

May 13, 1982

Syncon

TECHNICAL REPORT

for

STATE OF NEW JERSEY
DIVISION OF HAZARD MANAGEMENT
120 RT. 156
YARDVILLE, NJ 08620

on

Analysis of
State of New Jersey
Division of Hazard Management
Sample Test Pit #9

ETC Order/Sample Number A2295

prepared by

BT Dudenbostel /for
Denis C. K. Lin, Ph.D.
Vice President
Research/Operations

SYN 001 0840



ETC ENVIRONMENTAL TESTING and CERTIFICATION CORPORATION

May 13, 1982

Mr. Joe Buttich
State of New Jersey
Division of Hazard Management
120 Rt. 156
Yardville, NJ 08620

Dear Mr. Buttich:

We at ETC are pleased to submit the attached laboratory reports in response to your testing requirements. The analyses were performed by my staff and we are confident that you will find the results are of the highest quality.

If you have any questions regarding your report, we encourage you to contact our Customer Service organization (201/225-5600) and they will coordinate your request with appropriate laboratory personnel. You are also invited to visit with either Swep Davis or Henry Beal, Esq., if you have any questions regarding the regulatory or the legal aspects of your project. Dr. George Vander Velde is also available to assist you in defining the requirements for future testing programs.

All of us at ETC welcome your next call if we can be of further service to your organization in the future.

Sincerely,

DC Lin
Denis C. K. Lin, Ph.D.
Vice President
Research/Operations

DCKL:scm

Attachments

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INTRODUCTION

This report contains the analytical results on your soil sample, Test Pit #9, submitted on April 26, 1982. It is designed to satisfy the needs of your people at various levels in your organization.

The results we obtained on your sample are presented in a tabular format immediately after this introduction. Following the sample results, the quality assurance data on your specific sample are tabulated to verify the validity of the results obtained. The quality assurance data include those obtained on the surrogates, the blank, the spiked blank, the replicate and the spiked sample (commonly known as matrix spike). Also presented in the quality assurance data report are the verification of the proper functioning of the instruments used and the chain-of-custody record. The gas chromatograms and/ or mass spectra generated in the analysis of your sample are included in the Appendix of this report.

The established methods we used in the analysis of your sample are described in the Methodology section after the Results. In the analysis we followed a rigidly controlled Quality Assurance Protocol. This Protocol is described after the Methodology section.

We hope our report format is useful in assisting you to obtain pertinent information on your sample.

RESULTS

The results obtained on your sample are listed in Table 1. The compounds of interest are listed with their NPDES (National Pollution Discharge Elimination System) number, CAS (Chemical Abstract Service) number, and Method Detection Limit (MDL) published in Federal Register, December 3, 1979. When a compound is detected below its MDL it is reported in Table 1 as BMDL (Below Method Detection Limit). When a compound is searched for and cannot be found it is reported as ND (Not Detected).

The data on the recovery of the surrogates in your sample are listed after Table 1. Following the Surrogate Recovery Data, Table 2, are tables containing the Quality Assurance Data. Quality Assurance Report (A), Table 3, contains the results obtained on the Method Blank and Spiked Blank for your sample. Quality Assurance Report (B), Table 4, lists the data on the Replicate and the Matrix Spike Analysis. Quality Assurance Reports (C), (D), and (E) certify the performance of the GC/MS system when it was used in the analysis of your sample (Tables 5, 6, and 7).

The Chain-of-Custody Record on your sample is also included at the end of this Result section.

SYN 001 0844

TABLE 1: QUANTITATIVE DATA ON COMPOUNDS OF INTEREST

ETC Sample No. A2295Customer Sample ID. Test Pit #9

GC/MS FRACTION - VOLATILE COMPOUNDS

NPDES NUMBER	COMPOUND	CAS NUMBER	SAMPLE CONCENTRATION ug/kg	METHOD DETECTION LIMIT* ug/kg
1V	Acrolein	107-02-8	ND	2500
2V	Acrylonitrile	107-13-1	ND	2500
3V	Benzene	71-43-2	BMDL	250
4V	Bis (Chloromethyl) Ether	542-88-1	ND	250
5V	Bromoform	75-25-2	ND	250
6V	Carbon Tetrachloride	56-23-5	ND	250
7V	Chlorobenzene	108-90-71	-**	250
8V	Chlorodibromomethane	124-48-1	ND	250
9V	Chloroethane	75-00-3	ND	250
10V	2-Chloroethylvinyl Ether	110-75-8	ND	250
11V	Chloroform	67-66-3	ND	250
12V	Dichlorobromomethane	75-27-4	ND	250
13V	Dichlorodifluoromethane	75-71-8	ND	250
14V	1,1-Dichloroethane	75-34-3	ND	250
15V	1,2-Dichloroethane	107-06-2	ND	250
16V	1,1-Dichloroethylene	75-35-4	ND	250
17V	1,2-Dichloropropane	78-87-5	ND	250
18V	1,3-Dichloropropylene	542-75-6	ND	250

* ETC established Method Detection Limit for this particular sample.

**GC/MS scan terminated before elution of these compounds due to toluene overload of GC/MS system.

TABLE 1: QUANTITATIVE DATA ON COMPOUNDS OF INTEREST

ETC Sample No. A2295

Customer Sample ID. Test Pit #9

GC/MS FRACTION - VOLATILE COMPOUNDS

NPDES NUMBER	COMPOUND	CAS NUMBER	SAMPLE CONCENTRATION ug/kg	METHOD DETECTION LIMIT* ug/kg
19V	Ethylbenzene	100-41-4	-**	250
20V	Methyl Bromide	74-83-9	ND	250
21V	Methyl Chloride	74-87-3	BMDL	250
22V	Methylene Chloride	75-09-2	ND	250
23V	1,1,2,2-Tetrachloroethane	79-34-5	ND	250
24V	Tetrachloroethylene	127-18-4	ND	250
25V	Toluene	108-88-2	>3072	250
26V	1,2-Trans-Dichloroethylene	156-60-5	ND	250
27V	1,1,1-Trichloroethane	71-55-6	BMDL	250
28V	1,1,2-Trichloroethane	79-00-5	ND	250
29V	Trichloroethylene	79-01-6	ND	250
30V	Trichlorofluoromethane	75-69-4	ND	250
31V	Vinyl Chloride	75-01-4	ND	250

* ETC established Method Detection Limit for this particular sample.

**GC/MS scan terminated before elution of these compounds due to toluene overload of GC/MS system.

TABLE 1: QUANTITATIVE DATA ON COMPOUNDS OF INTEREST

ETC Sample No. A2295Customer Sample ID. Test Pit #9

GC/MS FRACTION - ACID COMPOUNDS

NPDES NUMBER	COMPOUND	CAS NUMBER	SAMPLE CONCENTRATION ug/kg	METHOD DETECTION LIMIT* ug/kg
1A	2-Chlorophenol	95-57-8	ND	833
2A	2,4-Dichlorophenol	120-83-2	ND	833
3A	2,4-Dimethylphenol	105-67-9	ND	833
4A	4,6-Dinitro-O-Cresol	534-52-1	ND	8333
5A	2,4-Dinitrophenol	51-28-5	ND	8333
6A	2-Nitrophenol	88-75-5	ND	833
7A	4-Nitrophenol	100-02-7	ND	833
8A	P-Chloro-M-Cresol	59-50-7	ND	833
9A	Pentachlorophenol	87-86-5	ND	833
10A	Phenol	108-95-2	BMDL	833
11A	2,4,6-Trichlorophenol	88-06-2	ND	833

* ETC established Method Detection Limit for this particular sample.

TABLE 1: QUANTITATIVE DATA ON COMPOUNDS OF INTEREST

ETC Sample No. A2295Customer Sample ID. Test Pit #9

GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS

NPDES NUMBER	COMPOUND	CAS NUMBER	SAMPLE CONCENTRATION ug/kg	METHOD DETECTION LIMIT* ug/kg
1B	Acenaphthene	83-32-9	BMDL	3333
2B	Acenaphthylene	208-96-8	ND	3333
3B	Anthracene	120-12-7	ND	3333
4B	Benzidine	92-87-5	ND	3333
5B	Benzo (a) Anthracene	56-55-3	ND	3333
6B	Benzo (a) Pyrene	50-32-8	ND	3333
7B	3,4-Benzofluoranthene	205-99-2	ND	3333
8B	Benzo (ghi) Perylene	191-24-2	ND	3333
9B	Benzo (k) Fluoranthene	207-08-9	ND	3333
10B	Bis (2-Chloroethoxy) Methane	111-91-1	ND	3333
11B	Bis (2-Chloroethyl) Ether	111-44-4	ND	3333
12B	Bis (2-Chloroisopropyl) Ether	39638-32-9	ND	3333
13B	Bis (2-Ethylhexyl) Phthalate	117-81-7	ND	3333
14B	4-Bromophenyl Phenyl Ether	101-55-3	ND	3333
15B	Butyl Benzyl Phthalate	85-68-7	BMDL	3333
16B	2-Chloronaphthalene	91-58-7	ND	3333
17B	4-Chlorophenyl Phenyl Ether	7005-72-3	ND	3333
18B	Chrysene	218-01-9	ND	3333

8780 100 NXS

* ETC established Method Detection Limit for this particular sample.

TABLE 1: QUANTITATIVE DATA ON COMPOUNDS OF INTEREST

ETC Sample No. A2295Customer Sample ID. Test Pit #9

GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS		CAS	SAMPLE	METHOD
NPDES				
NUMBER	COMPOUND	NUMBER	CONCENTRATION ug/kg	DETECTION LIMIT* ug/kg
19B	Dibenzo (a,h) Anthracene	53-70-3	ND	3333
20B	1,2-Dichlorobenzene	95-50-1	ND	3333
21B	1,3-Dichlorobenzene	541-73-1	ND	3333
22B	1,4-Dichlorobenzene	106-46-7	ND	3333
23B	3,3'-Dichlorobenzidine	91-94-1	ND	3333
24B	Diethyl Phthalate	84-66-2	ND	3333
25B	Dimethyl Phthalate	131-11-3	ND	3333
26B	Di-N-Butyl Phthalate	84-74-2	ND	3333
27B	2,4-Dinitrotoluene	121-14-2	ND	3333
28B	2,6-Dinitrotoluene	606-20-2	ND	3333
29B	Di-N-Octyl Phthalate	117-84-0	ND	3333
30B	1,2-Diphenylhydrazine	122-66-7	ND	3333
31B	Fluoranthene	206-44-0	ND	3333
32B	Fluorene	86-73-7	ND	3333
33B	Hexachlorobenzene	118-71-1	ND	3333
34B	Hexachlorobutadiene	87-68-3	ND	3333
35B	Hexachlorocyclopentadiene	77-47-4	ND	3333
36B	Hexachloroethane	67-72-1	ND	3333

6780 I00 NXS

* ETC established Method Detection Limit for this particular sample.

TABLE 1: QUANTITATIVE DATA ON COMPOUNDS OF INTEREST

ETC Sample No. A2295Customer Sample ID. Test Pit #9GC/MS FRACTION - BASE/NEUTRAL COMPOUNDS

NPDES NUMBER	COMPOUND	CAS NUMBER	SAMPLE CONCENTRATION ug/kg	METHOD DETECTION LIMIT* ug/kg
37B	Indeno (1,2,3-cd) Pyrene	193-39-5	ND	3333
38B	Isophorone	78-59-1	ND	3333
39B	Naphthalene	91-20-3	BMDL	3333
40B	Nitrobenzene	98-95-3	ND	3333
41B	N-Nitrosodimethylamine	62-75-9	ND	3333
42B	N-Nitrosodi-n-Propylamine	621-64-7	ND	3333
43B	N-Nitrosodiphenylamine	86-30-6	ND	3333
44B	Phenanthrene	85-01-8	BMDL	3333
45B	Pyrene	129-00-0	ND	3333
46B	1,2,4-Trichlorobenzene	120-82-1	ND	3333

0980 100 NAS

* ETC established Method Deteciton Limit for this particualar sample.

TABLE 1: QUANTITATIVE DATA ON COMPOUNDS OF INTEREST

ETC Sample No. A2295Customer Sample ID. Test Pit #9

GC/MS FRACTION - PESTICIDE COMPOUNDS

NPDES NUMBER	COMPOUND	CAS NUMBER	SAMPLE CONCENTRATION ug/kg	METHOD DETECTION LIMIT* ug/kg
1P	Aldrin	309-00-2	ND	3333
2P	Alpha-BHC	319-84-6	ND	3333
3P	Beta-BHC	319-85-7	ND	3333
4P	Gamma-BHC	58-89-9	ND	3333
5P	Delta-BHC	319-86-8	ND	3333
6P	Chlordane	57-74-9	ND	3333
7P	4,4'-DDT	50-29-3	ND	3333
8P	4,4'-DDE	72-55-9	ND	3333
9P	4,4'-DDD	72-54-8	ND	3333
10P	Dieldrin	60-57-1	ND	3333
11P	Alpha-Endosulfan	115-29-7	ND	3333
12P	Beta-Endosulfan	115-29-7	ND	3333
13P	Endosulfan Sulfate	1031-07-8	ND	3333
14P	Endrin	72-20-8	ND	3333
15P	Endrin Aldehyde	7421-93-4	ND	3333
16P	Heptachlor	76-44-2	ND	3333
17P	Heptachlor Epoxide	1024-57-3	ND	3333
18P	PCB-1242	53469-21-9	33000	3333

IS80 I00 NXS

* ETC established Method Detection Limit for this particular sample.

TABLE \$TBL: QUANTITATIVE DATA ON COMPOUNDS OF INTEREST

ETC Sample No. A2295

Customer Sample ID. Test Pit #9

GC/MS FRACTION - PESTICIDE COMPOUNDS

NPDES NUMBER	COMPOUND	CAS NUMBER	SAMPLE CONCENTRATION ug/kg	METHOD DETECTION LIMIT* ug/kg
19P	PCB-1254	11097-69-1	ND	3333
20P	PCB-1221	11104-28-2	ND	3333
21P	PCB-1232	11141-16-5	ND	3333
22P	PCB-1248	12672-29-6	ND	3333
23P	PCB-1260	11096-82-5	ND	3333
24P	PCB-1016	12674-11-2	ND	3333
25P	Toxaphene	8001-35-2	ND	3333

* ETC established Method Detection Limit for this particular sample.

TABLE 1: QUANTITATIVE DATA ON COMPOUNDS OF INTEREST

ETC Sample No. A2295Customer Sample ID. Test Pit #9

METALS, DIOXIN, CYANIDE, AND TOTAL PHENOLS

NPDES NUMBER	METAL OR COMPOUND	CAS NUMBER	SAMPLE CONCENTRATION mg/kg	METHOD DETECTION LIMIT mg/kg
1M	Antimony, Total	7440-36-0	ND	30
2M	Arsenic, Total	7440-38-2	18	5
3M	Beryllium, Total	7440-41-7	ND	1.0
4M	Cadmium, Total	7440-43-9	BMDL	2.0
5M	Chromium, Total	7440-47-3	70	2.0
6M	Copper, Total	7550-50-8	35	1.0
7M	Lead, Total	7439-92-1	95	20
8M	Mercury, Total	7439-97-6	0.4	0.1
9M	Nickel, Total	7440-02-0	14	4.0
10M	Selenium, Total	7782-49-2	ND	5
11M	Silver, Total	7440-22-4	ND	1.0
12M	Thallium, Total	7440-28-0	BMDL	15.0
13M	Zinc, Total	7440-66-6	160	2.0
14M	Cyanide, Total	57-12-5	1.5	0.2
15M	Phenols, Total		2.0	0.1
	2,3,7,8-Tetrachlorodibenzo- P-Dioxin	1746-01-6	ND	3.3

TABLE 2: SURROGATE RECOVERY DATA

ETC Sample No. A2295Customer Sample ID. Test Pit #9

COMPOUND	AMOUNT ADDED IN ug	% RECOVERY	CONTROL LIMITS*	
			LOWER	UPPER
<u>VOLATILE FRACTION</u>				
Bromochloromethane	.200	72	79	127
Benzene, d ₆	.150	94	63	122
Fluorobenzene	.150	92	74	122
1,4-Dichlorobutane**	.200	-	75	117
Pentafluorobenzene**	.150	-	58	124
Ethylbenzene, d ₁₀ **	.150	-	78	114
<u>ACID FRACTION</u>				
2-Fluorophenol	80	83	20	86
Pentafluorophenol	80	121	37	127
<u>BASE/NEUTRAL FRACTION</u>				
2-Fluorobiphenyl	80	63	62	122
1-Fluoronaphthalene	80	59	64	104
Nitrobenzene, d ₅	80	45	58	105

* Three Standard Deviations About the Mean.

