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August 30, 1991

VIA CERTIFIED MAIL - P 890 199 026
RETURN RECEIPT REQUESTED

Mr. Edwin B. Erickson
Regional Administrator
U.S. Environmental Protection Agency
Region III
841 Chestnut Street
Philadelphia, PA 19107

Re: Petition to Reopen Operable Unit 1 of the Record of Decision ("ROD") for the Eastern Diversified Metals ("EDM") Superfund Site in Hometown, Pennsylvania

Dear Mr. Erickson:

AT & T Nassau Metals Corporation ("Nassau")[1/] hereby petitions you to reopen Operable Unit 1 of the March 29, 1991 Record of Decision ("ROD") for the Eastern Diversified Metals ("EDM") Superfund site in Hometown, Pennsylvania.

Nassau is submitting this petition because new information demonstrates that the principal remedial action component of Operable Unit 1--the incineration of a so-called "hot spot" of PCB contamination at a cost of approximately $8 million--is fundamentally flawed and must be reconsidered. Specifically, new analytical data demonstrate that the so-called PCB "hot spot" does not exist, and that the material to be incinerated actually contains very low levels of PCBs, on the order of a few parts per million.

This new information came as a surprise to Nassau, just as it probably came as a surprise to EPA when Nassau first presented

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1/ Nassau is one of the two potentially responsible parties ("PRPs") that have jointly performed the RI/FS for the EDM Site.

it to members of your staff.[2/] Until a few weeks ago, Nassau had no reason to doubt the existence of a PCB "hot spot" at the EDM site. But in the process of analyzing samples at the site for use in treatability testing, Nassau's environmental consultant discovered that the waste matrix contained significant levels of polychlorinated naphthalenes--a chemical species that generates chromatographic "peaks" very similar to those for PCBs. This analytical interference was then confirmed in the laboratory.

These events led Nassau to review all of the original PCB analytical data for the EDM site. Based on that review, the following conclusions have emerged over the last few weeks:

First, the original GC/ECD analytical data on PCBs, which were set out in the RI Report and relied on in the ROD, are neither quantitatively nor qualitatively valid. The "peaks" in the chromatographic pattern did not conform to the standard "peaks" for Aroclors or PCBs, and would not be accepted for PCB quantitation under current data validation criteria.

Second, the GC/ECD (electron capture detector) methodology cannot be utilized for the waste matrix found at the EDM site, because the electron capture detector cannot distinguish between polychlorinated naphthalenes and PCBs. Only a GC/MS (mass spectrometry) method can yield reliable results on PCB concentrations in this particular matrix.

Third, when the EDM site waste is analyzed using the GC/MS method, an estimated worst-case PCB concentration of 10-20 parts per million is obtained for the so-called "hot spot." These values are actually below the "target level" of 25 parts per million established in the ROD, and they negate the existence of the PCB "hot spot" described in Operable Unit 1.

In light of these new developments, the principal remedial action component of Operable Unit 1--the incineration of the PCB "hot spot" at an estimated cost of $8 million--obviously requires reconsideration. Indeed, it would be arbitrary and capricious

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[2/] Nassau informed your staff as soon as this information became available, and specifically raised the possibility of petitioning to reopen the ROD. In addition, Nassau has discussed this information with the Office of Regional Counsel. Because this information only became available in July, however, Nassau obviously could not have submitted it during the public comment period on the PRAP for Operable Units 1 and 2.

for EPA to implement Operable Unit 1 as originally written, given that the actual level of PCBs is at least 100 times lower than the ROD had assumed and is below the ROD-established target level of 25 parts per million for PCBs. If Operable Unit 1 were implemented as written, the resulting remedial action would be inconsistent with the NCP because it would not be cost-effective in light of this significant new information.

The remainder of this Petition is organized as follows. Part I provides a brief overview of the EDM site and its history. Part II recounts the chronology of PCB sampling and analysis at the EDM site. Finally, Part III discusses why the Operable Unit 1 of the ROD should be reopened.

I. BRIEF OVERVIEW OF THE EDM SITE

The EDM Superfund site is a former metals reclamation facility located in Hometown, Pennsylvania. The site is located within Rush Township, Schuylkill County, about twenty miles northwest of Allentown.

From 1966 through 1977, the facility accepted wire and cable for reclamation. Through a mechanical chopping process, the incoming wire and cable was reduced to small pieces. The shredded plastic insulation or jacketing (known as "fluff") was then separated from the aluminum or copper wire. The metals were reclaimed and resold. The "fluff" remained on-site.

The most distinctive feature of the EDM site is a large pile of "fluff" that occupies about 7.5 acres in the central portion of the site. The "fluff" pile is about 250 feet wide, 1500 feet long, and 40-60 feet high. It contains an estimated 150 million pounds of "fluff."

In October of 1987, Nassau and the site owner entered into an Administrative Order on Consent with EPA Region III for the performance of the Remedial Investigation/Feasibility Study. All of the deliverables required under that consent order have been submitted and approved.

The RI report stated that the "fluff" pile contains a small area of elevated PCB concentrations (i.e., levels above 25 parts per million of PCBs) at the location where sample T-10 was obtained in 1984. The ROD later estimated that this so-called PCB "hot spot" contained about 5,160 cubic yards of "fluff" and soil.

The RI report also stated that "a very limited area along the southern rim of the pile" contains dioxin, apparently

resulting from one or more historical fires that smoldered for a period of time.[3/] The ROD later estimated that this so-called dioxin "hot spot" contained about 500 cubic yards of "fluff" and soil.

In February of 1991, EPA Region III issued its Proposed Remedial Action Plan ("PRAP") for the EDM site. In the PRAP, EPA proposed dividing the site into three separate Operable Units, dealing with (1) "hot spots" of contaminated "fluff", soils, and stream sediments, (2) ground water, and (3) the remainder of the "fluff" pile.

Specifically, the PRAP proposed the following actions for Operable Units 1 and 2:

* **incineration of "hotspot" areas (both "fluff" and soil) of PCBs** and dioxin;
* stabilization of incineration residuals;
* excavation and stabilization of other soils and stream sediments contaminated with metals;
* upgrading surface water runon/runoff controls;
* deepening ground water interceptor trenches; and
* evaluating deep ground water restoration.

No specific cost estimates were presented in the PRAP for EPA's proposed actions.

In March of 1991, Nassau and the site owner submitted written comments on the PRAP, as did other parties. In their comments, Nassau and the site owner urged EPA to:

* issue a single ROD for the entire EDM site, rather than dividing it into operable units;
* recognize that incineration of contaminated "fluff" is neither demonstrated nor available; and
* leave open the option of capping the so-called "hot spots" along with the entire "fluff" pile.

On March 29, 1991, EPA Region III issued the first ROD for the EDM site. The ROD addressed only Operable Units 1 and 2, and

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3/ RI Report at p. 4-6.

it states that the overall remedial action for the remainder of the "fluff" pile will be selected in a future ROD for Operable Unit later this year.[4/]

As for Operable Units 1 and 2, the ROD calls for:

* **incineration of 5,160 cubic yards of "fluff" and soil contaminated with PCBs above 25 parts per million**, incineration of 500 cubic yards of "fluff" contaminated with dioxin above 20 parts per billion, and stabilization of incineration residuals prior to disposal;

* removal of metals-contaminated stream sediments and soils, deepening of the ground water collection trench system, and upgrading of the on-site wastewater treatment plant and runon/run off controls; and

* evaluating the feasibility of deep ground water remediation and restoring deep ground water, if this is found to be feasible.

Most of the cost of Operable Units 1 and 2 is attributable to burning the so-called PCB "hot spot." The ROD estimates that Operable Units 1 and 2 will cost $12.4 million.[5/] Over 75% of this cost--more than $9 million--is for incineration of the so-called PCB "hot spot" and dioxins.[6/] The great bulk of this cost--over 90%, and over $8 million--is for incineration of the so-called PCB "hot spot," which is over 10 times larger than the dioxin "hot spot."

Because the remedy is driven by the perception that the so-called PCB "hot spot" must be dealt with, the strong newly-

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[4/] The ROD repeatedly suggests, however, that a containment remedy may be selected for Operable Unit 3. See, e.g., ROD at 6, 27, 65.

[5/] ROD at Table 15. Although not directly pertinent here, Nassau believes that EPA has seriously underestimated the costs of several components of the ROD. For example, the $12.4 million figure given in the ROD does not include any cost for determining the feasibility of deep ground water restoration, or for performing such restoration if it is found to be feasible.

[6/] In making this calculation, Nassau excluded "site preparation" costs as not directly attributable to the incineration remedy itself.

discovered evidence that the PCB "hot spot" does not exist must be carefully evaluated before the ROD can be implemented. The proper vehicle for this reconsideration is to reopen the ROD.[7/]

II. CHRONOLOGY OF PCB SAMPLING AND ANALYSIS AT THE EDM SITE

This section of the Petition presents the chronology of PCB sampling and analysis at the EDM site. At the outset, it should be noted that all of the sampling and analytical data on the so-called PCB "hot spot" were obtained by the site owner and its own consultant several years before the RI/FS project began. Nassau had no involvement in the sampling program or the analytical work.

The 1984 Sampling Event

In September of 1984, Todd Giddings and Associates, Inc. ("TGAI"), a consultant retained by the site owner, took 31 random samples of "fluff" from the surface of the pile at the EDM site. These samples--designated as T-1 through T-31--were taken in accordance with a sampling plan approved by the Pennsylvania Department of Environmental Resources.[8/] The samples were sent to Lancaster Laboratories, Inc. ("Lancaster") for analysis of their PCB content.

7/ This approach was recently followed by EPA Region IV at the Smith's Farm Superfund site near Brooks, Kentucky. In 1989, EPA Region IV had issued a ROD that called for, inter alia, incineration of some 32,000 yards of soil contaminated with PCBs and other compounds at an estimated cost of $27 million. After the ROD was signed, however, EPA Region IV learned that the actual levels of contamination were significantly lower than the levels described in the RI Report. As a result, EPA Region IV "determined that thermal treatment is no longer a viable part of the cleanup remedy because of the lower contaminant concentrations found in recent studies, the decrease in estimated soil/sediment volume for treatment, and the decreased cost-effectiveness of thermal treatment." EPA Fact Sheet published in Shepherdsville, Kentucky newspaper on July 15, 1991. EPA Region IV therefore proposed to amend the ROD to chemically treat some 16,000 cubic yards of soil and to eliminate incineration as an element of the remedial action. The public comment period on this proposal ended on August 15, 1991.

8/ The locations of all PCB samples are shown on Figure 4-2 of the RI report, and also on Figure 8 of the ROD.

Lancaster then analyzed the samples using gas chromatography ("GC") followed by the electron capture detection ("ECD") technique, as required under EPA's then-current analytical methods. Based on the GC/ECD technique, Lancaster reported that the dry weight PCB concentrations in the 31 samples ranged from a low of 1.7 parts per million (T-1) to a high of 5560 parts per million (T-10). The second-highest value reported was 40 parts per million (T-26).

Significantly, the "Analysis Report" sheet prepared by Lancaster for each of the 10 samples contained the following statement: "PCB content calculated from distorted pattern." In other words, the "peaks" in the chromatogram did not match the peaks for any of the Aroclors, or PCB species, in the reference standard.

The 1985 Sampling Event

Due to the high value obtained for Sample T-10, six additional "fluff" samples were collected from the same area in May of 1985. These samples were designated as T-10RC, T-10SW, T-10SE, T-10NE, T-10NW, and T-10R. Sample T-10R was taken from the same location as original sample T-10, while the other five samples were taken nearby. Once again, the samples were sent to Lancaster for PCB analysis.

Lancaster again used the GC/ECD technique to analyze the samples. Based on that technique, Lancaster reported that as received, the samples contained PCB levels ranging from a low of 7.7 parts per million (T-10SW) to a high of 1070 parts per million (T-10R). The "dry weight" PCB levels were not reported.

Significantly, the "Analysis Report" sheet prepared by Lancaster for each of the 6 samples contained the following statement: "The PCB content of this sample was calculated from a distorted peak pattern on the chromatogram." In other words, the "peaks" in the chromatogram did not match the peaks for any of the Aroclors, or PCB species, in the reference standard.

The 1988 Data Review

In 1987, as noted above, Nassau and the site owner agreed to perform the RI/FS for the EDM site. After signing an Administrative Order on Consent for the RI/FS work with EPA Region III, they retained Fred C. Hart Associates, Inc. ("Hart") to develop an RI/FS Work Plan. Although the Work Plan went through several iterations, the version dated March 18, 1988 was approved by EPA.

In section 2.5 of the Work Plan, Hart undertook a review of all previous data collected on the EDM site. The principal purpose of this data review was to identify areas where additional data collection was necessary to characterize conditions at the EDM site. As part of the data review, Hart specifically addressed the TGAI/Lancaster data on PCB concentrations in the "fluff" samples.

With regard to the original 31 samples, Hart noted the lack of reported data on sample holding time, the lack of reported laboratory data on instrument calibration, and the abnormal surrogate recoveries for several of the samples.[9/]

With regard to the 6 additional samples, Hart again noted the lack of reported data on sample holding time, the lack of reported laboratory data on instrument calibration, and the abnormal surrogate recoveries for several of the samples.[10/]

Based on this review, Hart concluded in the RI/FS Work Plan that:

> "These data are probably accurate, but documentation of laboratory QA/QC procedures is lacking. Therefore, these results cannot be considered to represent absolute concentrations of PCB's in solid waste samples."[11/]

After reviewing all of the data regarding the "fluff" pile, Hart explained:

> "As a result of these data, no further chemical analyses of the solid waste samples ["fluff"] is proposed. The investigation efforts will focus on sampling, for chemical analyses, the environmental media adjacent to and surrounding the pile to assess what impacts may have occurred."[12/]

9/ This information appears on page 6-1 of Appendix A-6 to the RI/FS Work Plan.

10/ This information appears on page 8-1 of Appendix A-8 to the RI/FS Work Plan.

11/ Remedial Investigation/Feasibility Study Work Plan at 28 (1988).

12/ Id. at 35.

The 1990-91 Data Summary

Nassau and the site owner then proceeded to perform the RI/FS under EPA's oversight. They retained a consultant--Environmental Resources Management, Inc. ("ERM")--to develop the various deliverables.

ERM submitted the first draft of the RI Report in January of 1990. Although the RI Report went through several iterations, the version ultimately approved by EPA was dated February 19, 1991.

In the RI Report, ERM noted that 95% of the pile contained PCBs below 25 parts per million, and that 98% of the pile contained PCBs below 50 parts per million.[13] In addition, once the three highest values were excluded as outliers, "the mean PCB concentration in the pile is 15.7 [parts per million]."[14]

In the "Conclusions" section of the RI Report, ERM stated that the "fluff" pile "contains a limited area of from 75 to 5500 [parts per million] of total PCBs."[15] This "limited area" was later described in the Feasibility Study Report, although the FS was careful to note the limitations of the available data:

> "The dimensions of the elevated PCB area beneath the surface of the pile have not been well defined. Definition of the depth and extent of that area must be done prior to, or during, site remediation. For the purpose of this feasibility study and evaluation, it is assumed that this area consists of approximately 3,700 tons (wet weight), representing the 2 percent of fluff having a PCB concentration exceeding 50 mg/kg."[16]

The first reference to a PCB "hot spot" occurred in the February 1991 PRAP, and this terminology was later carried forward into the ROD.

The 1991 Sampling and Analytical Events

On July 11, 1991, after the ROD had been issued, ERM took several "fluff" samples from the so-called PCB "hot spot" in

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13/ Remedial Investigation Report at p. 4-4 (1991).

14/ Id.

15/ Id. at p. 6-2.

16/ Feasibility Study Report at p. 2-15 (1991).

order to perform treatability tests using various PCB treatment technologies. ERM performed field GC/MS analyses on these samples from the "hot spot" area.

The results of the field GC/MS analysis revealed PCB concentrations of only 2.3 parts per million, along with a strong "background signal" from other unidentified compounds. Because these results were so sharply at odds with the prior characterization of the so-called PCB "hot spot" area, ERM conducted a further review of the data.

In the course of that review, ERM determined that the "fluff" contained polychlorinated naphthalenes, which are closely related to PCBs in their general structure and generate similar chromatographic signals, or "peaks." Upon careful study, it became clear that the chromatograms ERM had obtained from the new "fluff" samples reflected much higher levels of polychlorinated naphthalenes than of PCBs.[17/]

These results were confirmed when Lancaster performed its own GC/MS analysis of the new samples taken by ERM.[18/] Lancaster reported the level of PCBs in the new samples to be less than 10 parts per million.

These developments not only put an end to the PCB treatability testing effort, but, more importantly, they called into question all of the earlier data and conclusions regarding the so-called PCB "hot spot" at the EDM site. Because the chromatographic "peaks" for PCBs and polychlorinated naphthalenes are very similar, they cannot be readily separated using the GC/ECD methods that had been used by Lancaster back in 1984-85.[19/] Thus, ERM and Nassau became concerned that the 1984-85

[17/] This information is presented in greater detail in the August 1 letter from David E. Gallis, Ph.D. of ERM to Judy McCarthy of AT & T (copy attached as Exhibit 1).

[18/] This information is presented in greater detail in the August 21 letter from David E. Gallis, Ph.D. of ERM to the undersigned (copy attached as Exhibit 2).

[19/] This phenomenon is not new. In 1972, two British chemists reported that it could produce "an incorrect interpretation of the nature of the compound present with an overestimation of the PCB content." To address the problem, they devised a method for separating out PCBs from polychlorinated napthalenes in order to avoid this interference. See D. Holmes & M. Wallen, A Simple Differentiation of Polychlorobiphenyls from Chlorinated Napthalenes, 71 J. Chromatogr. 562-63 (1972) (copy attached as

data on PCBs might have overstated the extent of PCB contamination in the so-called "hot spot" based on a chromatographic "peak" that actually represented polychlorinated naphthalenes.

ERM then reviewed all of the previous data on PCBs in the "fluff" from the EDM site. Based on that review, ERM advised Nassau that the original 1984-85 GC/ECD data were neither valid nor reliable, due to strong analytical interference from polychlorinated naphthalenes and the inability of the GC/ECD technique to differentiate between the two types of compounds. In addition, ERM advised Nassau that the so-called "hot spot" area that was sampled probably contained PCBs at very low levels, well below the minimum level of 200 parts per million necessary for accurate quantitation. ERM offered as a "worst-case scenario" an estimate of 20 parts per million of PCBs, as opposed to the 5,000 parts per million value reported back in 1984-85.[20/] Significantly, this "worst-case" value of 20 parts per million is lower than the "target level" of 25 parts per million established in the ROD.

III. DISCUSSION

A. Synopsis of New Information

During the last six weeks, significant new technical information has come to light that essentially negates the existence of the so-called PCB "hot spot" that was the principal focus of the ROD for Operable Unit 1. Based on this new information, it now appears that:

1. The 1984-85 GC/ECD data showing elevated levels of PCBs at the EDM site must be rejected as neither qualitatively nor quantitatively valid. The waste matrix at the EDM site (the "fluff") has been found to contain polychlorinated naphthalenes, which generate chromatographic "peaks" very similar to those for PCBs. Due to this strong interference, the GC/ECD method cannot distinguish between polychlorinated naphthalenes and PCBs.[21/]

Exhibit 3).

[20/] This information is presented in greater detail in the August 21 letter from David E. Gallis, Ph.D. of ERM to the undersigned (copy attached as Exhibit 2).

[21/] See Holmes & Wallen, supra note 19.

2. The most recent data on the so-called "hot spot" show that the level of PCBs in the "fluff" is at least 100 times lower than reported in the ROD. A "worst-case scenario" value for PCBs in the "fluff" is 20 parts per million, based on interpretation of laboratory GC/MS results.

3. In short, the so-called PCB "hot spot" described in the ROD does not exist. On the contrary, the level of PCBs in the area of the so-called "hot spot" is well within the background range for the entire "fluff" pile, as defined in the RI/FS. It is also lower than the "target level" of 25 parts per million defined in the ROD.

B. Why EPA Must Reopen the ROD

In light of this significant new information, Operable Unit 1 must be reopened because the principal remedial action element selected in the ROD is no longer defensible. Simply stated, it would be arbitrary and capricious to require the expenditure of $8 million to destroy a so-called PCB "hot spot" that does not exist. In addition, implementing Operable Unit 1 as written would be inconsistent with the National Contingency Plan, because the actual level of PCBs in the area of the so-called "hot spot" is already lower than the "target level" of 25 parts per million established in the ROD. Finally, the incineration remedy selected in the ROD is certainly not cost-effective in light of this new information about the actual extent of contamination at the site.

Going beyond the issue of incinerating the so-called PCB "hot spot," reopening Operable Unit 1 will also allow the necessary exploration of other important issues. Among these issues are the following:

1. Should additional sampling and analysis be performed to confirm the new findings on PCB levels in the "fluff"? If EPA believes this would be useful, Nassau is ready and willing to undertake these activities on an expedited basis, using GC/MS techniques for identification and quantification of PCBs, either in conjunction with EPA or independently (but subject to EPA oversight).

2. Does the presence of polychlorinated naphthalenes in the area of the so-called PCB "hot spot" require any remedial action apart from the remedy that EPA will select in Operable Unit 3 for the remainder of the "fluff" pile? Nassau believes that the answer is no, and is prepared to undertake a supplemental focused

feasibility study to address this issue on an expedited basis, if EPA believes that would be useful. Nassau believes that there is no longer any justification for addressing this limited area of the "fluff" pile in a separate Operable Unit from the remainder of the pile.

3. If Operable Unit 1 is modified to remove incineration of the so-called PCB "hot spot," is there any reason to implement Operable Unit 1 separately before EPA selects the remedial action for the rest of the "fluff" pile? Nassau believes, for the reasons previously stated in comments on the PRAP, that the EDM site should be addressed in a single integrated ROD, rather than being split up into operable units.

Any one of these issues alone would warrant reopening the ROD to reconsider Operable Unit 1 as originally written, and to solicit public comment on appropriate modifications to the ROD. Taken together, however, these issues clearly require EPA to reopen Operable Unit 1.

C. The Dioxin "Hot Spot"

Nassau recognizes that Operable Unit 1 of the March 29, 1991 ROD also calls for incineration of the much smaller dioxin "hot spot." However, this portion of the ROD is also directly affected by the new information on PCBs, because the decision to burn the dioxin was incidental to the decision to burn the much larger volume of PCBs that were believed to be present.

Operable Unit 1 should be reopened, because (1) it is unlikely that the dioxin "hot spot" will actually need to be incinerated, and (2) in any event, given the length of time it would take to retain and mobilize an on-site incinerator to burn the dioxin "hot spot," there will be no significant delay from reopening the ROD to address the significant new information on PCBs.

The small dioxin "hot spot" contains dioxin at the level of 18 parts per billion, using the Toxic Equivalency Factors specified by EPA, as described in detail in the RI Report and the Endangerment Assessment Report. The ROD called for incineration to achieve a target level for dioxin of either 20 parts per billion or a health-based level determined by a fate-and-transport model, whichever is lower. This site-specific level will be set during the Remedial Design phase of Operable Unit 1. But unless a health-based level lower than 18 parts per billion is adopted, there will be no need to incinerate any material in the dioxin "hot spot."

Moreover, it is unlikely that a health-based level for the EDM site will be lower than 18 parts per billion. As described in the Feasibility Study Report, Superfund remedial action decisions at comparable sites have used levels higher than 18 parts per billion. In addition, the scientific community is coming to the conclusion that the toxicity and potency values previously ascribed to dioxin were overly conservative and need to be revised. A recent front-page article from the New York Times (copy attached as Exhibit 4) reports that federal government officials at EPA and other agencies now believe that the toxicity and potency of dioxin has been overstated.

Thus, when Nassau and the site owner present detailed technical support for a site-specific target level for the EDM site as part of the Remedial Design phase of Operable Unit 1, they will propose a site-specific number significantly higher than 18 parts per billion. Although that number will of course be subject to EPA review and approval, it will be based on state-of-the-art knowledge about dioxin and its health effects.

Accordingly, if EPA approves a site-specific target level of 18 parts per billion or higher, there will be no need to incinerate any material from the dioxin "hot spot" as part of the EDM site remedial action. Thus, EPA should reopen Operable Unit 1 of the ROD in Response to this Petition, based on the significant new information about PCBs.

Finally, as EPA recognized in the ROD, it would take at least a year in order to retain and mobilize an on-site incinerator to burn the dioxin "hot spot." Thus, even if a site-specific dioxin "target level" had already been established, and even if that level was lower than 18 parts per billion, reopening Operable Unit 1 to address the significant new information on PCBs still would not delay the actual incineration of dioxin materials.

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In closing, Nassau urges that Operable Unit 1 of the EDM site ROD be reopened and that the incineration component of the remedial action be reconsidered after (1) confirmation sampling and analysis is performed on the so-called PCB "hot spot" and (2) the relative cost and cost-effectiveness of other alternatives are compared. Nassau is ready and willing to undertake these activities on an expedited basis, either in conjunction with EPA or independently (but subject to EPA oversight).

Thank you very much for your consideration of this Petition. Nassau looks forward to hearing from you at the earliest possible opportunity. Should you or your staff have any questions

regarding this Petition, please feel free to call either me or Ron DiCola of AT & T ((908) 204-8299).

Very truly yours,

Michael W. Steinberg

Attorney for AT & T Nassau Metals Corporation

encs.

cc (w/encs.): Christine Chulick, Remedial Project Manager
Andrew Goldman, Assistant Regional Counsel

Environmental Resources Management, Inc.

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1 August 1991

Judy McCarthy
AT & T
131 Morristown Road
Basking Ridge, New Jersey 07920

FILE: 72005.01.01

Dear Judy:

As you are aware, ERM's field analytical unit performed field GC/MS screening at the EDM site on 11 July 1991. The purpose of this investigation was to identify fluff samples having elevated levels of polychlorinated biphenyls (PCBs) for treatability analysis. For this purpose, fluff samples were obtained for field GC/MS analysis from the zone of highest PCB concentration (as designated by Todd Giddings in 1984). Samples were collected from several locations, and analyzed on site, in what became a futile effort to locate the PCB "hot spot". The effort defined fluff PCB levels that were quite low (approximately 2.3 ppm and less); it also, however, exposed a chemical interference which may compromise all of the 1984 data relating to PCB delineation at the site.

Attached please find the Field Analysis Summary containing an analysis narrative and some field GC/MS results that will illustrate the following discussion. The results of the field sample analysis designated FLUFF009, showed low levels of PCBs based on a reconstructed single ion trace of the chromatograms. Since there was significant background signal from phthalates and other unidentified compounds, our field chemist performed mass spectral library searches (using the National Institute of Standards and Technology's 50,000 spectra library) to determine if these compounds could be hindering our ability to detect PCBs. The result of these searches was the identification of numerous chromatographic peaks corresponding to a pattern of polychlorinated naphthalenes (PCNs). These compounds are closely related to PCBs in general structure, chemical properties and laboratory detectability. It is not expected that the laboratory would be able to adequately distinguish between PCN and PCB by the electron capture detection (ECD) technique, required by the EPA's promulgated analytical protocols which were used in 1984. On the basis of the ERM-FAST GC/MS data, the 1984 data could be biased high by one or two orders of magnitude.

The analytical behavior of these compounds is illustrated in their chromatography and mass spectra. Figure 1 shows the chromatographic signals for both the tetrachlorinated PCBs and the tetrachlorinated PCNs in sample analysis FLUFF009. As can be seen, the signals for the PCNs

dwarf those for the PCBs. This can also be seen for the same sample in Figures 2 and 3, for pentachlorinated PCBs and PCNs and the hexachlorinated PCBs and PCNs, respectively. The chromatograms in Figures 1 through 3 are from GC/MS analyses. As such, the instrument signals from PCBs can be separated from those corresponding to PCNs. By the EPA-required analytical technique used at the laboratory in 1984, there is no mechanism to separate the signals for the PCBs from those for the PCNs, and therefore, all signals would be taken as contributions by PCBs only. The reported 1984 PCB levels may indeed be PCBs plus PCNs, with the PCN levels at a much higher concentration than the PCBs.

In an attempt to check these field observations, the sample documented in Figure 1 through 3 was submitted to Lancaster Laboratories, Inc. (LLI) for analysis by GC/MS. Verbal results from the laboratory support the field GC/MS findings. The laboratory has identified several of the PCNs that ERM-FAST had detected, at concentrations higher than the PCBs found in the sample. Also, the PCB levels determined by laboratory GC/MS were stated to be less than 10 ppm. Subsequently, the same sample was submitted to the GC/ECD group at LLI to be analyzed in the same manner as used in 1984. Preliminary verbal results indicate that the sample is behaving the same way as the 1984 matrix analysis (extremely intense signal requiring a sample dilution factor of 1000 or more). This needed dilution is not at all consistent with the GC/MS results for only low level PCB content.

From a qualitative perspective, there can be no mistake that the main signals in the polychlorinated biphenyl region of the field analysis chromatogram of the fluff sample are PCNs. This is easily seen in the mass spectral comparison illustrated in Figures 4 through 6. Not only do the sample spectra match the PCN library spectra, the sample spectra fail all levels of classical mass spectral interpretation as PCB compounds. Specifically, there is a characteristic shift of 26 amu (to lower mass) for all signals identified as PCNs, relative to their PCB analogs. This amounts to the difference of two carbons and two hydrogens between the biphenyl and naphthalene structures.

Figure 7 illustrates the situation as seen at the laboratory level. The chromatogram in Figure 7 is basically the sum of all signals corresponding to PCBs and PCNs in the sample. This figure in the closest analogy to the laboratory's 1984 GC/ECD raw data output. The peaks corresponding to PCNs have been marked. It is clear that the body of the chromatogram is PCNs rather than PCBs.

As an analytical chemist, I am very uncomfortable about the reliability of any of the 1984 data, based on these field observations. With the knowledge that these peculiar and intense interferences are present in the fluff

matrix, I strongly suggest that any further delineation or confirmatory analyses of the fluff and site-related matrices NOT be performed by GC/ECD. Instead, I suggest that GC/MS techniques be used for these analyses.

The laboratory GC/MS and GC/ECD results are expected to be delivered to ERM very shortly. They will be reviewed to confirm the verbal statements made by the lab, and shall be immediately forwarded to your attention. ERM shall also review the raw 1984 data pending its release, and its reliability shall also be reported to you.

If you have any questions or comments about these findings please call at your convenience (215/524-3786).

Sincerely,

David E. Gallis, Ph.D.
ERM-FAST Technical Manager

DEG:cmm
Enclosures: Figures 1-7; Field Analysis Description.
cc: David Steele
Marilyn Hewitt
Ash Jain
File

FIELD ANALYSIS SUMMARY

ERM-FAST^{SM}

Eastern Diversified Metals, Inc., Hometown, Pennsylvania

11 July 1991

Prepared by David R. Catherman

The following summary report is an account of the field analytical activities conducted on 11 July 1991 by ERM-FAST^{SM} at the Eastern Diversified Metals, Inc. (EDM) site in Hometown, Pennsylvania.

1.0 Introduction

Environmental Resources Management, Inc. (ERM), Exton, Pennsylvania dispatched its mobile Field Analytical Services Technology (ERM-FAST^{SM}) unit to the EDM site for field analysis of a polychlorinated biphenyl (PCB) "hot spot" within the fluff pile. This field sampling and analysis event was intended to locate the area of the pile that was previously found to have the highest levels of PCB contamination as reported by Todd Giddings and Associates based on laboratory analyses performed by Lancaster Laboratories, Inc. in 1984. The PCB levels reported from the 1984 laboratory analyses were as high as 5000 ppm in one area of the fluff pile. It was the intent of the ERM-FAST unit to analyze subsurface samples within this area. Based on ERM-FAST analyses, a sample of fluff having PCB contamination levels corresponding to the historical data was to be collected and shipped for laboratory treatability studies.

2.0 ERM-FAST PCB Field Screening

2.1 Sample Preparation and Instrumental Analysis

After fluff samples were collected from the hot spot, a 1 to 2 gram representative portion of the sample was mixed vigorously with 1 gram of hexane and allowed to settle. A measured volume of the hexane was recovered and evaporated to dryness. 10 microliters of hexane was added to the residue, mixed thoroughly and reduced to approximately 4 microliters which was then injected directly into the gas chromatograph (GC). The sample extract is vaporized and the components are separated on a 25 meter SE-54 capillary column and detected by a mass spectrometer (MS). The MS was set to monitor all ions in the range of 65 to 400 atomic mass units (amu).

2.2 Interpretation and Results

A few of the fluff sample extracts contained a brown, oily residue which would not evaporate to dryness. This resulted in high hydrocarbon and phthalate background signals detected by the MS.

Ions of maximum abundance for characteristic PCB congeners were found in the total ion chromatogram by observing the selected ion traces for the congeners. These ions were detected in the fluff sample extracts and quantitation was performed by correlating the response of tetrachlorobiphenyl (292 amu) from standard Aroclor 1254 to the response of **tetrachlorobiphenyl** (292 amu) in the samples at the same retention time. The highest value obtained by the ERM-FAST analyses for PCBs was **2.3 ppm** in sample **Hole 1, 3-5'**.

By qualitatively scanning the total ion chromatogram obtained from the GC/MS analysis of sample **Hole 1, 3-5'**, it was observed (in the field, by the ERM-FAST chemist) that other chlorinated organic compounds were present in the sample. The ERM-FAST computer searched the NIST Mass Spectral Library database (50,000 compounds) where **trichloronaphthalene** was positively identified. This observation was recorded in the field log book for this sample.

3.0 Field Observations

It was noted that the ERM-FAST results for PCBs in all fluff samples analyzed were not consistent with the historical (LLI, 1984) data. The historical data was between 3 and 5 orders of magnitude higher than the results found by ERM-FAST field analyses. The ERM-FAST field chemist reviewed the raw data and calculations for possible errors. None were found, and the field results were reported to project management with confidence.

4.0 Quality Control - Quality Assurance Review (following the field analyses)

The ERM Senior Quality Control Chemist and ERM-FAST Technical Manager reviewed the field raw data and results on 12 July 1991. PCB results reported by ERM-FAST were evaluated based on blank analyses, instrument calibration and Aroclor 1254 standardization. This data review verified the maximum PCB concentration found by ERM-FAST (sample Hole 1, 3-5') as approximately 2 ppm. However, in the review process of the raw data it was observed that **polychlorinated naphthalenes** were present in many of the fluff samples analyzed in the field. Ions characteristic of **dichloro-** through **hexachloronaphthalene** were detected.

ERM then sent a composite sample from Hole 1, 3-5' to Lancaster Laboratories, Inc. for analysis. Special reference was made to the issue of

potential interference in the laboratory analytical method from polychlorinated naphthalenes in the sample. GC/MS analysis was requested (with specific polychlorinated naphthalene ion masses to scan) in addition to the typical PCB GC analysis with detection by Electron Capture (ECD). It was also requested that the 1984 analytical raw data be reviewed for discrepancies in the Aroclor recognition pattern.

ERM - FAST
SOIL ANALYSIS FOR PCB's
by GC / MS

Stock AR 1254 Conc. (ug/uL)	0.100	Sample ID	FLUFF009
AR 1254 Std. Vol. injected (uL)	50.0	Site Code	EDMPCB 3-5'
Weight of Matrix (g)	2.60	Sampling Date	7/11/91
Std. 292 amu congener Log Response	5.674	Analysis Date	7/11/91
Effective Dilution Factor	10.0	Wet Weight	0.0
AR 1254 Conc. in Matrix (mg/Kg)	1.923	Dry Weight	0.0
Std. 292 amu [illegible]	47?0?3	Percent Moisture	0.00

P C B Congener	Max Log Response	Linear Response	PPM
292	4.770	58884	2.399
	0.000	0	0.000
	0.000	0	0.000
	0.000	0	0.000
	0.000	0	0.000
	0.000	0	0.000
	0.000	0	0.000
	0.000	0	0.000
	0.000	0	0.000
	0.000	0	0.000

Figure 1

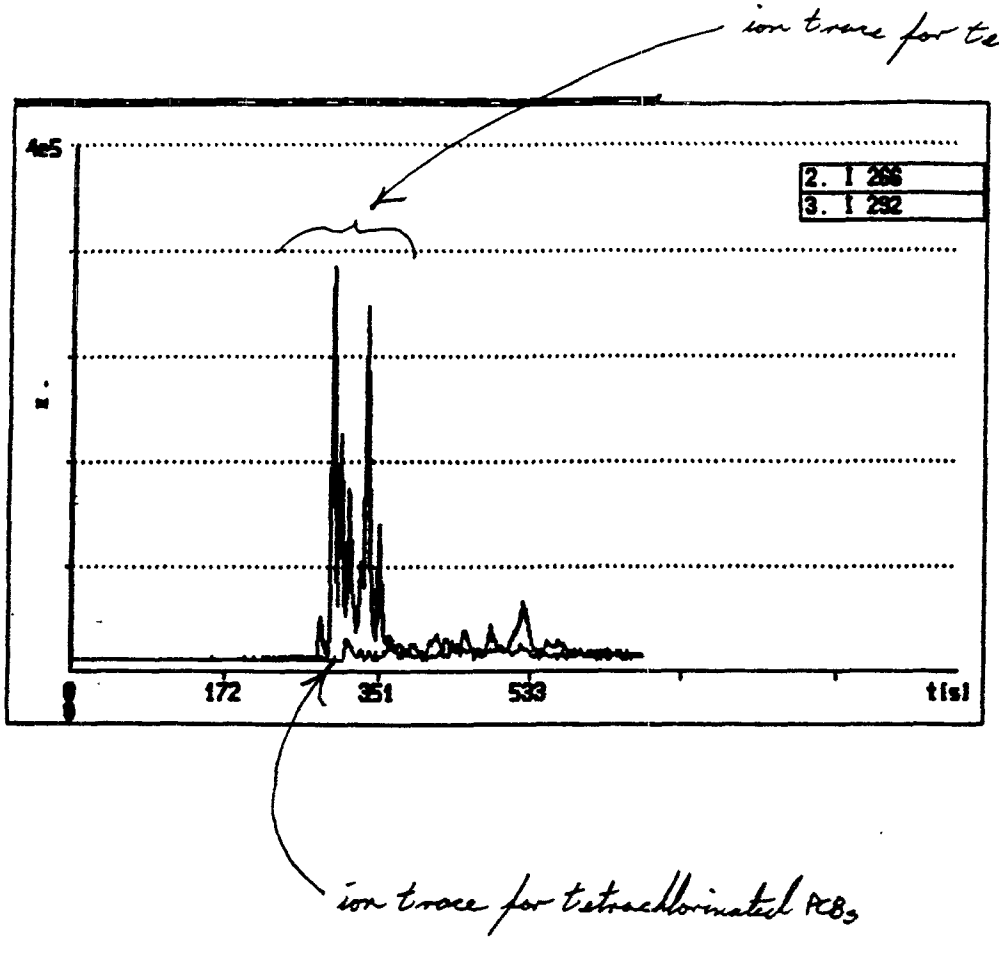


Figure 2

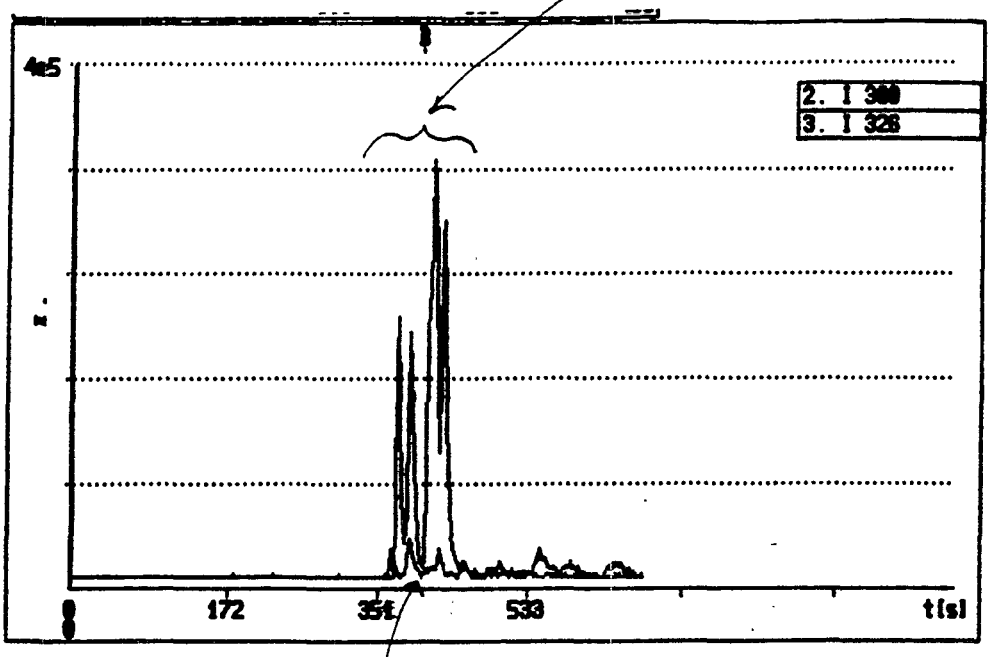
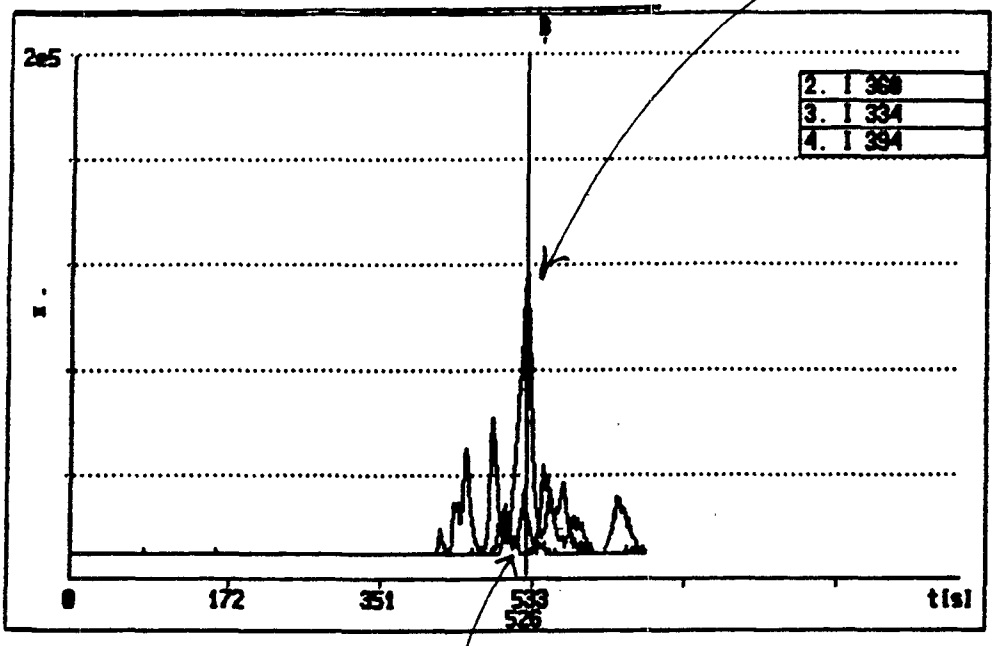

ion trace for pentachlorinated PCNs
4e5
2. I 360
3. I 326
172
354
533
t[s]
ion trace for pentachlorinated PCBs

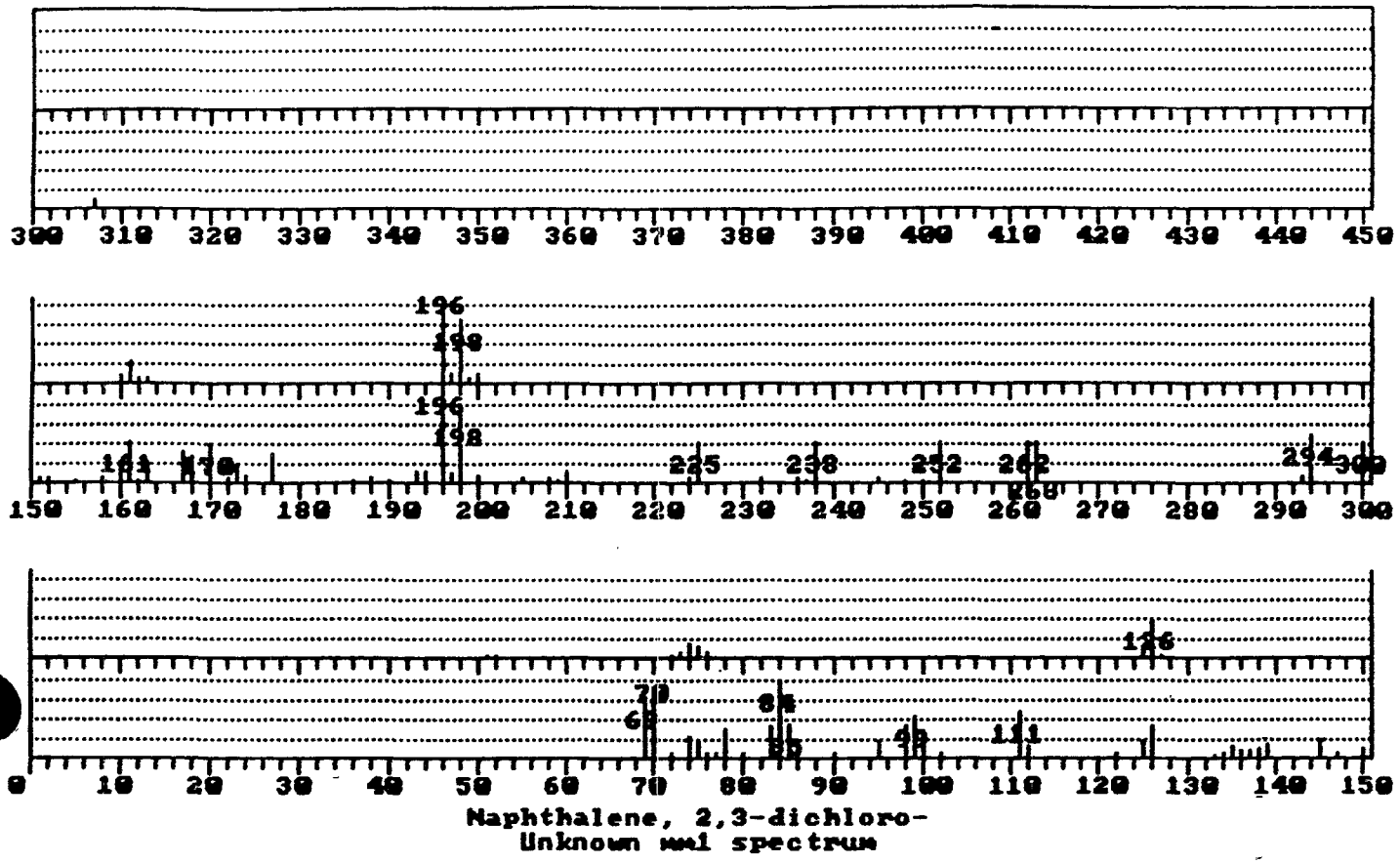
Figure 3



ion trace for hexachlorinated PCNs

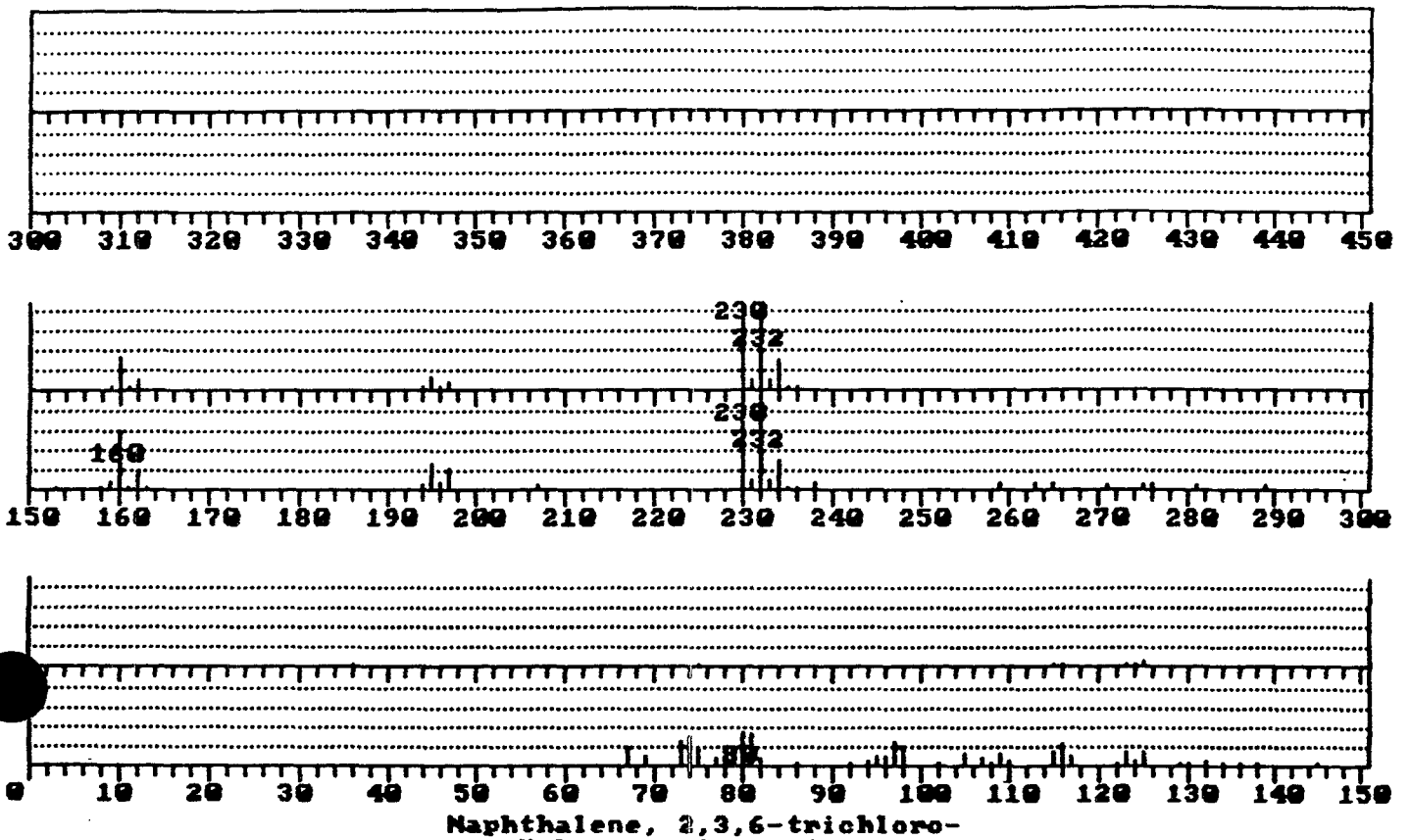
ion trace for hexachlorinated PCBs

Figure 4



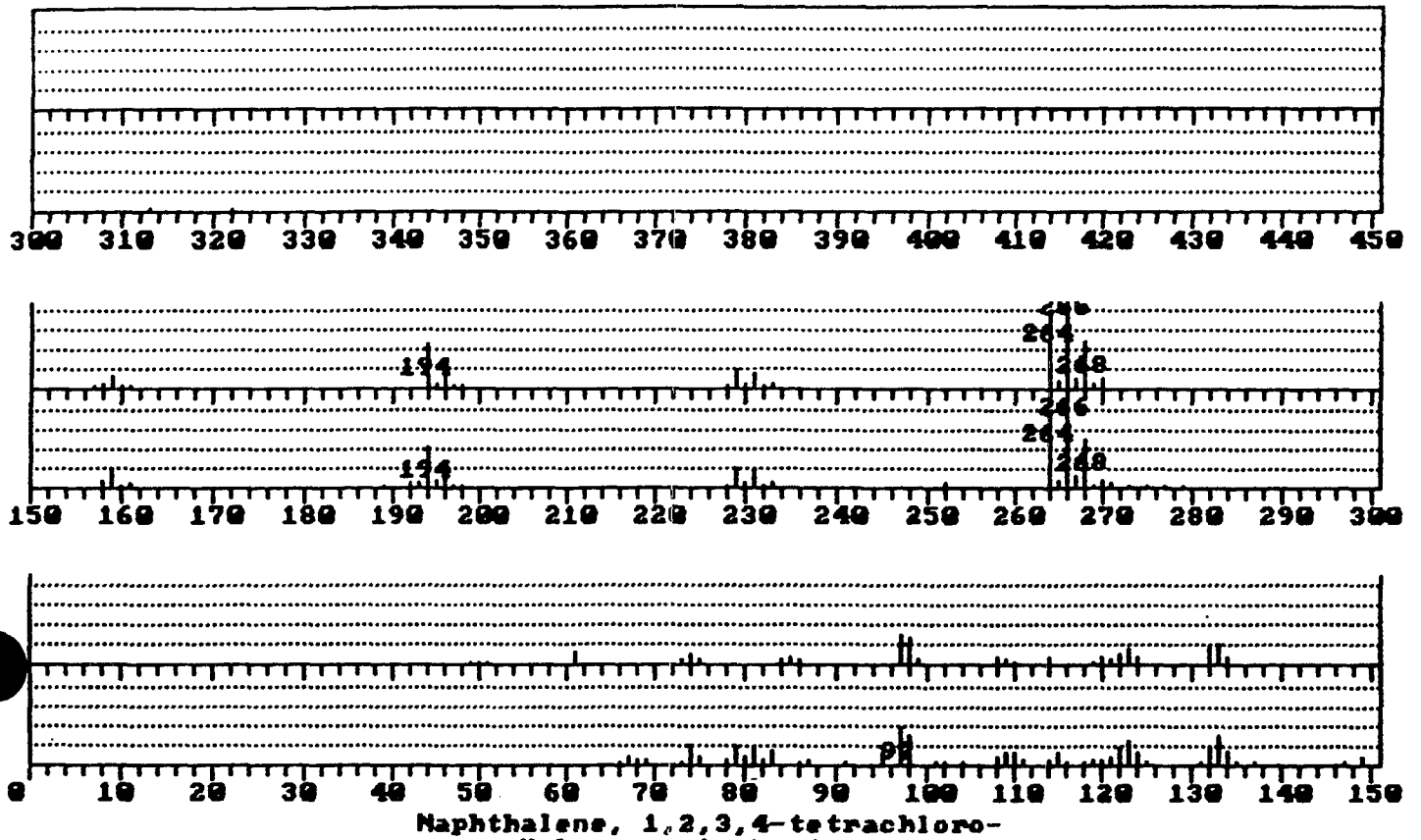
Naphthalene, 2,3-dichloro-
Unknown mwl spectrum

Figure 5



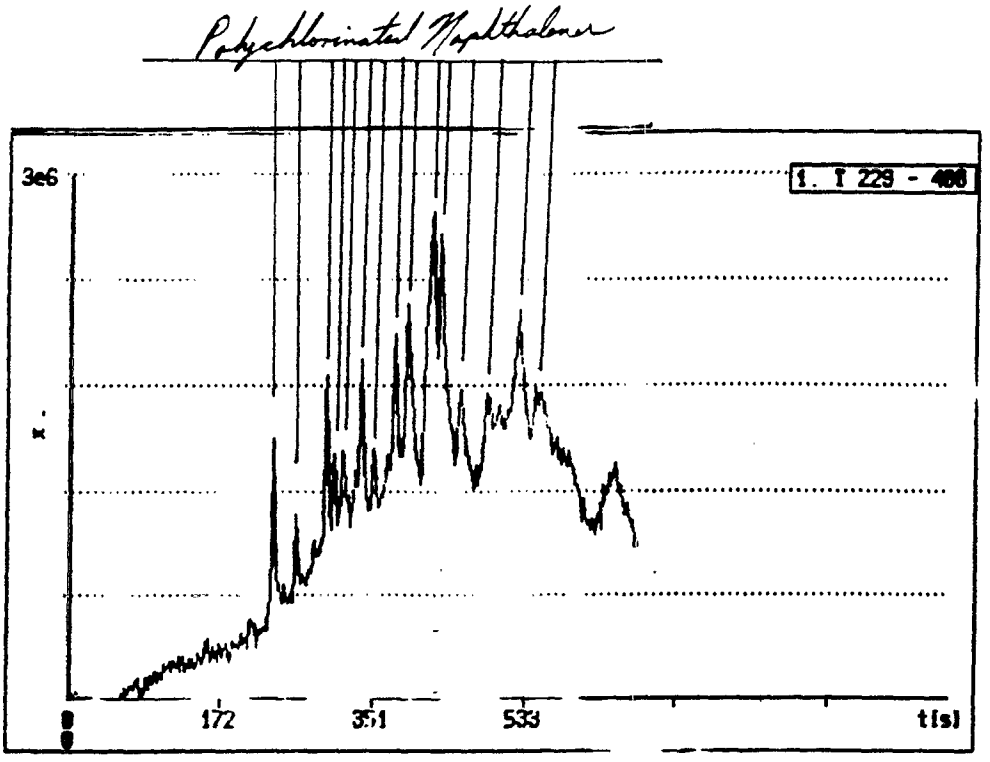
Naphthalene, 2,3,6-trichloro-
Unknown mnl spectrum

Figure 6



Naphthalene, 1,2,3,4-tetrachloro-
Unknown mai spectrum

Figure 7



Environmental Resources Management, Inc.

855 Springdale Drive • Exton, Pennsylvania 19341 • (215) 524-3500 • Fax One: 524-7335 • Fax Two: 524-7798

21 August 1991

Michael W. Steinberg, Esq.
Morgan, Lewis and Bockius
1800 M. Street, NW
Washington, DC 20036

FILE: 72005.01.01

Dear Mr. Steinberg:

The purpose of this letter is to inform you of the outcome of the laboratory analyses performed on a sample of fluff from the "PCB hotspot" at Operable Unit 1 of the Eastern Diversified Metals Site (EDM). A portion of this same sample was analyzed by our ERM-FAST field analytical unit on 11 July 1991. The purpose and nature of the ERM-FAST analyses, as well as the results, were described in our letter of 1 August to Judy McCarthy (attached).

The data produced by Lancaster Laboratories Inc. (LLI) during the GC/MS and GC/ECD analyses of the sample (designated Hole 1, 3-5'), and the raw data from the 1984 PCB analysis of the fluff from the same area (collected by Todd Giddings and Associates, Inc.) are also enclosed.

Based on a review of these data, the following conclusions can be drawn.

1) The most recent GC/ECD data could not conclusively identify an Aroclor pattern (PCB) in the sample.

2) The most recent GC/ECD data could not be used to generate any consistent "worst case" PCB level approximation based on tentative GC signals.

3) The most recent GC/ECD data contained intense interferences such that reliable detection of PCBs could not be achieved below 200 ppm for the Aroclor tentatively identified in the 1984 analysis.

4) The raw data for the 1984 analysis fails as conclusive qualitative and quantitative evidence for valid results. The chromatographic pattern fails current data validation criteria.

5) The laboratory GC/MS results have verified the presence of polychlorinated naphthalenes (PCNs) in the sample at a concentration significantly greater than that of the PCBs in the same analysis.

6) The laboratory GC/MS results verify all observations that were made in the field by ERM-FAST.

7) The laboratory GC/MS results functionally characterize the nature of the interference seen in the GC/ECD data. Thereby, proving that the GC/ECD method is not a viable method for analysis of this site matrix.

Since the July laboratory GC/MS work included a data work-up that was not routine, an effort was made by ERM to extract as much information from the hard copy deliverables when they were received. As a result, it can be determined that PCNs are by far the most abundant polychlorinated species in the sample (by at least one order of magnitude over the PCB level). Using a quantitation procedure based on the tentatively identified compound (TIC) quantitation method of the Contract Laboratory Program (CLP), the worst case scenario for quantitating the PCB content of the sample would be 20 ppm. This is a very liberal estimate, probably overestimating PCB concentrations since there is no consideration of PCB homolog coelution. The analysis by LLI stated the PCB level to be less than 10 ppm. Using the same quantitation procedure, the PCN content of the sample is on the order of 230 ppm.

Although it appears that GC/MS is the best method for analyzing these fluff matrices for PCB and PCN content, some analytical complexities remain. The fluff matrix contains phthalates which can impede the achievement of a suitable detection limit for both PCBs and PCNs. To overcome this interference, a pre-analysis clean-up procedure may be needed. The accurate quantification of PCN compounds will require the procurement of a suitable PCNs standard. Such a standard is not easily available since environmental samples are not routinely analyzed for PCNs (i.e., PCNs are not on a regulatory method list). I am currently considering all of these issues so an accurate and straight forward analytical method can be developed for both field and laboratory analysis of this matrix.

If you have any questions or comments about these results or laboratory deliverables, please call at your convenience (215/524-3786).

Sincerely,

David E. Gallis, Ph.D.
ERM-FAST Technical Manager

DEG:cmm
Enclosures: 1 August Letter; Lab deliverables; 1984 data.
cc: David Steele
Marilyn Hewitt
Ash Jain
File

GC/MS DATA FOR ANALYSIS PERFORMED
17 JULY 1991

Lancaster Laboratories INCORPORATED
[illegible] (717) 656-2301

ERM, Inc. - PA
855 Springdale Drive
Exton, PA 19341-2843

LLI Sample No. ES 1689008
Date Reported 8/ 7/91
Date Submitted 7/15/91
Discard Date 9/ 7/91
Collected 7/11/91 by CP
Time Collected
P.O. 72005-01-01/CP
Rel.

37784 E.D.M. Hole 1 3-5' Composite Solid Sample

37784 ANALYSIS	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
Semivolatile Library Search	attached		089309500S

The results from the semivolatile library search are listed on the attached FORM 1F - SV-TIC. The qualifiers appearing in the "Q" column are:

A - aldol condensate
B - detected in method blank
D - determined in diluted sample
I - an isomer of the listed compound
J - estimated value

PCBs in Soils/Sludges/Solids	attached		121618000S*

2 COPIES TO ERM, Inc. ATTN: Mr. David Blye

RECEIVED

[illegible]

Questions? Contact Environmental Client Services at (717) 656-2301
024 00767 355.00 063000

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

AR001545

Timothy S. Oostdyk, B.A.
Manager GC/MS

[illegible]

Member American Council of Independent Laboratories, Inc

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Lancaster Laboratories INCORPORATED

ERM, Inc. - PA
855 Springdale Drive
Exton, PA 19341-2843

37784 E.D.M. Hole 1 3-5' Composite Solid Sample

LLI Sample No. ES 1689008
Date Reported 8/ 7/91
Date Submitted 7/15/91
Discard Date 9/ 7/91
Collected 7/11/91 by CP
Time Collected
P.O. 72005-01-01/CP
Rel.

37784 PCBs in Soils/Sludges/Solids	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
PCB-1016	< 20,000.	ug/kg	20,000.	149500000S
PCB-1221	< 20,000.	ug/kg	20,000.	149600000S
PCB-1232	< 30,000.	ug/kg	30,000.	149700000S
PCB-1242	< 20,000.	ug/kg	20,000.	149800000S
PCB-1248	< 20,000.	ug/kg	20,000.	149900000S
PCB-1254	< 40,000.	ug/kg	40,000.	150000000S
PCB-1260	< 200,000.	ug/kg	200,000.	150100000S

2 COPIES TO ERM, Inc. ATTN: Mr. David Blye

Questions? Contact Environmental Client Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, Pesticides/PCBs

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

377

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1689008
Sample wt/vol: 30.0(g/mL) G Lab File ID: >I8605
Level: (low/med) LOW Date Received: 07/15/91
% Moisture: not dec. _____. dec. _____. Date Extracted: 07/16/91
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 07/17/91
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 50.000

Number TICs found: 29

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown alkane	29.77	13000.	J
2.		Unknown halogenated aromatic	30.49	17000.	J
3.		Unknown halogenated aromatic	31.96	22000.	J
4.		Unknown halogenated aromatic	33.90	32000.	J
5.		Unknown phthalate	34.28	62000.	J
6.		Unknown phthalate	34.59	20000.	J
7.	117817	Bis(2-ethylhexyl) phthalate	35.29	980000.	J
8.		Unknown phthalate	35.50	50000.	J
9.		Unknown phthalate	35.65	100000.	J
10.		Unknown phthalate	35.79	27000.	J
11.		Unknown phthalate	36.00	20000.	J
12.		Unknown phthalate	36.10	33000.	J
13.		Unknown phthalate	36.31	92000.	J
14.		Unknown phthalate	36.45	50000.	J
15.		Unknown	36.73	50000.	J
16.		Phosphoric acid, tris(methyl	36.90	32000.	JI
17.	117840	Di-n-octylphthalate	37.36	500000.	J
18.		Unknown phthalate	37.84	140000.	J
19.		Unknown	38.35	27000.	J
20.		Unknown phthalate	38.78	52000.	J
21.		Unknown phthalate	39.02	95000.	J
22.		Unknown phthalate	40.52	500000.	J
23.		Unknown phthalate	42.16	8300.	J
24.		Unknown phthalate	42.65	33000.	J
25.		Unknown phthalate	42.80	42000.	J
26.		Unknown alkane	43.40	15000.	J
27.		Unknown phthalate	44.80	370000.	J
28.		Unknown phthalate	47.98	23000.	J
29.		Unknown phthalate	50.98	38000.	J
30.					

"I" = Unknown isomer of ...

FORM I SV-TIC 1/87 Rev.

The American Association for Laboratory Accreditation
Chemical, Biological & Environmental fields of testing

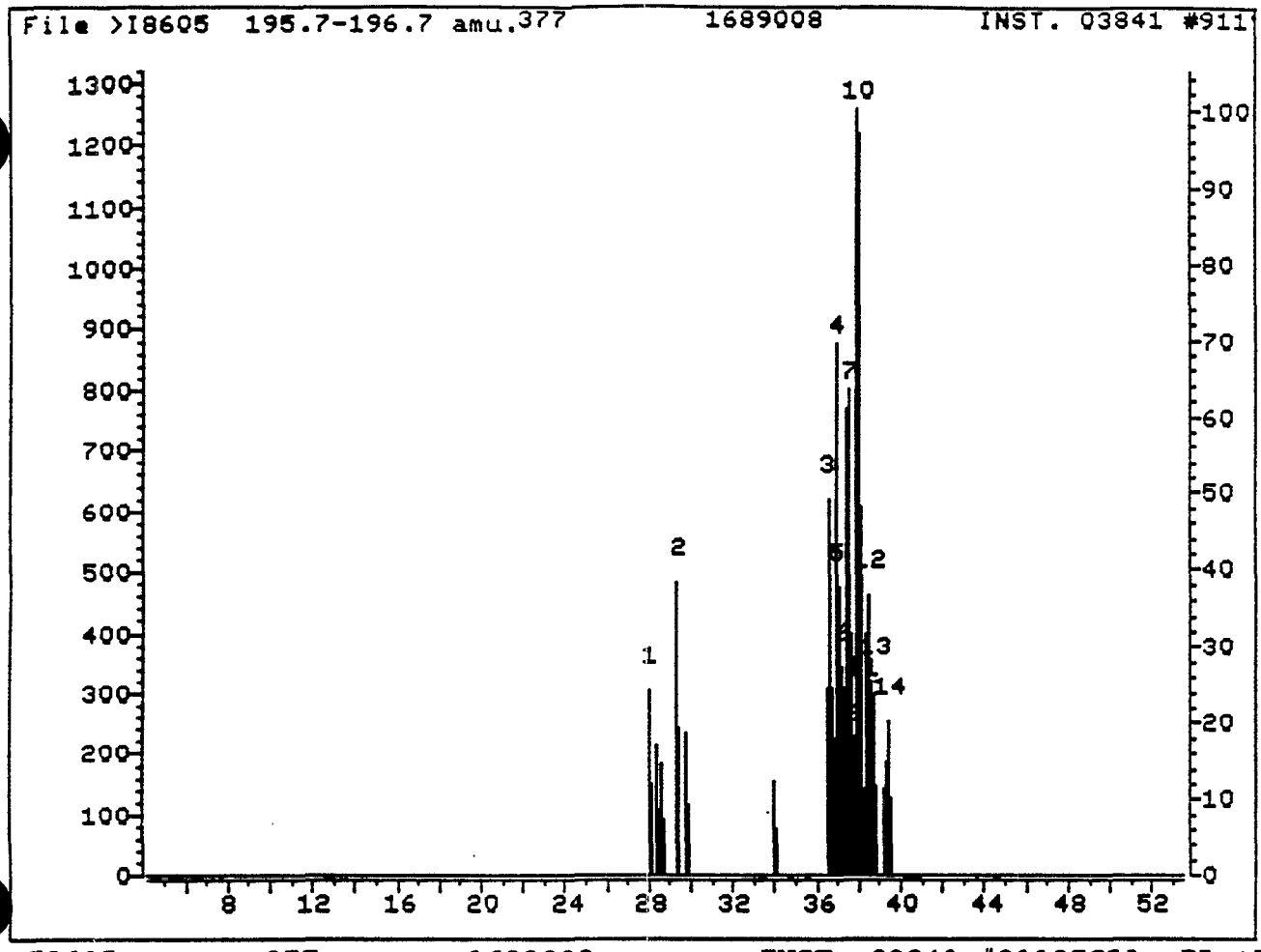
AR001547

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.