**GC/MS scan terminated before elution of these surrogates due to toluene overload of GC/MS System.

TABLE 3: QUALITY ASSURANCE REPORT (A): BLANK AND SPIKED BLANK

** VOLATILES **

For ETC Sample Numbers: A2170, A2245, A2293 to 2297

NPDES NUMBER	COMPOUND	CONCENTRATION IN ug/l	
		BLANK	SPIKED BLANK
		AMOUNT ADDED	% RECOVERY
1V	Acrolein	ND	86
2V	Acrylonitrile	ND	77
3V	Benzene	ND	112
4V	Bis (Chloromethyl) Ether	ND	-
5V	Bromoform	ND	98
6V	Carbon Tetrachloride	ND	110
7V	Chlorobenzene	ND	116
8V	Chlorodibromomethane	ND	104
9V	Chloroethane	ND	93
10V	2-Chloroethylvinyl Ether	ND	88
11V	Chloroform	ND	107
12V	Dichlorobromomethane	ND	103
13V	Dichlorodifluoromethane	ND	-
14V	1,1-Dichloroethane	ND	109
15V	1,2-Dichloroethane	ND	86
16V	1,1-Dichloroethylene	ND	105
17V	1,2-Dichloropropane	ND	115
18V	1,3-Dichloropropylene	ND	102

★★ VOLATILES ★★

For ETC Sample Numbers: A2170, A2245, A2293 to A2297

NPDES NUMBER	COMPOUND	CONCENTRATION IN ug/l		%	RECOVERY
		BLANK	SPIKED BLANK		
			AMOUNT ADDED		
19V	Ethylbenzene	ND	200		112
20V	Methyl Bromide	ND	200		106
21V	Methyl Chloride	ND	-		-
22V	Methylene Chloride	BMDL	190		88
23V	1,1,2,2-Tetrachloroethane	ND	200		89
24V	Tetrachloroethylene	ND	190		121
25V	Toluene	BMDL	200		92
26V	1,2-Trans-Dichloroethylene	ND	200		121
27V	1,1,1-Trichloroethane	BMDL	200		101
28V	1,1,2-Trichloroethane	ND	190		99
29V	Trichloroethylene	ND	190		117
30V	Trichlorofluoromethane	ND	200		109
31V	Vinyl Chloride	ND	200		17
	Ortho-Xylene	ND	150		116
	Meta/Para-Xylene	ND	300		102

TABLE 3: QUALITY ASSURANCE REPORT (A): BLANK AND SPIKED BLANK

** ACID FRACTION **

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION IN ug/l		AMOUNT ADDED	% RECOVERY
		BLANK*	SPIKED BLANK*		
1A	2-Chlorophenol	ND	-	-	-
2A	2,4-Dichlorophenol	ND	-	-	-
3A	2,4-Dimethylphenol	ND	-	-	-
4A	4,6-Dinitro-0-Cresol	ND	-	-	-
5A	2,4-Dinitrophenol	ND	-	-	-
6A	2-Nitrophenol	ND	-	-	-
7A	4-Nitrophenol	ND	-	-	-
8A	P-Chloro-M-Cresol	ND	-	-	-
9A	Pentachlorophenol	ND	-	-	-
10A	Phenol	ND	-	-	-
11A	2,4,6-Trichlorophenol	ND	-	-	-

LS80 100 NXS

* Reagent Blank. Spiked Blank cannot be performed for soil samples.

TABLE 3: QUALITY ASSURANCE REPORT (A): BLANK AND SPIKED BLANK

** BASE/NEUTRAL FRACTION**

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION IN ug/l	
		BLANK*	SPIKED BLANK*
		<u>AMOUNT ADDED</u>	<u>% RECOVERY</u>
1B	Acenaphthene	ND	-
2B	Acenaphthylene	ND	-
3B	Anthracene	ND	-
4B	Benzidine	ND	-
5B	Benzo (a) Anthracene	ND	-
6B	Benzo (a) Pyrene	ND	-
7B	3,4-Benzofluoranthene	ND	-
8B	Benzo (ghi) Perylene	ND	-
9B	Benzo (k) Fluoranthene	ND	-
10B	Bis (2-Chloroethoxy) Methane	ND	-
11B	Bis (2-Chloroethyl) Ether	ND	-
12B	Bis (2-Chloroisopropyl) Ether	ND	-
13B	Bis (2-Ethylhexyl) Phthalate	ND	-
14B	4-Bromophenyl Phenyl Ether	ND	-
15B	Butyl Benzyl Phthalate	ND	-
16B	2-Chloronaphthalene	ND	-
17B	4-Chlorophenyl Phenyl Ether	ND	-
18B	Chrysene	ND	-

8980 100 NAS

*Reagent Blank. Spiked Blank cannot be performed for these samples.

TABLE 3: QUALITY ASSURANCE REPORT (A): BLANK AND SPIKED BLANK

** BASE/NEUTRAL FRACTION**

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION IN ug/l	
		BLANK*	SPIKED BLANK*
		AMOUNT ADDED	% RECOVERY
19B	Dibenzo (a,h) Anthracene	ND	-
20B	1,2-Dichlorobenzene	ND	-
21B	1,3-Dichlorobenzene	ND	-
22B	1,4-Dichlorobenzene	ND	-
23B	3,3'-Dichlorobenzidine	ND	-
24B	Diethyl Phthalate	BMDL	-
25B	Dimethyl Phthalate	ND	-
26B	Di-N-Butyl Phthalate	BMDL	-
27B	2,4-Dinitrotoluene	ND	-
28B	2,6-Dinitrotoluene	ND	-
29B	Di-N-Octyl Phthalate	ND	-
30B	1,2-Diphenylhydrazine	ND	-
31B	Fluoranthene	ND	-
32B	Fluorene	ND	-
33B	Hexachlorobenzene	ND	-
34B	Hexachlorobutadiene	ND	-
35B	Hexachlorocyclopentadiene	ND	-
36B	Hexachloroethane	ND	-

6980 100 NAS

*Reagent Blank. Spiked Blank cannot be performed for these samples.

TABLE 3: QUALITY ASSURANCE REPORT (A): BLANK AND SPIKED BLANK

** BASE/NEUTRAL FRACTION**

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION IN ug/l	
		BLANK*	SPIKED BLANK*
		AMOUNT ADDED	% RECOVERY
37B	Indeno (1,2,3-cd) Pyrene	ND	-
38B	Isophorone	ND	-
39B	Naphthalene	ND	-
40B	Nitrobenzene	ND	-
41B	N-Nitrosodimethylamine	ND	-
42B	N-Nitrosodi-n-Propylamine	ND	-
43B	N-Nitrosodiphenylamine	ND	-
44B	Phenanthrene	ND	-
45B	Pyrene	ND	-
46B	1,2,4-Trichlorobenzene	ND	-

0980 100 NAS

*Reagent Blank. Spiked Blank cannot be performed for these samples.

TABLE 3: QUALITY ASSURANCE REPORT (A): BLANK AND SPIKED BLANK

** PESTICIDES **

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION IN ug/l	
		BLANK*	SPIKED BLANK*
		AMOUNT ADDED	% RECOVERY
1P	Aldrin	ND	-
2P	Alpha-BHC	ND	-
3P	Beta-BHC	ND	-
4P	Gamma-BHC	ND	-
5P	Delta-BHC	ND	-
6P	Chlordane	ND	-
7P	4,4'-DDT	ND	-
8P	4,4'-DDE	ND	-
9P	4,4'-DDD	ND	-
10P	Dieldrin	ND	-
11P	Alpha-Endosulfan	ND	-
12P	Beta-Endosulfan	ND	-
13P	Endosulfan Sulfate	ND	-
14P	Endrin	ND	-
15P	Endrin Aldehyde	ND	-
16P	Heptachlor	ND	-
17P	Heptachlor Epoxide	ND	-
18P	PCB-1242	ND	-

I980 I00 NAS

*Reagent Blank. Spiked Blank cannot be performed for these samples.

**** PESTICIDES ****

NPDES
NUMBER

CONCENTRATION IN ug/l
BLANK* SP

SPIKED BLANK*

AMOUNT ADDED

8 RECOVERY

19P

PCB-1254

ND

1

—

20P

PCB-1221

ND

—

•

21P

PCB-1232

ND

—

—

22P

PCB-1248

ND

—

•

23P

PCB-1260

ND

1

•

24P

PCB-1016

ND

—

•

25P

Toxaphene

ND

•

•

2980 100 NLS

*Reagent Blank. Spiked Blank cannot be performed for these samples.

TABLE 4: QUALITY ASSURANCE REPORT (B): REPLICATE ANALYSIS AND MATRIX SPIKE ANALYSIS

** VOLATILES **

For ETC Sample Numbers: A2170, A2245, A2293 to A2297

NPDES NUMBER	COMPOUND	CONCENTRATION in ug/kg			SPIKED SAMPLE	AMOUNT ADDED	% RECOVERY
		SAMPLE	REPLICATE	SAMPLE			
1V	Acrolein	ND	ND	ND	7425	8000	93
2V	Acrylonitrile	ND	ND	ND	883	800	110
3V	Benzene	ND	ND	ND	225	200	113
4V	Bis (Chloromethyl) Ether	ND	ND	ND	-	-	-
5V	Bromoform	ND	ND	ND	201	200	101
6V	Carbon Tetrachloride	ND	ND	ND	208	190	109
7V	Chlorobenzene	ND	ND	ND	272	190	143
8V	Chlorodibromomethane	ND	ND	ND	196	190	103
9V	Chloroethane	ND	ND	ND	154	200	77
10V	2-Chloroethylvinyl Ether	ND	ND	ND	190	200	95
11V	Chloroform	ND	37	ND	186	190	98
12V	Dichlorobromomethane	ND	ND	ND	193	200	97
13V	Dichlorodifluoromethane	ND	ND	ND	-	-	-
14V	1,1-Dichloroethane	ND	ND	ND	207	190	109
15V	1,2-Dichloroethane	ND	ND	ND	177	200	89
16V	1,1-Dichloroethylene	ND	ND	ND	184	190	97
17V	1,2-Dichloropropane	ND	ND	ND	224	190	118
18V	1,3-Dichloropropylene	ND	ND	ND	181	200	91

E980 100 NAS

TABLE 4: QUALITY ASSURANCE REPORT (B): REPLICATE ANALYSIS AND MATRIX SPIKE ANALYSIS

** VOLATILES **

For ETC Sample Numbers: A2170, A2245, A2293 to A2297

NPDES NUMBER	COMPOUND	CONCENTRATION in ug/kg		SAMPLE	SPIKED SAMPLE	AMOUNT ADDED	% RECOVERY
		SAMPLE	REPLICATE				
19V	Ethylbenzene	61	60	61	305	200	122
20V	Methyl Bromide	ND	ND	ND	171	200	86
21V	Methyl Chloride	ND	ND	ND	-	-	-
22V	Methylene Chloride	125	124	125	276	190	79
23V	1,1,2,2-Tetrachloroethane	14	ND	14	125	200	56
24V	Tetrachloroethylene	5	3	5	234	190	121
25V	Toluene	466	503	466	-	200	-*
26V	1,2-Trans-Dichloroethylene	ND	ND	ND	227	200	114
27V	1,1,1-Trichloroethane	8	11	8	196	200	94
28V	1,1,2-Trichloroethane	ND	ND	ND	259	190	136
29V	Trichloroethylene	ND	ND	ND	163	190	86
30V	Trichlorofluoromethane	ND	ND	ND	188	200	94
31V	Vinyl Chloride	ND	ND	ND	38	200	19
	Ortho-Xylene	162	132	162	444	150	188
	Meta/Para-Xylenes	58	88	58	212	300	51

* Level of spike too low to obtain meaningful recovery data on this sample.

TABLE 4: QUALITY ASSURANCE REPORT (B): REPLICATE ANALYSIS AND MATRIX SPIKE ANALYSIS

** ACID FRACTION **

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION IN ug/kg			SPIKED SAMPLE	AMOUNT ADDED	% RECOVERY
		SAMPLE	REPLICATE	SAMPLE			
1A	2-Chlorophenol	ND	ND	ND	125	150	83
2A	2,4-Dichlorophenol	ND	ND	ND	148	150	99
3A	2,4-Dimethylphenol	ND	ND	ND	109	150	73
4A	4,6-Dinitro-O-Cresol	ND	ND	ND	91	150	61
5A	2,4-Dinitrophenol	ND	ND	ND	-	-	-
6A	2-Nitrophenol	ND	ND	ND	147	150	98
7A	4-Nitrophenol	ND	ND	ND	73	150	49
8A	P-Chloro-M-Cresol	ND	ND	ND	147	150	98
9A	Pentachlorophenol	ND	ND	ND	78	150	52
10A	Phenol	ND	3	4	129	150	87
11A	2,4,6-Trichlorophenol	ND	ND	ND	143	150	95

TABLE 4: QUALITY ASSURANCE REPORT (B): REPLICATE ANALYSIS AND MATRIX SPIKE ANALYSIS

** BASE/NEUTRAL FRACTION **

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION in ug/kg			SPIKED SAMPLE	AMOUNT ADDED	% RECOVERY
		SAMPLE	REPLICATE	SAMPLE			
1B	Acenaphthene	1	1	1	66	100	65
2B	Acenaphthylene	ND	ND	1	58	100	57
3B	Anthracene	ND	ND	2	45	100	43
4B	Benzidine	ND	ND	ND	-	-	-
5B	Benzo (a) Anthracene	ND	ND	ND	140	100	140
6B	Benzo (a) Pyrene	ND	ND	43	95	100	52
7B	3,4-Benzofluoranthene	ND	ND	9	66	100	57
8B	Benzo (ghi) Perylene	ND	ND	ND	-	-	-
9B	Benzo (k) Fluoranthene	ND	ND	ND	51	100	51
10B	Bis (2-Chloroethoxy) Methane	ND	ND	ND	62	100	62
11B	Bis (2-Chloroethyl) Ether	ND	ND	ND	56	100	56
12B	Bis (2-Chloroisopropyl) Ether	ND	ND	ND	67	100	67
13B	Bis (2-Ethylhexyl) Phthalate	ND	ND	2	76	100	74
14B	4-Bromophenyl Phenyl Ether	ND	ND	ND	46	100	46
15B	Butyl Benzyl Phthalate	ND	ND	ND	120	100	120
16B	2-Chloronaphthalene	ND	ND	ND	65	100	65
17B	4-Chlorophenyl Phenyl Ether	ND	ND	ND	49	100	49
18B	Chrysene	ND	ND	74	158	100	84

TABLE 4: QUALITY ASSURANCE REPORT (B): REPLICATE ANALYSIS AND MATRIX SPIKE ANALYSIS

** BASE/NEUTRAL FRACTION **

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION in ug/kg		SAMPLE	SPIKED SAMPLE	AMOUNT ADDED	RECOVERY
		SAMPLE	REPLICATE				
19B	Dibenzo (a,h) Anthracene	ND	ND	ND	-	-	-
20B	1,2-Dichlorobenzene	ND	ND	ND	57	100	57
21B	1,3-Dichlorobenzene	ND	ND	ND	30	100	30
22B	1,4-Dichlorobenzene	ND	ND	ND	51	100	51
23B	3,3'-Dichlorobenzidine	ND	ND	ND	-	-	-
24B	Diethyl Phthalate	1	3	2	64	100	62
25B	Dimethyl Phthalate	ND	ND	ND	65	100	65
26B	Di-N-Butyl Phthalate	ND	ND	20	124	100	104
27B	2,4-Dinitrotoluene	ND	ND	ND	39	100	39
28B	2,6-Dinitrotoluene	ND	ND	ND	50	100	50
29B	Di-N-Octyl Phthalate	ND	ND	ND	107	100	107
30B	1,2-Diphenylhydrazine	ND	ND	ND	38	100	38
31B	Fluoranthene	7	9	20	112	100	92
32B	Fluorene	ND	ND	1	53	100	52
33B	Hexachlorobenzene	ND	ND	1	45	100	44
34B	Hexachlorobutadiene	ND	ND	ND	84	100	84
35B	Hexachlorocyclopentadiene	ND	ND	ND	-	-	-
36B	Hexachloroethane	ND	ND	ND	60	100	60

TABLE 4: QUALITY ASSURANCE REPORT (B): REPLICATE ANALYSIS AND MATRIX SPIKE ANALYSIS

** BASE/NEUTRAL FRACTION **

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION in ug/kg		SPIKED SAMPLE	AMOUNT ADDED	% RECOVERY
		SAMPLE	REPLICATE			
37B	Indeno (1,2,3-cd) Pyrene	ND	ND	ND	-	-
38B	Isophorone	ND	ND	ND	79	100
39B	Naphthalene	2	1	8	65	100
40B	Nitrobenzene	ND	ND	ND	65	100
41B	N-Nitrosodimethylamine	ND	ND	ND	-	-
42B	N-Nitrosodi-n-Propylamine	ND	ND	ND	63	100
43B	N-Nitrosodiphenylamine	ND	ND	ND	151	100
44B	Phenanthrene	ND	ND	8	68	100
45B	Pyrene	ND	ND	21	108	100
46B	1,2,4-Trichlorobenzene	ND	ND	ND	70	100

8980 100 NAS

TABLE 4: QUALITY ASSURANCE REPORT (B): REPLICATE ANALYSIS AND MATRIX SPIKE ANALYSIS

** PESTICIDES **

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION IN ug/kg			SPIKED SAMPLE	AMOUNT ADDED	% RECOVERY
		SAMPLE	REPLICATE	SAMPLE			
1P	Aldrin	ND	ND	ND	23	100	23
2P	Alpha-BHC	ND	ND	ND	16	100	16
3P	Beta-BHC	ND	ND	ND	3	100	3
4P	Gamma-BHC	ND	ND	ND	-	-	-
5P	Delta-BHC	ND	ND	ND	7	100	7
6P	Chlordane	ND	ND	ND	-	-	-
7P	4,4'-DDT	ND	ND	41	97	100	56
8P	4,4'-DDE	ND	ND	2	16	100	14
9P	4,4'-DDD	ND	ND	41	71	100	30
10P	Dieldrin	ND	ND	ND	11	100	11
11P	Alpha-Endosulfan	ND	ND	ND	10	130	8
12P	Beta-Endosulfan	ND	ND	ND	-	-	-
13P	Endosulfan Sulfate	ND	ND	ND	12	100	12
14P	Endrin	ND	ND	ND	3	100	3
15P	Endrin Aldehyde	ND	ND	ND	-	-	-
16P	Heptachlor	ND	ND	ND	4	100	4
17P	Heptachlor Epoxide	ND	ND	ND	7	100	7
18P	PCB-1242	ND	ND	ND	-	-	-

TABLE 4: QUALITY ASSURANCE REPORT (B): REPLICATE ANALYSIS AND MATRIX SPIKE ANALYSIS

**** PESTICIDES ****

For ETC Sample Numbers: A2293 to A2298

NPDES NUMBER	COMPOUND	CONCENTRATION IN ug/kg			SPIKED SAMPLE	AMOUNT ADDED	RECOVERY
		SAMPLE	REPLICATE	SAMPLE			
19P	PCB-1254	ND	ND	ND	-	-	-
20P	PCB-1221	ND	ND	ND	-	-	-
21P	PCB-1232	ND	ND	ND	-	-	-
22P	PCB-1248	ND	ND	292	-	-	-
23P	PCB-1260	ND	ND	ND	-	-	-
24P	PCB-1016	ND	ND	ND	-	-	-
25P	Toxaphene	ND	ND	ND	-	-	-

0480 100 NXS

TABLE 5: QUALITY ASSURANCE REPORT (C): GC/MS PERFORMANCE ON BROMOFLUOROBENZENE (BFB)
FOR VOLATILE FRACTION

For ETC Sample Numbers: A2170, A2245, A2293 to 2297

DATE: 5/4/82 RUN NO: 6058 SPECTRUM NO: 50 ANALYST: P. Krajczar

m/z	ION ABUNDANCE CRITERIA	ABUNDANCE IN % OF BASE PEAK
50	15-40% of the base peak	23
75	30-60% of the base peak	55
95	Base Peak, 100% relative abundance	100
96	5-9% of the base peak	7
173	Less than 1% of the base peak	<1
174	Greater than 50% of the base peak	88
175	5-9% of mass 174	7
176	Greater than 50% of the base peak	84
177	5-9% of mass 176	7

Graphic display of spectrum in Appendix B

TABLE 6: QUALITY ASSURANCE REPORT (D): GC/MS PERFORMANCE ON DECAFLUOROTRIPHENYLPHOSPINE (DFTPP)
FOR ACID FRACTION

For ETC Sample Numbers: A2293 to A2298

DATE: 5/2/82 RUN NO: 21554 SPECTRUM NO: 90 ANALYST: Mita Mukherjee

m/z	ION ABUNDANCE CRITERIA	ABUNDANCE IN % OF BASE PEAK
51	30-60% of mass 198	31
68	less than 2% of mass 69	<2
70	less than 2% of mass 69	<2
127	40-60% of mass 198	55
197	less than 1% of mass 198	<1
198	base peak, 100% relative abundance	100
199	5-9% of mass 198	8
275	10-30% of mass 198	21
365	greater than 1% of mass 198	2
441	less than mass 443	7
442	greater than 40% of mass 198	49
443	17-23% of mass 442	10

Graphic display of spectrum in Appendix B

TABLE 7: QUALITY ASSURANCE REPORT (E): GC/MS PERFORMANCE ON DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)
FOR BASE/NEUTRAL/PESTICIDE FRACTION

For ETC Sample Numbers: A2170, A2179, A2245, A2294 to A2298

DATE: 5/3/82 RUN NO: 26572 SPECTRUM NO: 62 ANALYST: W. W. Chi

m/z	ION ABUNDANCE CRITERIA	ABUNDANCE IN % OF BASE PEAK
51	30-60% of mass 198	47
68	less than 2% of mass 69	<2
70	less than 2% of mass 69	<2
127	40-60% of mass 198	43
197	less than 1% of mass 198	<1
198	base peak, 100% relative abundance	100
199	5-9% of mass 198	7
275	10-30% of mass 198	20
365	greater than 1% of mass 198	3
441	less than mass 443	12
442	greater than 40% of mass 198	72
443	17-23% of mass 442	15

Graphic display of spectrum in Appendix B

E480 100 NAS

LABORATORY CHAIN-OF-CUSTODY

ETC Sample Number A2293 to A2298

Relinquished By Tony Kuzmack

Received By Ben Luf

Date 4/26/82 Time 4:50 p.m.