Member American Council of Independent Laboratories, Inc

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Environmental Client Services at (717) 656-2301



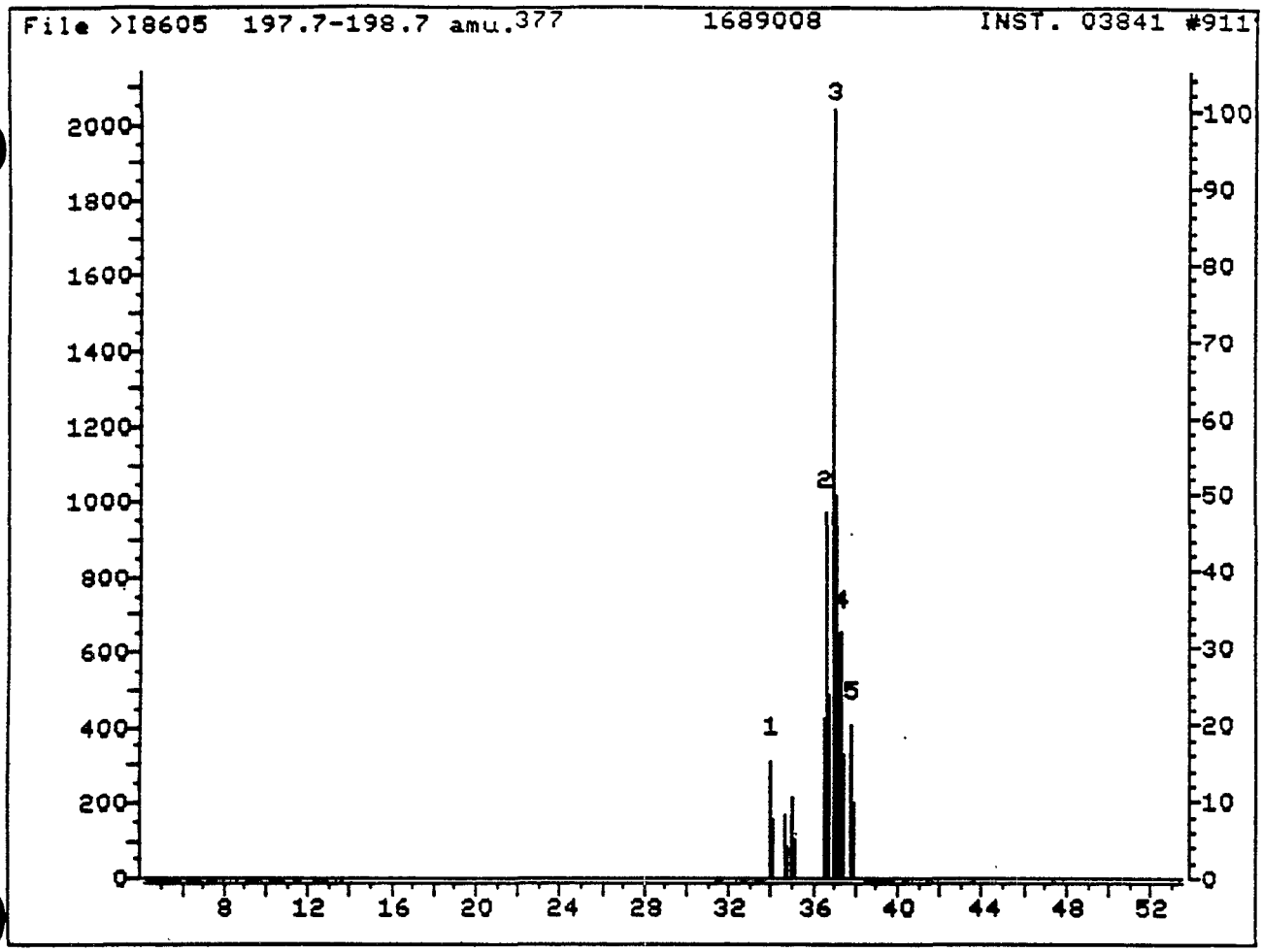
>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

195.7| 196.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 14 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	27.94	2284	2285	2287	305	312	312	5.37	1.188
2	29.31	2414	2417	2420	482	1185	1185	20.39	4.512
3	36.47	3100	3104	3108	617	1950	1950	33.55	7.425
4	36.86	3136	3141	3145	876	3049	3049	52.45	11.610
5	36.95	3146	3150	3155	472	1622	1622	27.90	6.176
6	37.26	3177	3179	3182	344	771	771	13.26	2.936
7	37.51	3191	3203	3209	800	5582	5582	96.03	21.256
8	37.75	3225	3226	3229	210	373	373	6.42	1.420
9	37.86	3232	3236	3237	287	600	600	10.32	2.285
10	37.94	3237	3244	3251	1257	5813	5813	100.00	22.135
11	38.08	3255	3257	3260	284	593	593	10.20	2.258
12	38.43	3286	3291	3299	460	2566	2566	44.14	9.771
13	38.64	3307	3311	3316	321	1237	1237	21.28	4.710
14	39.35	3375	3379	3380	252	608	608	10.46	2.315

Sum of corrected areas: 26261.

Dichloromethane

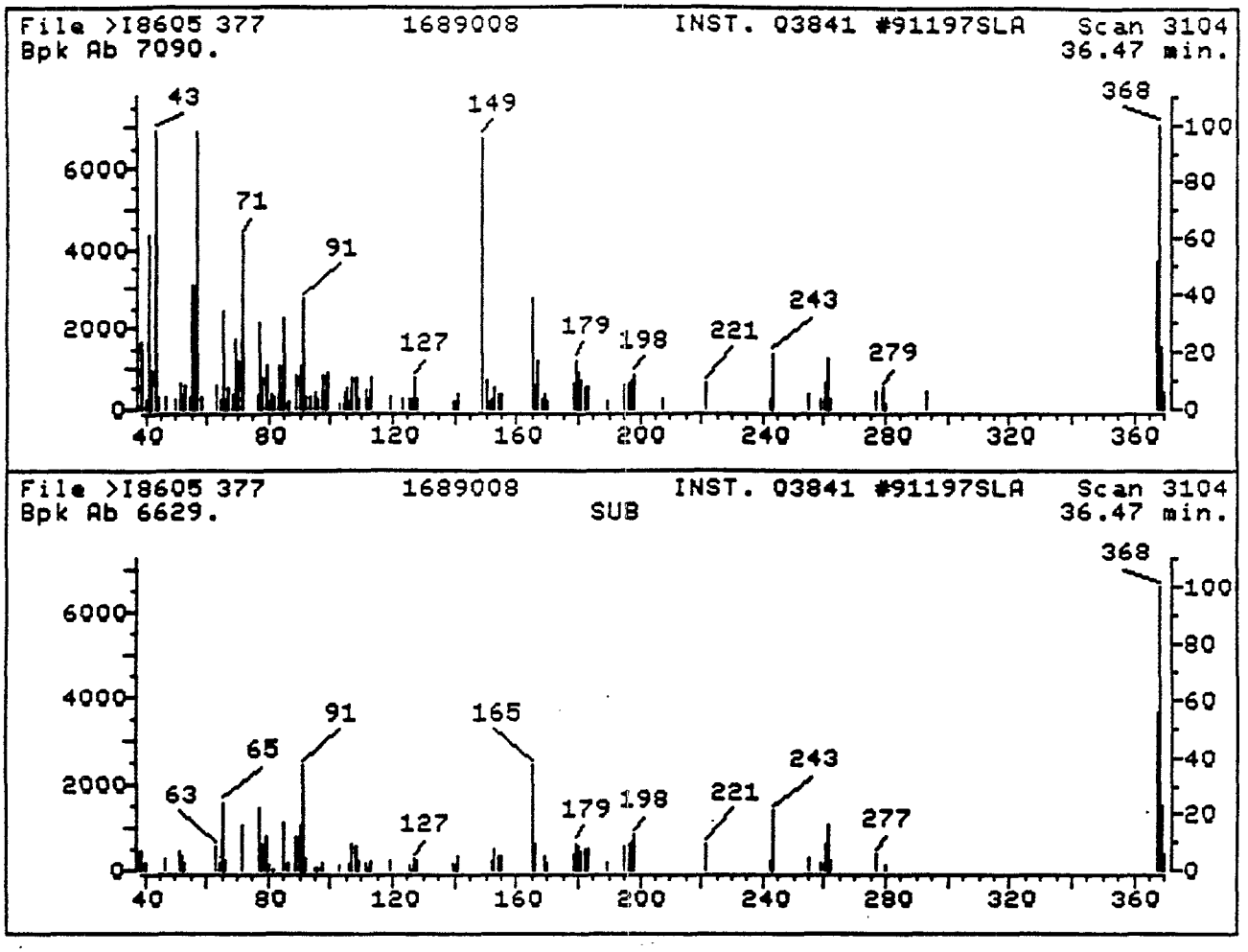


>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

197.7| 198.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 5 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	33.90	2856	2858	2861	305	607	607	8.59	4.223
2	36.48	3100	3105	3108	968	2712	2712	38.36	18.869
3	36.86	3135	3141	3146	2038	7070	7070	100.00	49.189
4	37.27	3175	3180	3186	649	2849	2849	40.30	19.822
5	37.76	3223	3227	3230	404	1135	1135	16.05	7.897

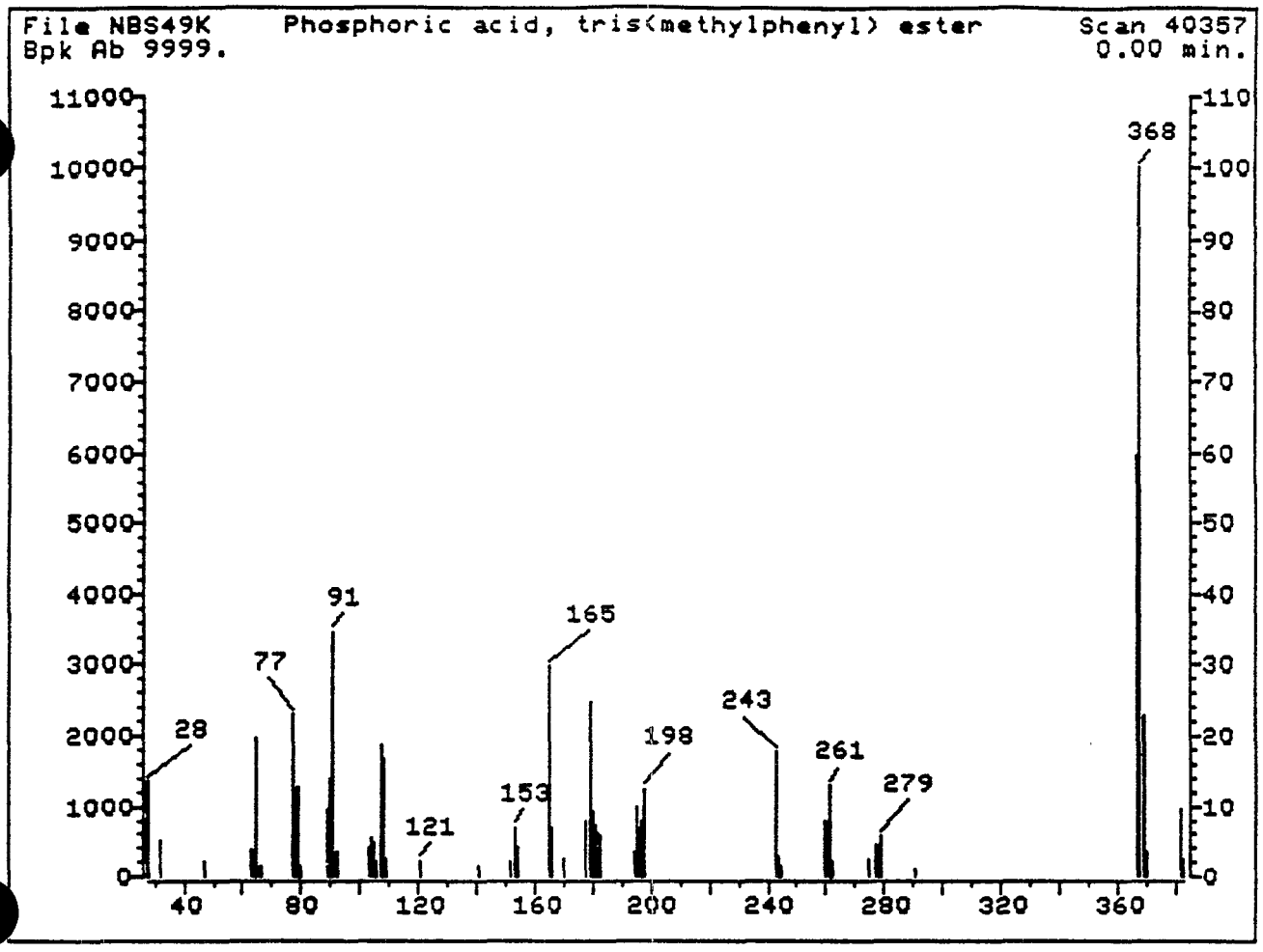
Sum of corrected areas: 14373.

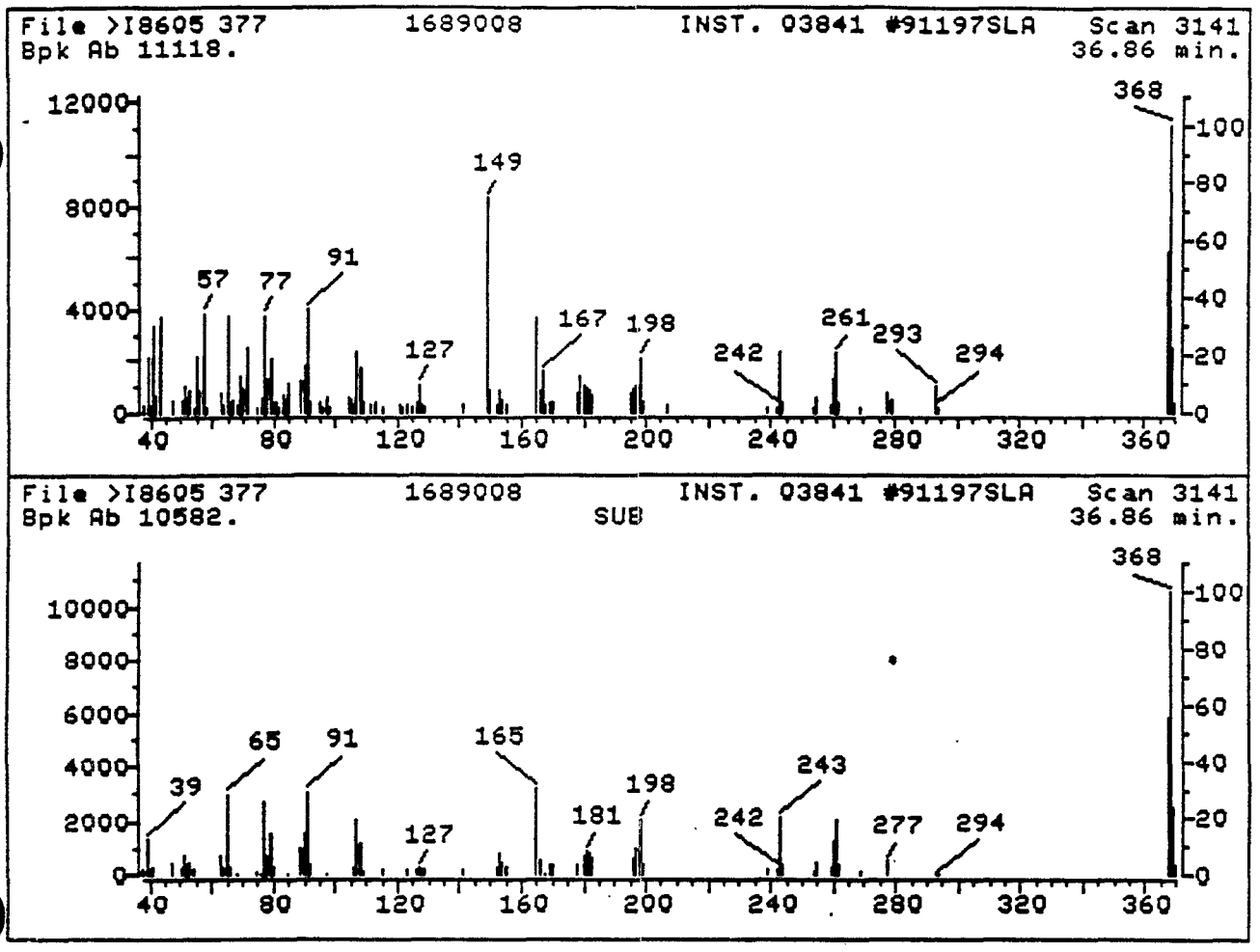


1. Phosphoric acid, tris(methylphenyl) ester 368 C21H2104P
2. Phosphoric acid, tris(4-methylphenyl) ester 368 C21H2104P
3. Phosphoric acid, tris(3-methylphenyl) ester 368 C21H2104P
4. Cholesta-3,5-diene 368 C27H44

Sample file: >I8605 Spectrum #: 3104
Search speed: 1 Tilting option: N No. of ion ranges searched: 43

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	95*	1330785	43998	NBS49K	130	54	3	0	92	7	68	94
2.	47*	78320	44001	NBS49K	59	111	3	0	81	26	19	25
3.	40*	563042	43999	NBS49K	102	82	1	0	36	67	11	95
4.	24*	747900	44033	NBS49K	23	142	3	0	100	42	8	12

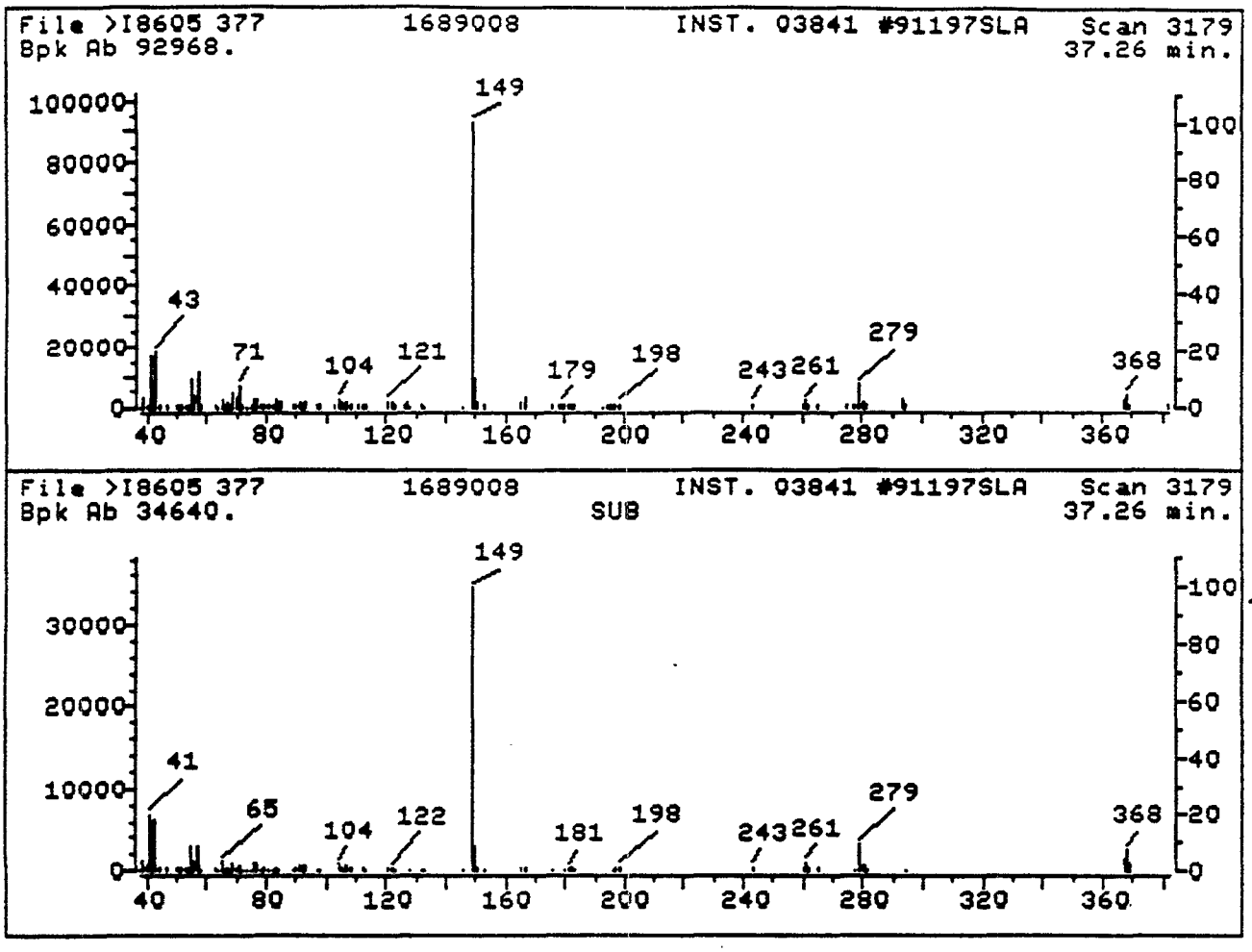

File NBS49K
Bpk Ab 9999.
Phosphoric acid, tris(methylphenyl) ester
Scan 40357
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
368
91
165
77
243
28
198
261
153
279
121
40
80
120
160
200
240
280
320
360



1. Phosphoric acid, tris(methylphenyl) ester 368 C21H2104P
2. Phosphoric acid, tris(4-methylphenyl) ester 368 C21H2104P
3. Cholesta-3,5-diene 368 C27H44

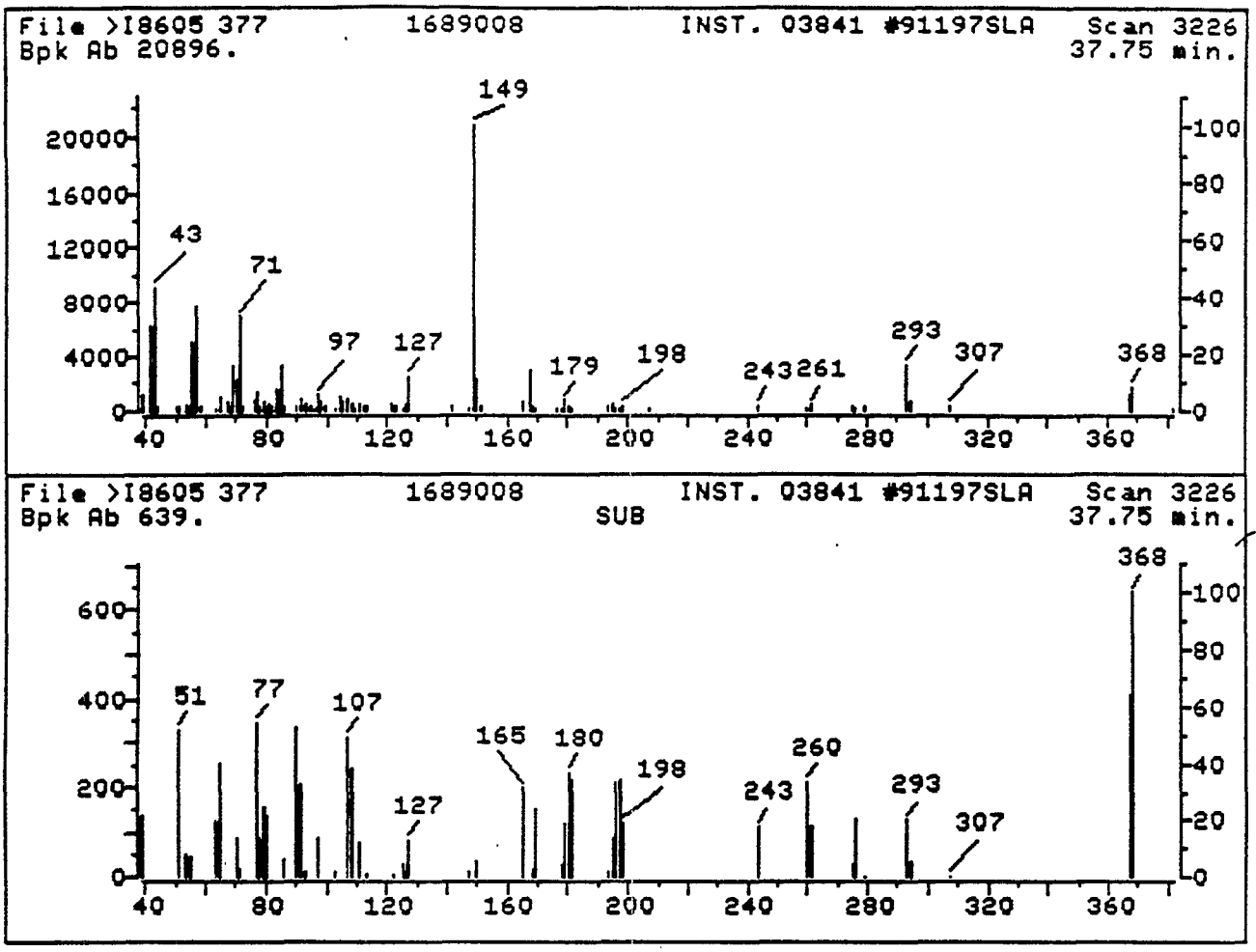
Sample file: >I8605 Spectrum #: 3141
Search speed: 1 Tilting option: N No. of ion ranges searched: 42

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	79*	1330785	43998	NBS49K	99	85	3	0	93	11	43	63
2.	64*	78320	44001	NBS49K	77	93	3	0	82	24	28	42
3.	25*	747900	44033	NBS49K	24	141	3	0	100	47	7	12



Sample file: >I8605 Spectrum #: 3179

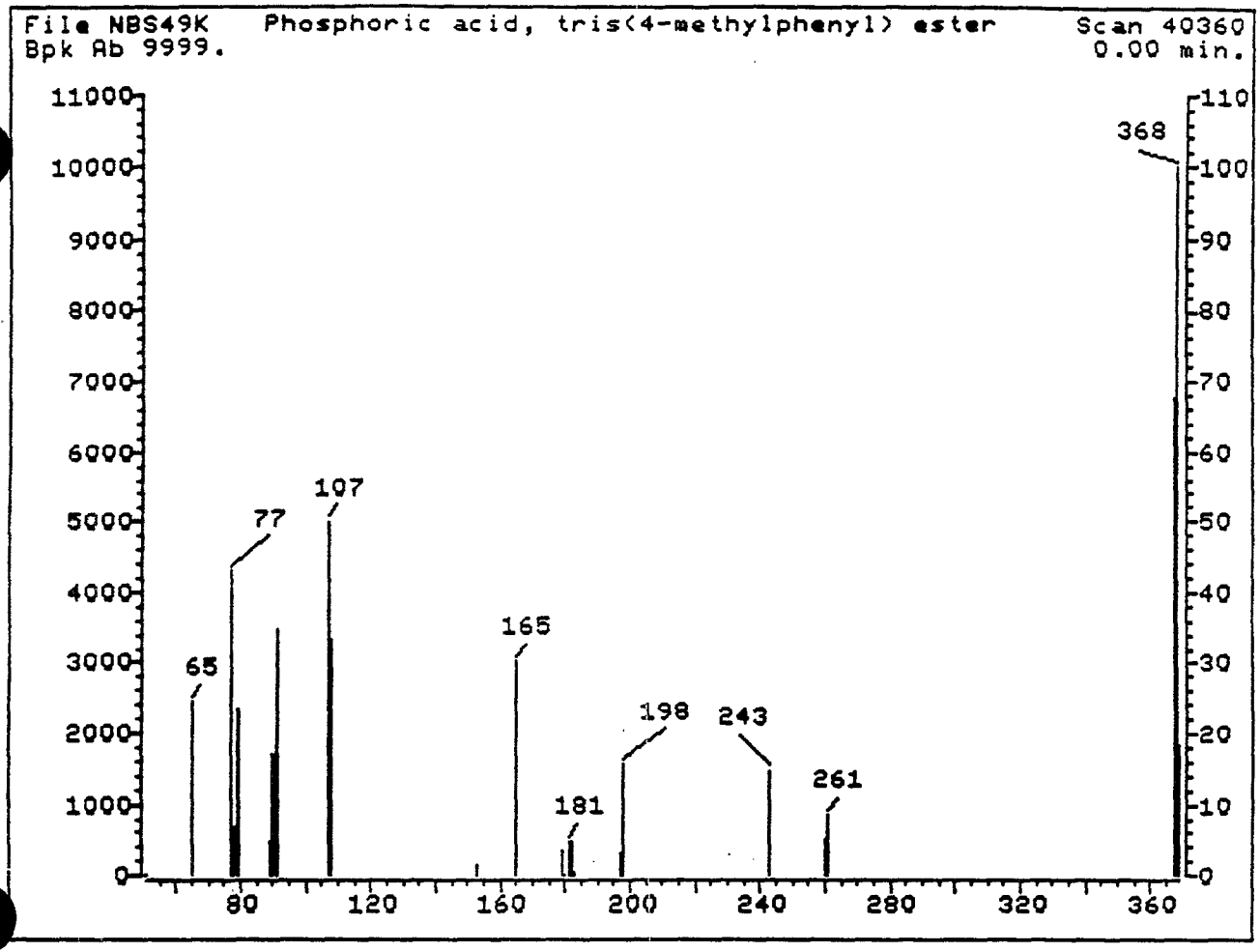
No data base entries were retrieved.

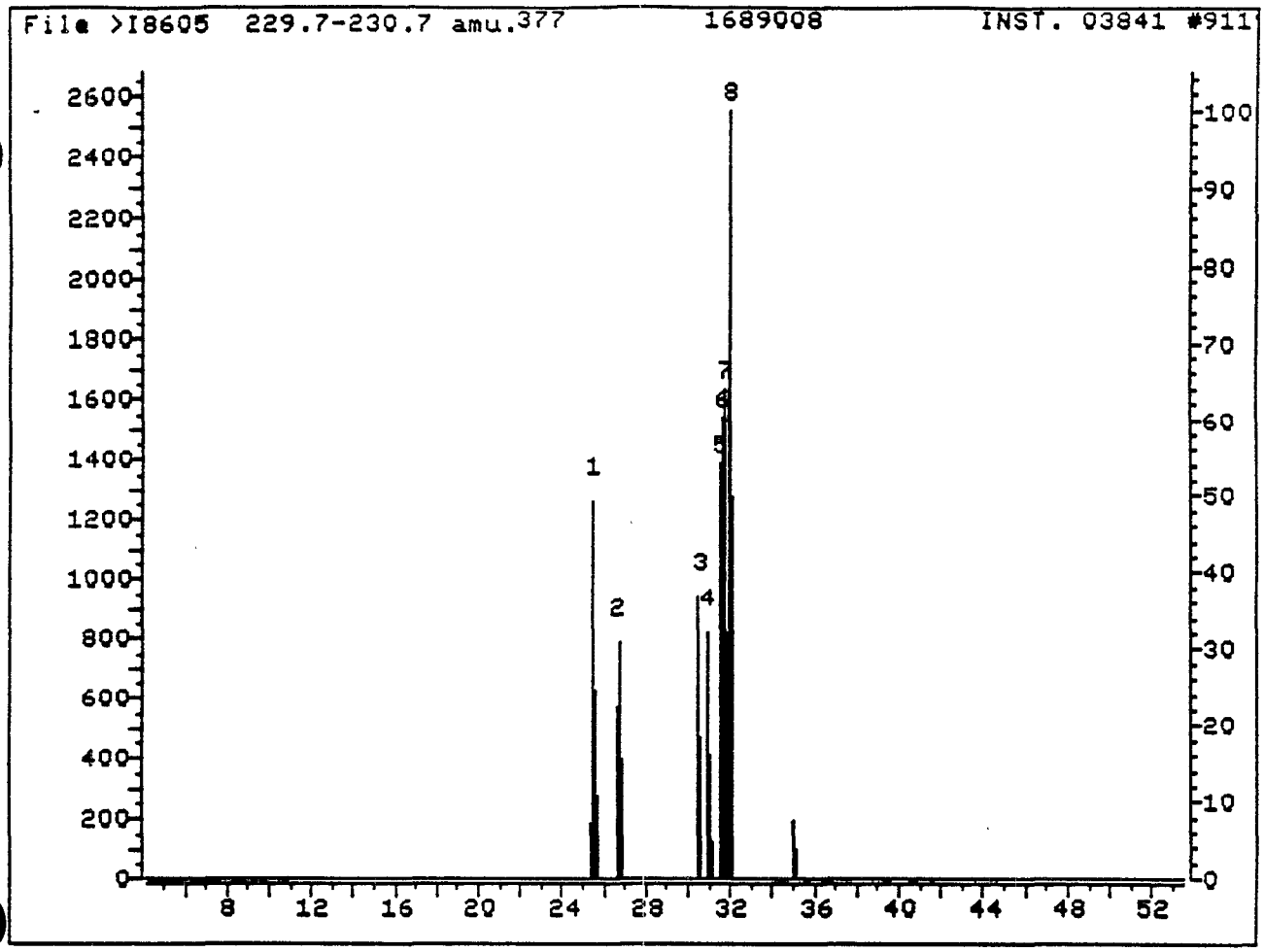


1. Phosphoric acid, tris(4-methylphenyl) ester 368 C21H2104P
2. Phosphoric acid, tris(methylphenyl) ester 368 C21H2104P
3. Phosphoric acid, tris(3-methylphenyl) ester 368 C21H2104P

Sample file: >I8605 Spectrum #: 3226
Search speed: 1 Tilting option: N No. of ion ranges searched: 43

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	50*	78320	44001	NBS49K	87	83	3	0	94	43	17	53
2.	29*	1330785	43998	NBS49K	54	130	3	0	100	44	8	17
3.	25*	563042	43999	NBS49K	44	163	3	0	66	48	7	13


File NBS49K Phosphoric acid, tris(4-methylphenyl) ester
Bpk Ab 9999.
Scan 40360
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
368
107
77
165
65
198
243
261
181
80
120
160
200
240
280
320
360



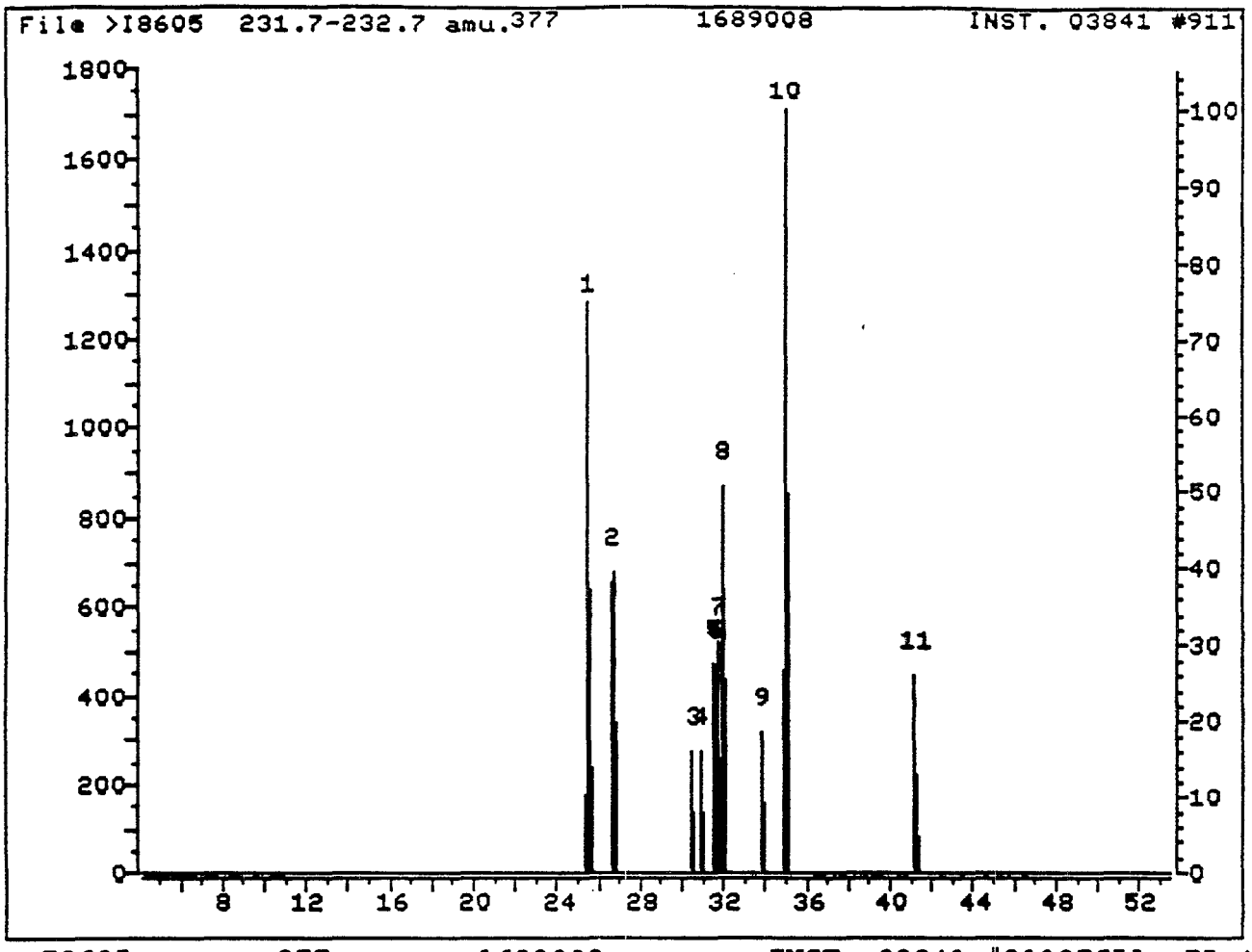
>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

229.7| 230.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 8 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	25.44	2042	2045	2049	1257	2966	2966	42.54	10.412
2	26.61	2153	2157	2160	788	1715	1715	24.60	6.020
3	30.45	2523	2527	2531	937	2293	2293	32.89	8.049
4	30.87	2563	2567	2571	818	2238	2238	32.10	7.856
5	31.48	2622	2626	2630	1390	3917	3917	56.18	13.750
6	31.61	2633	2638	2642	1540	4067	4067	58.33	14.277
7	31.69	2642	2646	2650	1635	4319	4319	61.95	15.161
8	31.93	2664	2669	2673	2558	6972	6972	100.00	24.474

Sum of corrected areas: 28487.

Trichloroethylene

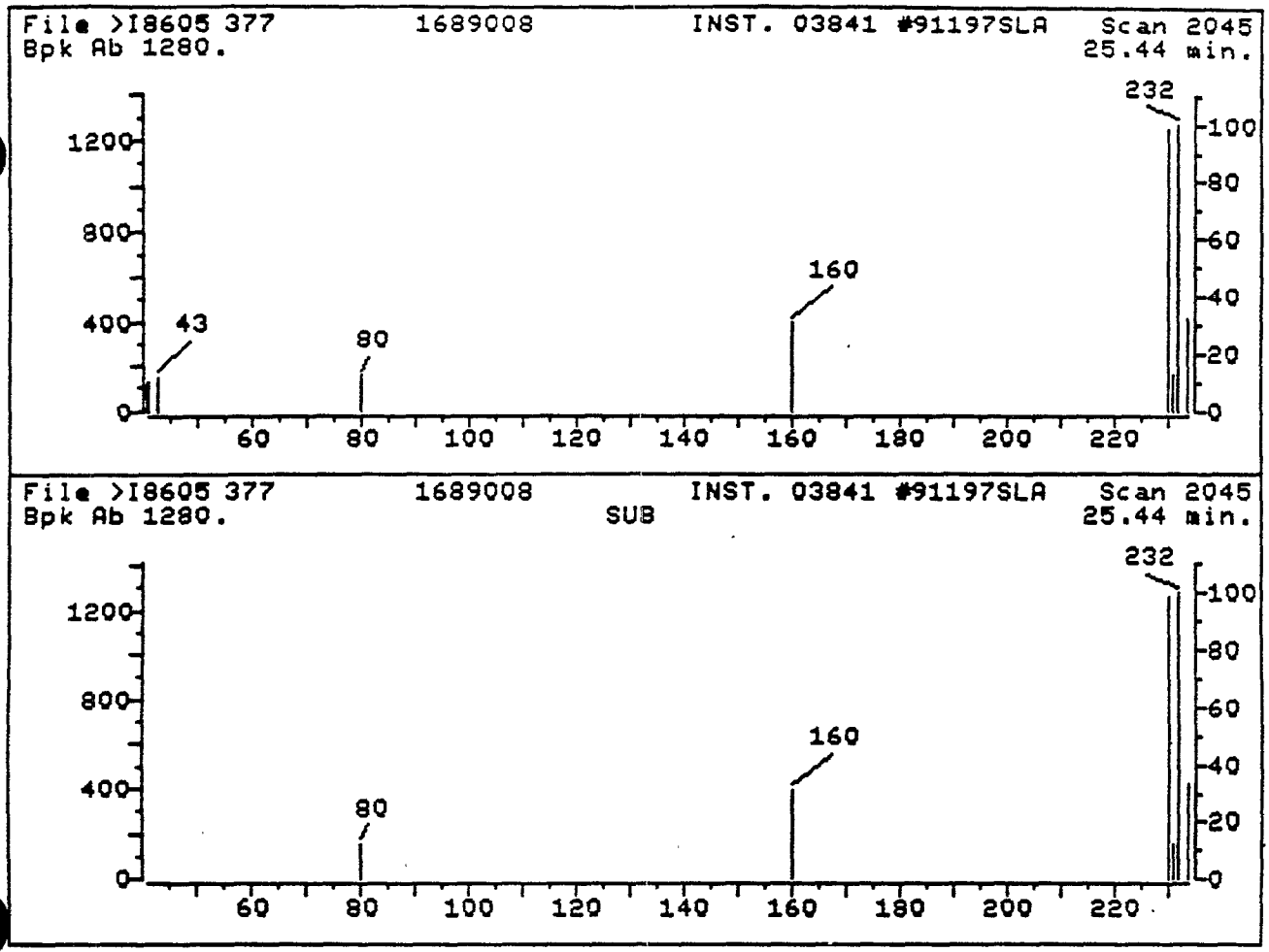


>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

231.7| 232.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 11 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	25.44	2041	2045	2048	1280	2906	2906	51.69	14.176
2	26.61	2153	2157	2160	677	1648	1648	29.31	8.039
3	30.45	2524	2527	2529	276	592	592	10.53	2.888
4	30.87	2565	2567	2569	276	485	485	8.63	2.366
5	31.49	2623	2627	2630	475	1260	1260	22.41	6.146
6	31.61	2635	2638	2642	466	1366	1366	24.30	6.663
7	31.69	2642	2646	2649	520	1361	1361	24.21	6.639
8	31.92	2664	2668	2673	868	2440	2440	43.40	11.902
9	33.75	2842	2844	2847	318	633	633	11.26	3.088
10	34.87	2946	2951	2957	1711	5622	5622	100.00	27.424
11	41.14	3543	3550	3555	447	2187	2187	38.90	10.668

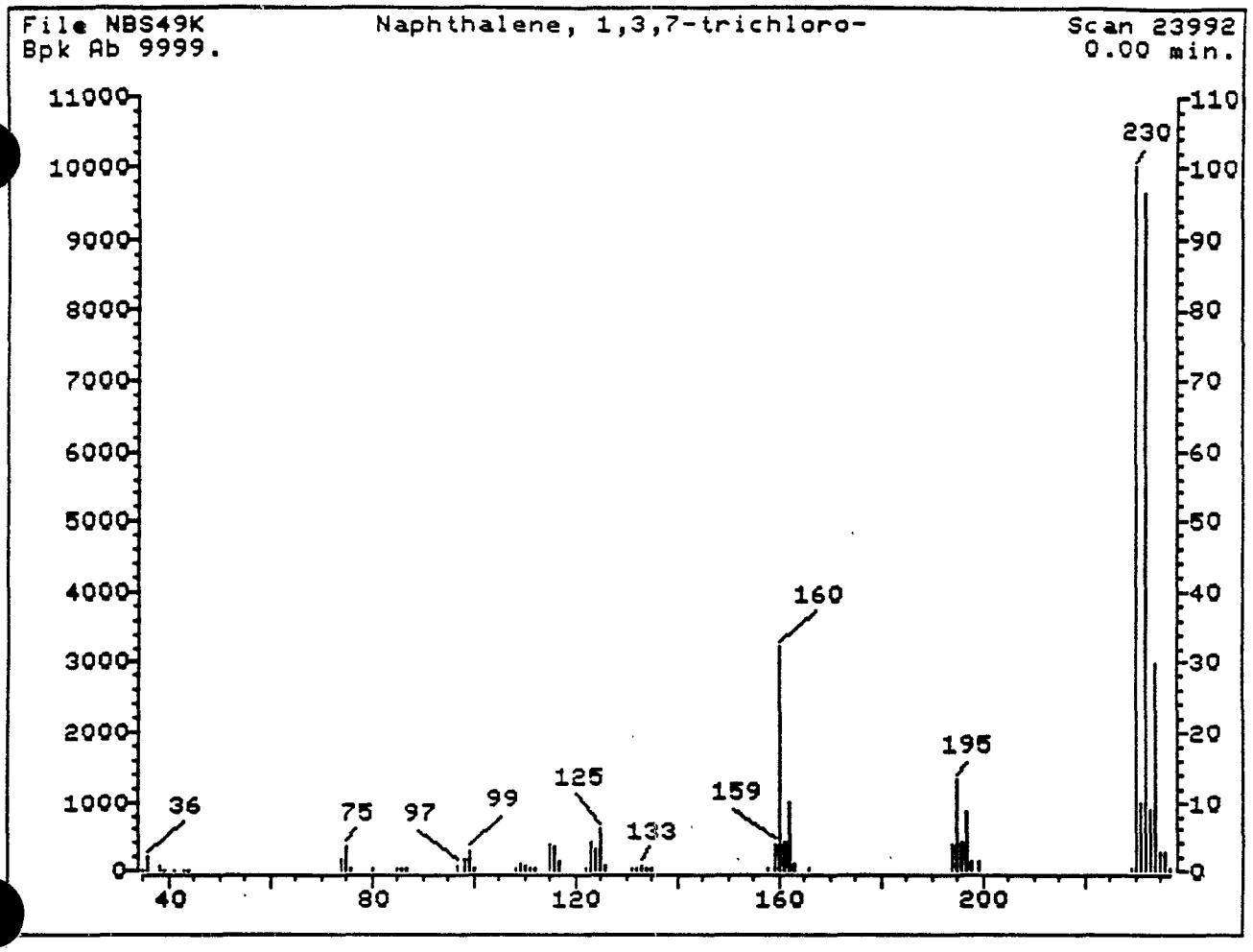
Sum of corrected areas: 20500.

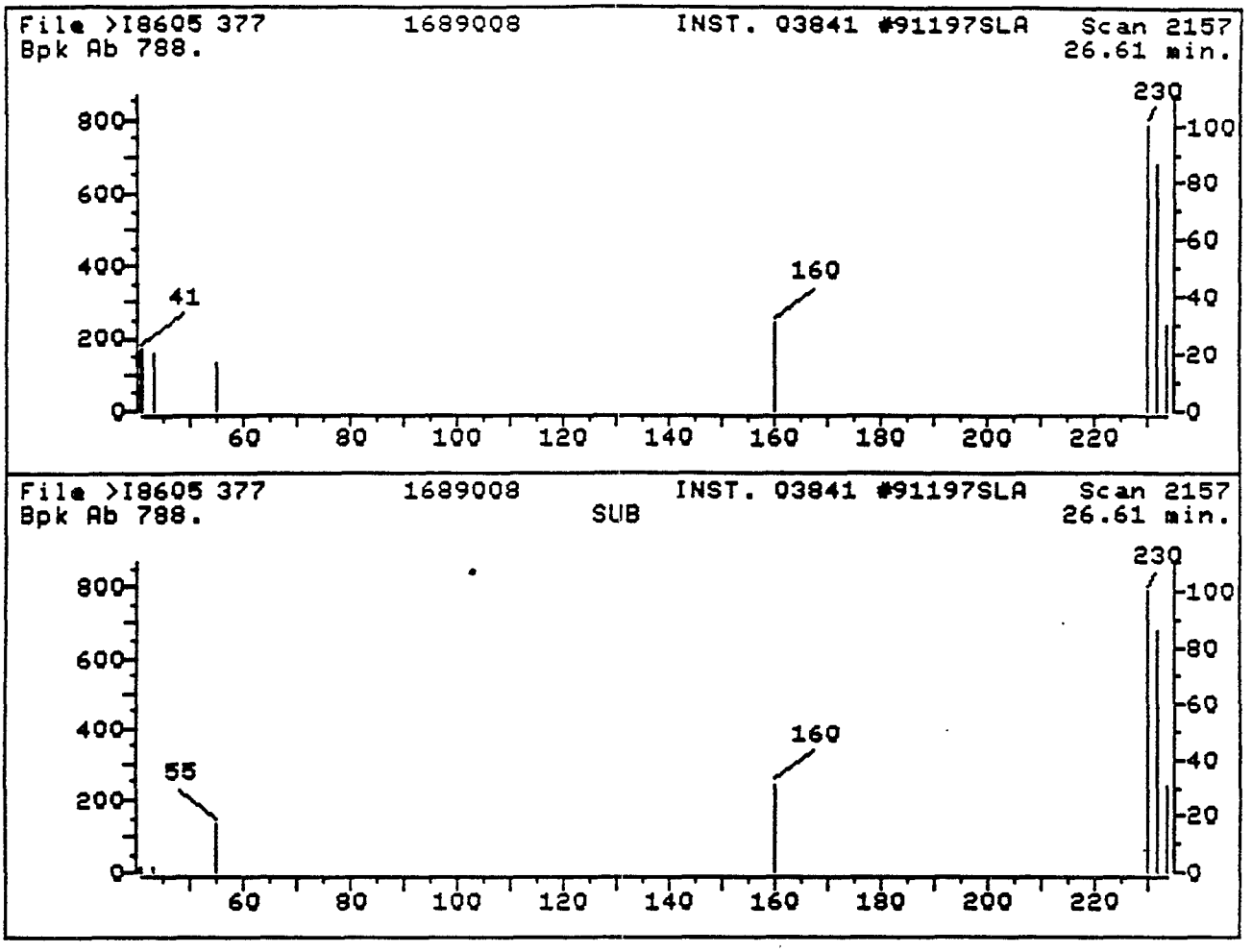


1. Naphthalene, 1,3,7-trichloro- 230 C10H5Cl3
2. Naphthalene, 2,3,6-trichloro- 230 C10H5Cl3

Sample file: >I8605 Spectrum #: 2045
Search speed: 1 Tilting option: N No. of ion ranges searched: 84

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	78*	55720371	32147	NBS49K	39	100	3	0	98	4	55	13
2.	78*	55720406	32148	NBS49K	39	102	3	0	98	4	55	13

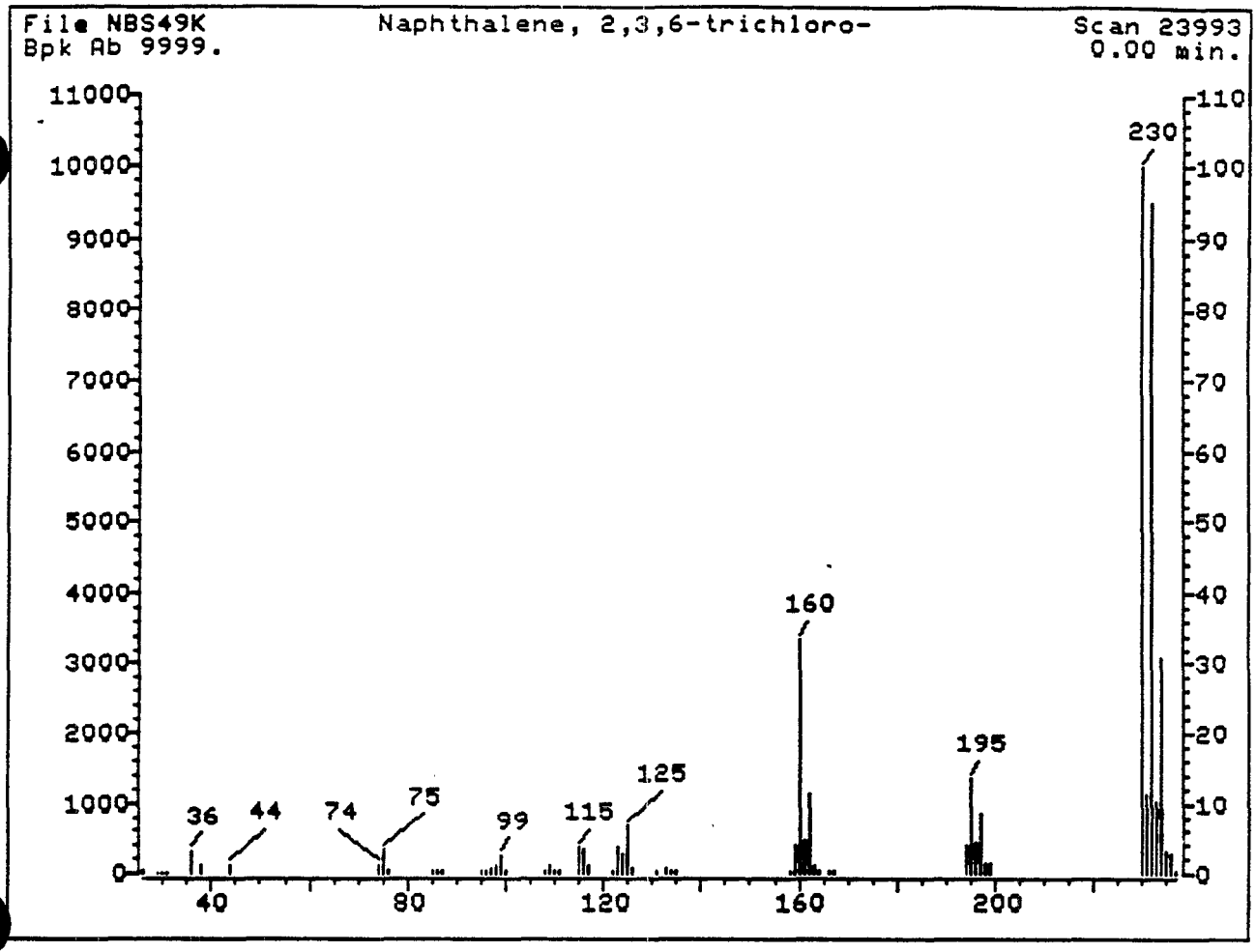

File NBS49K
Bpk Ab 9999.
Naphthalene, 1,3,7-trichloro-
Scan 23992
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
230
160
195
125
159
99
97
75
36
133
40
80
120
160
200

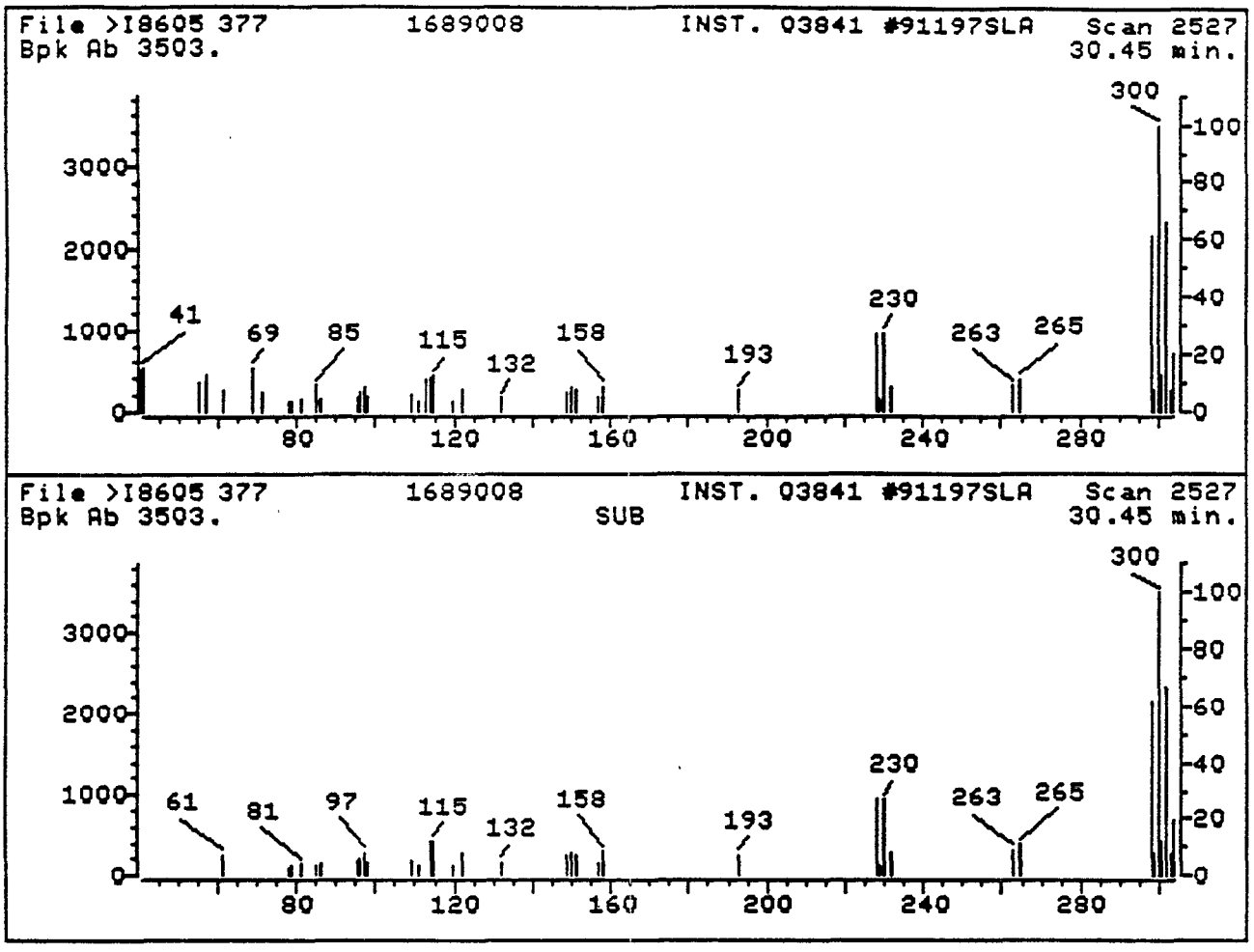


1. Naphthalene, 1,3,7-trichloro- 230 C10H5Cl3
2. Naphthalene, 2,3,6-trichloro- 230 C10H5Cl3

Sample file: >I8605 Spectrum #: 2157
Search speed: 1 Tilting option: N No. of ion ranges searched: 45

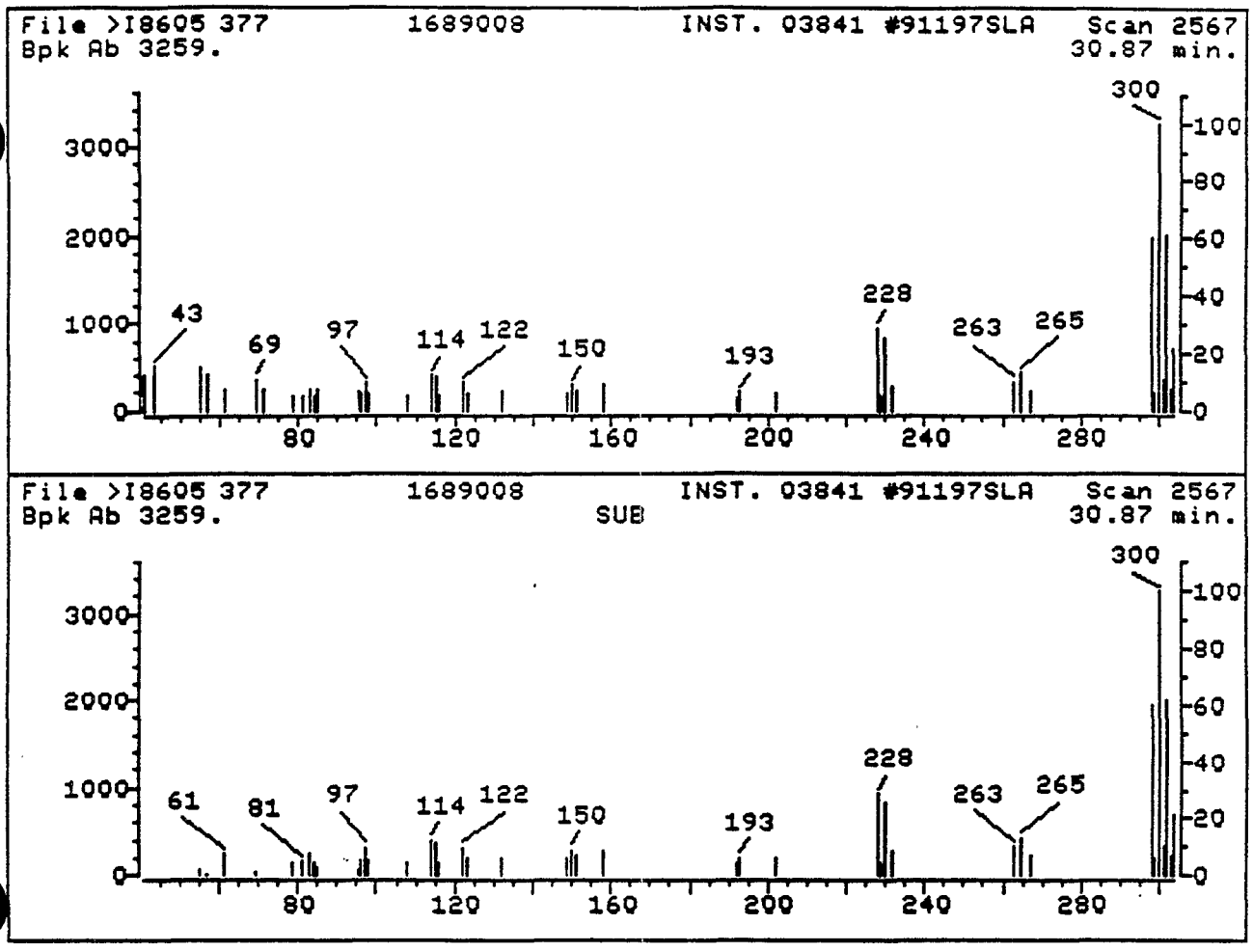
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	70*	55720371	32147	NBS49K	40	99	3	0	89	6	42	13
2.	70*	55720406	32148	NBS49K	40	101	3	0	90	6	42	13


File NBS49K
Bpk Ab 9999.
Naphthalene, 2,3,6-trichloro-
Scan 23993
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
36
44
74
75
99
115
125
160
195
230
40
80
120
160
200



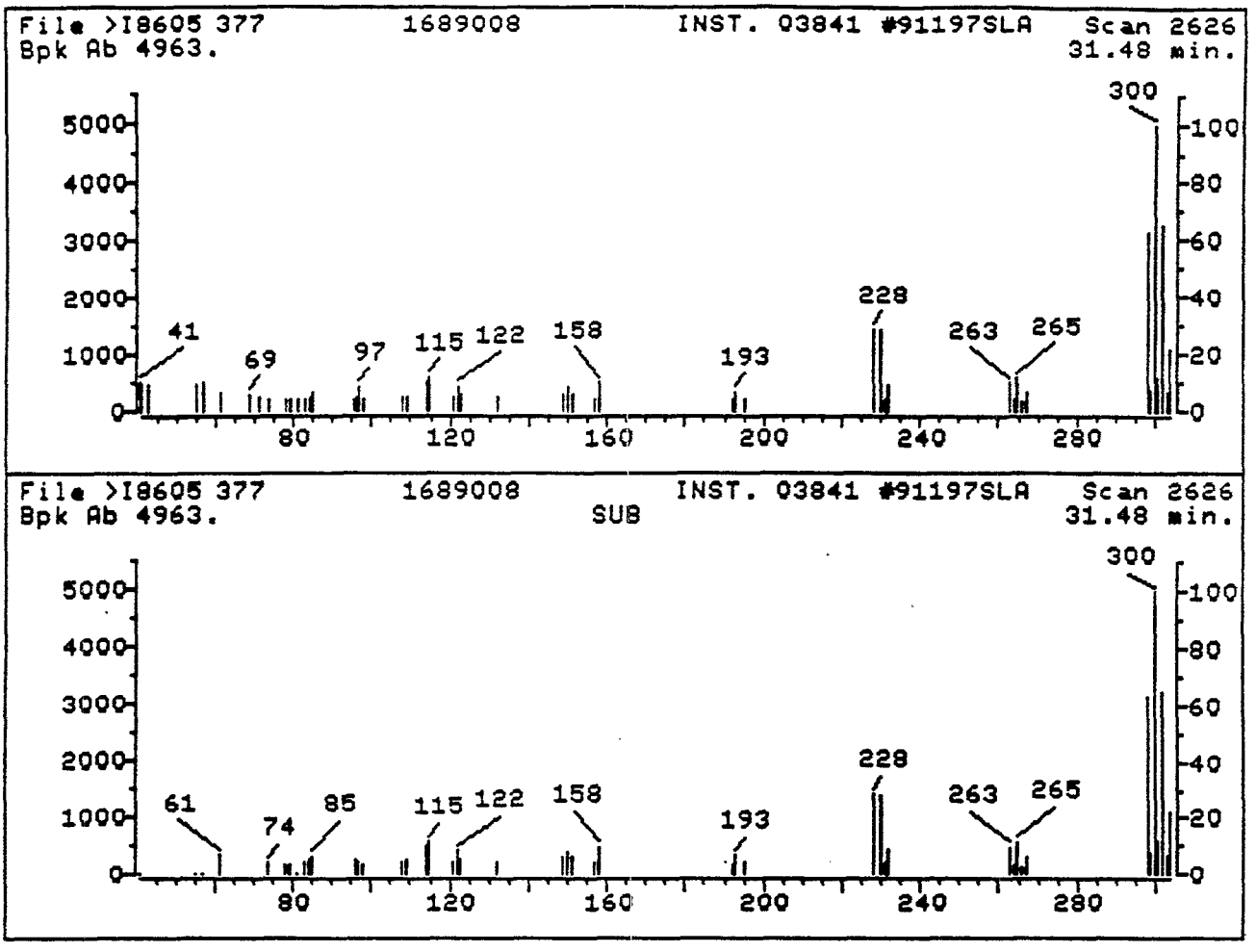
Sample file: >I8605 Spectrum #: 2527

No data base entries were retrieved.



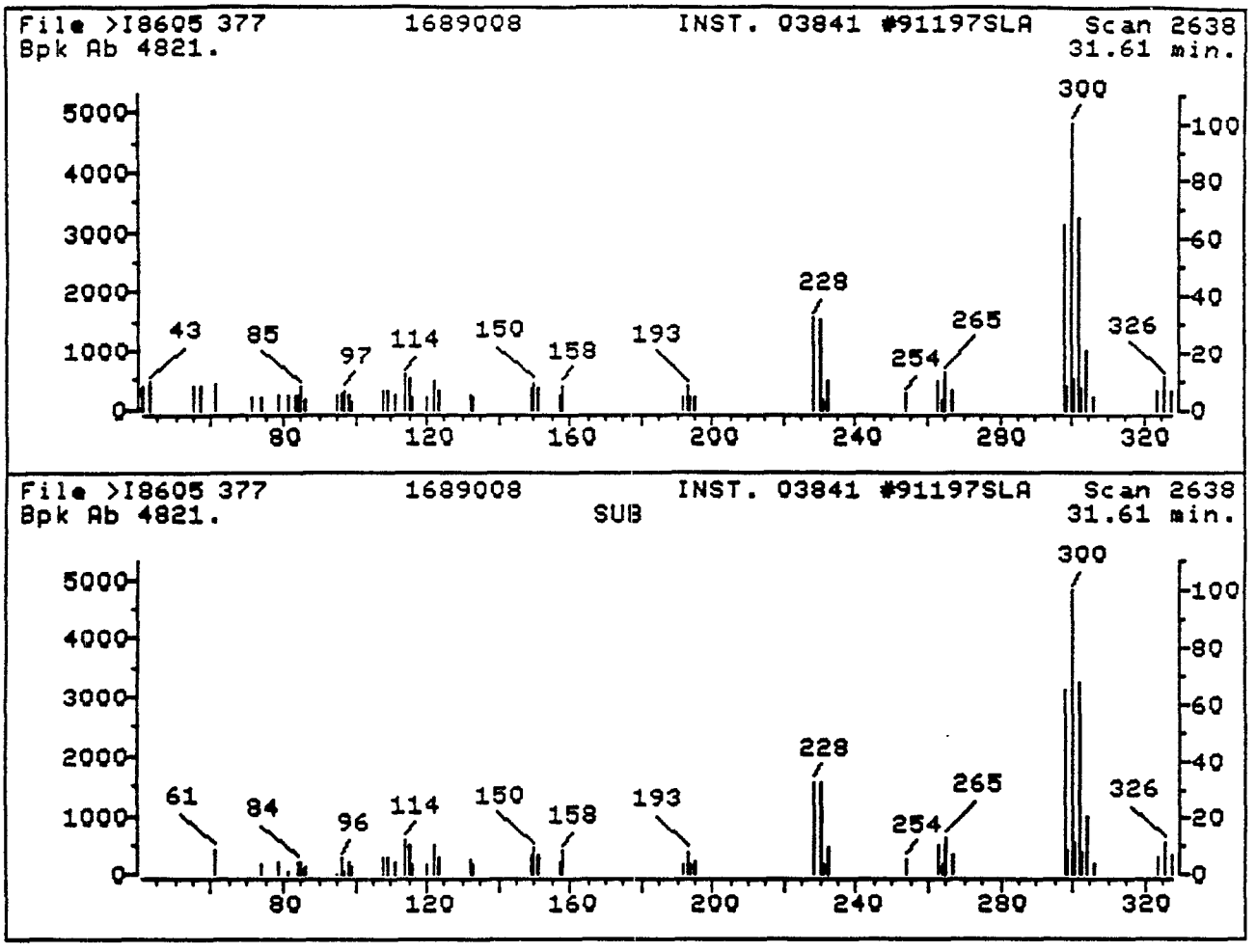
Sample file: >I8605 Spectrum #: 2567

No data base entries were retrieved.