Relinquished By _____

Received By _____ Date _____ Time _____

Relinquished By _____

Received By _____ Date _____ Time _____

Relinquished By _____

Received By _____ Date _____ Time _____



ENVIRONMENTAL
TESTING AND
CERTIFICATION
CORPORATION

LABORATORY CHAIN-OF-CUSTODY CHRONICLE

ETC Sample Number A2293 to A2298

Sample Preparation For

Analyst

Date

Base/Neutral/PCB's & Pesticides

B. J. / Stephanie Dubs

4/27-4/28/82

Acids

B. J. / Stephanie Dubs

4/27-4/28/82

Metals

J. Birn

4/26/82

Others

Sample Analysis For

Analyst

Date

Base/Neutral/PCB's & Pesticides

Wen-Wen Chi

5/3/82

Acids

Mita Mukherjee

5/2/82

VOA/Purgeables

Pearl Krajczar

5/4 + 7/82

Metals

J. Birn

5/11/82

Others

Others

Verified By

B. J. Dunderbott

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ETC

ENVIRONMENTAL
TESTING AND
CERTIFICATION
CORPORATION

CHAIN OF CUSTODY

Company: Chymel Associates Job No. _____

Address 1101 State Rd
Princeton NJ

Attention: Mike Wright

Sample Description:

ETC Sample #15

A2293 PN to
A 2298 PN

A2293 CN to
A2298 CN

TO be analyzed for:

total phenols

total cyanides

Sample(s) Relinquished by: Toni Ruzmack

Time: 2:55pm Date: 4/28/82

Sample(s) Received by: Greg Saska

Time: 2:55 PM Date: 4-28-82

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METHODOLOGY

The methods employed in the analysis of your sample are established EPA methods for priority pollutants. Combined gas chromatography and mass spectrometry (GC/MS) was used in the analysis of the organic compounds and atomic absorption spectrophotometry (AA) in the analysis of the metals.

For the analysis of the volatile organic compounds, a modified version of EPA Method 624 (Federal Register, December 3, 1979; page 69532) was used. The modification can be summarized as follows: Two to three (2 to 3) grams of the sample are weighed into a 15 ml Hypo vial. The vial is sealed immediately with a teflon-backed silicone septum. Internal standards (3) are injected directly into the soil. The vial is attached to the Purge and Trap sampler. A 5 ml organic free water trap is attached in series between the purge and trap device and the sample vial. The sample vial is heated at 100 degree C +/- 2 degree C for 20 minutes. The volatile organics are efficiently purged from the sample using an inert gas. Purged compounds pass through the water trap onto the sorbent column of the Purge and Trap system. After purging is complete, the sorbent column is heated and back-flushed with helium, desorbing the volatile organics onto the gas chromatographic column. The gas chromatograph is temperature programmed to separate the volatiles which are then identified and quantitated using a computerized mass spectrometer (GC/MS/DS).

For the analysis of the Acid, Base/Neutral and Pesticide priority pollutants, EPA Method 625 (Federal Register, December 3, 1979; page 69540) was used. The method can be summarized as follows: A 30 gram semi-wet soil sample is Soxhlet extracted with 1:1 acetone and hexane. The acetone is thermally stripped. The remaining extract is diluted to 200 ml with methylene chloride and extracted twice with NaOH solution and once with reagent free water. The methylene chloride fraction is dried, concentrated, and analyzed for base neutral compounds by Method 625. The aqueous phase is then adjusted to pH less than 2 and extracted sequentially three times with methylene chloride. The extract is dried, concentrated, and analyzed for acid extractables using Method 625. The concentrates are injected into GC/MS systems set specifically for the separation and measurement of priority pollutants.

The exact conditions of the GC/MS systems used in the analysis of your sample by Method 625 are listed in the Appendix. Qualitative identification of the priority pollutants was performed initially using the relative retention times, the relative abundance of three characteristic ions and their ratios. The entire mass spectrum was reviewed before an identification was recorded. Quantitative analysis was performed using an internal standard with a single characteristic ion.

Metals analysis was performed according to the methods published by EPA in "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-70-020, March 1979. Arsenic, selenium, thallium, and antimony were analyzed by furnace AA while beryllium, chromium, nickel, copper, zinc, silver, cadmium, lithium, tin and lead were analyzed by flame AA. Mercury was analyzed by cold vapor technique.

QUALITY ASSURANCE PROTOCOL

The quality assurance protocol followed in the analysis of your sample is based on the "Handbook for Analytical Control in Water and Wastewater Laboratories", EPA-600/4-79-019, March, 1979; National Enforcement Investigation Center Policies, and Procedures manual; EPA-330/9/79/001-R, October, 1979; and the recommended guidelines for EPA Method 624 and 625.

Our protocol calls for a higher percentage of quality assurance samples than the requirements of Method 624 and 625. The key QA elements for the analysis of priority pollutants are summarized as follows:

Method 624

- In every block of 10 samples, analysis of 7 field samples, one blank, one spiked sample and one replicate are performed. This amounts to a 30% quality control factor.
- Three surrogate compounds are added to each sample in the block of ten.
- Blind quality control samples are included in field samples at a minimum of one every hundred samples.
- The GC/MS is checked and retuned, if necessary, every eight hours to ensure its performance on bromofluorobenzene (BFB) meets the EPA criteria.
- A calibration curve for quantification is prepared using a minimum of 3 concentrations of a standard mixture of the priority pollutants of interest and 3 internal standards (at a constant concentration).
- The calibration curve is verified with a standard priority pollutant mixture every eight hours.
- Results meet the acceptance criteria given in Method 624.

Method 625

- In every block of 20 samples extracted, there are 16 field samples, one blank, one spiked blank, one sample spiked with the priority pollutant standard mixture and a duplicate field sample.
- Five surrogate compounds are added to each sample in the block of 20.
- Blind quality control samples are included in field samples at a minimum of one every hundred samples.
- The GC/MS is checked and retuned, if necessary, every eight hours to ensure its performance on decafluorotriphenylphosphine (DFTPP) meets the EPA criteria.
- GC performance criteria as specified in Method 625 are met before analysis starts.
- A calibration curve for quantification is prepared using a minimum of 3 concentrations of a standard mixture of the priority pollutants of interest and 2,2'-difluorobiphenyl as internal standard.
- The calibration curve is verified with a standard priority pollutant mixture every eight hours.
- Results meet the acceptance criteria given in Method 625.

Analysis of Metals (Standards)

- New working standards are prepared for each batch of samples.
- Normal calibration is performed using a blank and four standards that have been carried through the entire sample preparation procedure. A regression analysis is used to construct the calibration curve.
- For each sample analysis in the standard additions technique, a three point calibration is performed using U. S. EPA Methods for Chemical Analysis of Water and Wastes, 1979. Results are obtained using linear regression analysis. Any results obtained with a coefficient of correlation below 0.990 are considered erroneous, necessitating raw data editing or sample re-analysis.
- Normal calibration curves are constructed using greater than or equal to 5 times the Instrumental Detection Limit (IDL) as the lowest concentration level.
- All calibration standards are analyzed in duplicate, as a minimum.
- Independent reference standards are used to check the accuracy of calibration standards.
- A check standard is analyzed every ten samples to establish the validity of the normal calibration curve.

SYN 001 0881

Analysis of Metals (Sample, for all metals except Mercury)

For all homogeneous samples (minimum of 42% QC), each sample batch may include up to 30 samples and the following fixed number of QC samples:

- 3 Replicates.
- 2 Replicate spikes.
- 2 Replicate independent reference standards.
- 8 Calibration standards (processed using the sample preparation method).
- 2 Blanks (using sample preparation method).
- 4 Calibration standards (without sample preparation).
- 1 Blank (without sample preparation).

For all heterogeneous samples (minimum of 65% QC), every field sample in a sample batch is run in duplicate. A sample batch may include up to 30 samples and the following fixed number of QC samples:

- 4 Replicates.
- 4 Replicate spikes.
- 2 Replicate independent reference standards.
- 8 Calibration standards (processed using the sample preparation method).
- 2 Blanks (using sample preparation method).
- 4 Calibration standards (without sample preparation).
- 1 Blank (without sample preparation).

Analysis of Metals (Sample, Mercury)

For every matrix (minimum of 66% QC), all the field samples in sample batch are run in duplicate. A sample batch may include up to 20 samples and the following fixed number of QC samples:

- 3 Replicates.
- 2 Replicate spikes.
- 2 Replicate independent reference standards.
- 10 Calibration standards (processed using the sample preparation method).
- 2 Blanks.

SYN 001 0883

Chain-of-Custody

The chain-of-custody procedure is part of our quality assurance protocol. We believe our chain-of-custody record fully complies with the legal requirements of federal, state and local government agencies and of the courts of law. The record covers:

- labeling of sample bottles, packing the Sample Shuttle and transferring the Shuttle under seal to the custody of a shipper;
- outgoing shipping manifests;
- the chain-of-custody form completed by the person (s) breaking the seal, taking the sample, resealing the Shuttle and transferring custody to a shipper;
- incoming shipping manifests;
- breaking the Shuttle's reseal;
- storing each labeled sample bottle in a secured area;
- disposition of each sample to an analyst or technician and;
- the use of the sample in each bottle in a testing procedure appropriate to the intended purpose of the sample.

The record shows for each link in this process:

- the person with custody;
- the time and date each person accepted or relinquished custody.

SYN 001 0884

REPORT APPENDICES

The following appendices provide the support analytical data associated with your sample analyses. They are arranged as follows:

Appendix A

- 1) Reconstructed total ion chromatogram of GC/MS analyses of your sample.
- 2) The individual mass spectra of all priority pollutant compounds which have been identified as being present in your sample.
- 3) The individual mass spectra of the corresponding compounds as obtained from the standards.

Appendix B

- 1) The mass spectra of the calibration compounds, 4-bromofluorobenzene (BFB) and decafluorotriphenylphosphine (DFTPP), as obtained on the data of sample analyses.

Appendix C [for plus 10 and 50% internal standard option]

- 1) Spectra of tentatively identified compounds, with their differences.

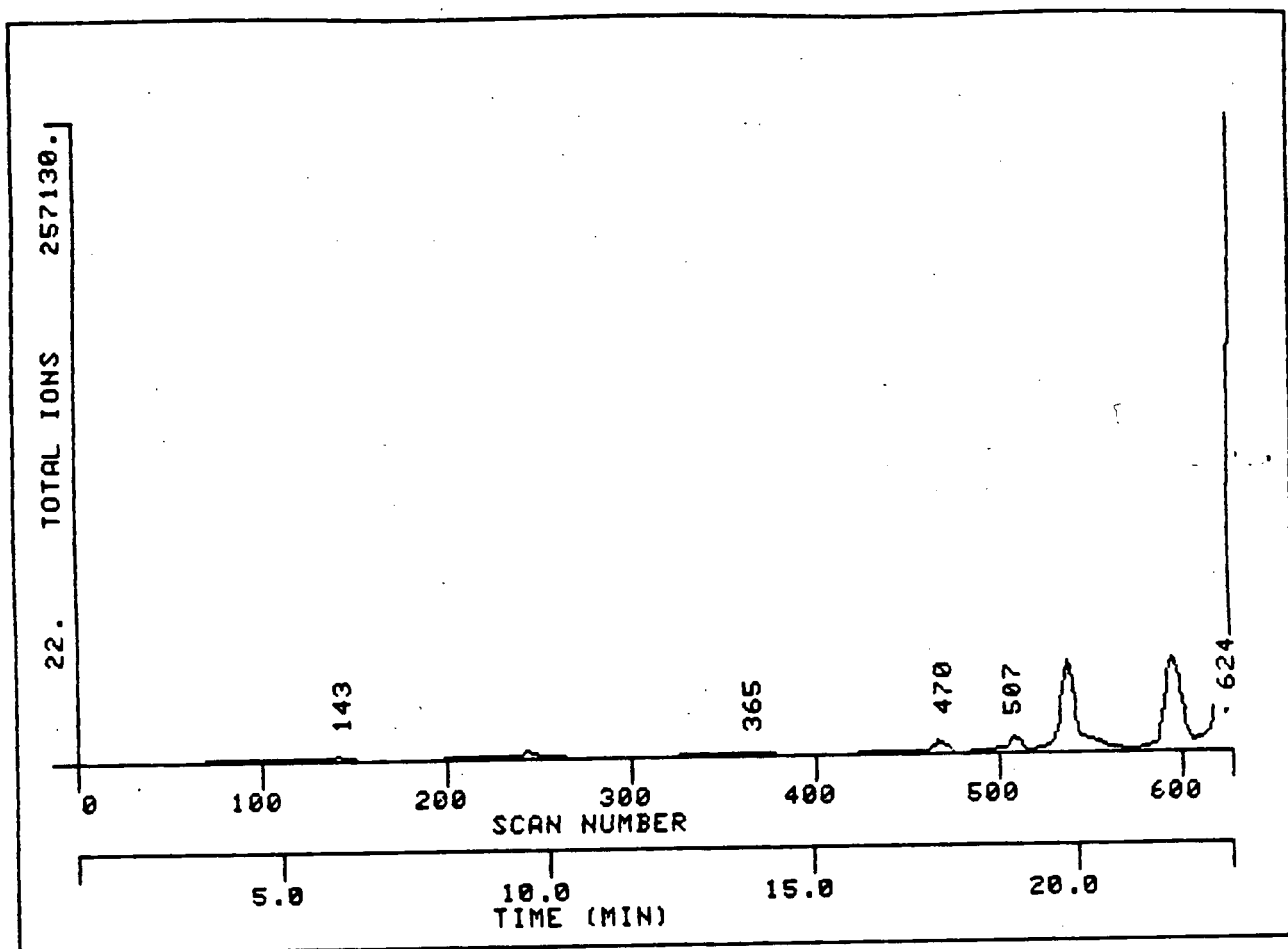
Appendix D

- 1) Subcontractor's report.

These data are provided to present a complete report on your sample and to provide the data on which analytical decisions have been based. We hope this will aid you in your own analysis of the data.