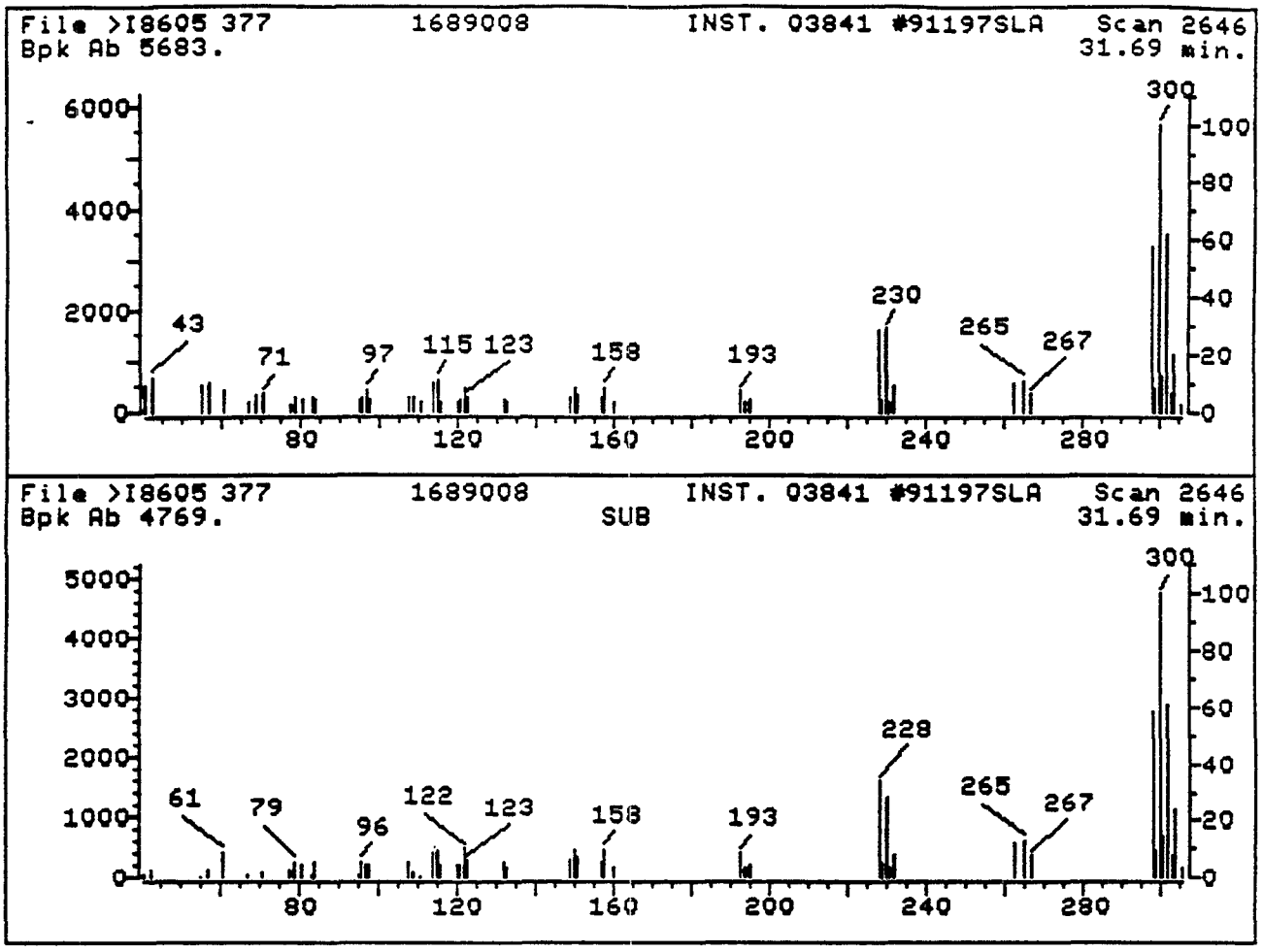
Sample file: >I8605 Spectrum #: 2626

No data base entries were retrieved.



Sample file: >I8605 Spectrum #: 2638

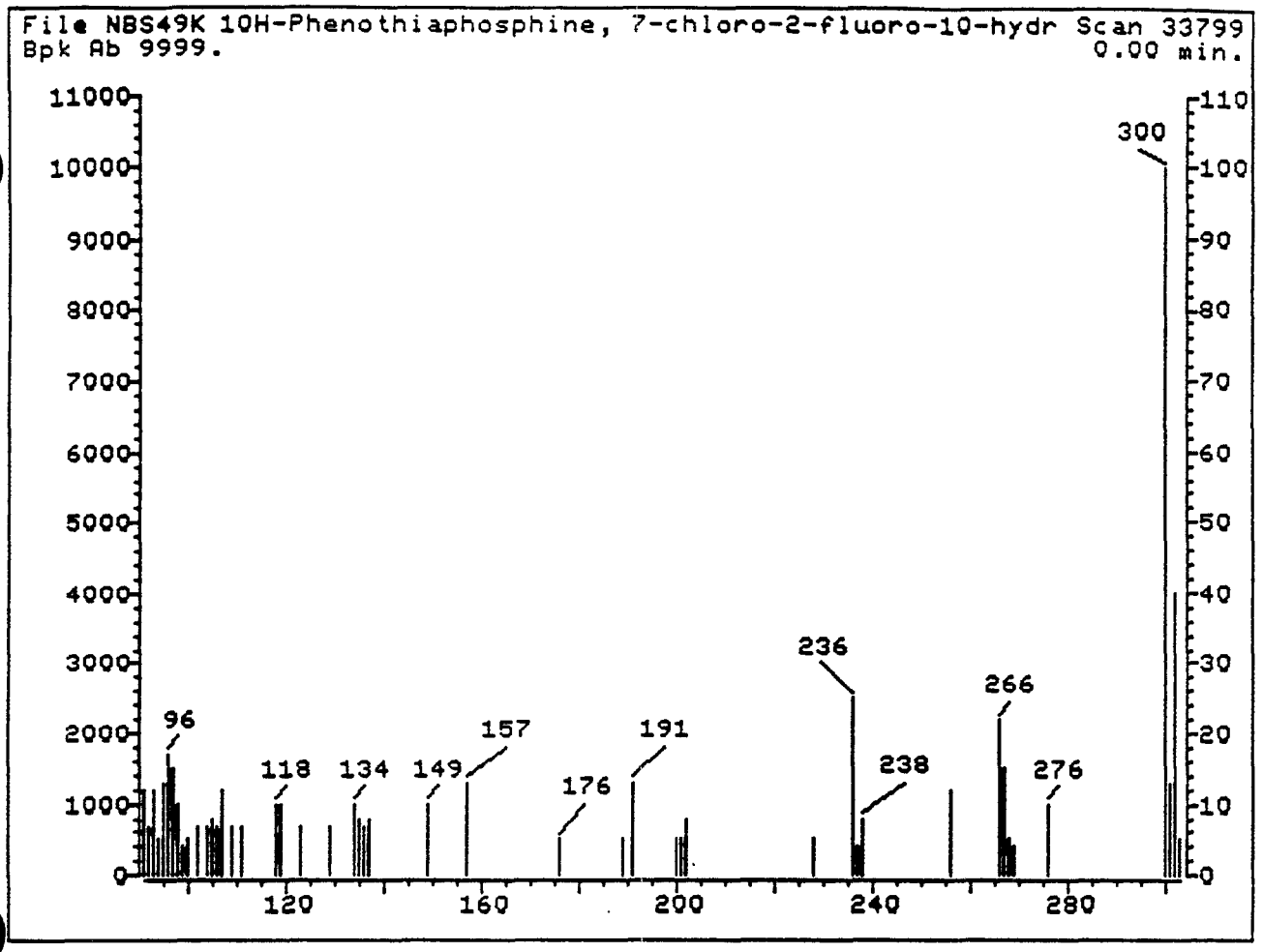
No data base entries were retrieved.

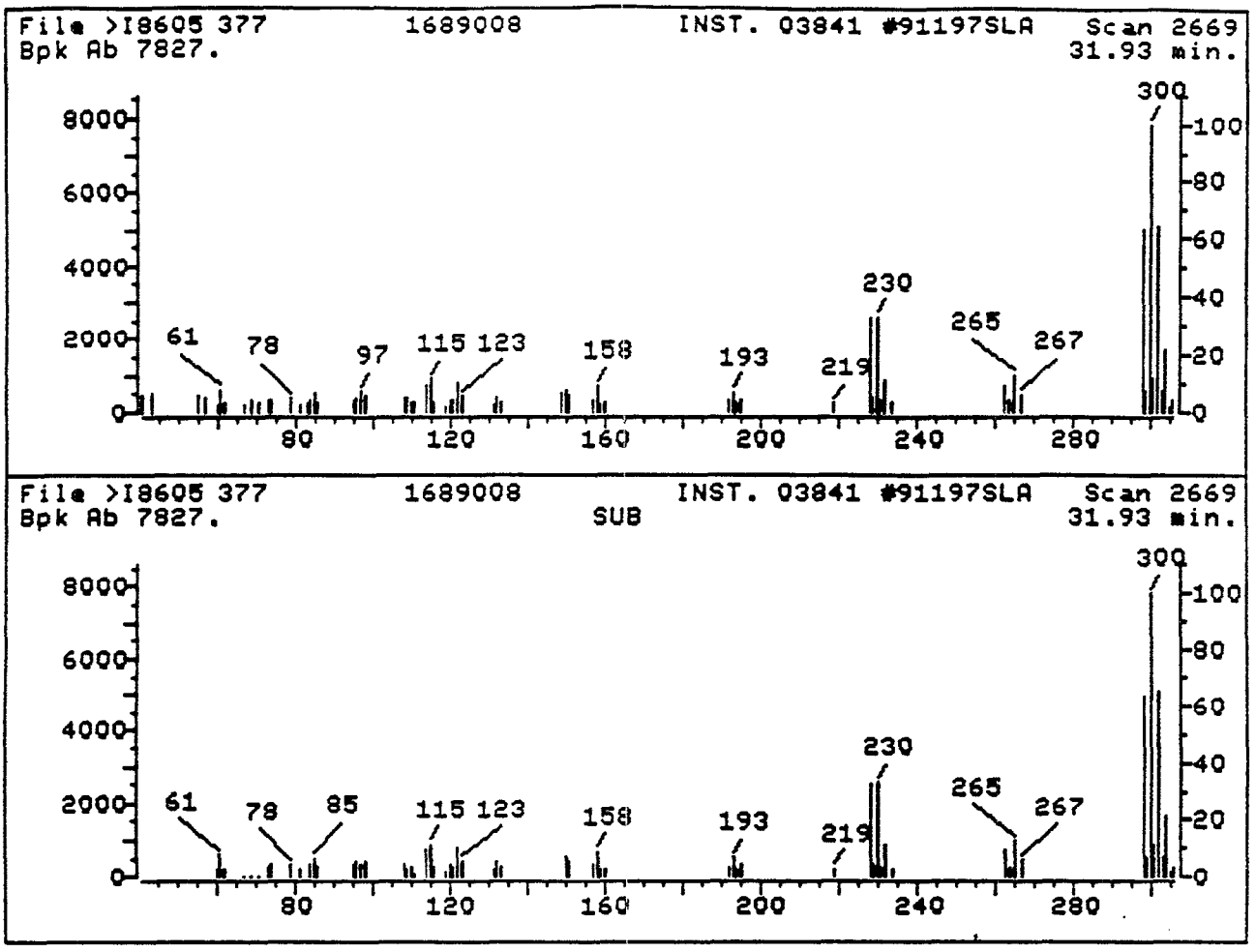


1. 10H-Phenothiaphosphine, 7-chloro-2-fluoro-10-hydroxy -, 10-oxide 300 C12H7ClFO2PS

Sample file: >I8605 Spectrum #: 2646
Search speed: 1 Tilting option: N No. of ion ranges searched: 45

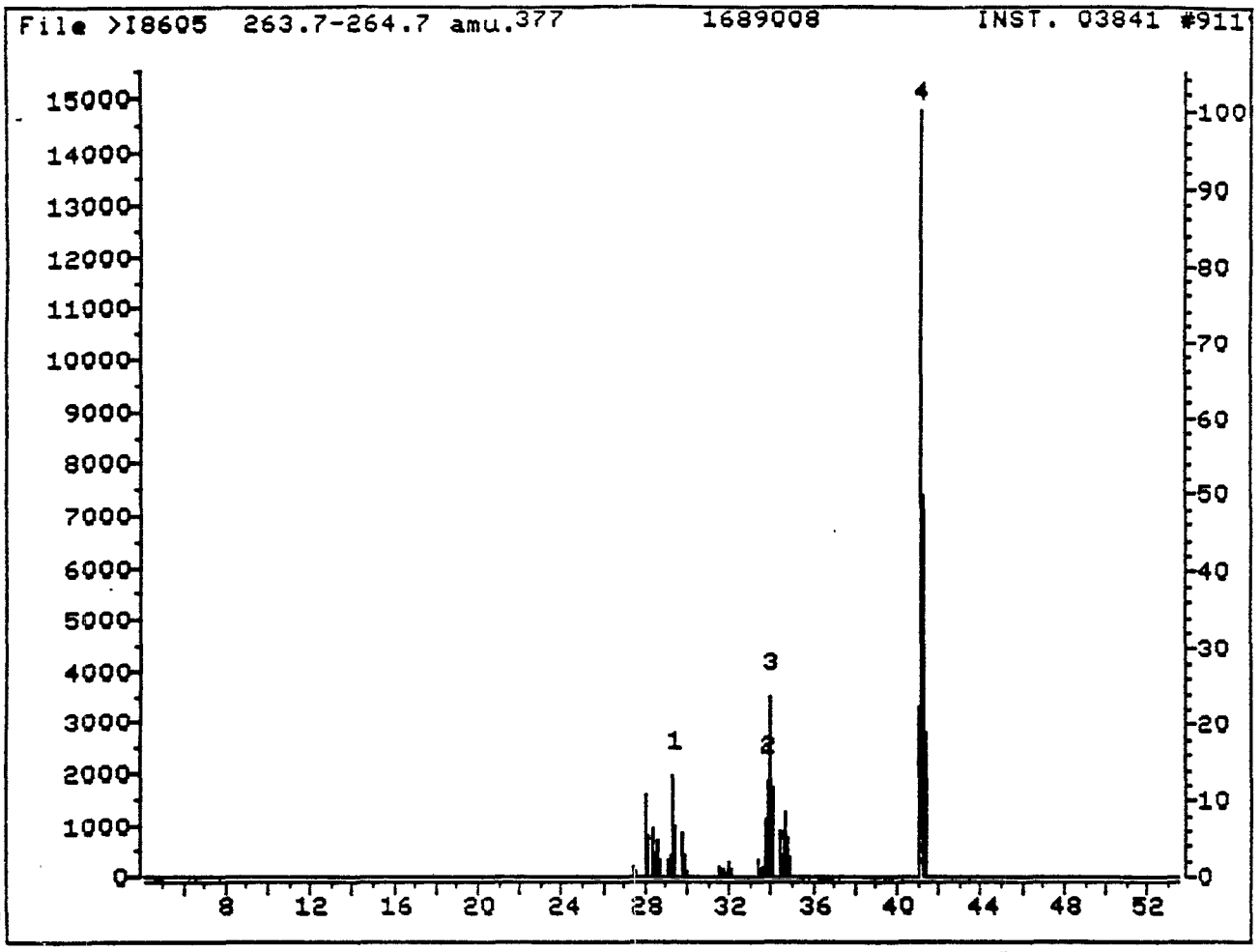
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	25*	54934848	39212	NBS49K	25	149	3	0	100	50	7	13


File NBS49K 10H-Phenothiaphosphine, 7-chloro-2-fluoro-10-hydr Scan 33799
Bpk Ab 9999.
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
300
236
266
96
157
191
238
118
134
149
176
276
120
160
200
240
280



Sample file: >I8605 Spectrum #: 2669

No data base entries were retrieved.



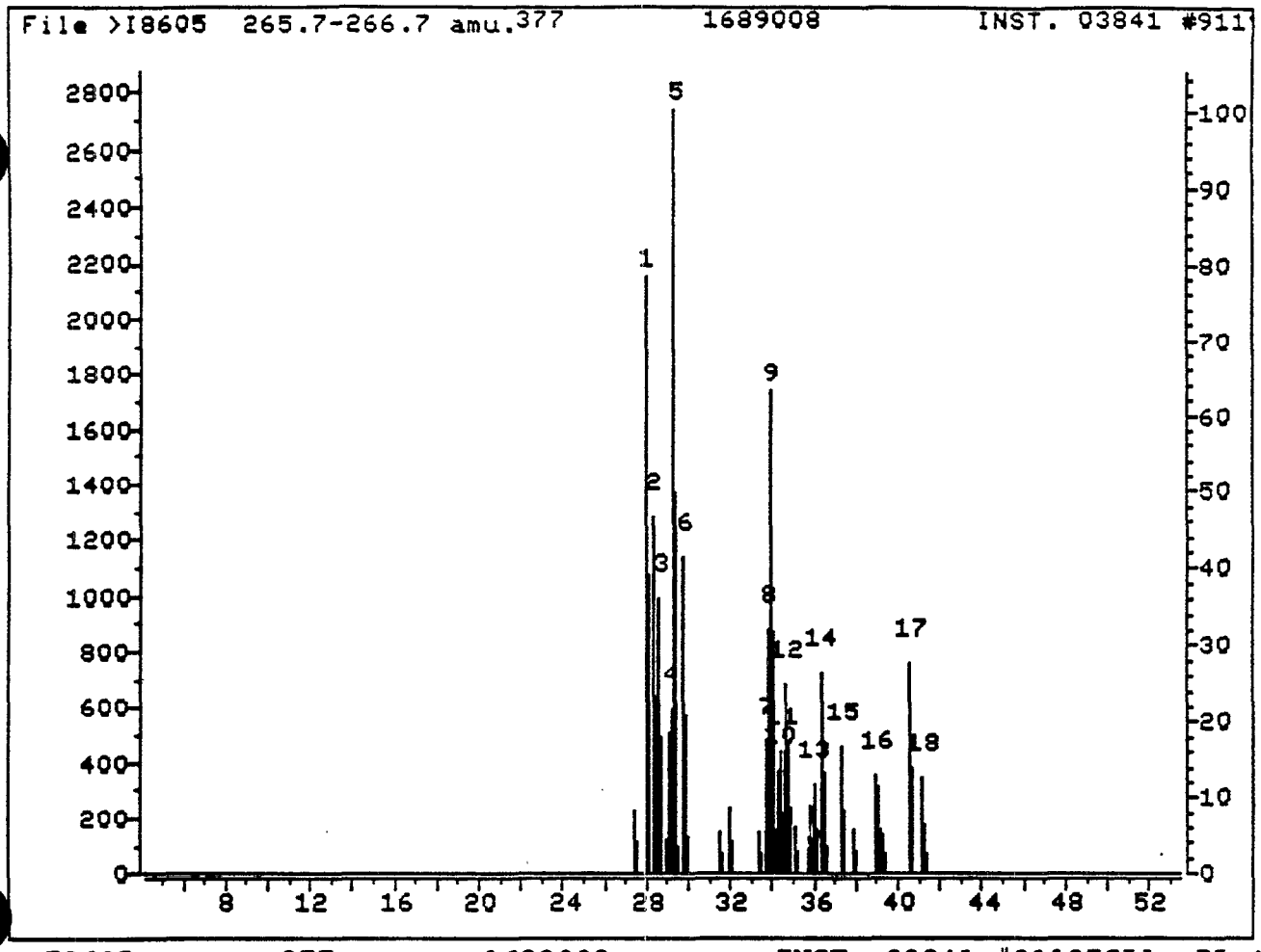
>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

263.7| 264.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 4 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	29.31	2413	2417	2421	1970	5276	5276	6.14	4.991
2	33.73	2837	2842	2848	1878	5100	5100	5.94	4.825
3	33.86	2849	2854	2859	3475	9451	9451	11.00	8.941
4	41.13	3537	3549	3563	14783	85880	85880	100.00	81.243

Sum of corrected areas: 105707.

tetrachloroethylene



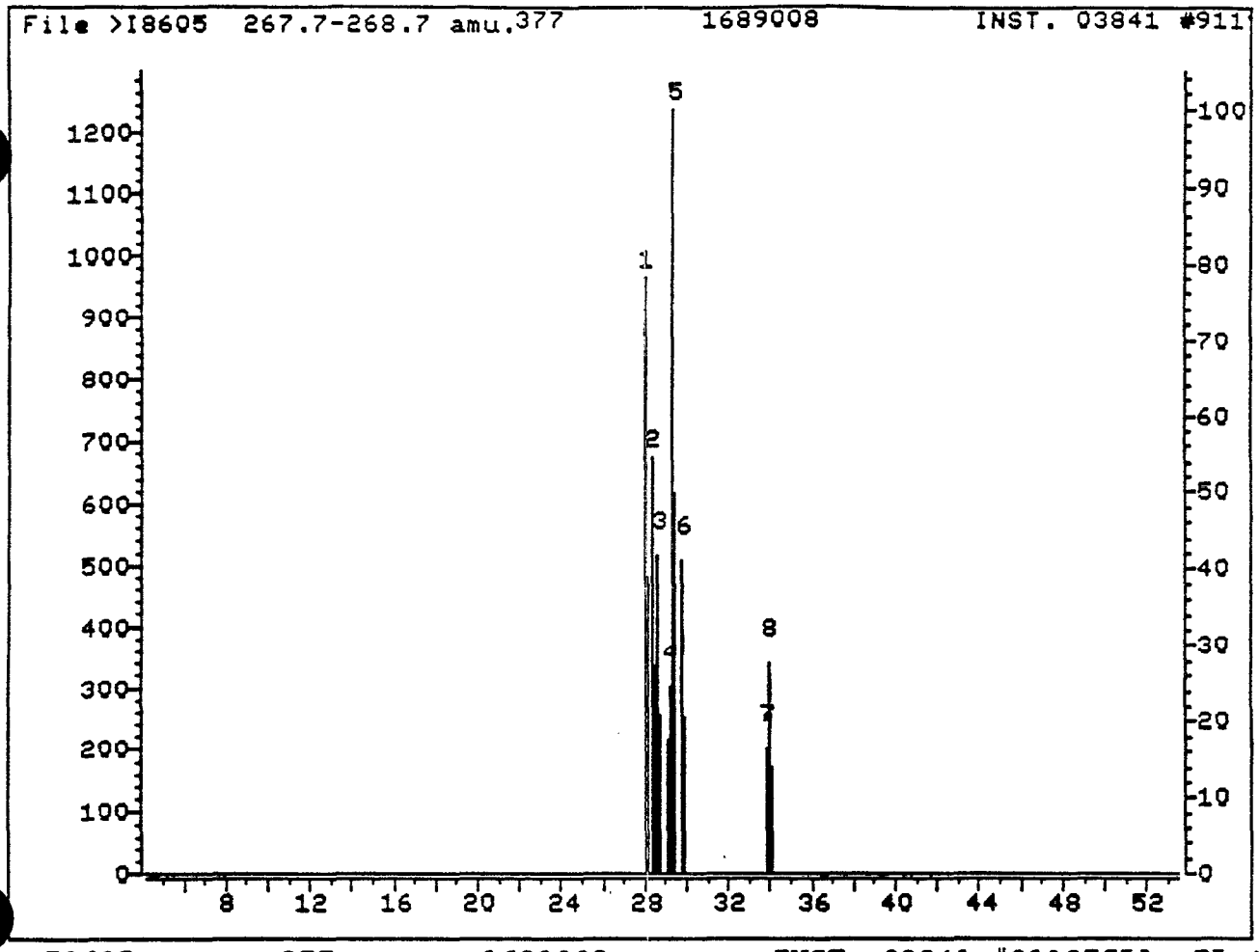
>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

265.7| 266.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 18 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	27.93	2280	2284	2289	2141	5437	5437	77.55	12.617
2	28.25	2311	2315	2319	1278	3233	3233	46.11	7.502
3	28.61	2346	2350	2354	988	2551	2551	36.39	5.920
4	29.12	2396	2399	2402	593	1421	1421	20.27	3.298
5	29.31	2412	2417	2422	2738	7011	7011	100.00	16.269
6	29.78	2458	2462	2466	1130	2728	2728	38.91	6.330
7	33.61	2827	2830	2833	478	1220	1220	17.40	2.831
8	33.73	2838	2842	2846	874	2337	2337	33.33	5.423
9	33.86	2849	2854	2858	1731	4624	4624	65.95	10.730
10	34.23	2888	2890	2893	373	813	813	11.60	1.887
11	34.36	2898	2902	2905	442	1188	1188	16.94	2.757
12	34.60	2921	2925	2929	681	1843	1843	26.29	4.277
13	35.96	3054	3055	3058	316	445	445	6.35	1.033
14	36.28	3082	3086	3089	721	1950	1950	27.81	4.525
15	37.35	3182	3188	3191	457	1624	1624	23.15	3.769
16	38.98	3338	3343	3345	352	1137	1137	16.22	2.638
17	40.56	3491	3494	3498	759	1834	1834	26.16	4.256

18	41.13	3544	3549	3555	348	1697	1697	24.20	3.938

Sum of corrected areas: 43093.

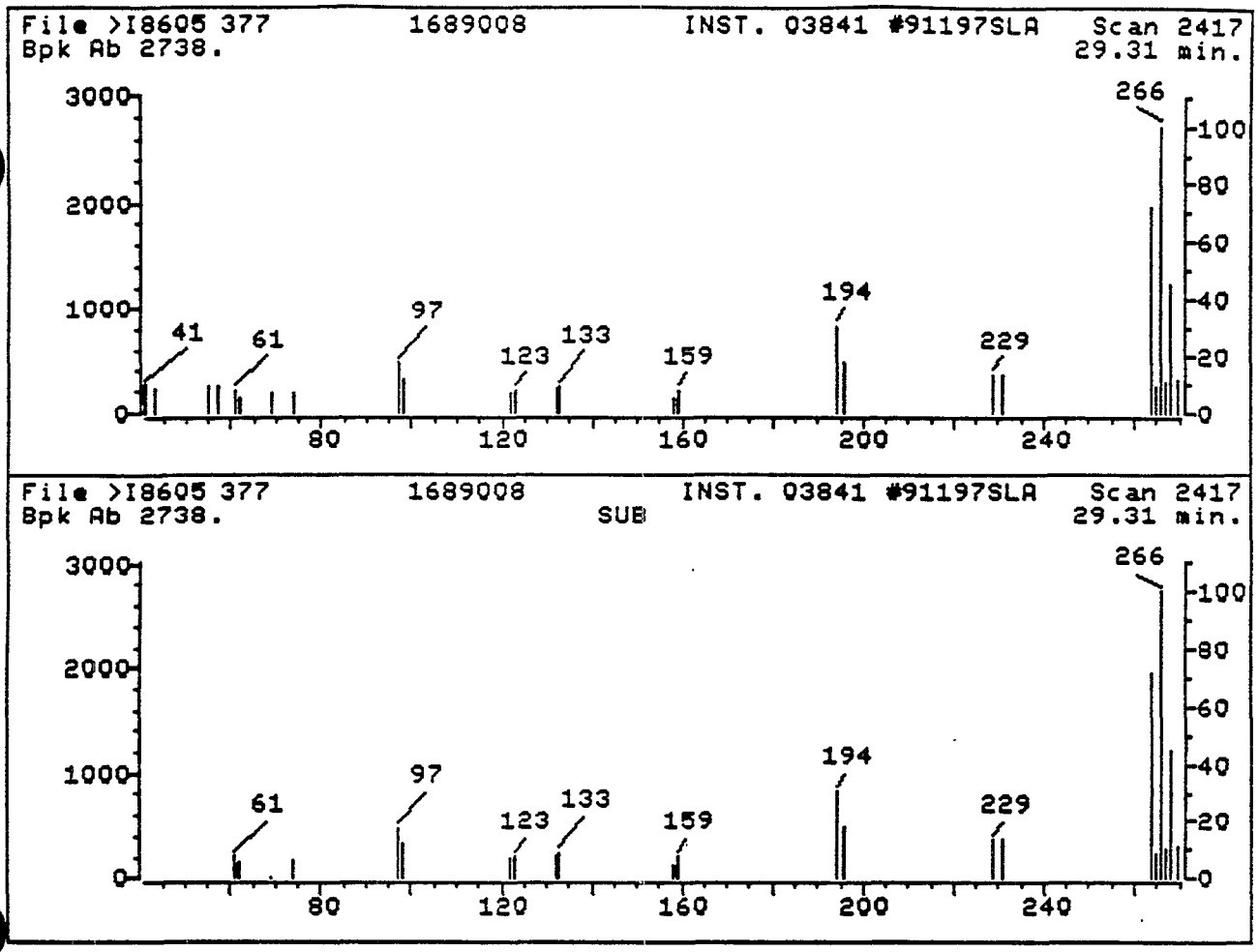


>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

267.7| 268.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 8 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	27.93	2280	2284	2288	962	2520	2520	77.99	22.344
2	28.25	2312	2315	2318	673	1391	1391	43.05	12.334
3	28.61	2348	2350	2354	514	1136	1136	35.16	10.073
4	29.12	2397	2399	2401	303	479	479	14.83	4.247
5	29.31	2413	2417	2421	1234	3231	3231	100.00	28.649
6	29.78	2458	2462	2465	508	1278	1278	39.55	11.332
7	33.72	2840	2841	2844	202	362	362	11.20	3.210
8	33.87	2851	2855	2857	340	881	881	27.27	7.812

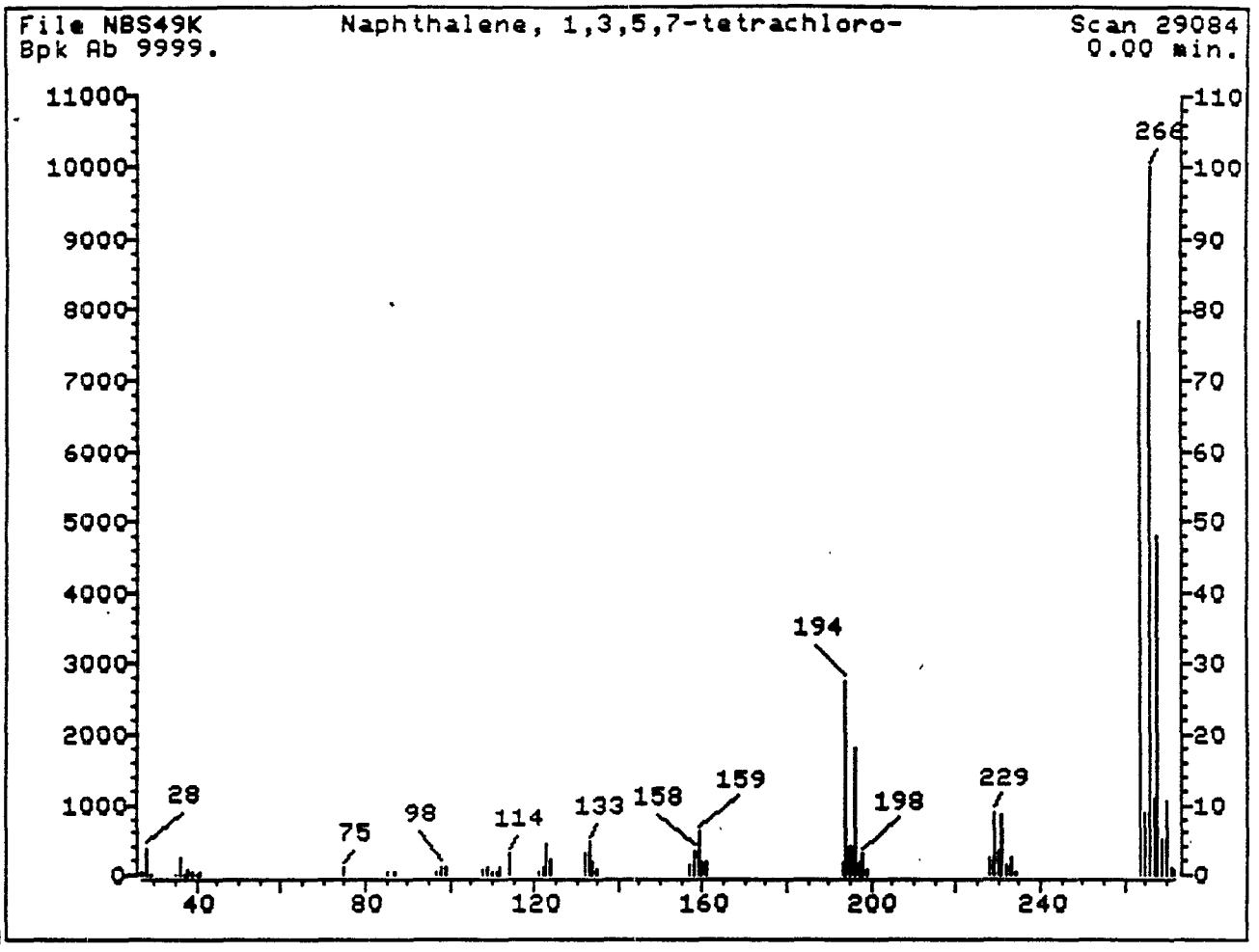
Sum of corrected areas: 11278.

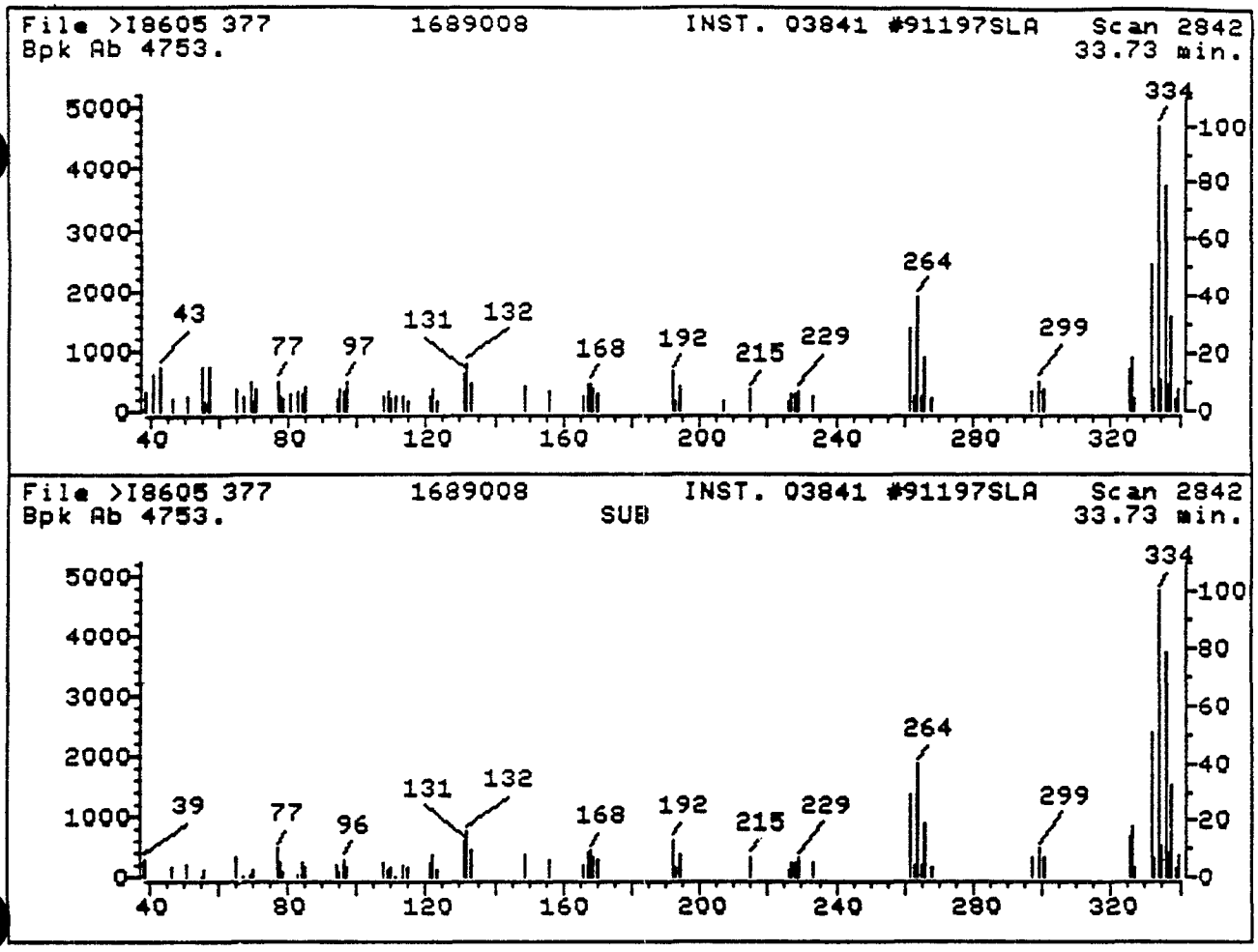


1.	Naphthalene, 1,3,5,7-tetrachloro-	264	C10H4Cl4
2.	Naphthalene, 1,4,6,7-tetrachloro-	264	C10H4Cl4
3.	Tetrachloroisophthalonitrile (ACN)	264	C8Cl4N2
4.	1,2-Benzenedicarbonitrile, 3,4,5,6-tetrachloro-	264	C8Cl4N2
5.	Naphthalene, 1,2,3,4-tetrachloro-	264	C10H4Cl4
6.	10,10-DICHLORO-9-OXA-10-SILA-9,10-DIHYDROPHENANTHREN	266	C12H8Cl2OSi

Sample file: >I8605 Spectrum #: 2417
Search speed: 1 Tilting option: N No. of ion ranges searched: 65

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	93*	53555649	35649	NBS49K	110	37	2	0	91	0	68	89
2.	89*	55720439	35650	NBS49K	97	52	2	0	83	0	66	74
3.	81*	1897456	35647	NBS49K	79	89	3	0	84	8	53	44
4.	79*	1953997	35646	NBS49K	71	87	3	0	90	8	48	36
5.	78*	20020024	35648	NBS49K	56	118	3	0	90	0	55	19
6.	27*	20470988	35667	NBS49K	27	74	3	0	67	36	10	13

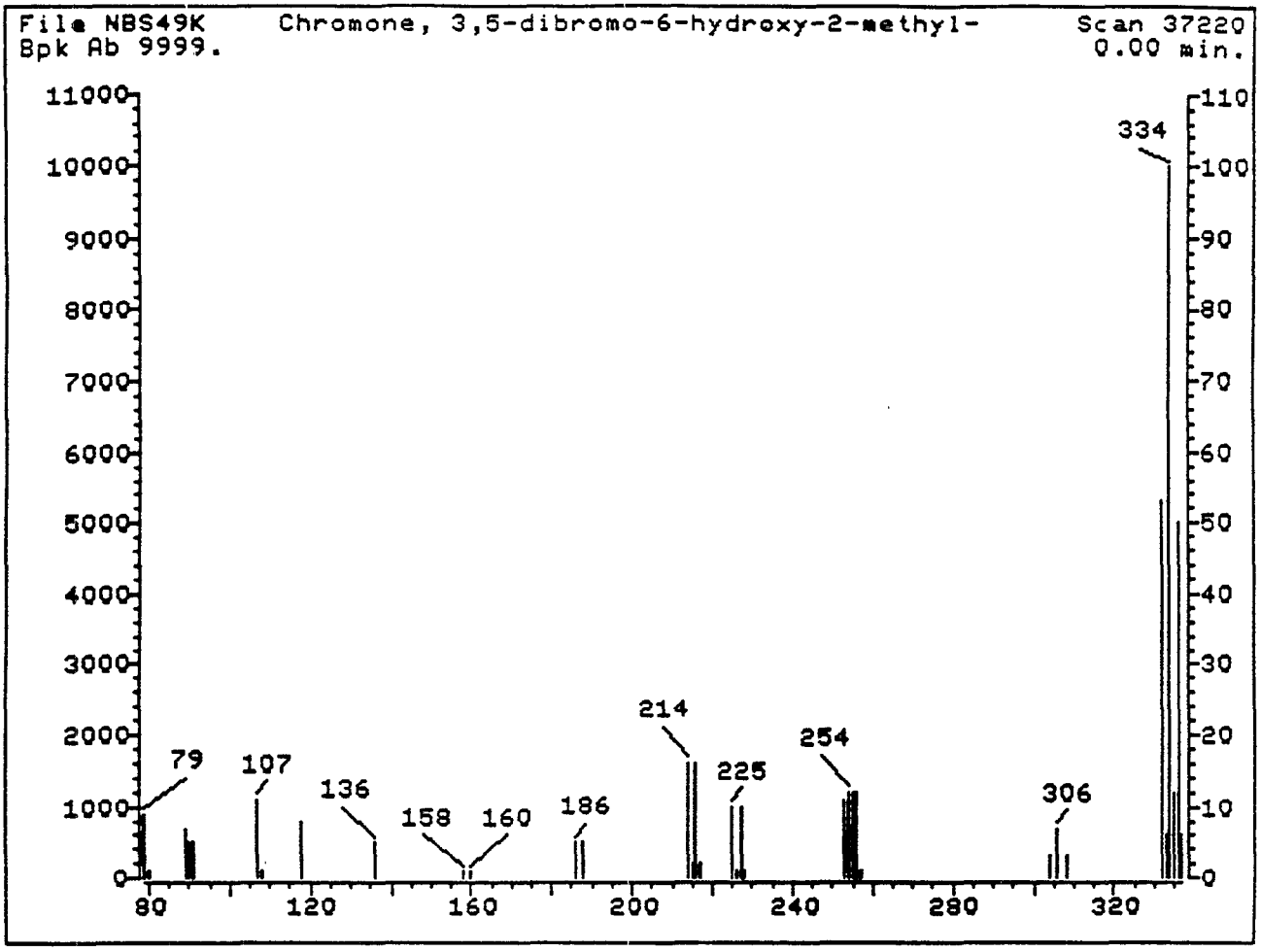

File NBS49K
Bpk Ab 9999.
Naphthalene, 1,3,5,7-tetrachloro-
Scan 29084
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
40
80
120
160
200
240
28
75
98
114
133
158
159
194
198
229
266

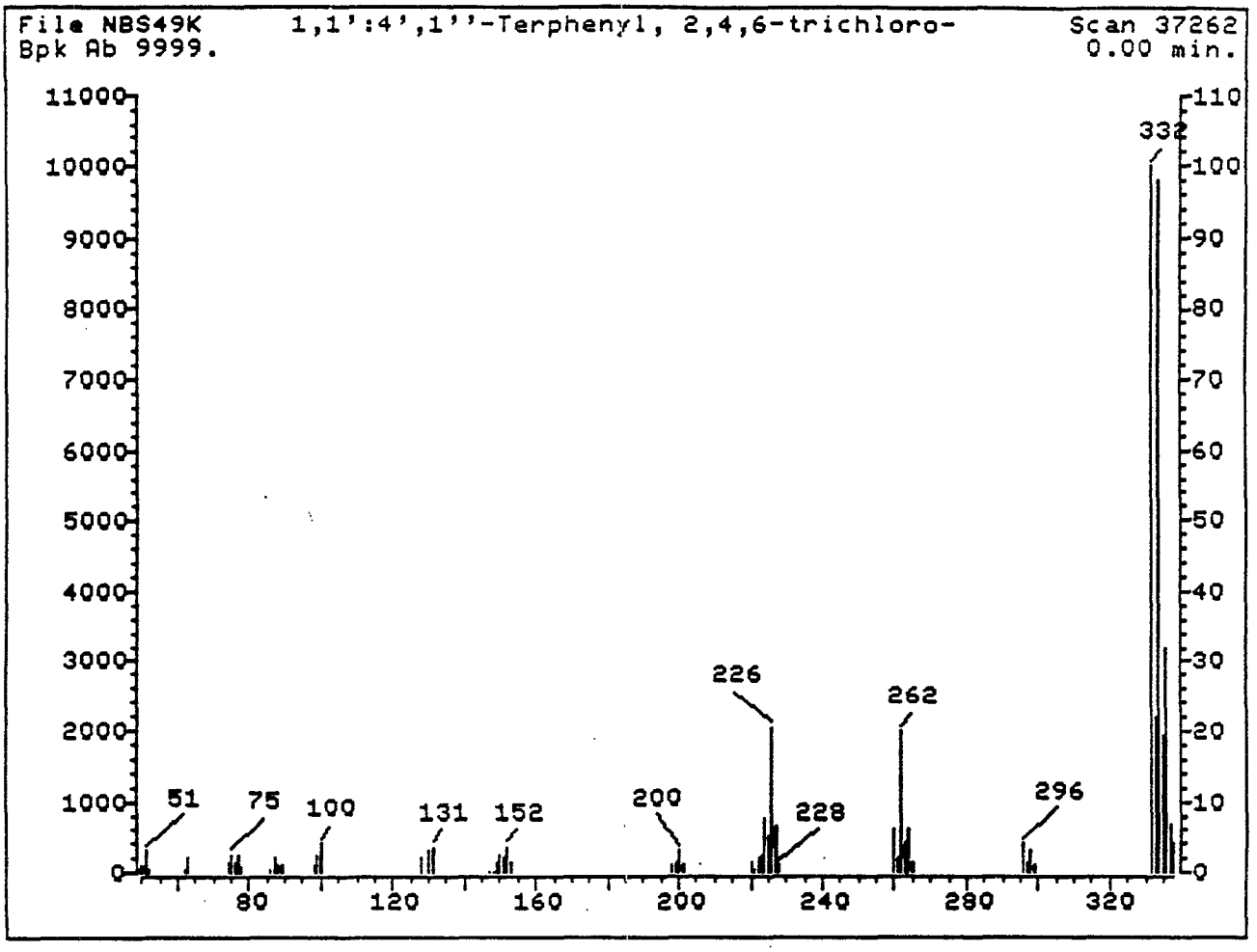


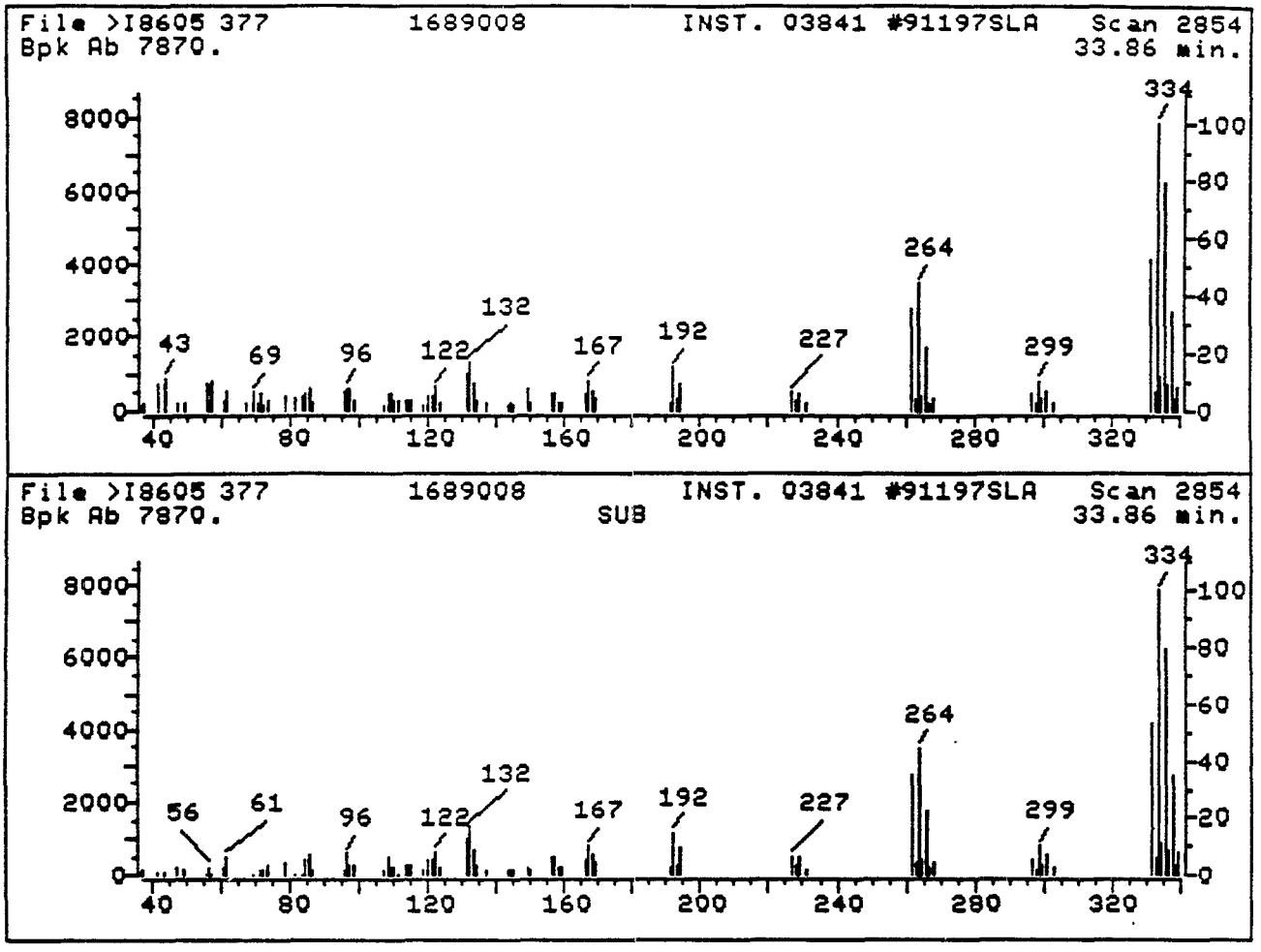
1. Chromone, 3,5-dibromo-6-hydroxy-2-methyl- 332 C10H6Br2O3
2. 1,1':4',1''-Terphenyl, 2,4,6-trichloro- 332 C18H11Cl3

Sample file: >I8605 Spectrum #: 2842
Search speed: 1 Tilting option: N No. of ion ranges searched: 43

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	25*	30095773	41924	NBS49K	34	140	3	0	95	46	7	13
2.	11*	57346619	41926	NBS49K	32	135	2	0	50	63	2	14


File NBS49K
Bpk Ab 9999.
Chromone, 3,5-dibromo-6-hydroxy-2-methyl-
Scan 37220
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
79
107
136
158
160
186
214
225
254
306
334
80
120
160
200
240
280
320

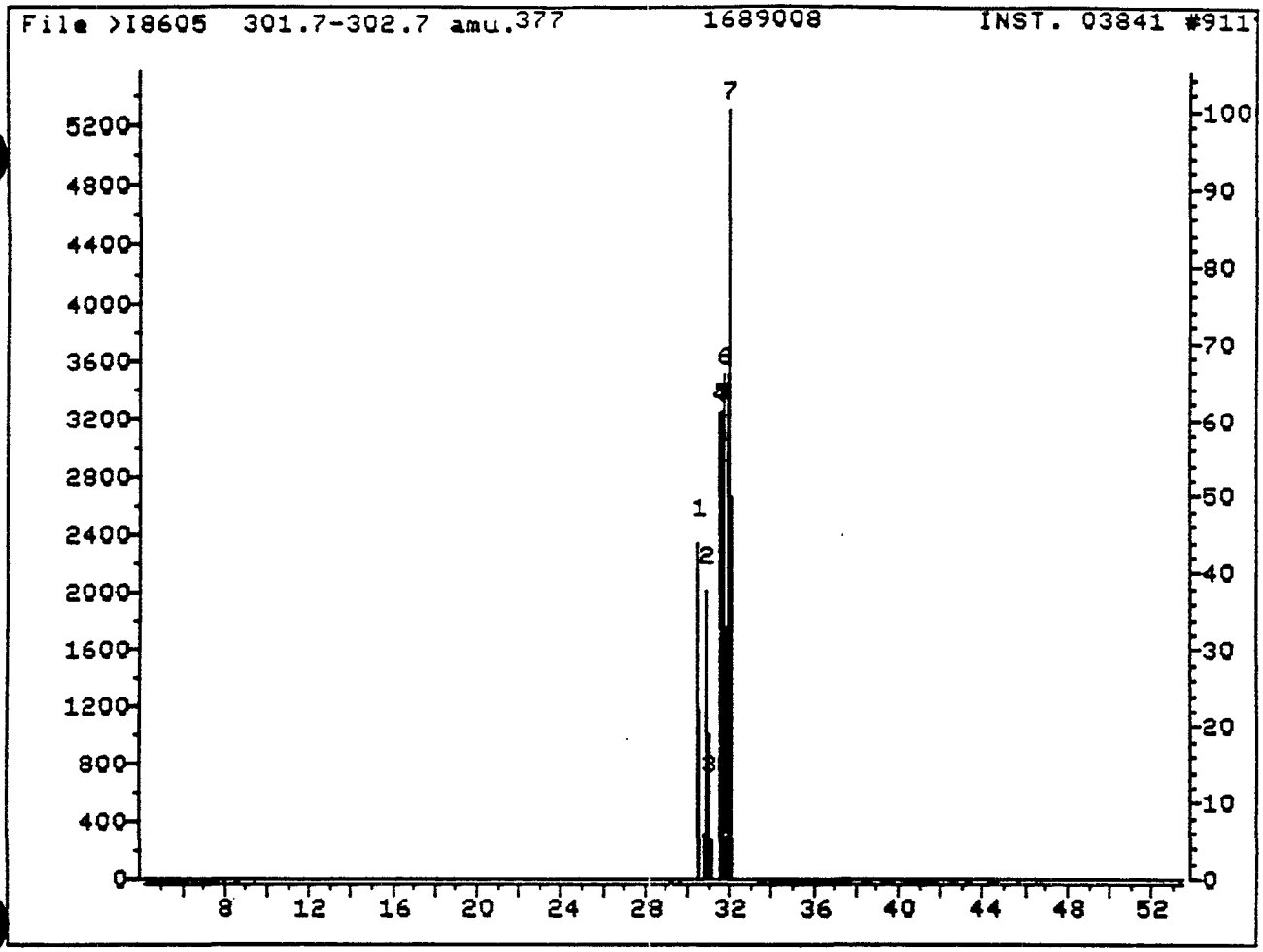

File NBS49K
Bpk Ab 9999.
1,1':4',1''-Terphenyl, 2,4,6-trichloro-
Scan 37262
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
332
226
262
296
51
75
100
131
152
200
228
80
120
160
200
240
280
320



1. Chromone, 3,5-dibromo-6-hydroxy-2-methyl- 332 C10H6Br2O3
2. 1,1':4',1''-Terphenyl, 2,4,6-trichloro- 332 C18H11Cl3

Sample file: >I8605 Spectrum #: 2854
Search speed: 1 Tilting option: N No. of ion ranges searched: 41

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	25*	30095773	41924	NBS49K	34	140	3	0	99	46	7	13
2.	11*	57346619	41926	NBS49K	38	129	3	0	53	64	2	13



>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

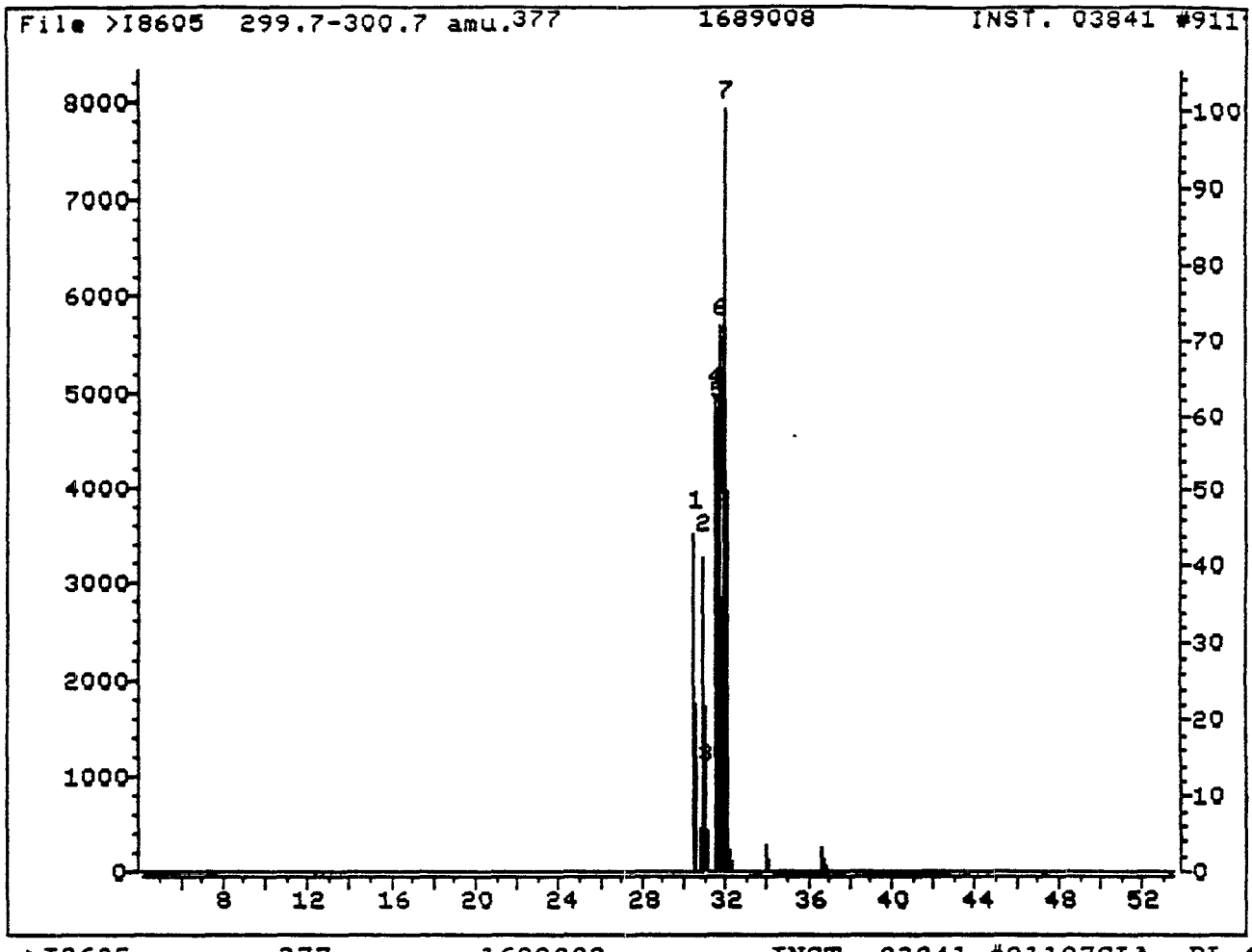
301.7| 302.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 7 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
①	30.45	2523	2527	2531	2329	5714	5714	38.76	10.411
②	30.87	2562	2567	2571	1992	5515	5515	37.41	10.049
3	30.99	2575	2579	2581	556	1472	1472	9.98	2.682
④	31.48	2621	2626	2632	3232	8852	8852	60.04	16.129
⑤	31.61	2633	2638	2642	3240	9098	9098	61.71	16.577
⑥	31.69	2642	2646	2651	3495	9488	9488	64.36	17.288
⑦	31.92	2663	2668	2674	5310	14743	14743	100.00	26.863

Sum of corrected areas: 54882.

(#) - see M/z 230 and 232 for spectra of these particular scans.

particle was unidentified

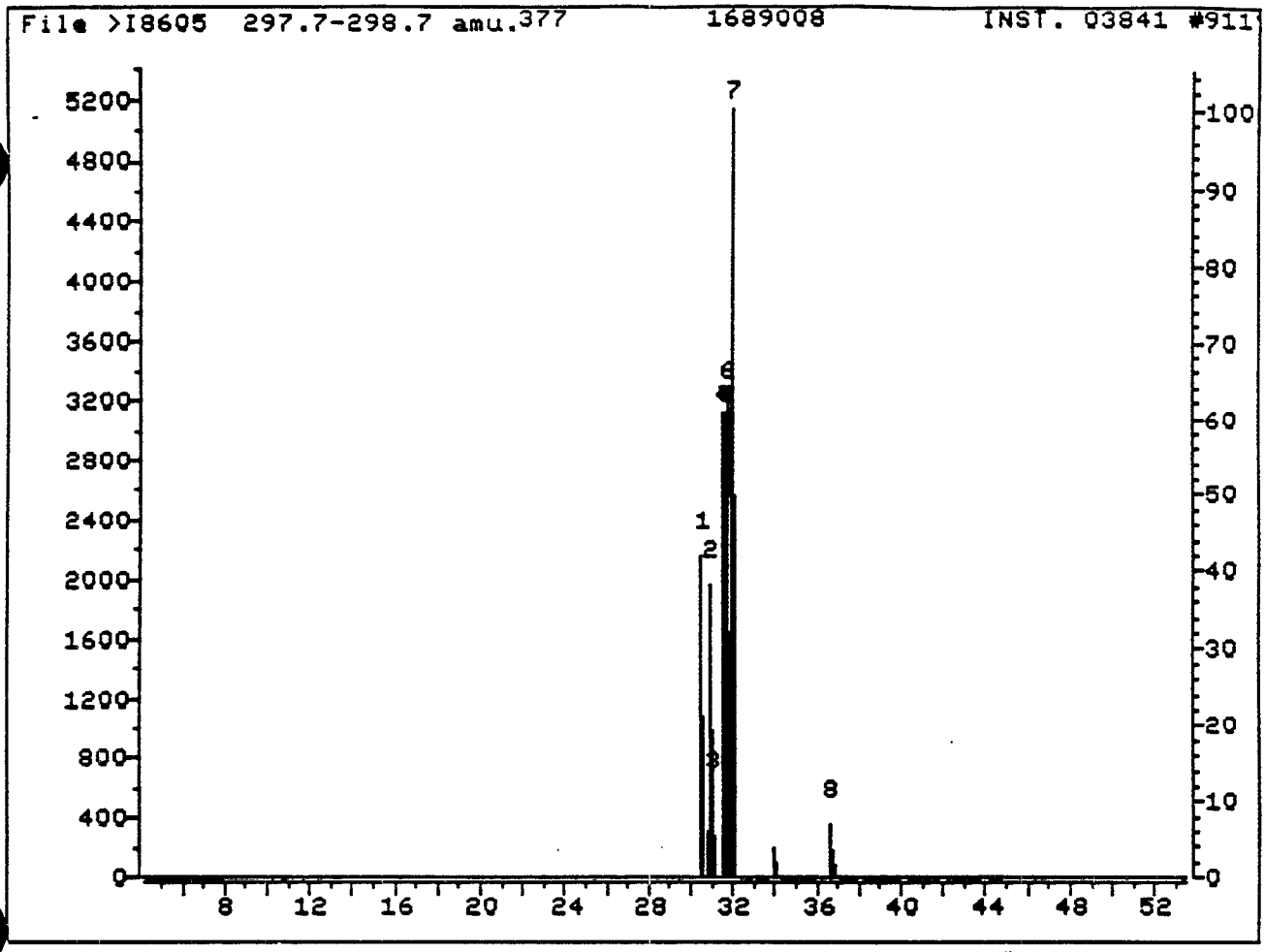


>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

299.7| 300.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 7 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	30.45	2522	2527	2531	3503	9116	9116	40.59	10.685
2	30.87	2562	2567	2571	3259	8746	8746	38.94	10.251
3	30.99	2574	2579	2581	879	2480	2480	11.04	2.907
4	31.48	2621	2626	2632	4963	13854	13854	61.68	16.238
5	31.61	2633	2638	2642	4821	13727	13727	61.11	16.089
6	31.69	2642	2646	2651	5683	14933	14933	66.48	17.503
7	31.92	2663	2668	2674	7929	22461	22461	100.00	26.327

Sum of corrected areas: 85317.

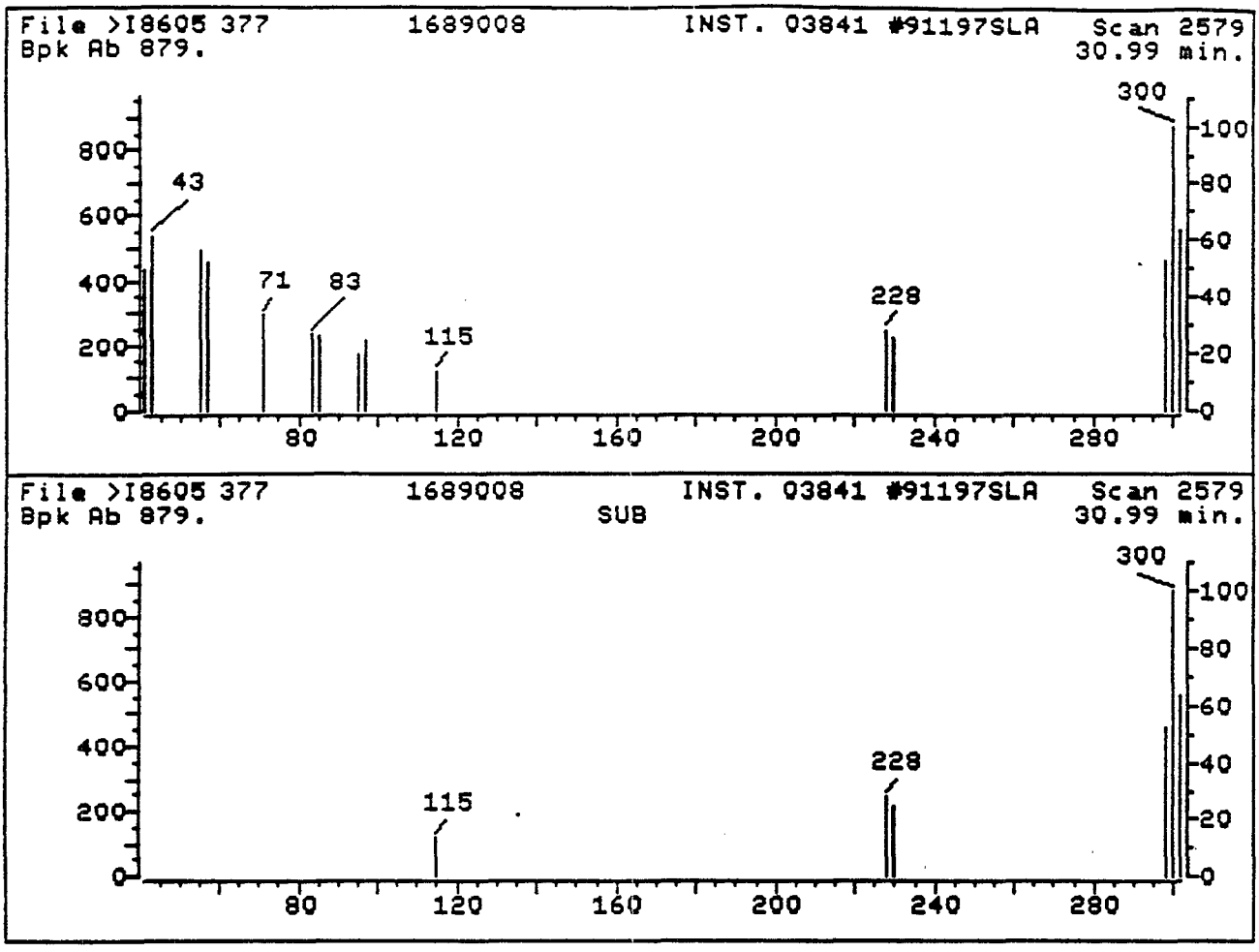


>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

297.7| 298.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 8 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

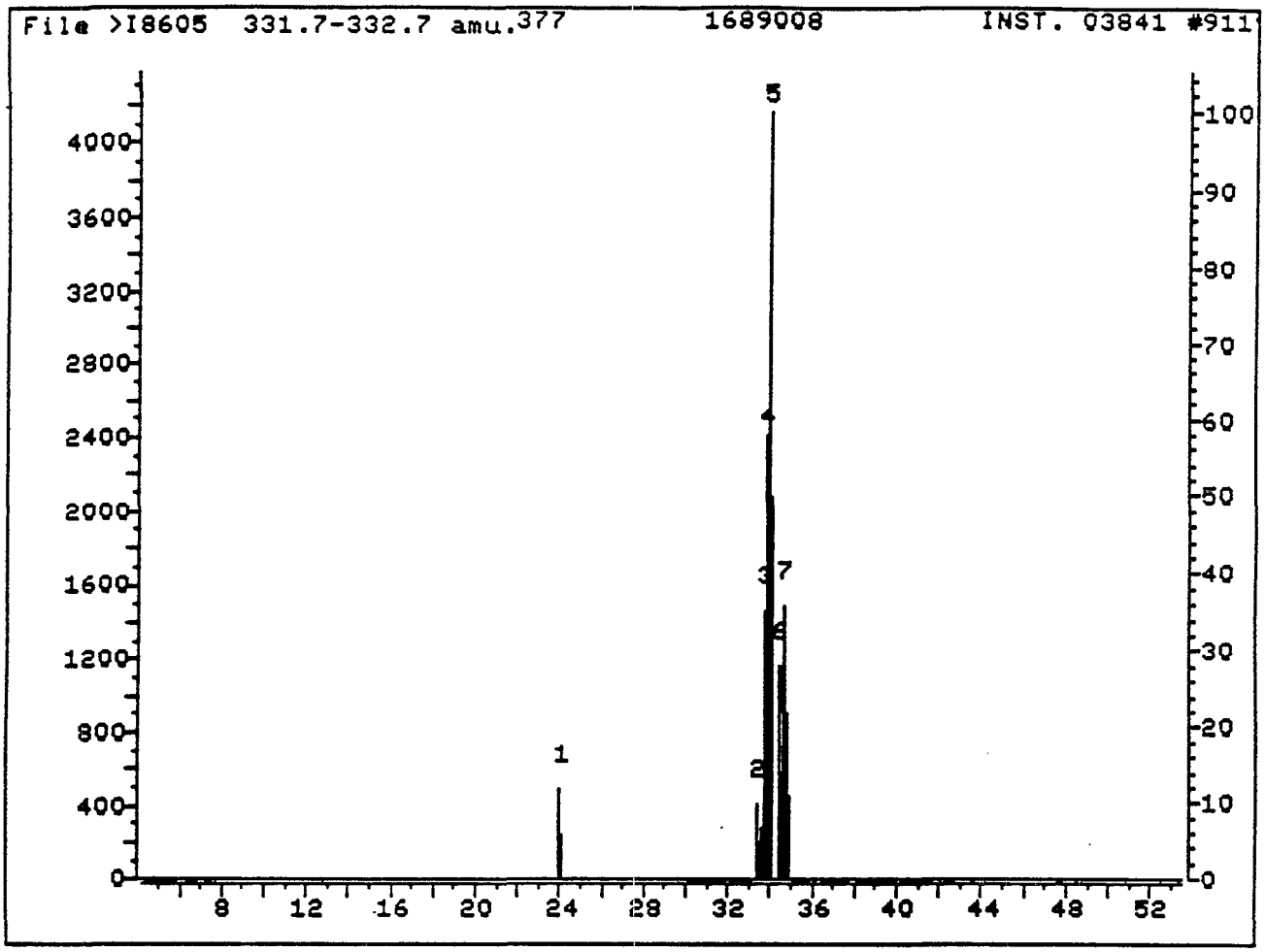
Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	30.45	2523	2527	2531	2152	5609	5609	39.32	10.182
2	30.87	2562	2567	2571	1960	5442	5442	38.15	9.879
3	30.98	2575	2578	2581	548	1491	1491	10.45	2.707
4	31.48	2621	2626	2632	3117	8531	8531	59.80	15.486
5	31.61	2633	2638	2641	3125	8546	8546	59.90	15.514
6	31.69	2641	2646	2651	3287	9483	9483	66.47	17.215
7	31.92	2663	2668	2673	5134	14266	14266	100.00	25.897
8	36.52	3104	3109	3114	361	1719	1719	12.05	3.121

Sum of corrected areas: 55087.