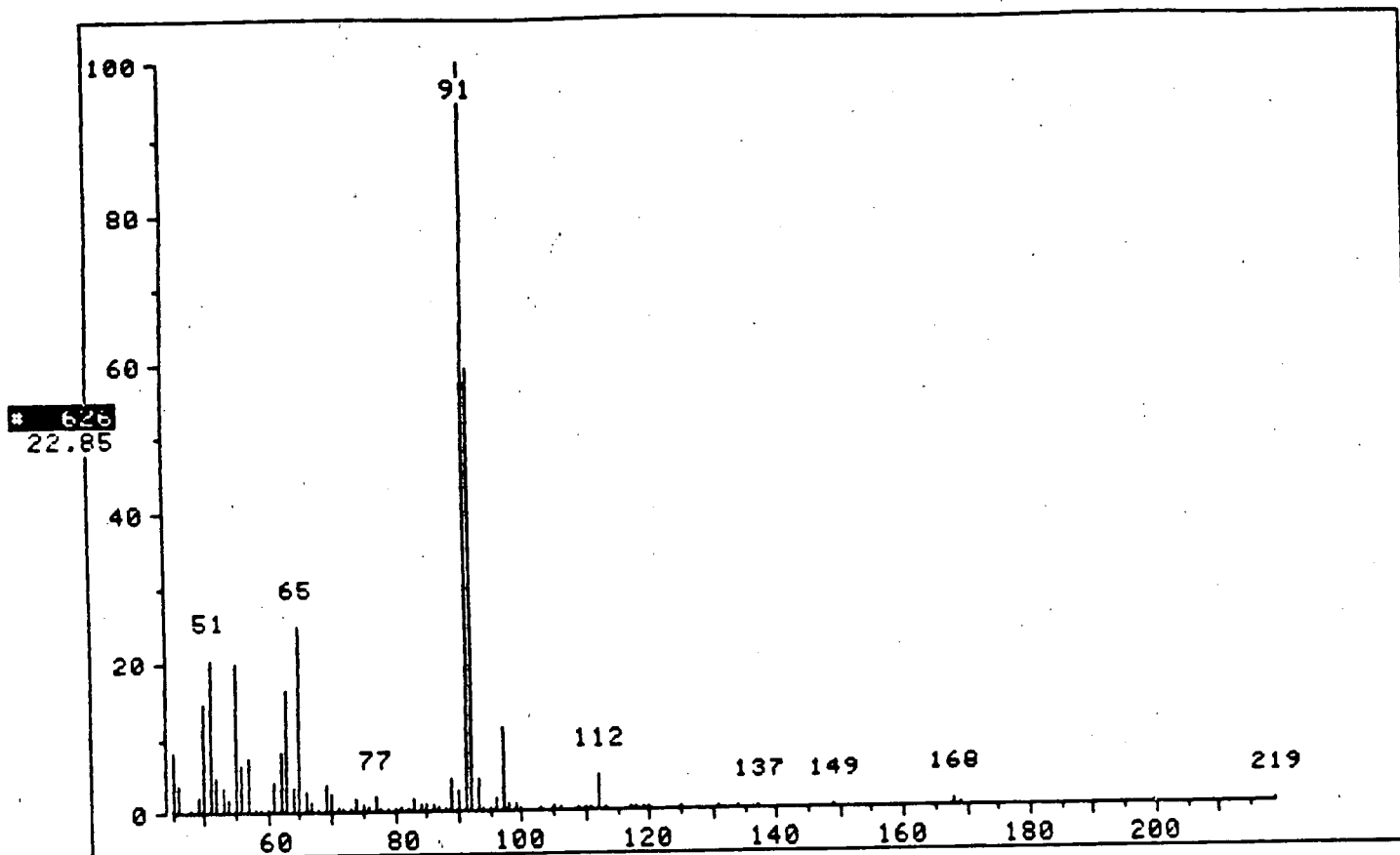
APPENDIX A

TOTAL ION CHROMATOGRAM



MS Data File FRN: 6080
 Name: A 2295 SEDIMENT PURGEABLES FRACTION
 Misc Data: 5/4/82 GC/MS A
 Last R.T.: 22.9 minutes

SYN 100 0887

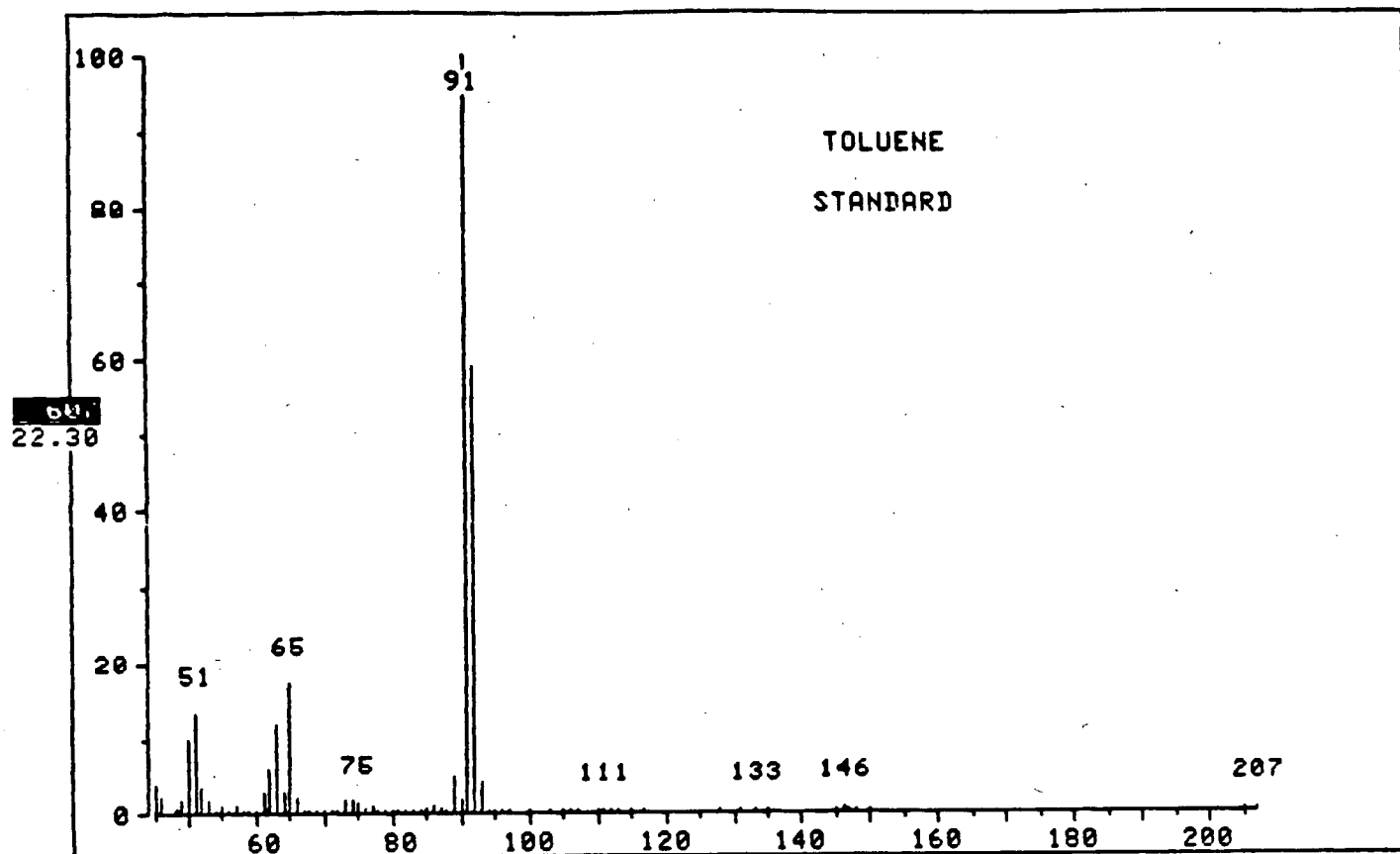


MS Data File FRN: 6080
Name: A2295 SEDIMENT PURGEABLES FRACTION

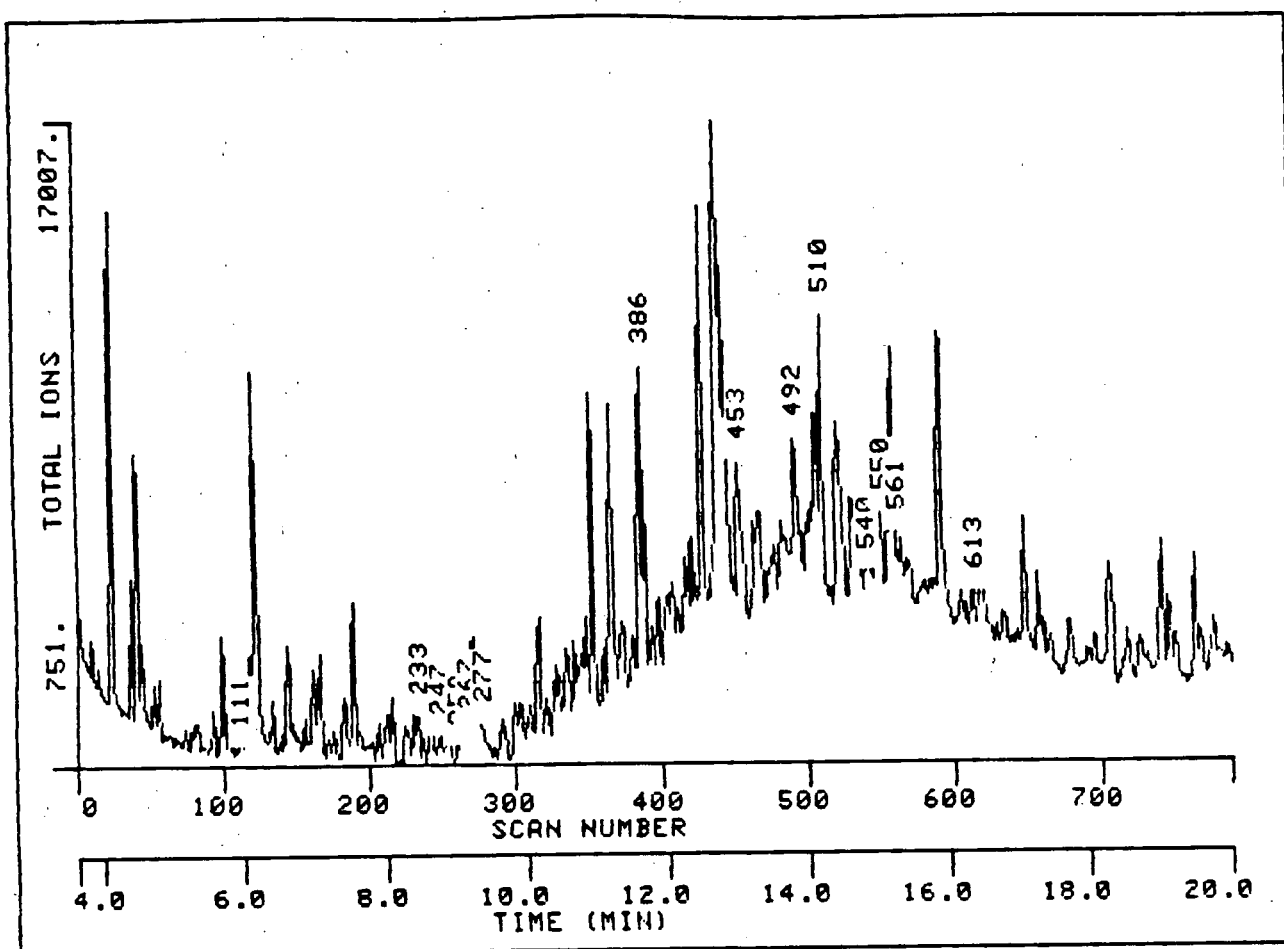
Compound Number: 24

Name: Toluene
Scan Number: 627
Retention Time: 24.00 minutes
Major Peak Area: calculate manually
Concentration: calculate manually

SYN 001 0888



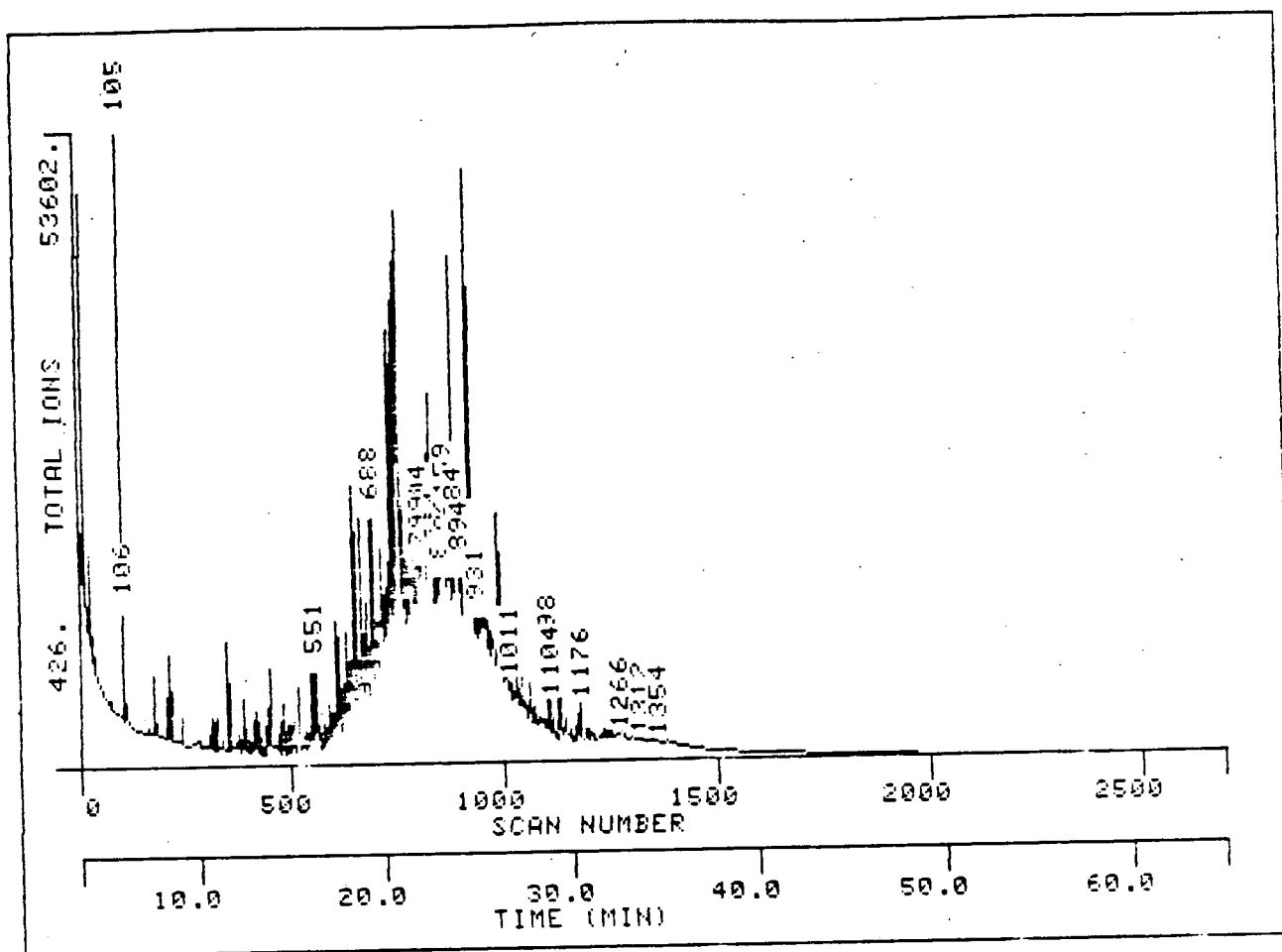
TOTAL ION CHROMATOGRAM



MS Data File FRN: 21566
 Name: A2295 ACID
 Misc Data: 5/2/82 GCMS D BTL#12
 Last R.T.: 20.0 minutes

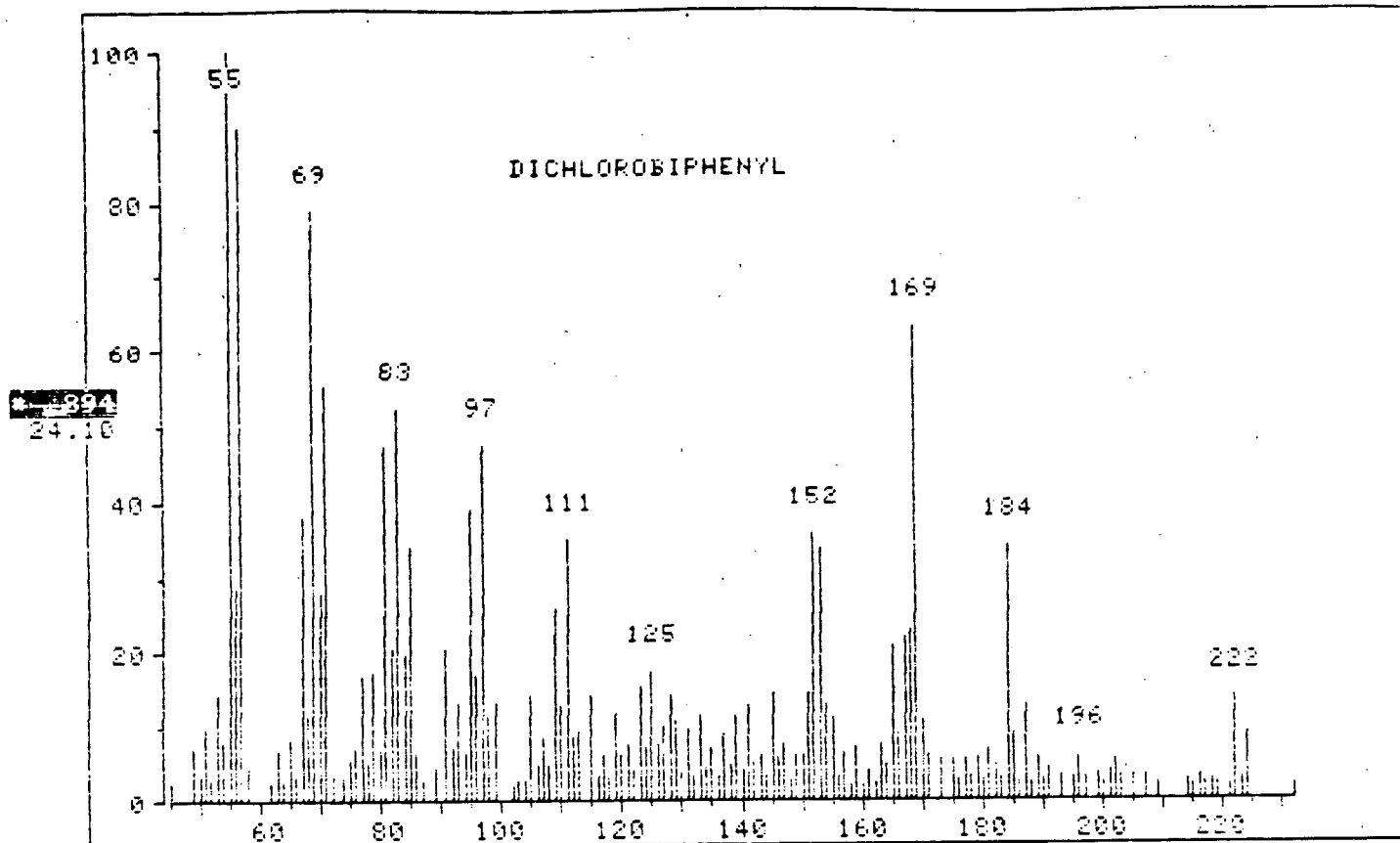
D21566

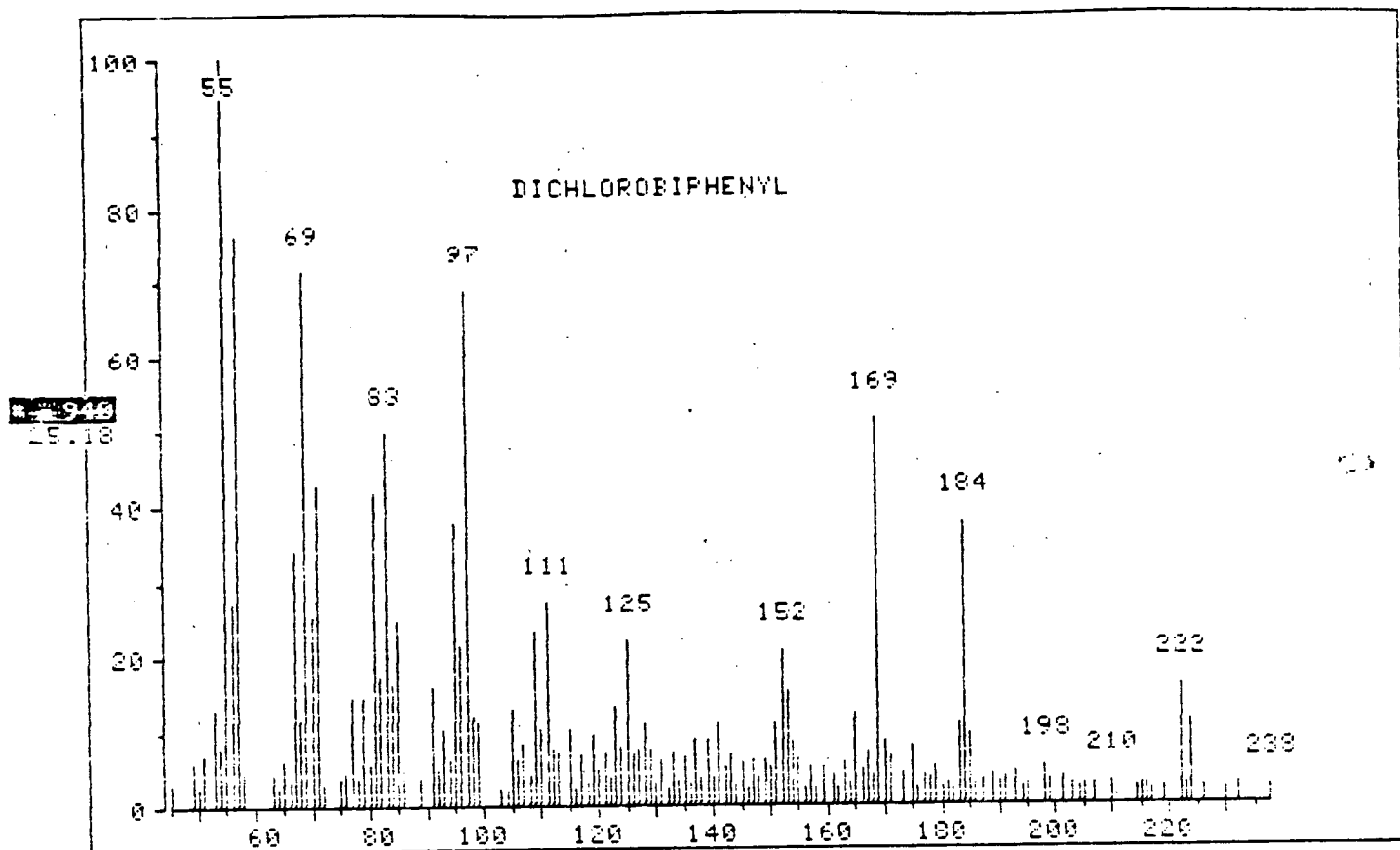
TOTAL ION CHROMATOGRAM

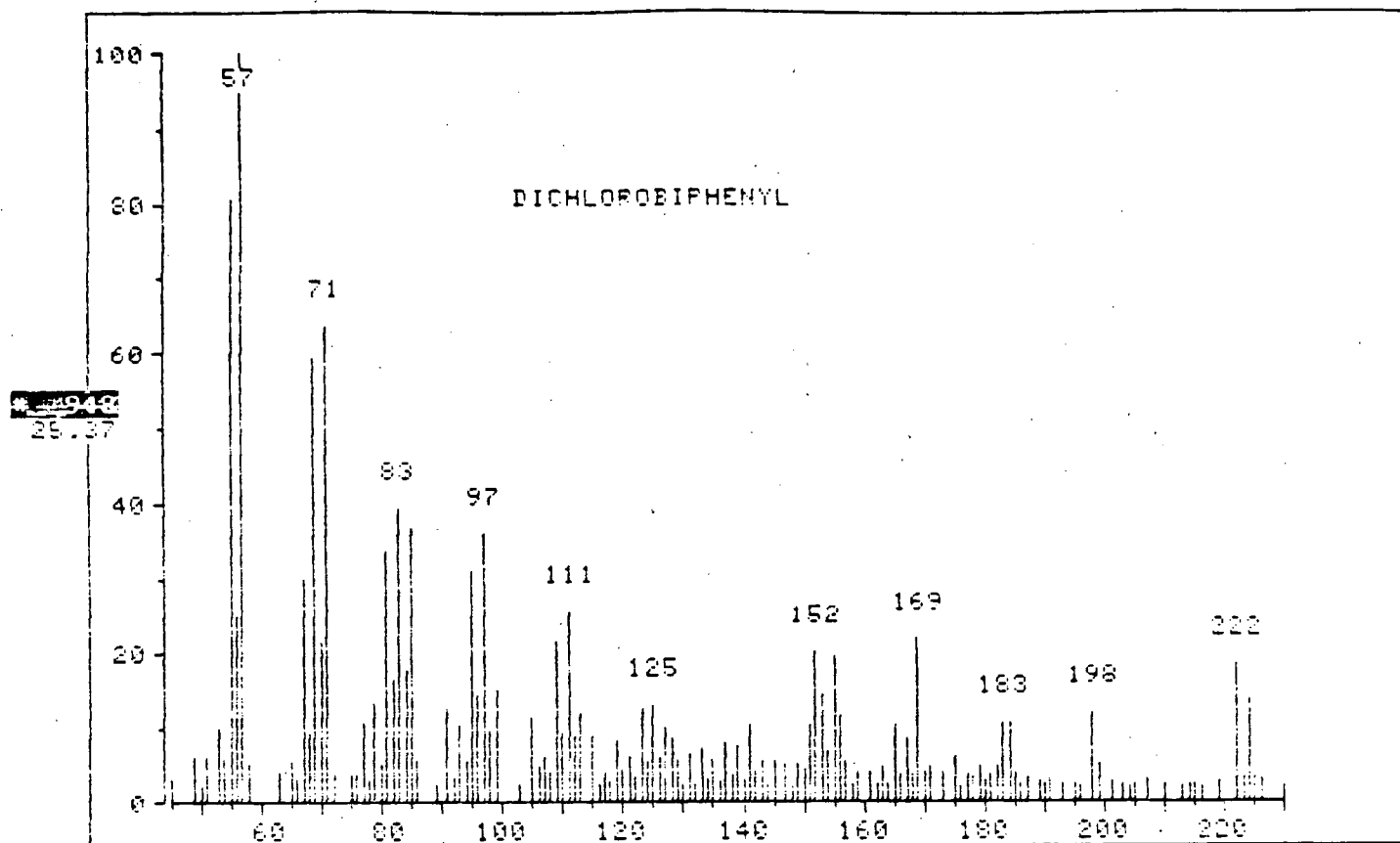


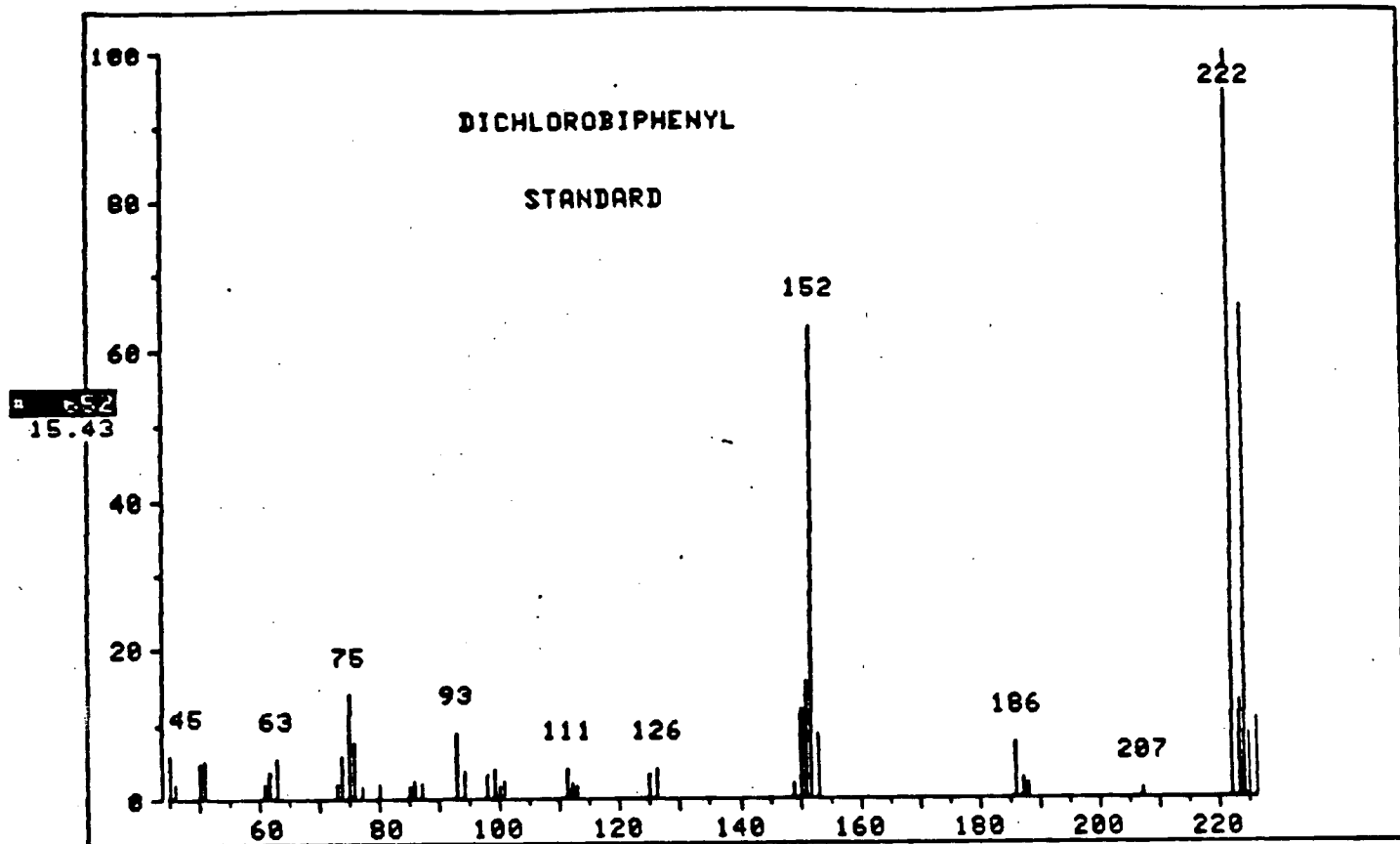
MS Data File FRN: 26587
 Name: ETC SAMPLE A2295 (1:10) B/N FRACTION
 Misc Data: 820503 BTL#15 D26587
 Last R.T.: 65.0 minutes