Sample file: >I8605 Spectrum #: 2579

No data base entries were retrieved.



>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

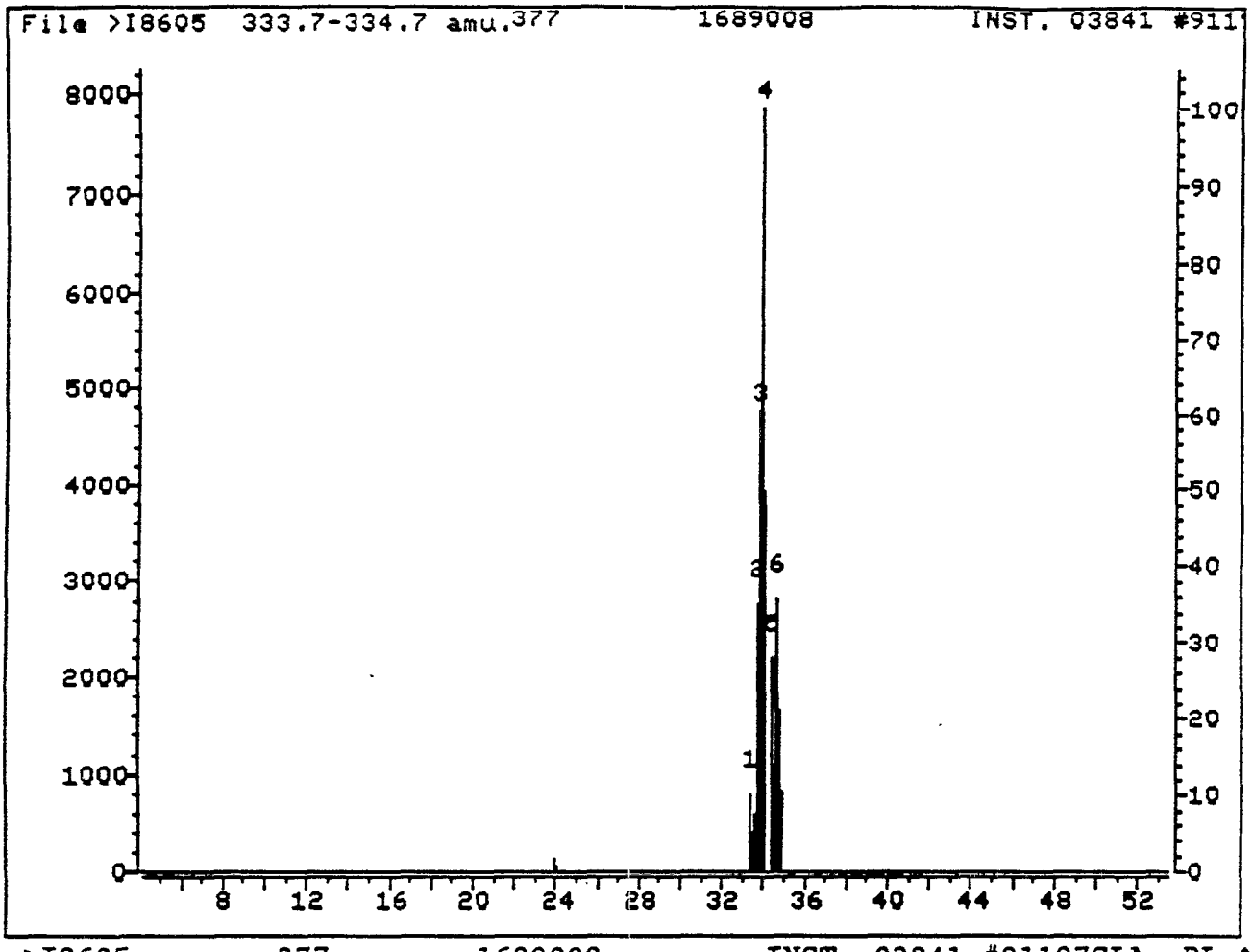
331.7| 332.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 7 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	23.95	1898	1901	1904	487	1045	1045	9.19	3.354
2	33.27	2796	2798	2801	403	893	893	7.85	2.866
3	33.61	2826	2830	2836	1458	3998	3998	35.15	12.833
④	33.73	2837	2842	2848	2410	6636	6636	58.35	21.300
⑤	33.86	2849	2854	2859	4165	11373	11373	100.00	36.505
6	34.36	2898	2902	2906	1165	3018	3018	26.54	9.687
7	34.60	2921	2925	2930	1484	4192	4192	36.86	13.455

Sum of corrected areas: 31155.

④ – See m/z 266, 266 and 268, for spectra of these particular scans.

Identified with Heptane

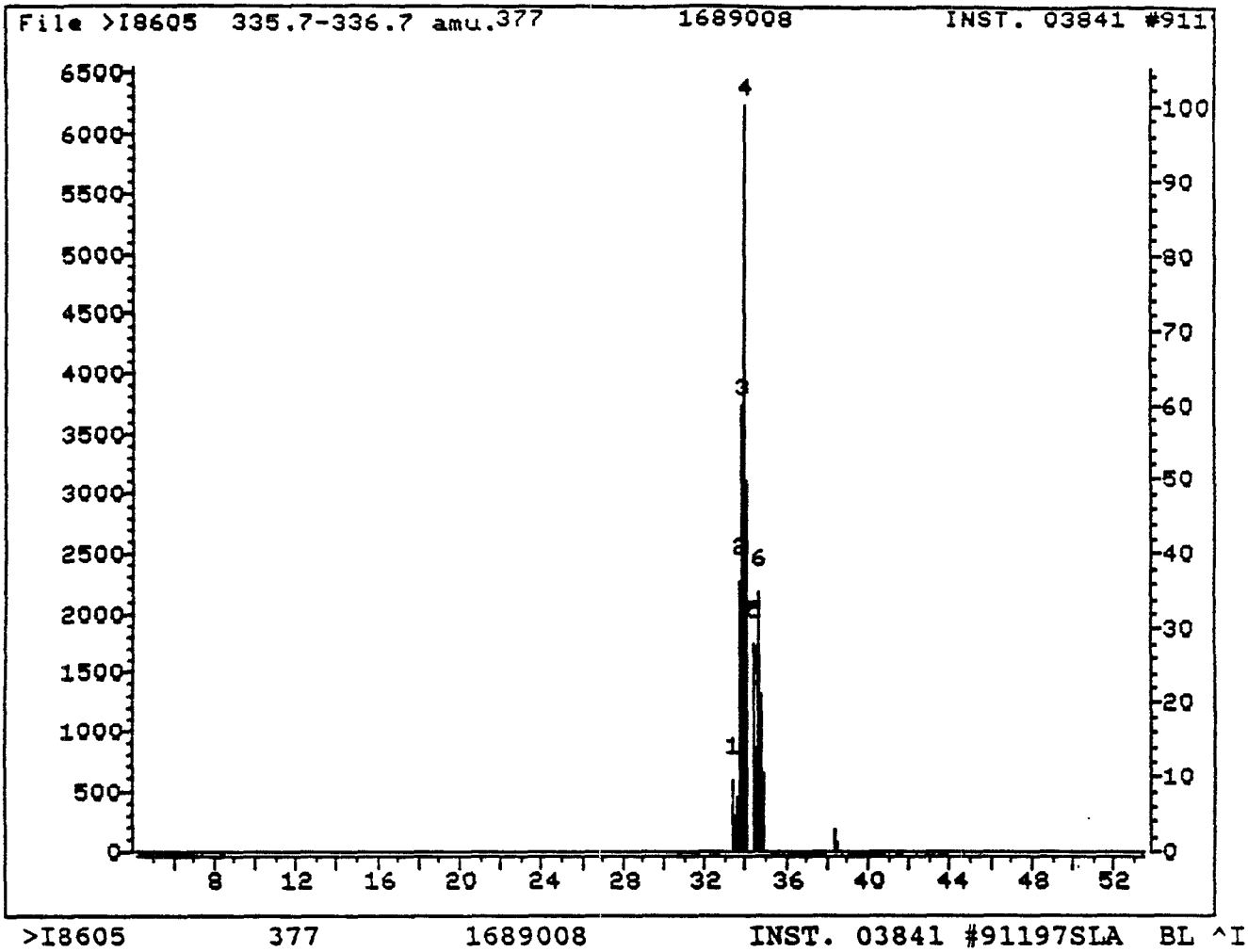


>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

333.7| 334.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 6 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	33.27	2795	2798	2802	785	1975	1975	9.08	3.395
2	33.61	2825	2830	2836	2767	7743	7743	35.60	13.312
3	33.73	2837	2842	2847	4753	12932	12932	59.46	22.233
4	33.86	2848	2854	2859	7870	21750	21750	100.00	37.393
5	34.36	2897	2902	2906	2210	5918	5918	27.21	10.174
6	34.60	2920	2925	2930	2822	7848	7848	36.08	13.492

Sum of corrected areas: 58166.

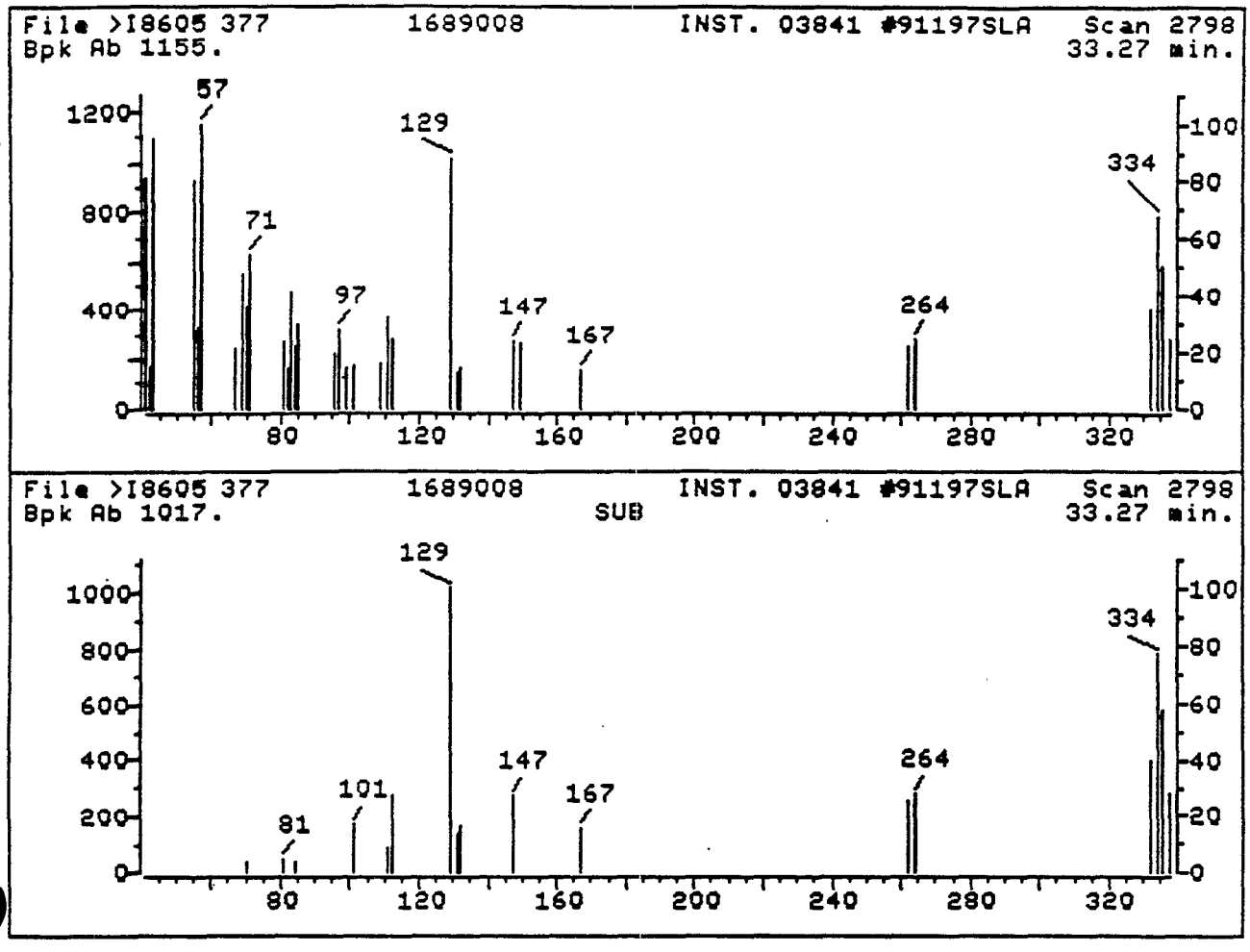


>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

335.7| 336.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 6 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR73 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	33.27	2795	2798	2802	581	1558	1558	8.91	3.378
2	33.61	2826	2830	2834	2273	5976	5976	34.17	12.957
3	33.73	2837	2842	2847	3739	10085	10085	57.66	21.866
4	33.86	2848	2854	2859	6231	17489	17489	100.00	37.919
5	34.36	2897	2902	2906	1743	4794	4794	27.41	10.394
6	34.60	2921	2925	2930	2177	6220	6220	35.57	13.486

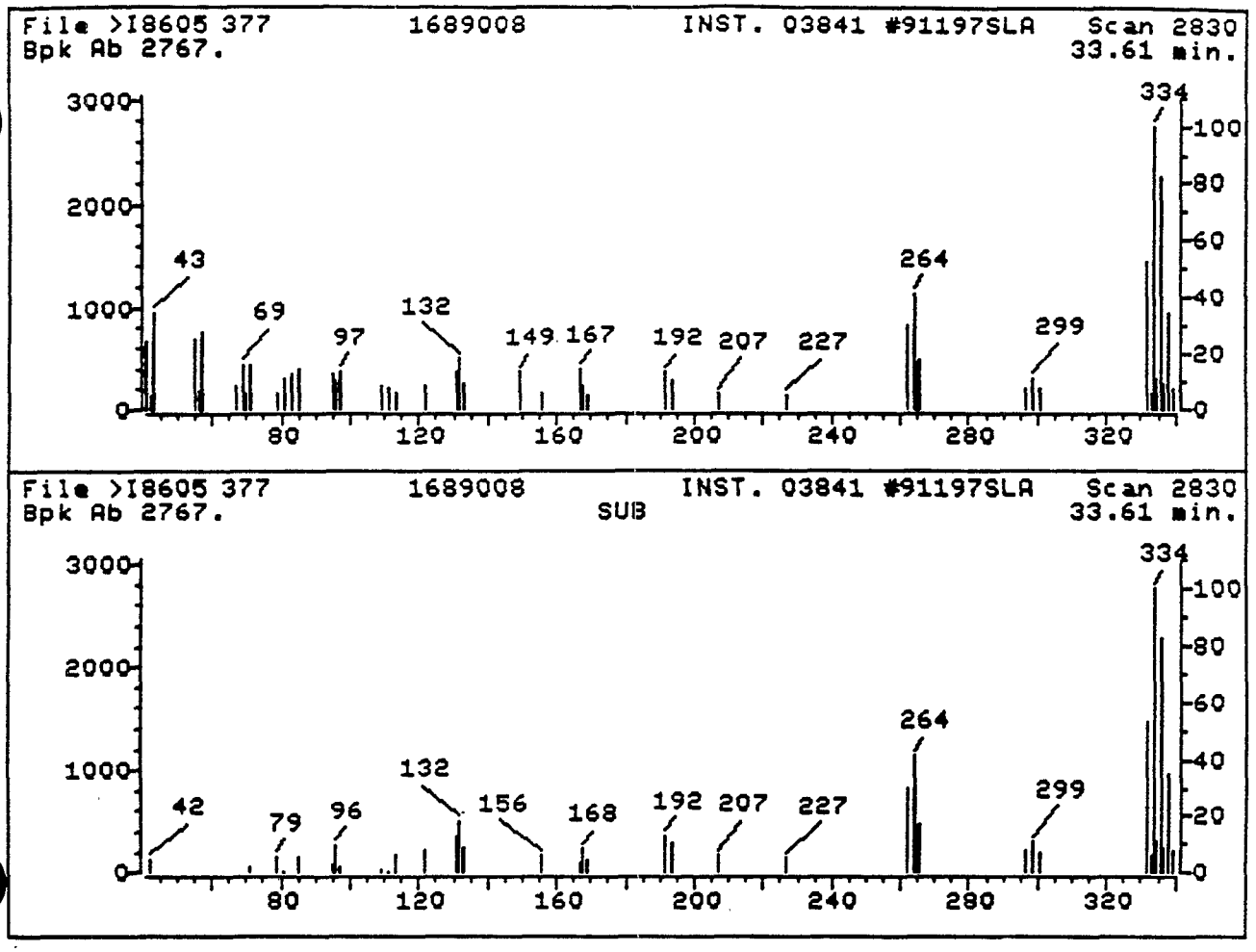
Sum of corrected areas: 46122.



Sample file: >I8605 Spectrum #: 2798

No data base entries were retrieved.

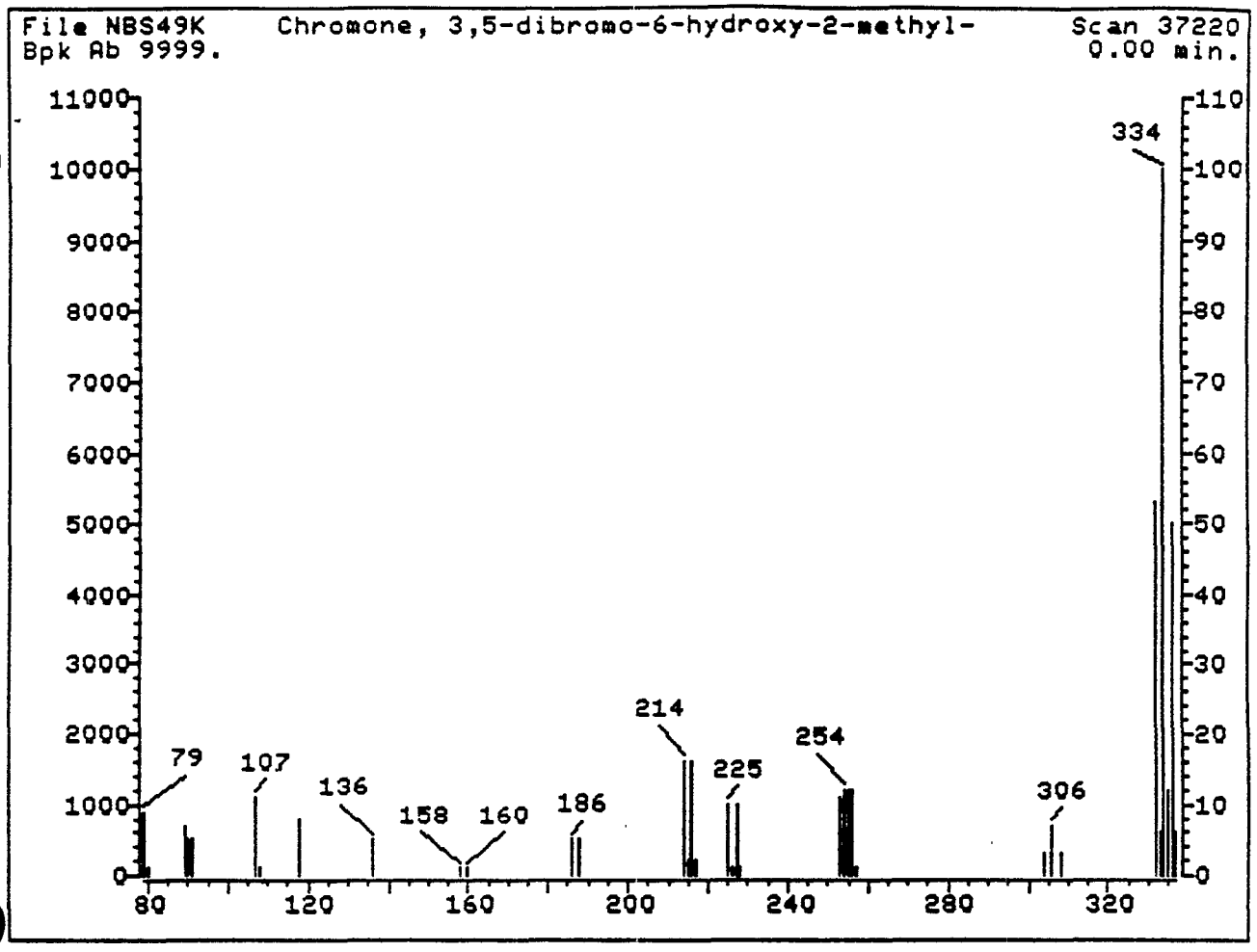
CI..A> CRT,FF;NEW

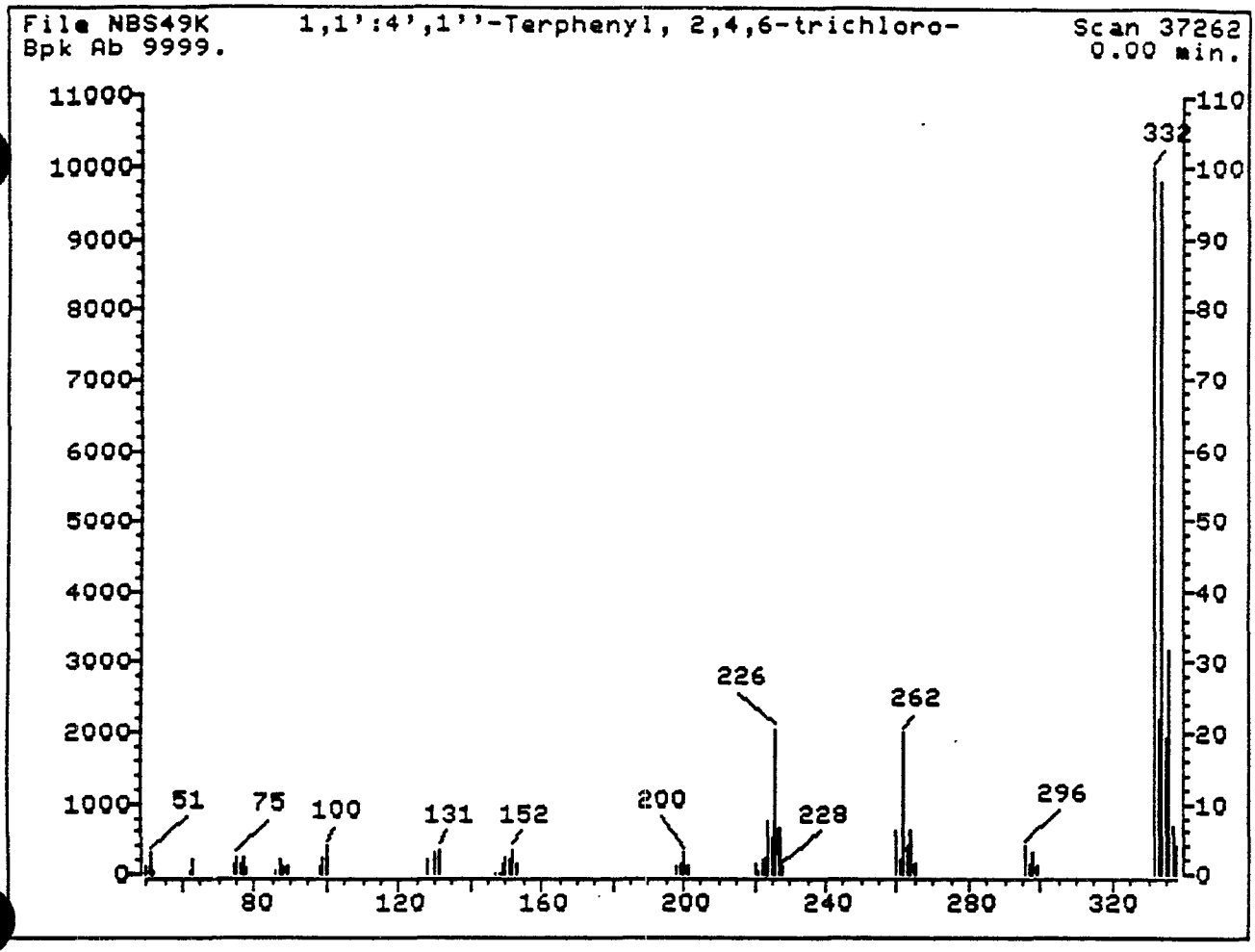


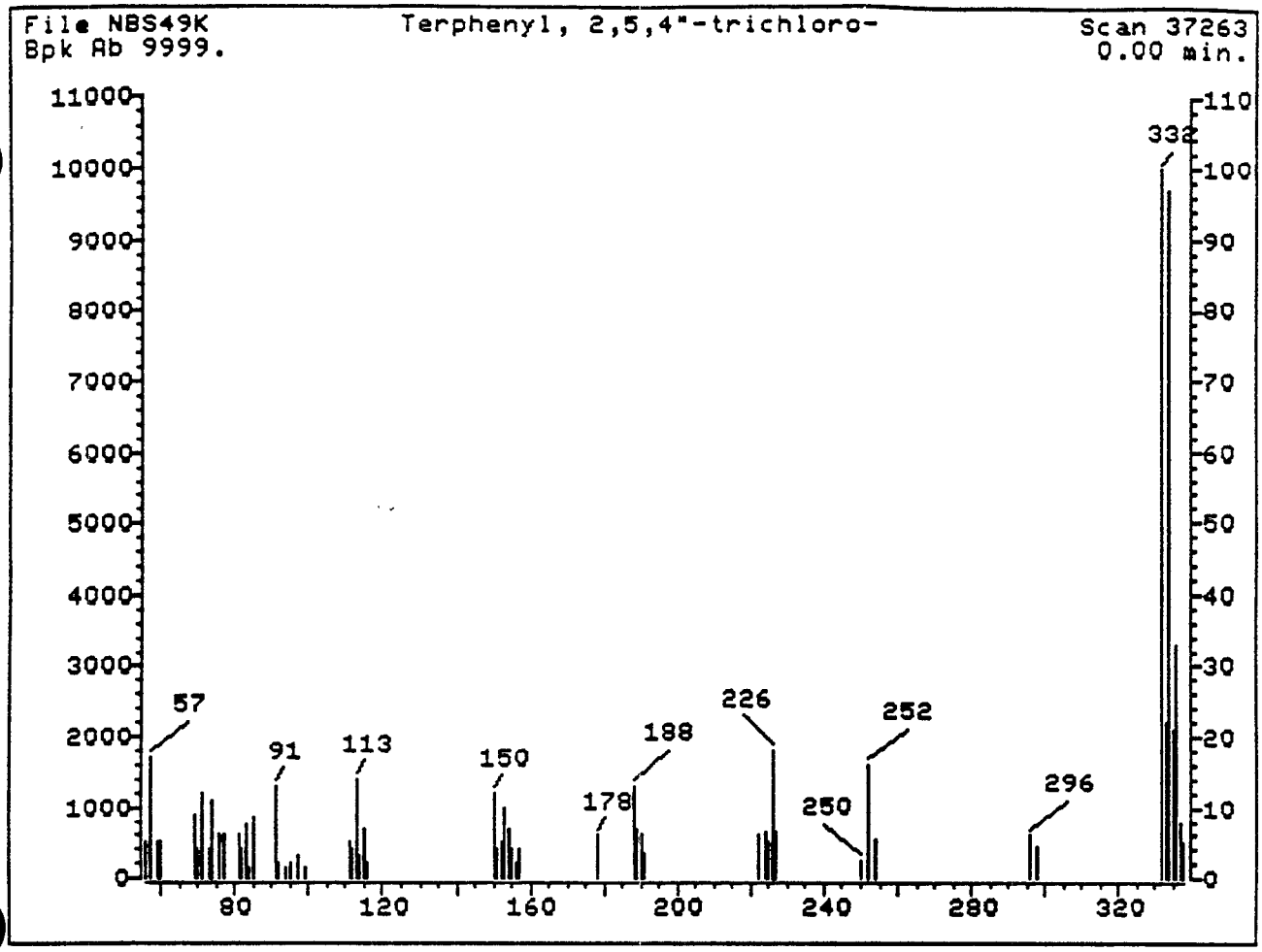
1. Chromone, 3,5-dibromo-6-hydroxy-2-methyl- 332 C10H6Br2O3
2. 1,1':4',1''-Terphenyl, 2,4,6-trichloro- 332 C18H11Cl3
3. Terphenyl, 2,5,4"-trichloro- 332 C18H11Cl3

Sample file: >I8605 Spectrum #: 2830
Search speed: 1 Tilting option: N No. of ion ranges searched: 46

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	27*	30095773	41924	NBS49K	27	147	3	0	99	40	10	13
2.	15*	57346619	41926	NBS49K	25	142	3	0	52	59	3	13
3.	11*	61576930	41927	NBS49K	22	152	3	0	52	63	2	12


File NBS49K
Bpk Ab 9999.
Chromone, 3,5-dibromo-6-hydroxy-2-methyl-
Scan 37220
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
79
107
136
158
160
186
214
225
254
306
334
80
120
160
200
240
280
320


File NBS49K
Bpk Ab 9999.
1,1':4',1''-Terphenyl, 2,4,6-trichloro-
Scan 37262
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
51
75
100
131
152
200
226
228
262
296
332
80
120
160
200
240
280
320