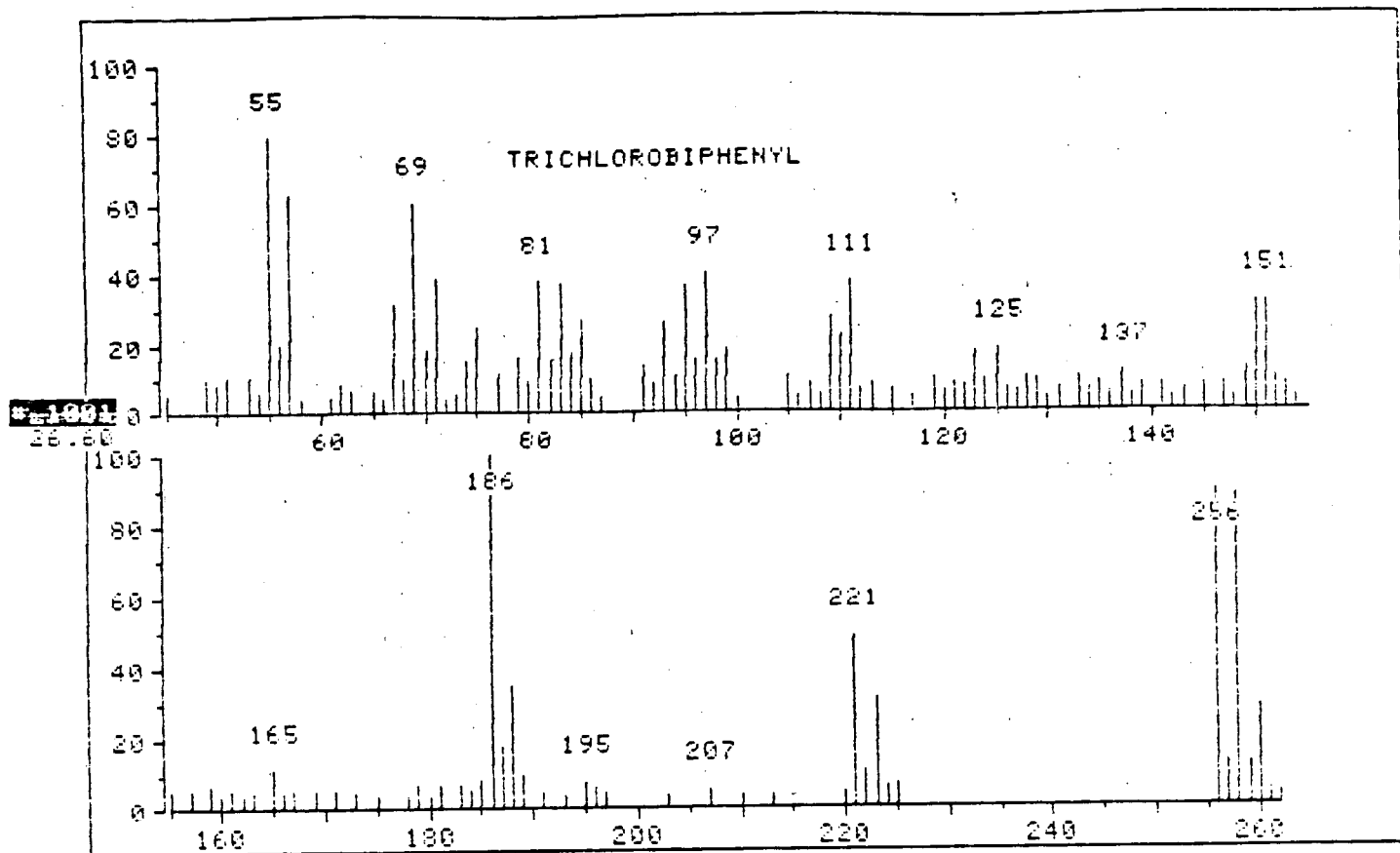
1680 100 NXS

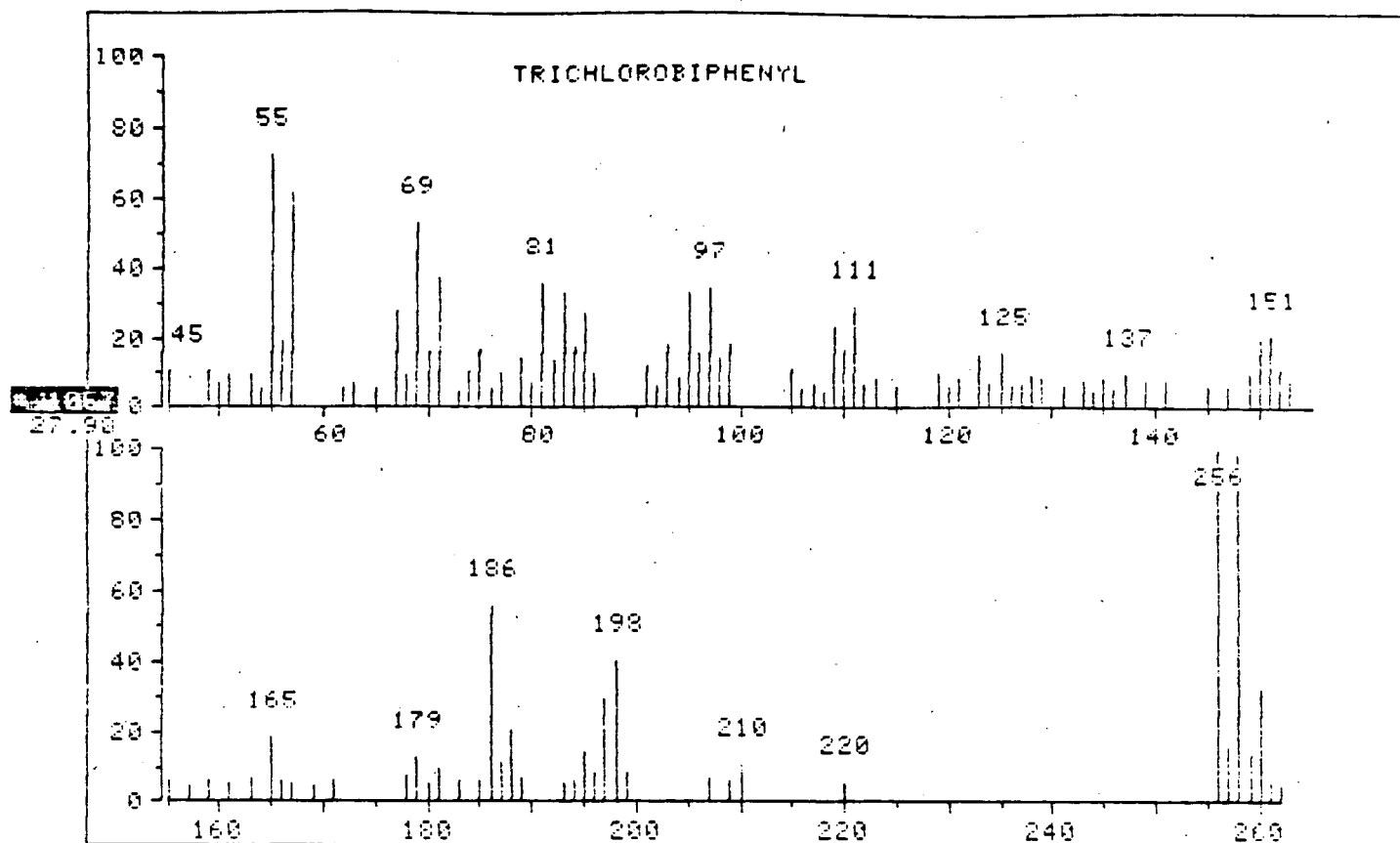




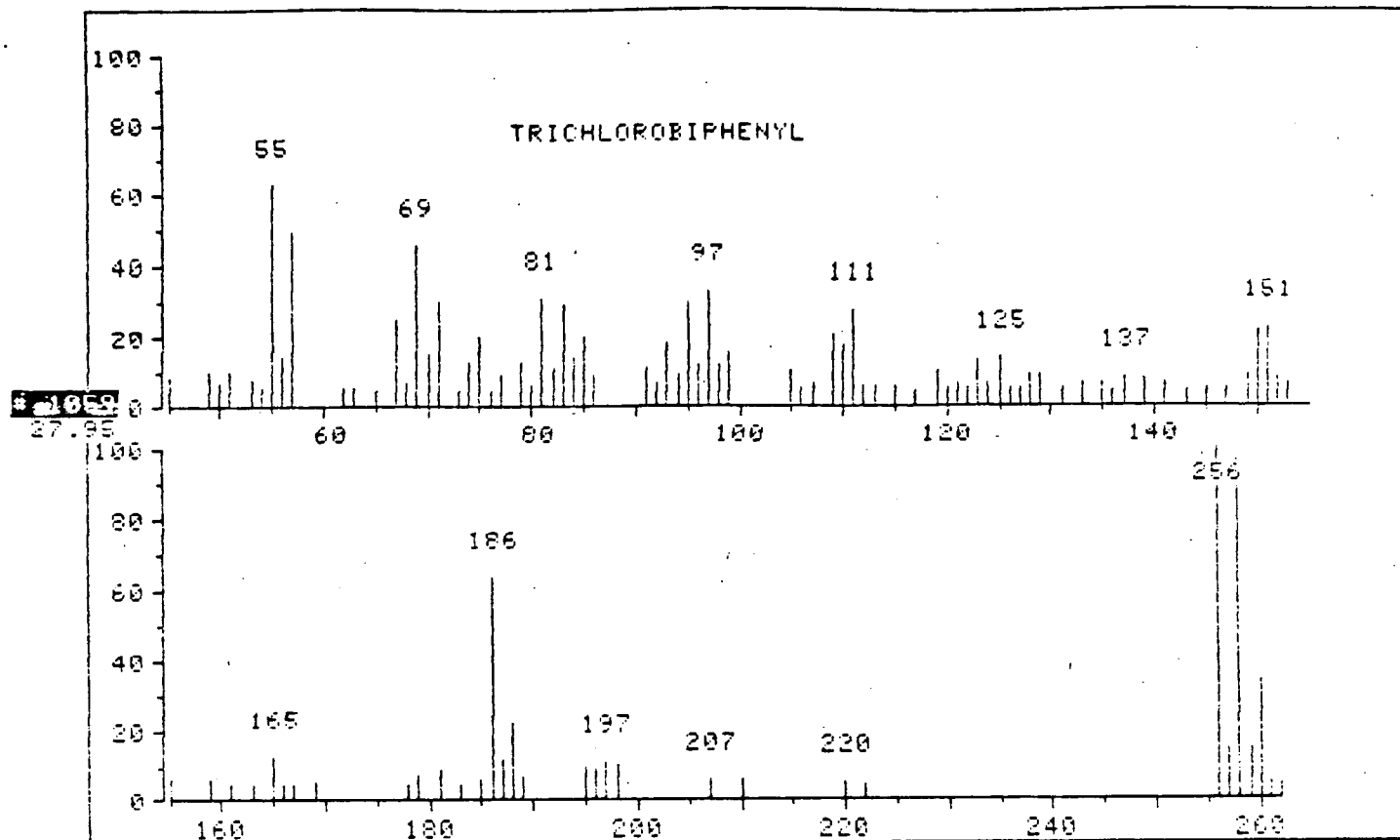




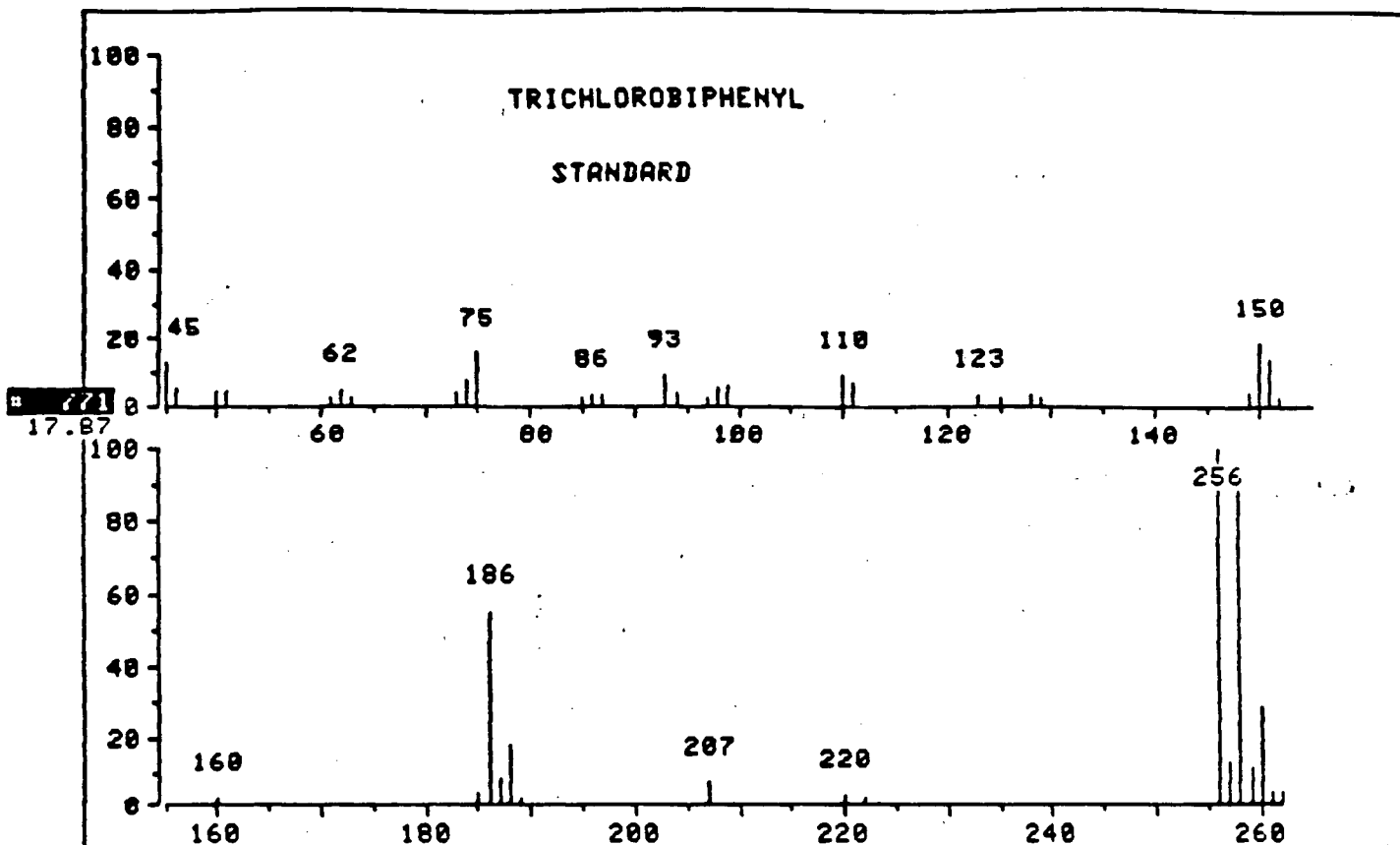


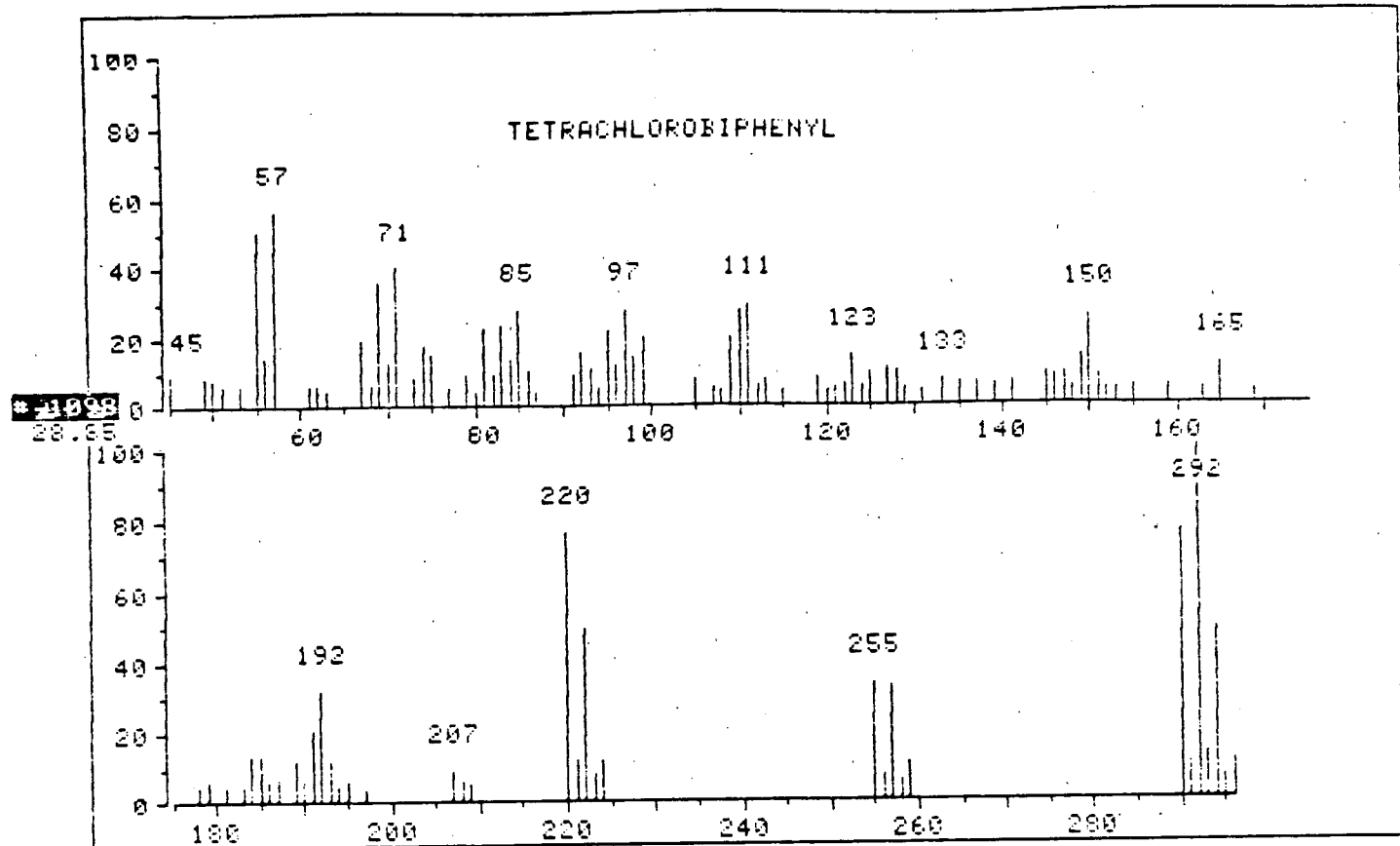


SYN 001 0897

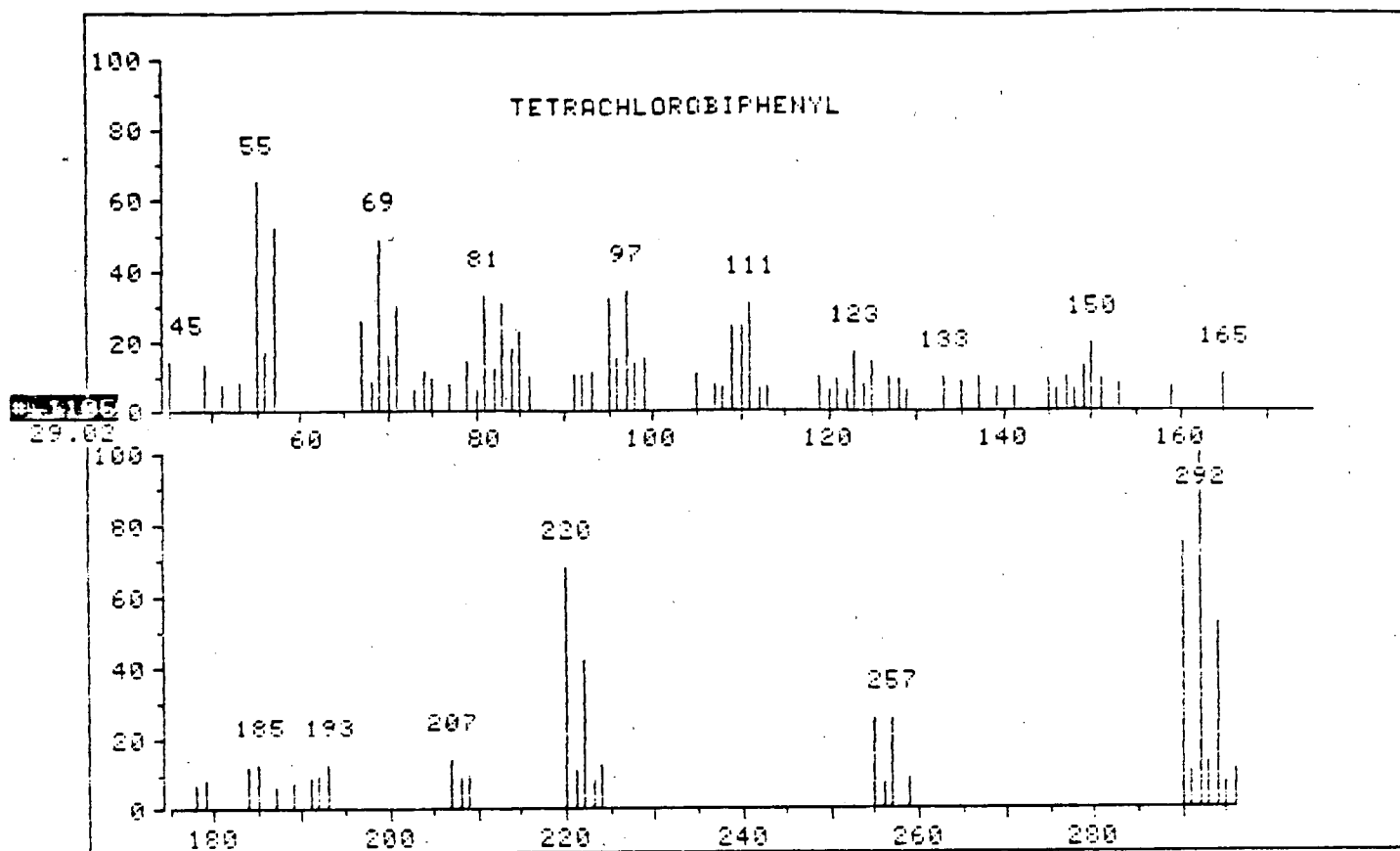


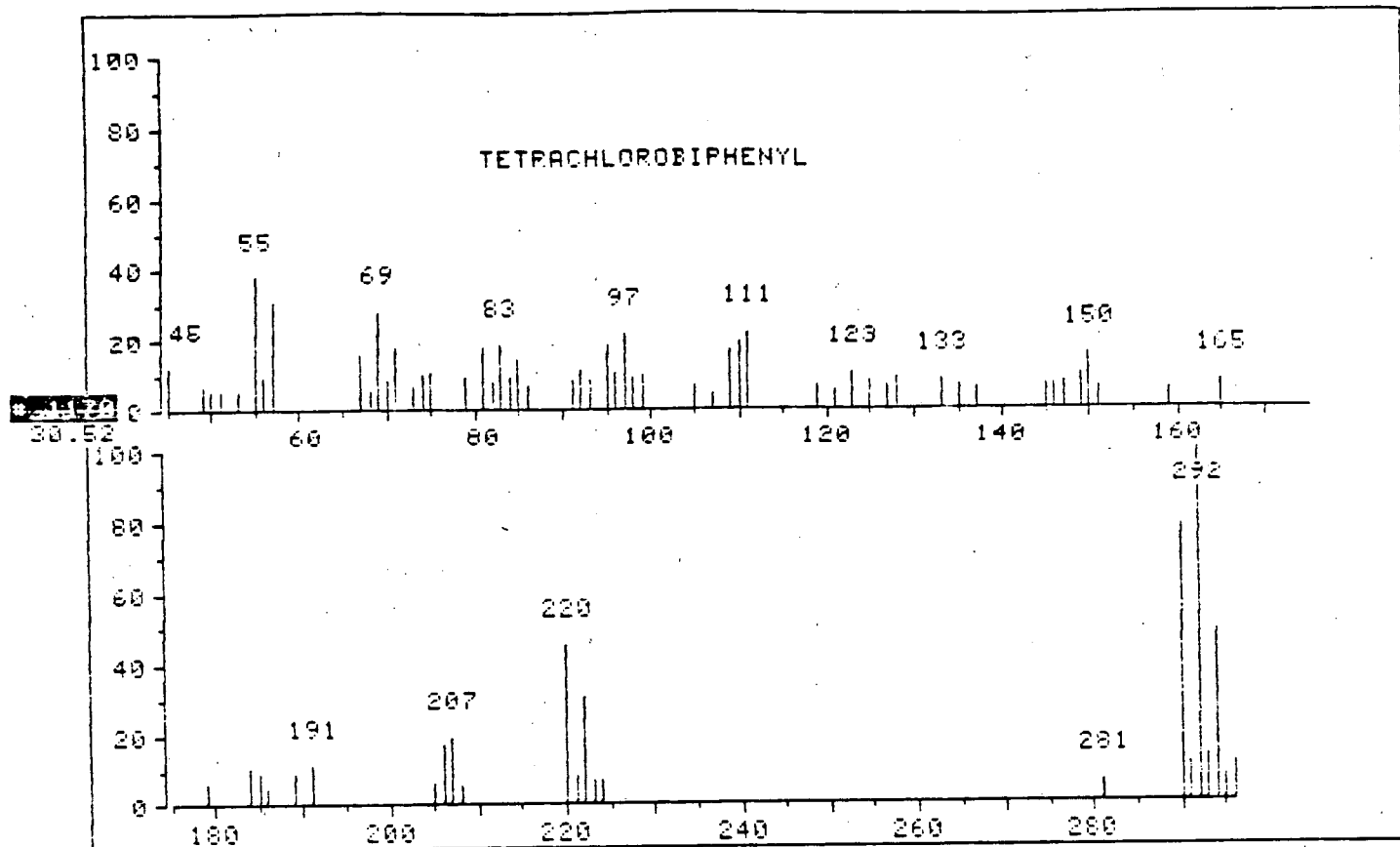
SYN 001 0898

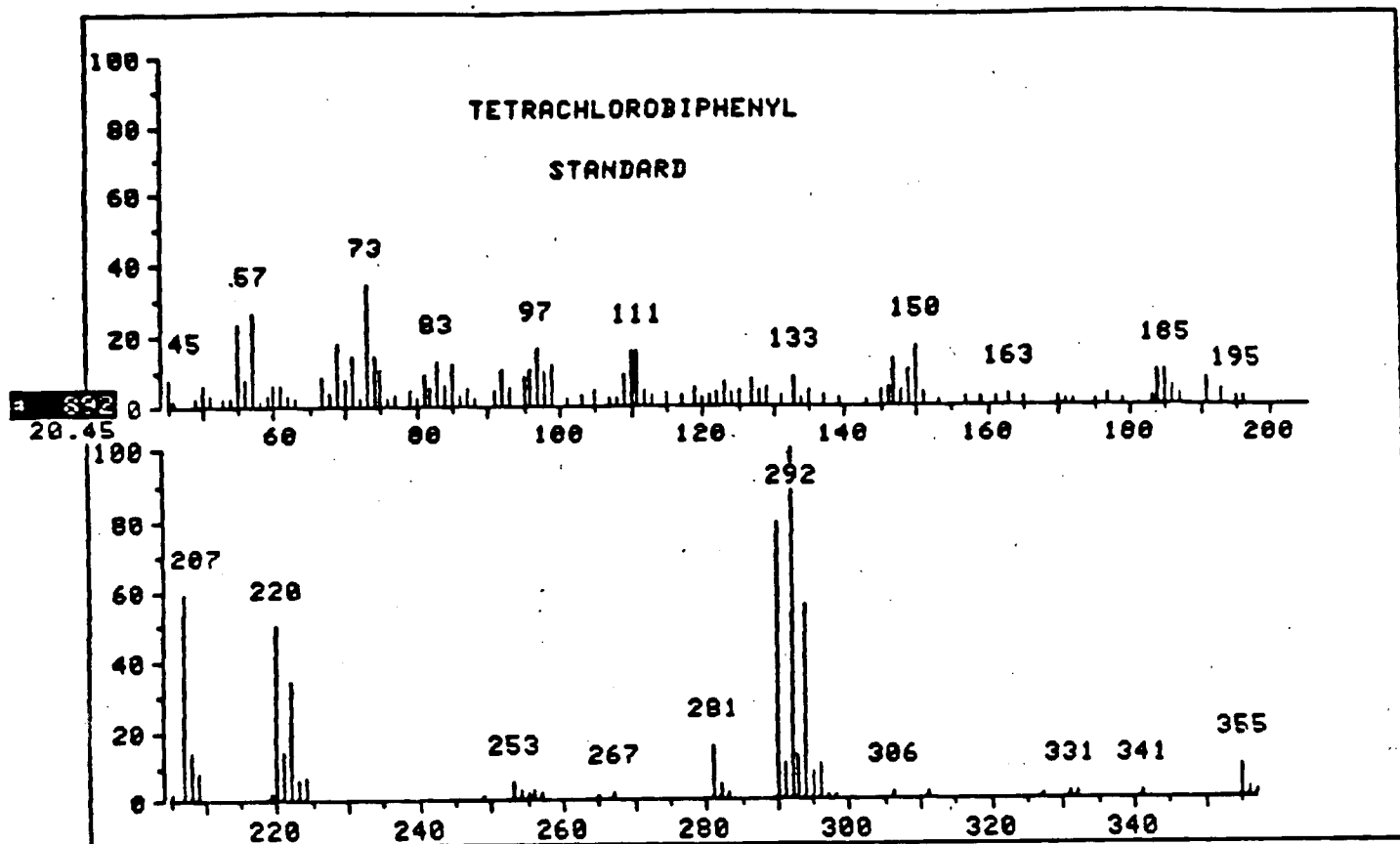


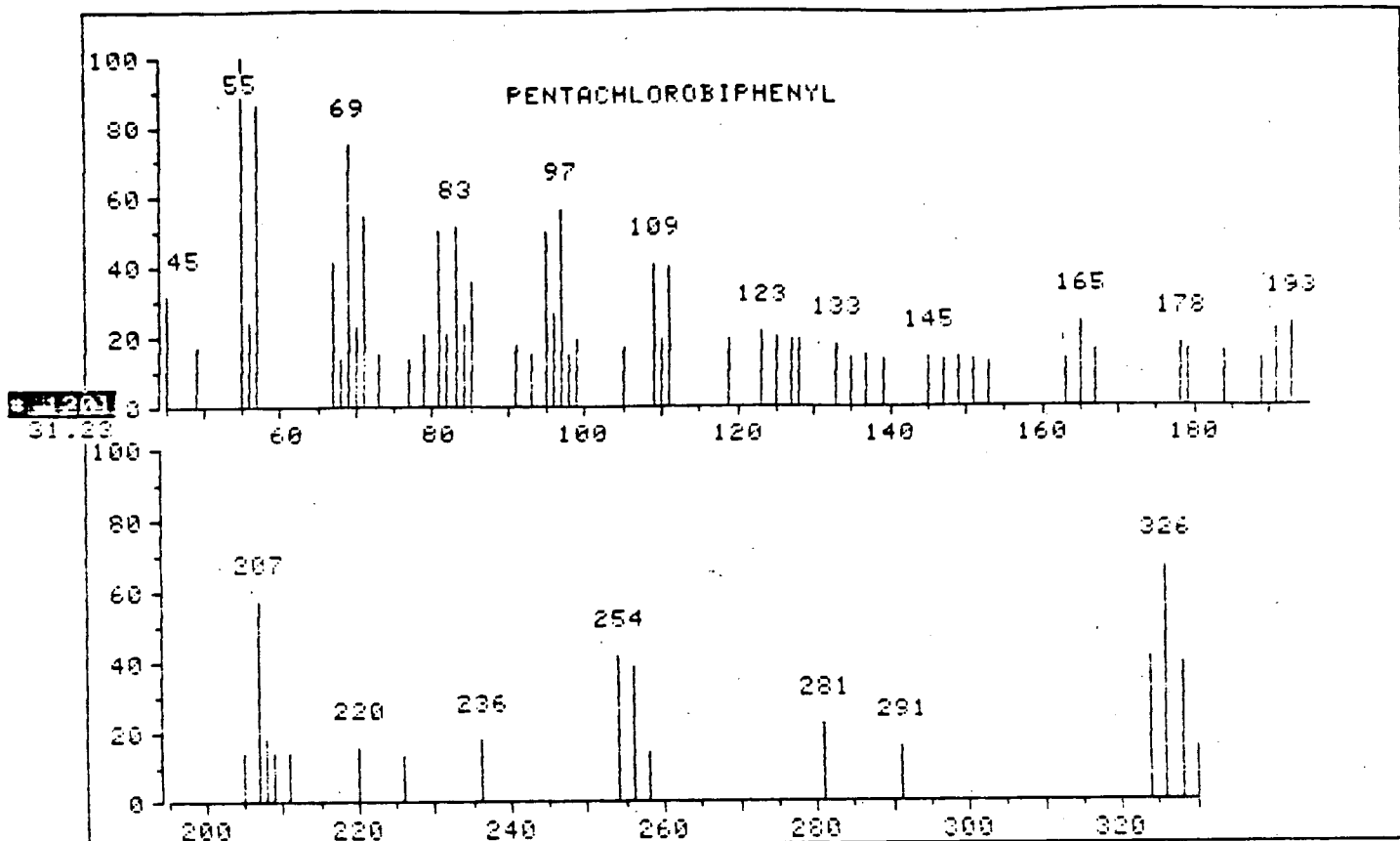


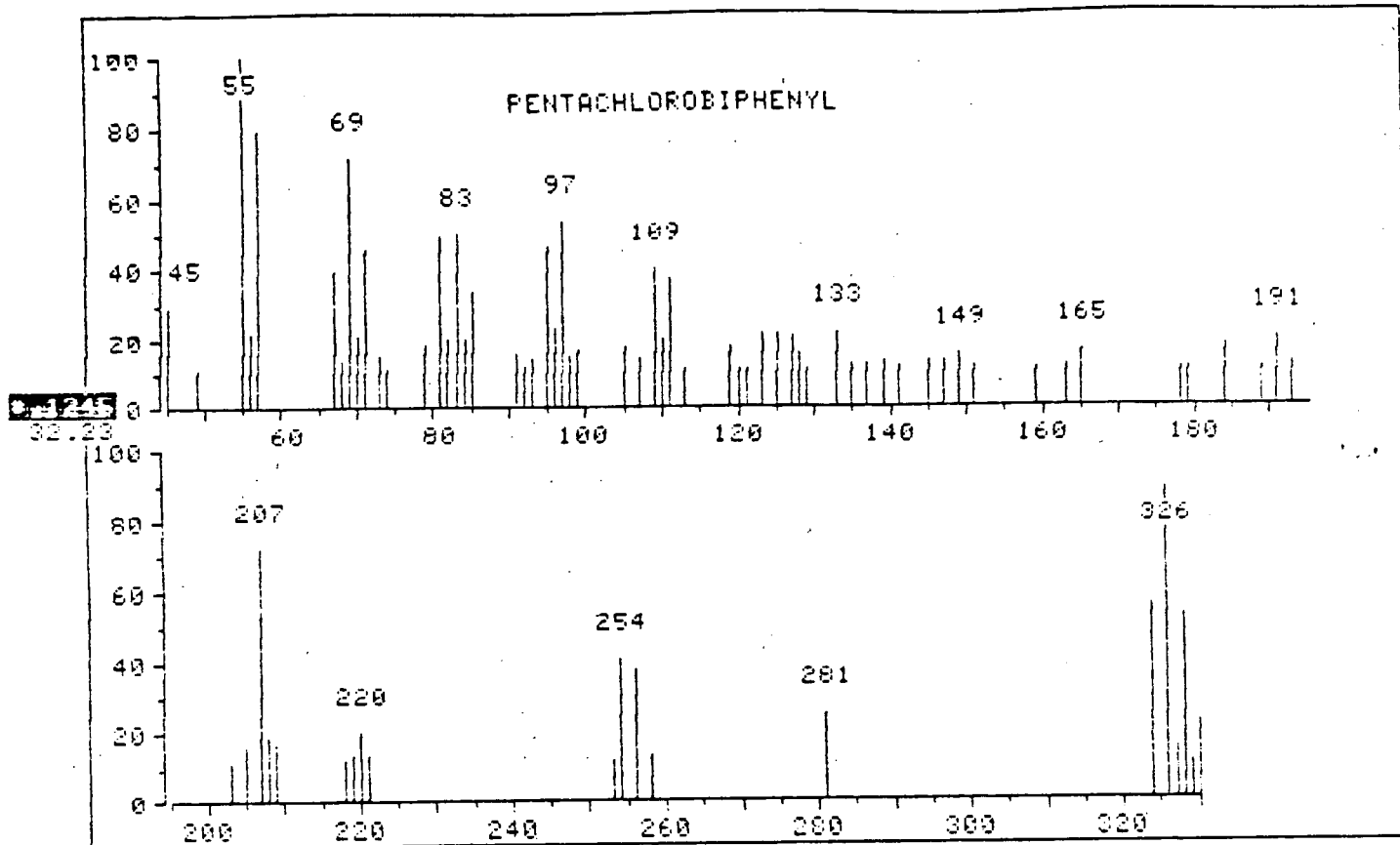
0060 100 NYS
001 0900

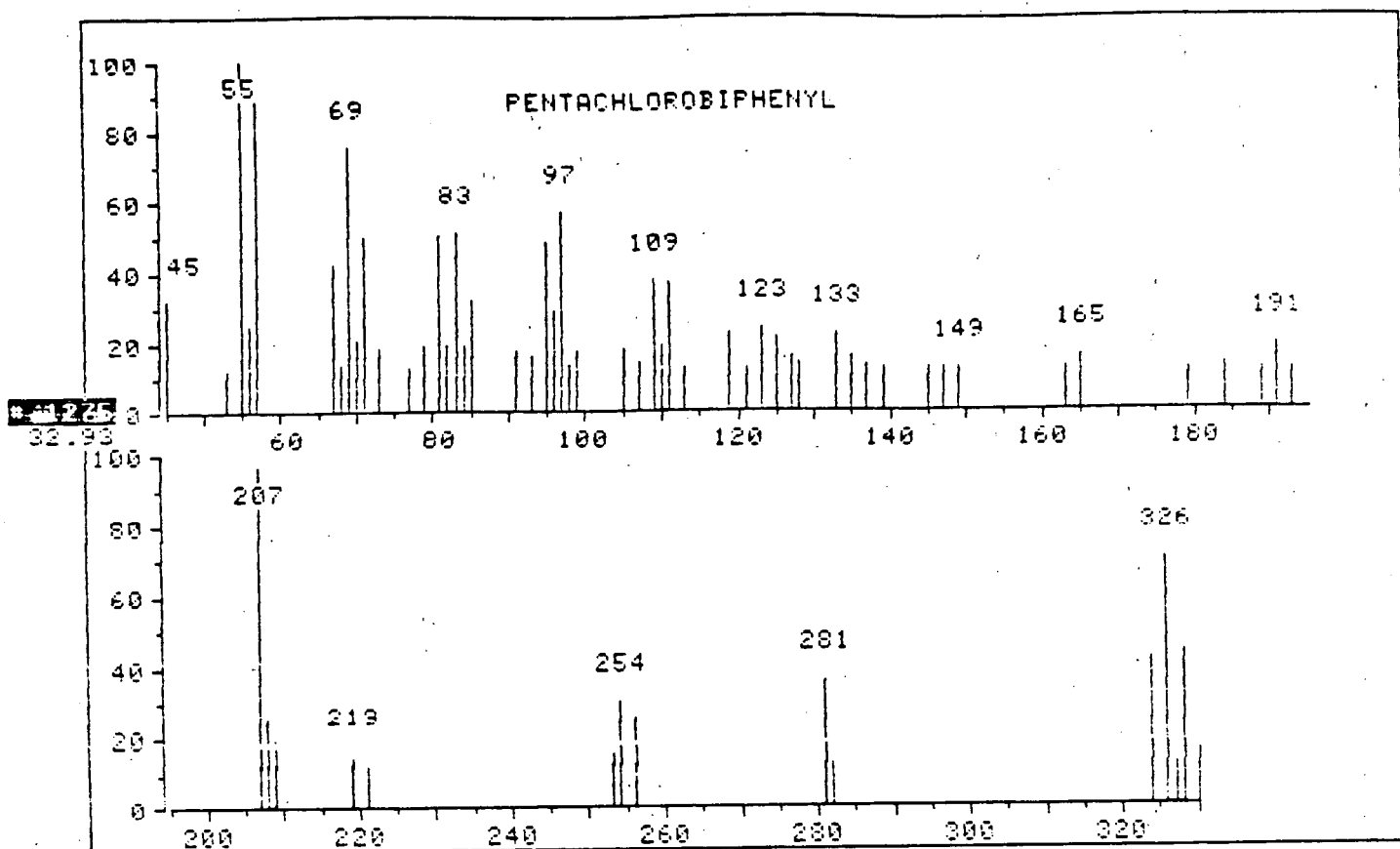


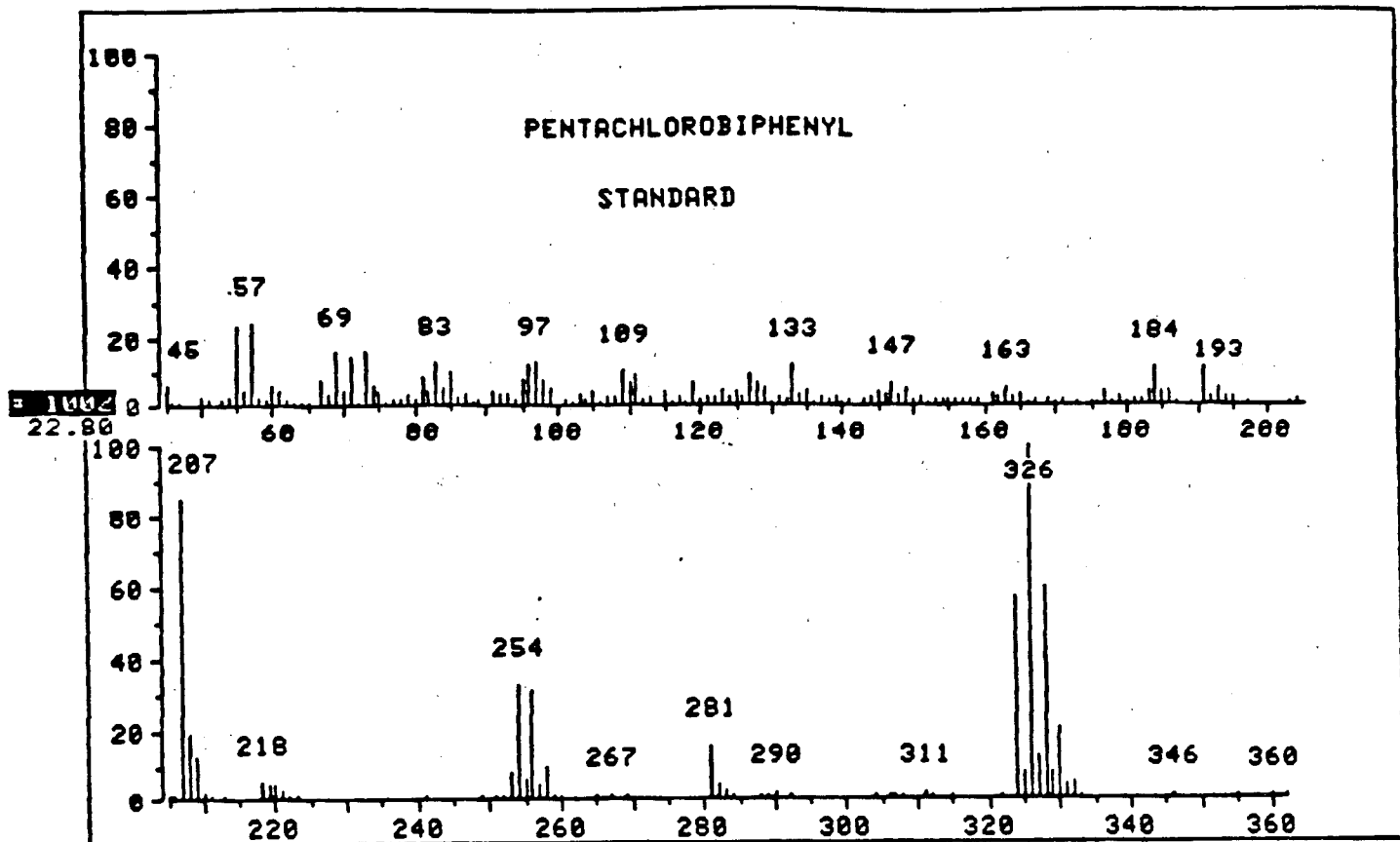








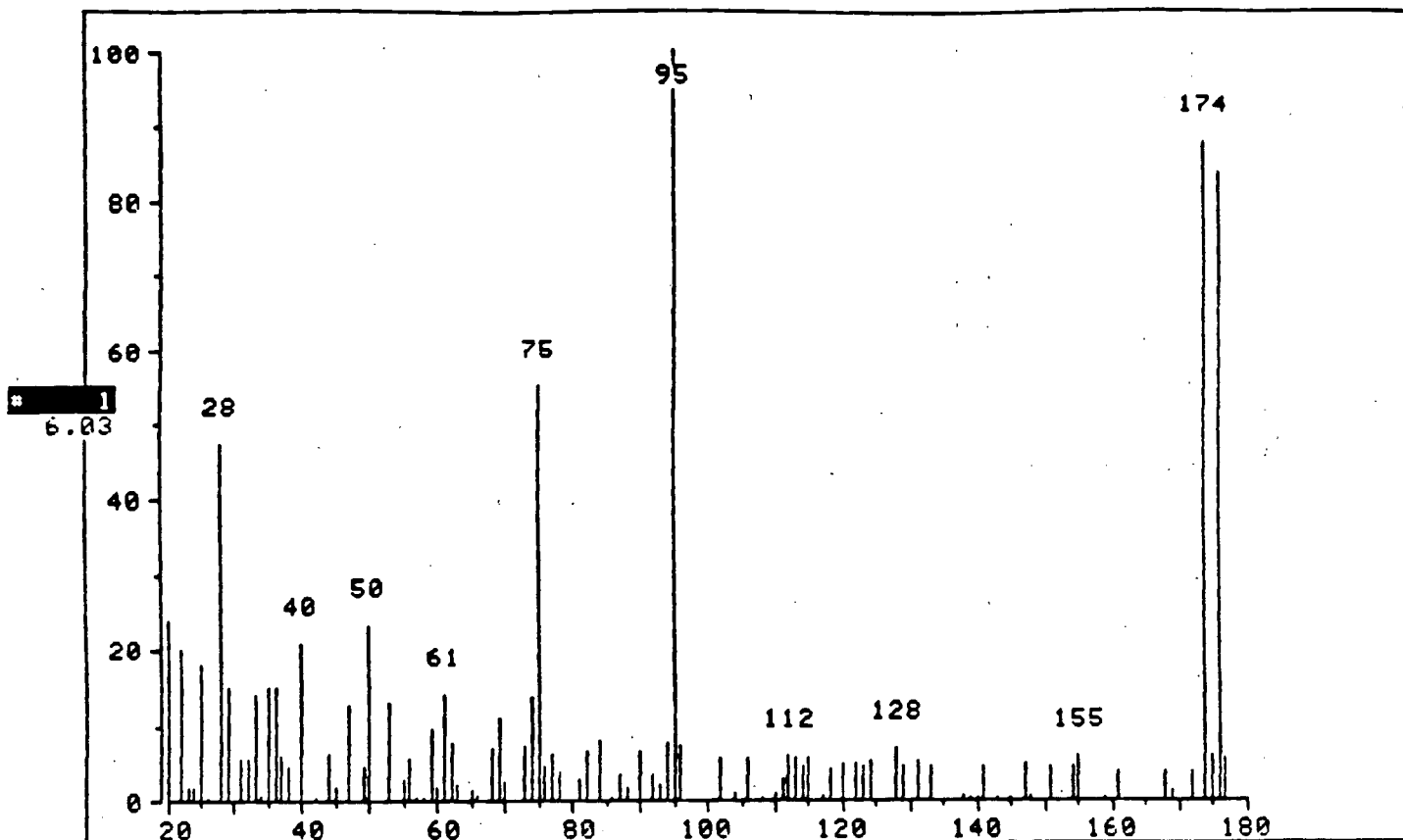




SYN 001 0907
L060

APPENDIX B

8060 100 SYN 001 0908



FRN 6058, SPECTRUM # 1 RET.TIME: 6.03, 121 PEAKS

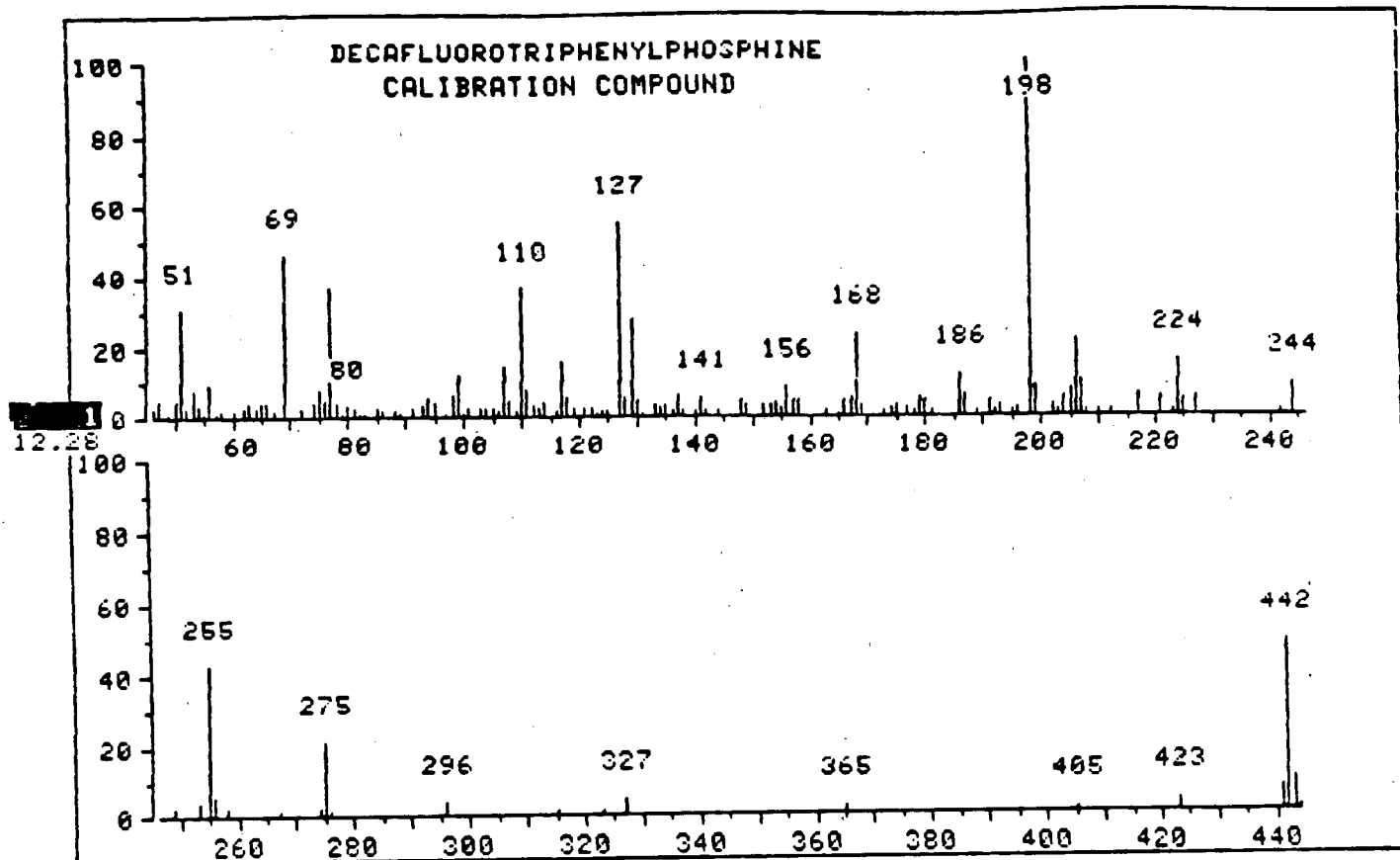
M/Z	REL ABUND	M/Z	REL ABUND	M/Z	REL ABUND	M/Z	REL ABUND
20	23.9	55	3.0	90	6.7	131	5.3
22	16.2	56	5.7	92	3.6	131	4.1
22	20.0	59	9.7	93	2.2	133	4.7
23	1.8	60	2.0	94	7.7	138	1.0
24	1.8	61	14.2	95	100.0	141	2.2
25	18.2	62	7.5	96	7.3	141	4.5
25	1.0	63	2.2	102	5.7	147	5.1
28	47.4	63	1.4	104	1.2	147	4.2
29	15.2	65	1.4	106	5.7	148	1.0
31	5.7	68	6.9	106	5.1	151	4.5
32	5.5	69	11.1	110	1.2	154	4.7
33	14.0	70	2.6	111	3.0	155	1.0
35	15.0	73	7.3	112	5.9	155	6.1
36	15.2	74	13.6	113	5.5	161	1.0
37	5.9	75	55.3	114	4.5	161	4.1
38	4.7	76	4.7	115	5.7	168	4.1
40	20.6	77	6.3	117	1.0	169	1.4
44	6.3	78	3.8	118	4.2	172	4.1
45	2.0	81	3.0	120	4.9	174	87.7
47	12.8	82	6.5	122	4.9	175	6.1
49	4.5	84	7.9	123	4.7	176	83.6
50	23.1	87	3.6	124	5.3	177	5.7
53	2.6	88	2.0	128	7.1		
53	13.0	90	6.1	129	4.5		

>PAUSE

-65-

SYN 001 0909

ETC CALIBRATION COMPOUND, P-BROMOFLUOROBENZENE, PURGEABLES FRACTION



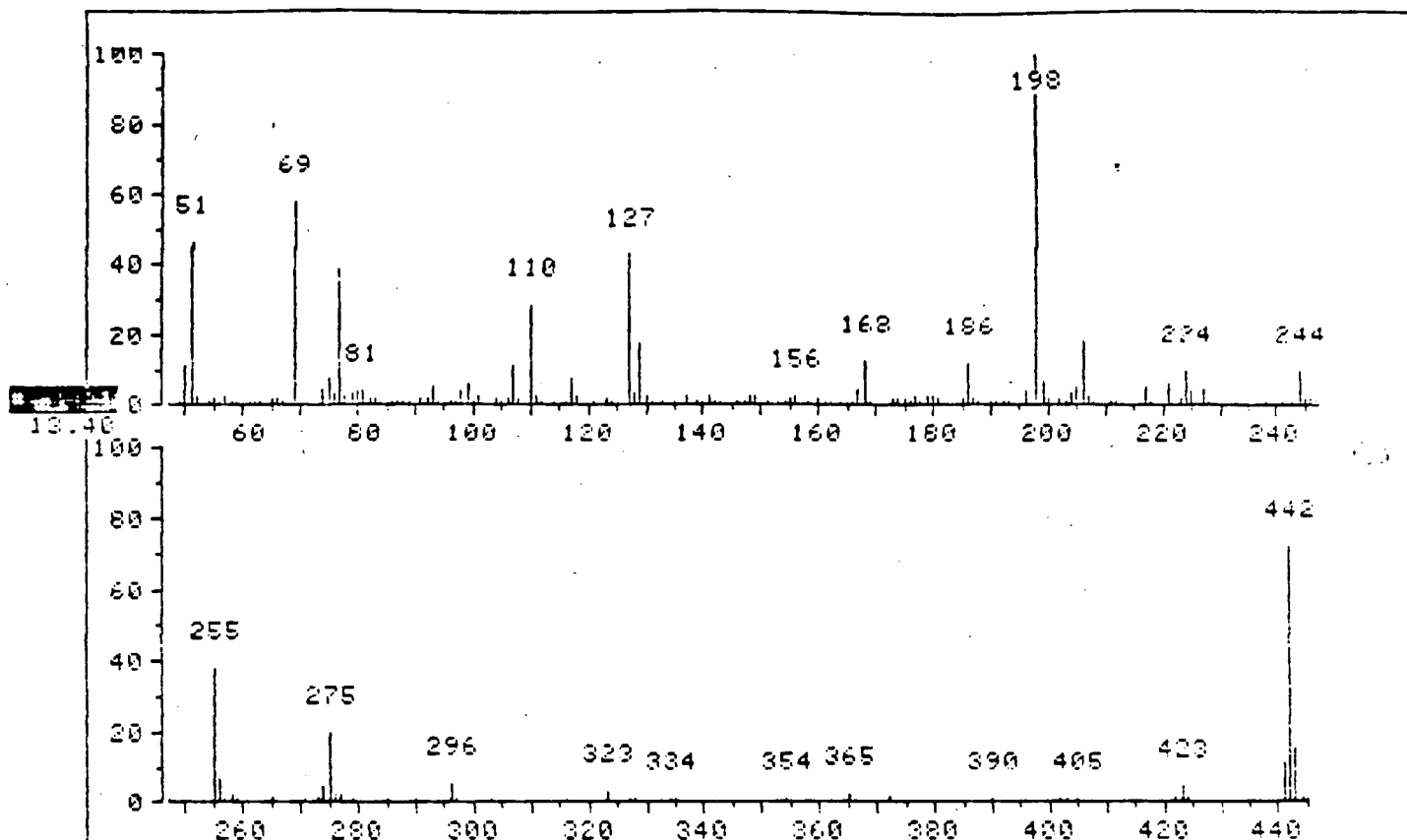
orking...
ETPP EPA CRITERION VERIFIER

IN: 21554
SPECTRUM: 1

Mass	Rel. Abund.	Criterion
51	30.8688	30-60% MASS 198
68	0	< 2% MASS 69
69	46.0875	
70	0	< 2% MASS 69
127	54.7812	40-60% MASS 198
197	0	< 1% MASS 198
198	100	BASE PEAK
199	8.25937	5-9% MASS 198
275	21.3031	10-30% MASS 198
365	2.175	> 1% MASS 198
441	7.39062	< MASS 443
442	48.6969	> 40% MASS 198
443	9.56562	17-23% MASS 442

NOTE: '**' indicates out of range!

SYN 001 0910



FRN 26572, SPECTRUM # 1 RET.TIME: 13.40, 183 PEAKS

M/Z	REL ABUND	M/Z	REL ABUND	M/Z	REL ABUND	M/Z	REL ABUND
50	11.2	101	2.6	179	2.6	244	9.7
51	46.7	107	11.2	180	2.3	255	38.1
52	2.3	110	28.7	185	2.1	256	7.0
55	2.1	111	2.9	186	12.0	258	2.3
57	2.9	117	7.6	187	2.1	274	4.4
69	57.7	118	2.3	196	3.7	275	20.1
74	4.7	127	42.8	198	100.0	276	2.6
75	7.8	128	3.1	199	7.0	277	2.3
76	3.1	129	17.8	202	2.1	296	5.5
77	38.6	130	2.3	204	3.4	323	3.1
78	2.3	137	2.6	205	5.2	365	2.6
79	3.4	141	2.6	206	18.0	372	2.1
80	3.9	148	2.6	207	2.3	423	4.4
81	3.9	149	2.3	217	5.5	441	11.5
82	2.1	156	2.6	221	6.0	442	72.1
93	5.7	167	4.4	224	9.9	443	15.4
98	3.7	168	12.3	225	3.7	444	2.1
99	6.3	177	2.6	227	4.4		

PAUSE

CALIBRATION COMPOUND, DECAFLUOROTRIPHENYLPHOSPHINE, BASE/NEUT. FRACTION

SYN 001 0911

APPENDIX D

SYN 001 0912

LABORATORY ANALYSIS REPORT

RECEIVED
RT
5 1982

Client: ETC Corporation
Address: 284 Raritan Center Parkway
Edison, N.J. 08837
Attention: Dr. Denis Lin

Test Number: L82213
Date Received: April 28, 1982
Date Sampled: Unknown
Job Number: 023

SAMPLE NUMBER	SAMPLE DESIGNATION DESCRIPTION
1	A2293
2	A2294
3	A2295
4	A2296
5	A2297
6	A2298

[illegible]

Detection Limits: Cyanide.....0.2
Phenolics.....0.1

All results in mg/l (ppm) except where noted.

Laboratory ID No. 11198

ma/hq as per Mike Wright 5/11/42

May 3, 1982

Date

Michael Wright
Laboratory Supervisor

SYN 001 0913