File NBS49K
Bpk Ab 9999.
Terphenyl, 2,5,4"-trichloro-
Scan 37263
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
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113
150
178
188
226
250
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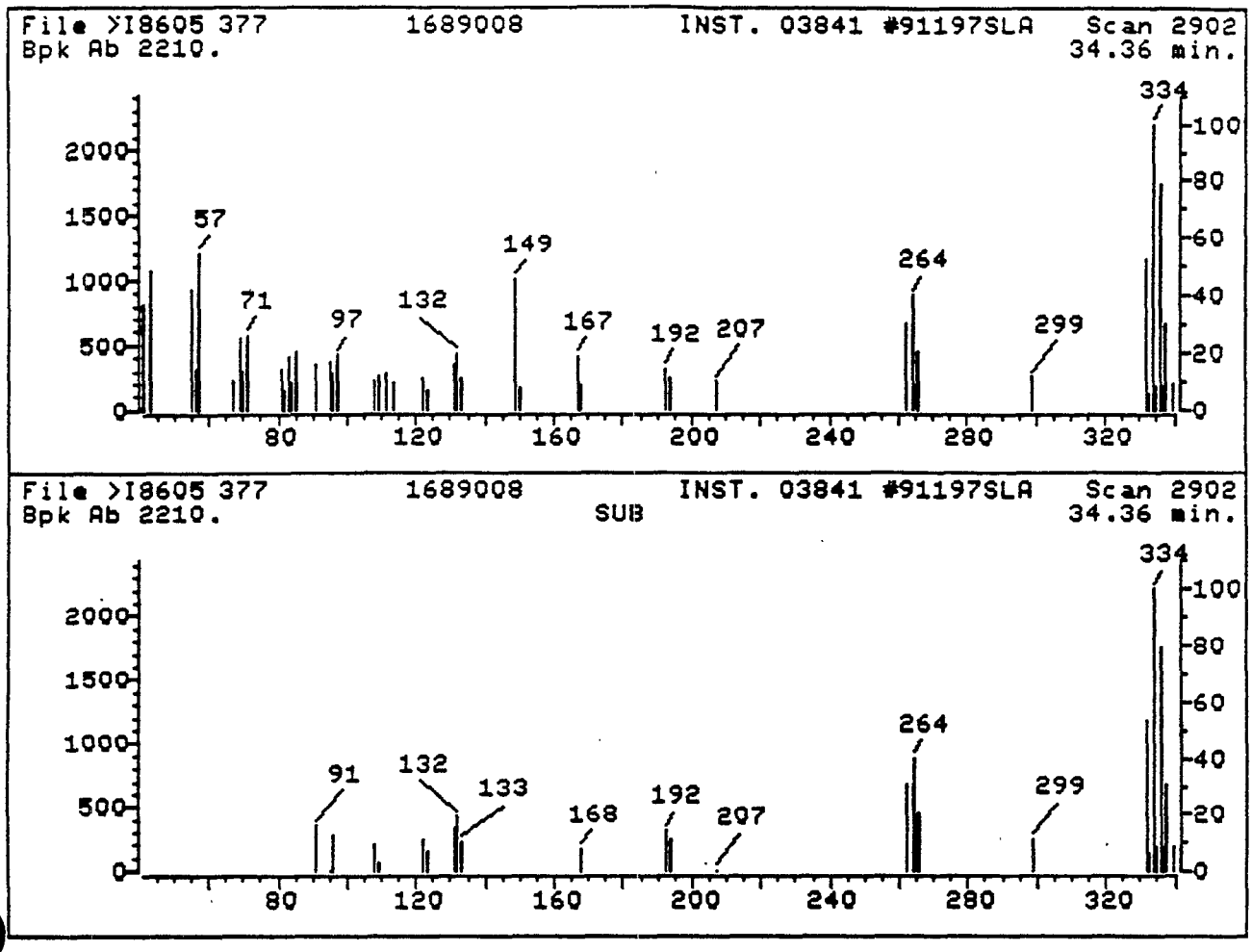
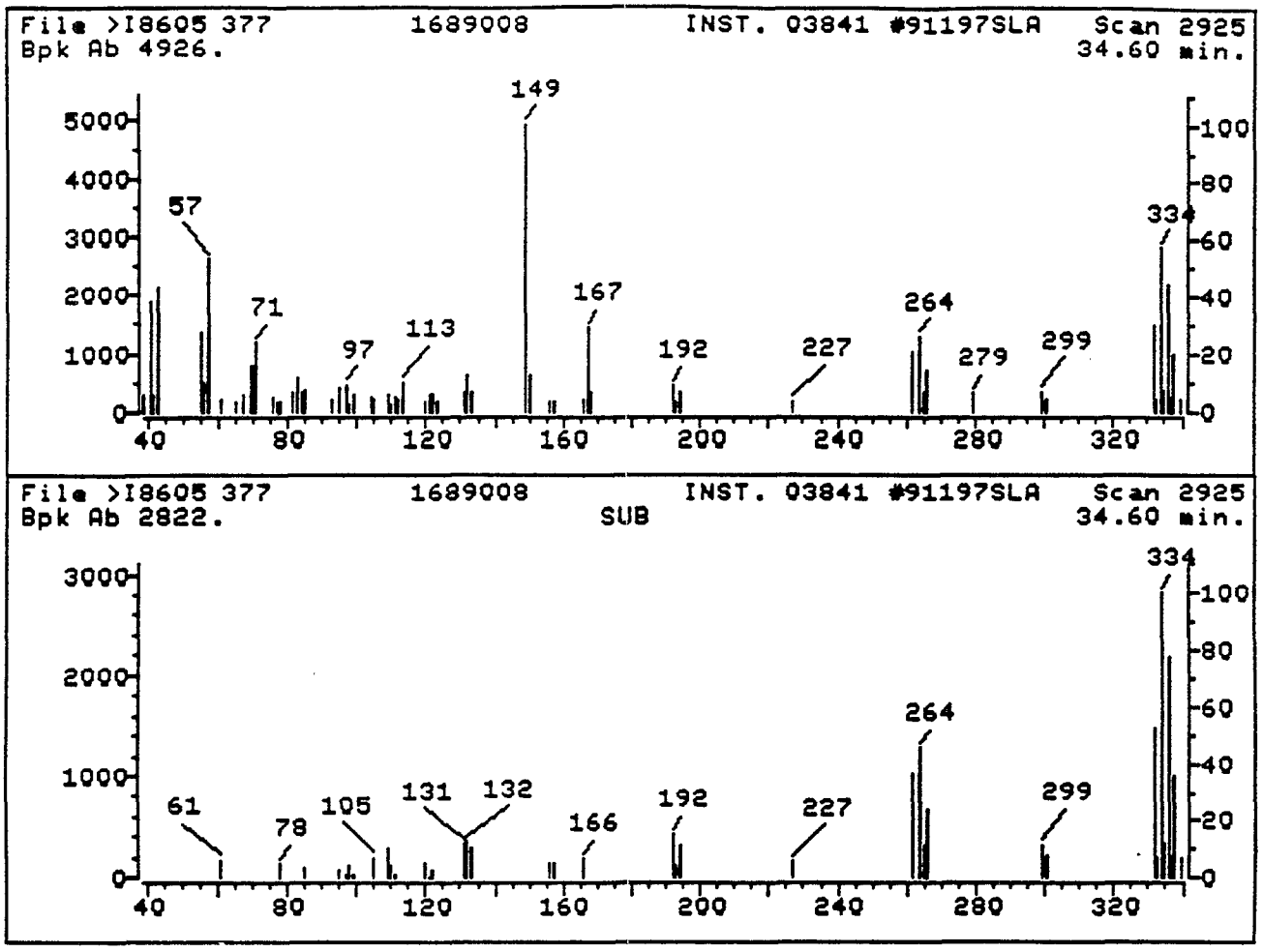
296
332
80
120
160
200
240
280
320



1. Chromone, 3,5-dibromo-6-hydroxy-2-methyl- 332 C10H6Br2O3

Sample file: >I8605 Spectrum #: 2902
Search speed: 1 Tilting option: N No. of ion ranges searched: 95

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	25*	30095773	41924	NBS49K	27	147	3	0	99	46	7	13

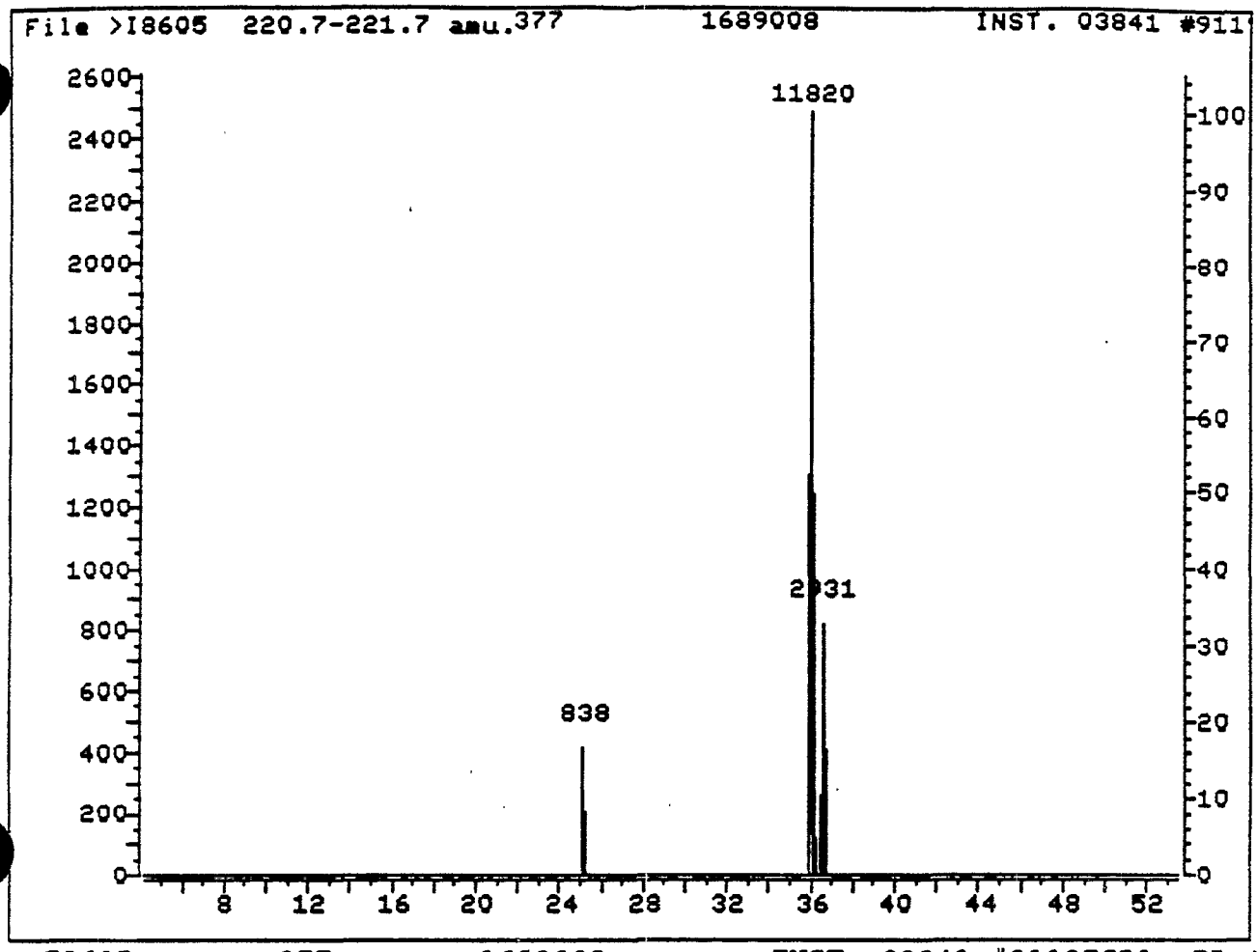


1. Chromone, 3,5-dibromo-6-hydroxy-2-methyl- 332 C10H6Br2O3
2. 1,1':4',1''-Terphenyl, 2,4,6-trichloro- 332 C18H11Cl3

Sample file: >I8605 Spectrum #: 2925
Search speed: 1 Tilting option: N No. of ion ranges searched: 65

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	25*	30095773	41924	NBS49K	43	131	3	0	99	45	8	13
2.	11*	57346619	41926	NBS49K	25	142	3	0	52	62	2	13

L



220.7| 221.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 3 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	25.10	2009	2012	2014	416	838	838	7.09	5.376
2	35.91	3044	3050	3060	2483	11820	11820	100.00	75.823
3	36.48	3101	3105	3110	816	2931	2931	24.80	18.802

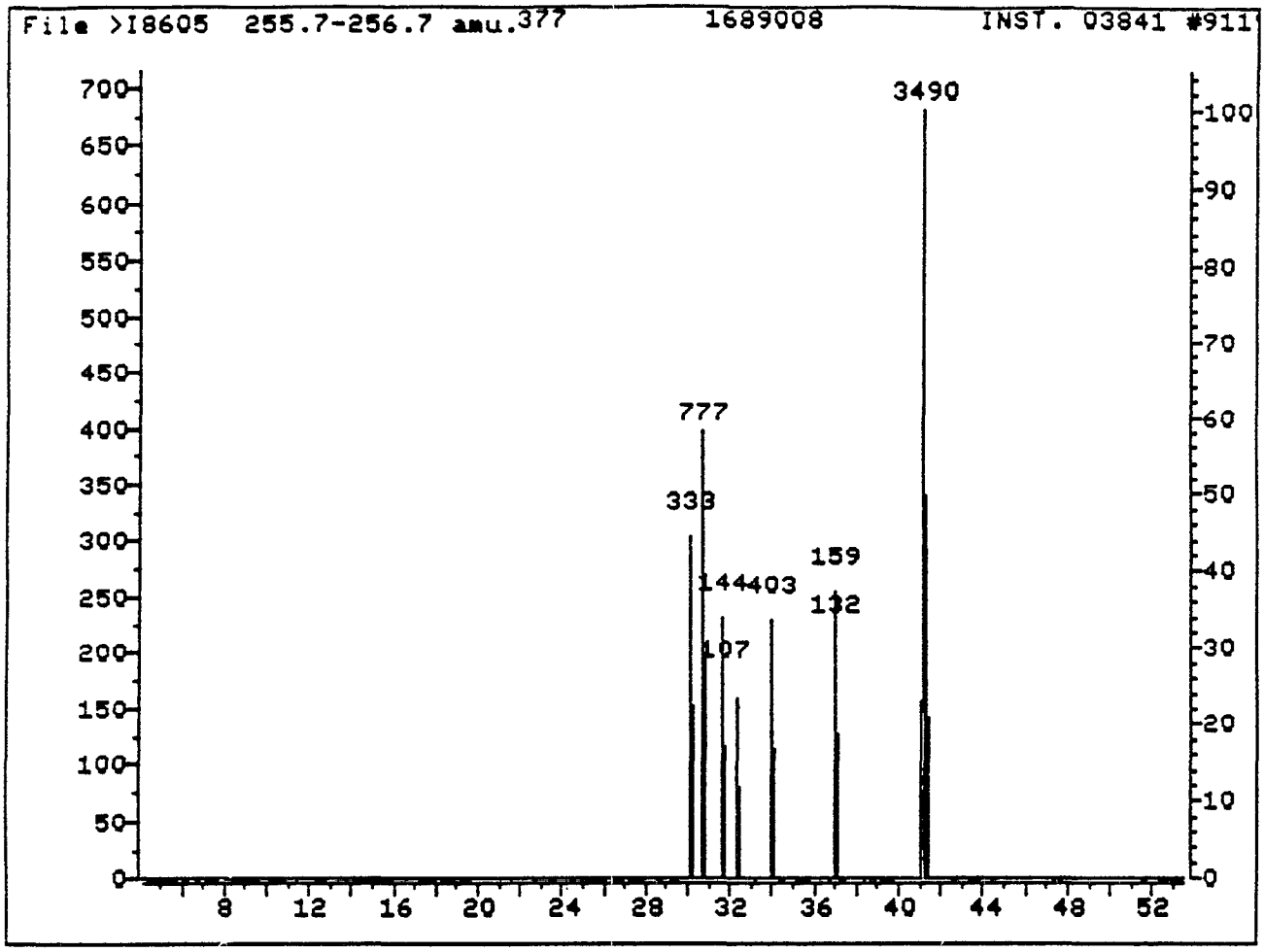
Sum of corrected areas: 15589.

Trichlorobiphenyl

M/z 188, 221, 256

AR001593

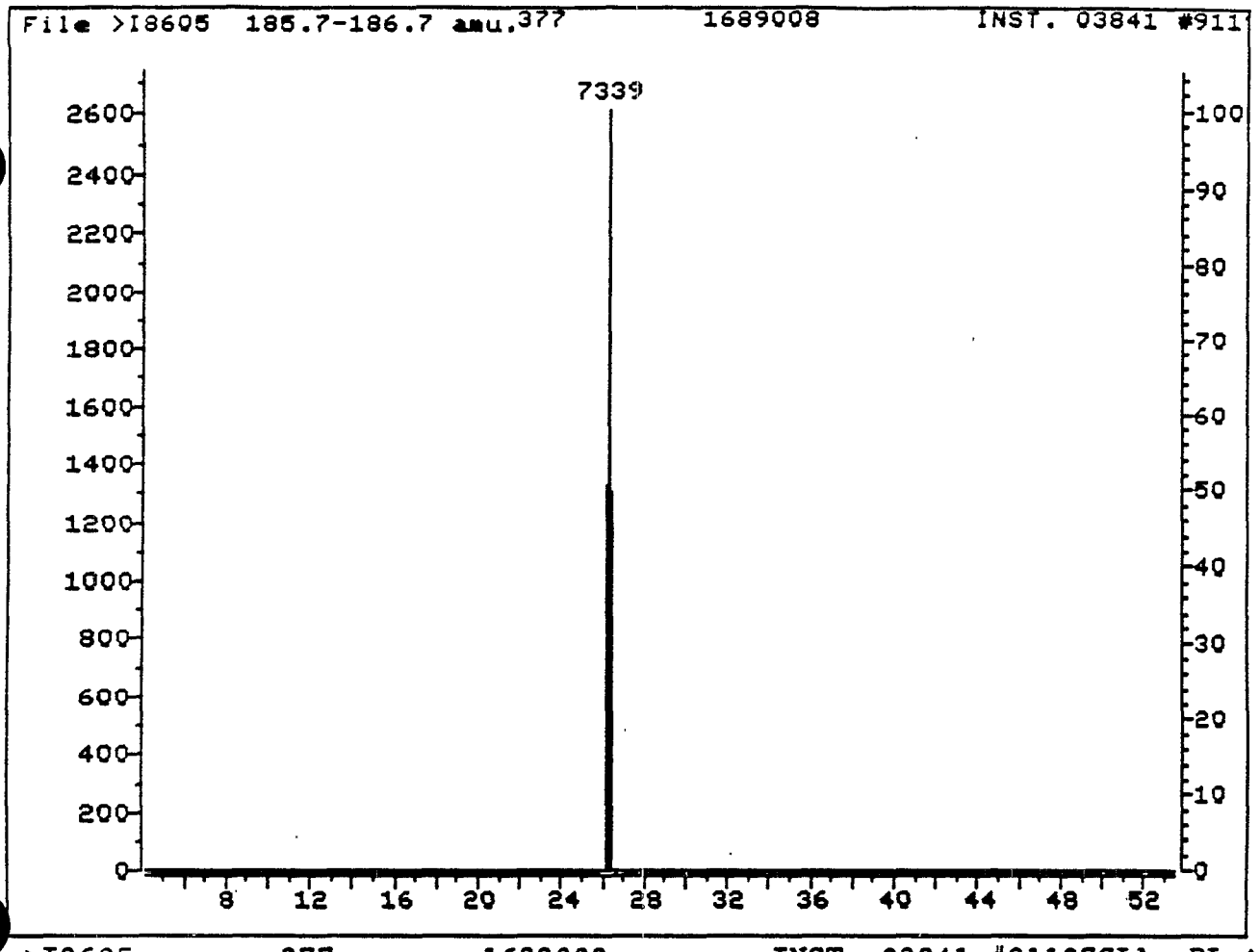
No matches. AS 8/2/91



255.7| 256.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 8 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	30.06	2487	2489	2490	303	333	333	9.54	6.005
2	30.62	2541	2543	2546	396	777	777	22.26	14.013
3	31.60	2636	2637	2638	231	144	144	4.13	2.597
4	31.62	2638	2639	2640	172	107	107	3.07	1.930
5	33.91	2856	2859	2860	229	403	403	11.55	7.268
6	36.85	3139	3140	3141	254	159	159	4.56	2.867
7	36.87	3141	3142	3143	211	132	132	3.78	2.381
8	41.13	3541	3549	3556	681	3490	3490	100.00	62.940

Sum of corrected areas: 5545.



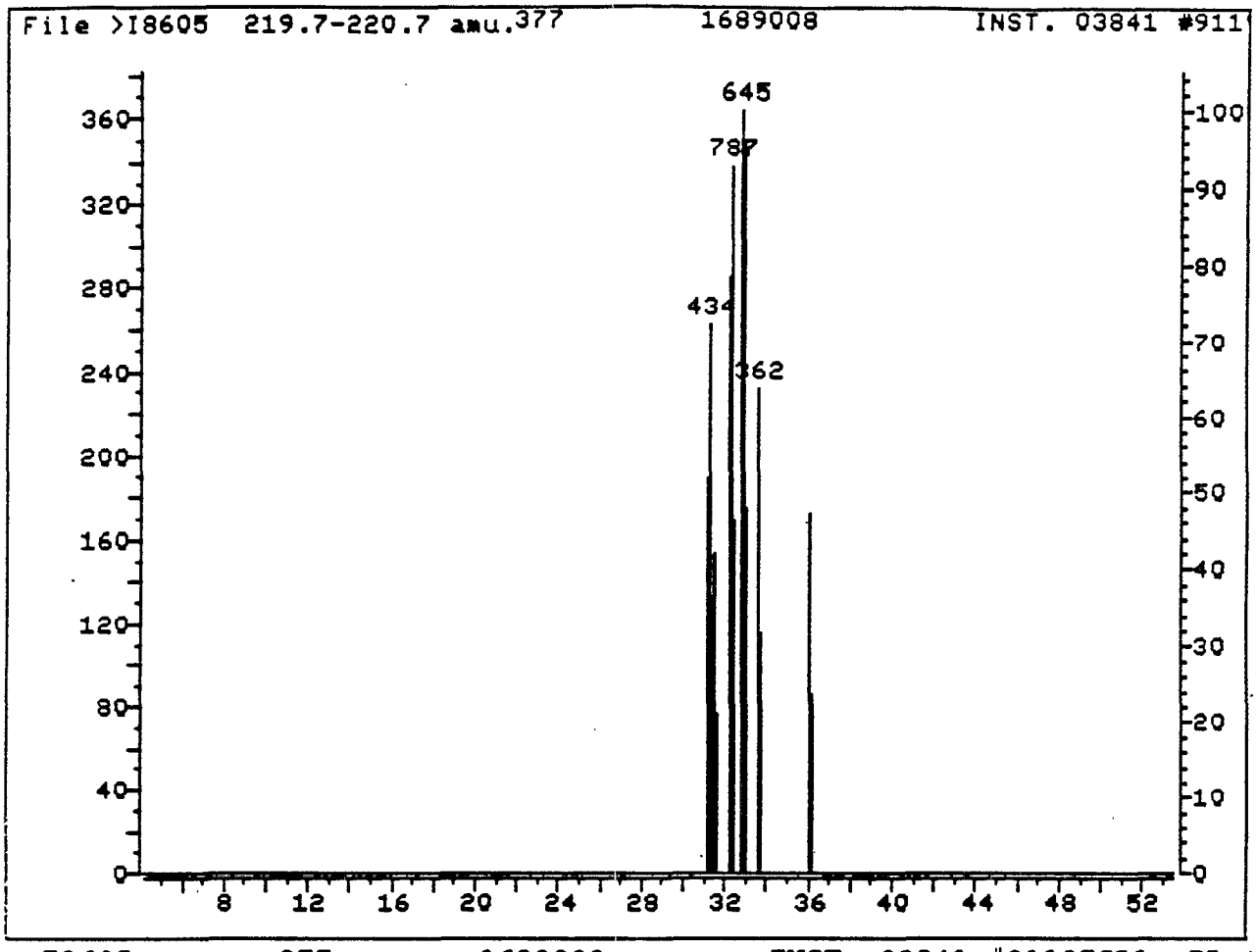
>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

185.7| 186.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 1 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	26.17	2110	2115	2119	2614	7339	7339	100.00	100.000

Sum of corrected areas: 7339.

AR001595



219.7| 220.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 4 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	31.18	2595	2597	2599	262	434	434	55.15	19.479
2	32.21	2693	2696	2699	337	787	787	100.00	35.323
3	32.77	2748	2750	2752	364	645	645	81.96	28.950
4	33.50	2819	2820	2823	231	362	362	46.00	16.248

Sum of corrected areas: 2228.

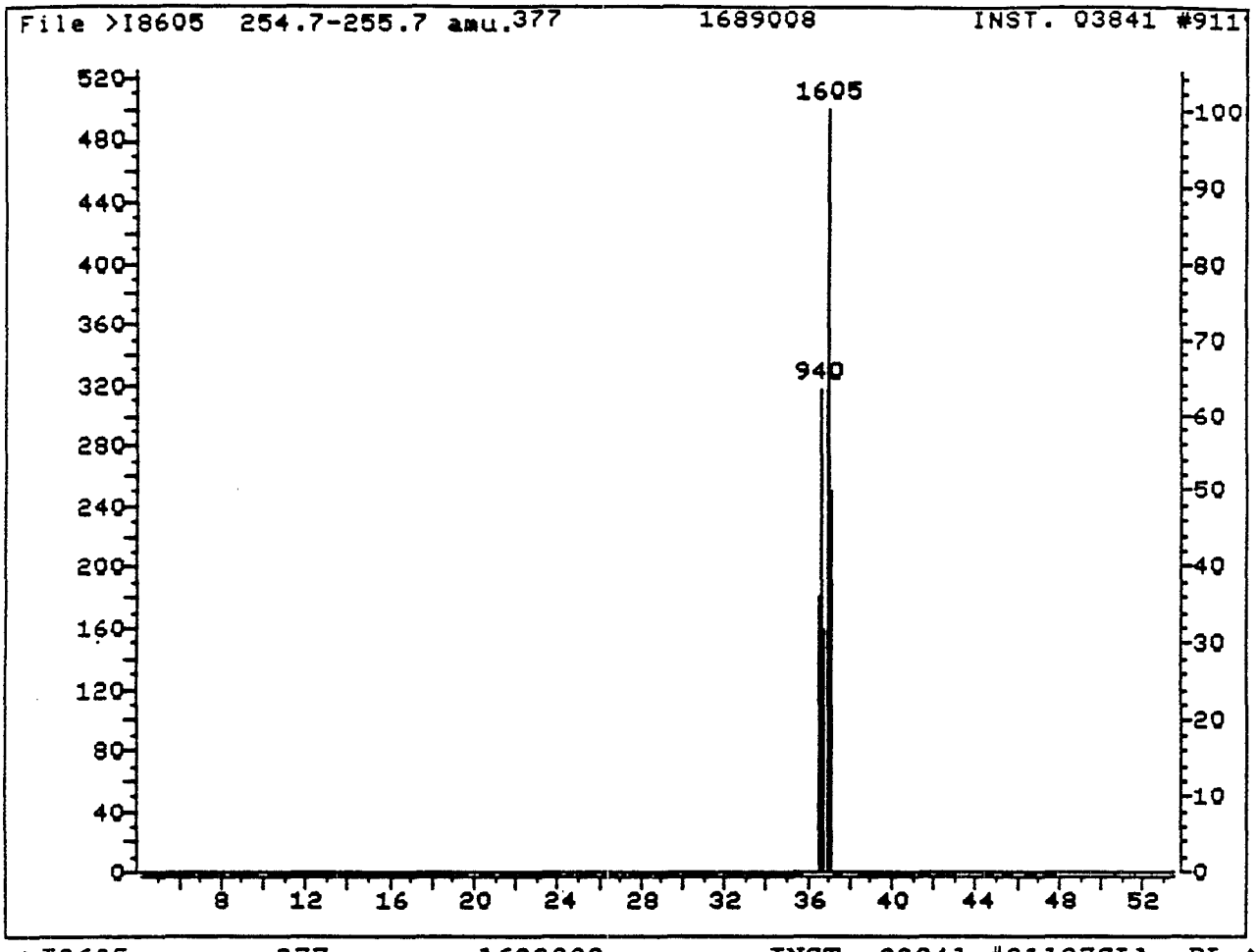
Tetrachlorobiphenyl

M/z = 220, 255 and 292

No matches.

AR001596

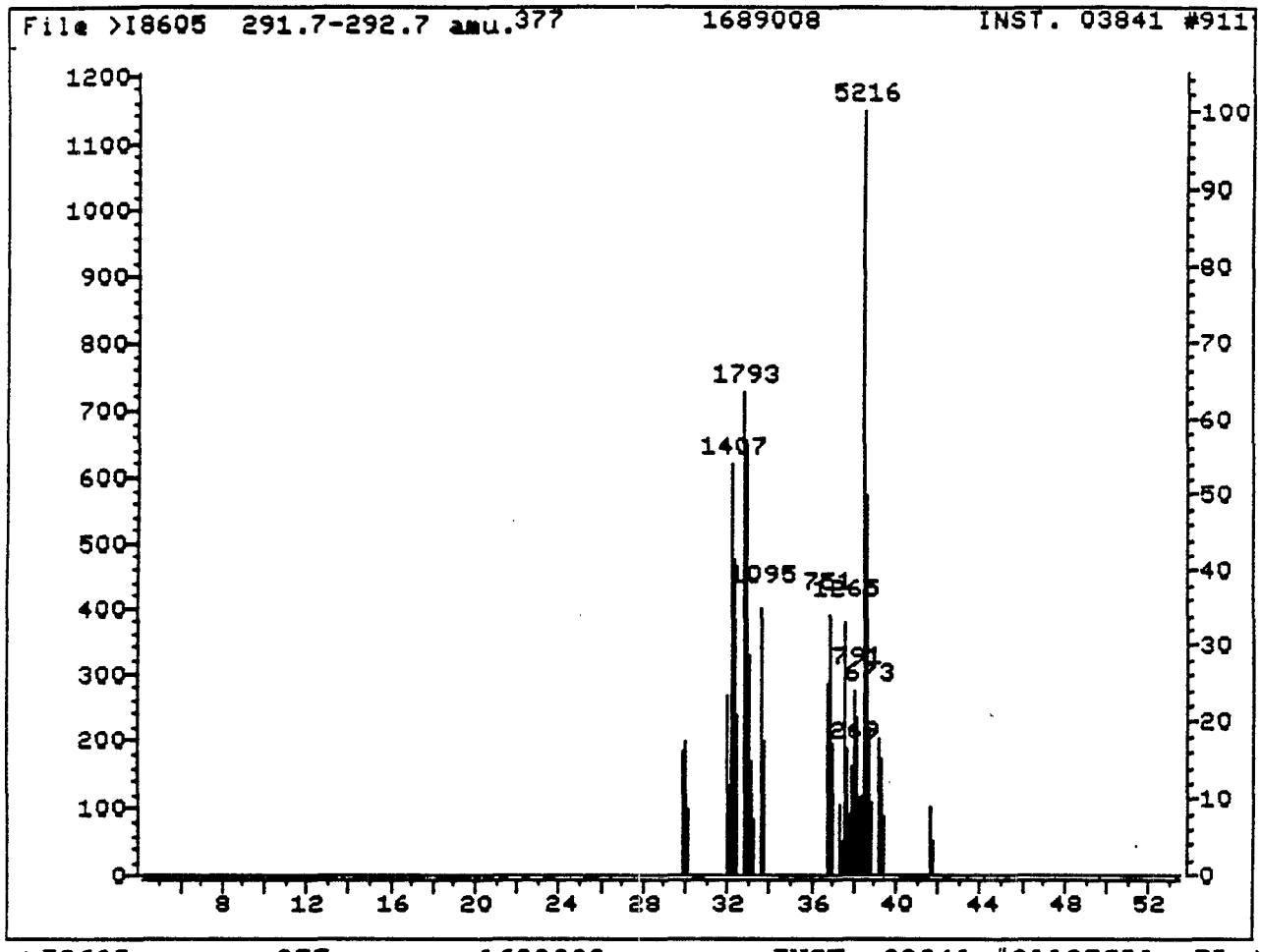
RJS 8/2/91



254.7| 255.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 2 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	36.47	3101	3104	3108	316	940	940	58.57	36.935
2	36.86	3137	3141	3145	500	1605	1605	100.00	63.065

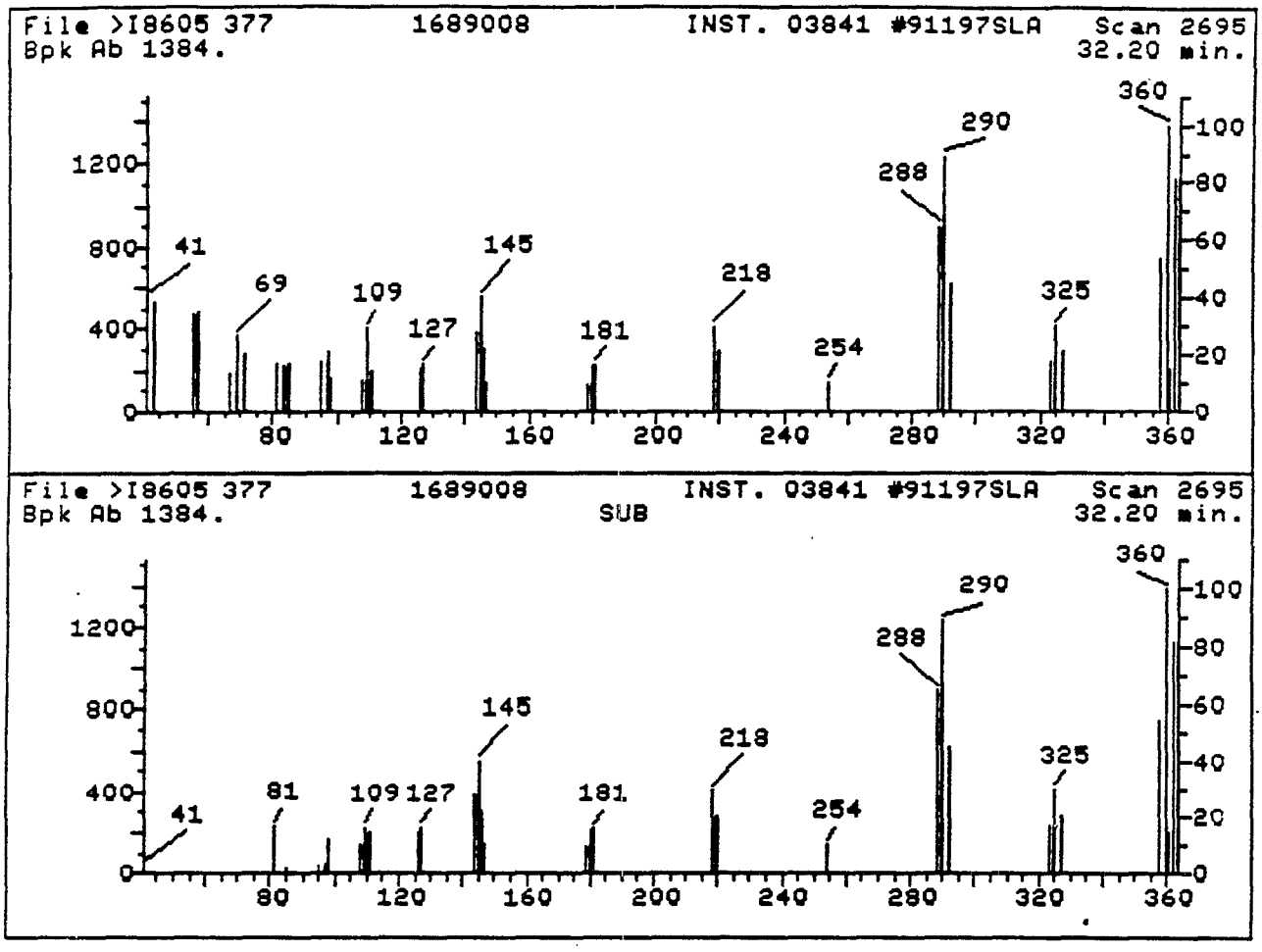
Sum of corrected areas: 2545.



291.7| 292.7
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 9 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	32.20	2691	2695	2698	617	1407	1407	26.97	10.611
2	32.77	2747	2750	2754	727	1793	1793	34.38	13.522
3	33.51	2817	2821	2824	399	1095	1095	20.99	8.258
4	36.69	3122	3125	3127	389	751	751	14.40	5.664
5	37.57	3206	3209	3214	376	1265	1265	24.25	9.540
6	37.92	3239	3242	3243	162	269	269	5.16	2.029
7	38.07	3253	3256	3260	272	791	791	15.16	5.965
8	38.48	3290	3296	3305	1146	5216	5216	100.00	39.336
9	38.64	3308	3311	3314	248	673	673	12.90	5.075

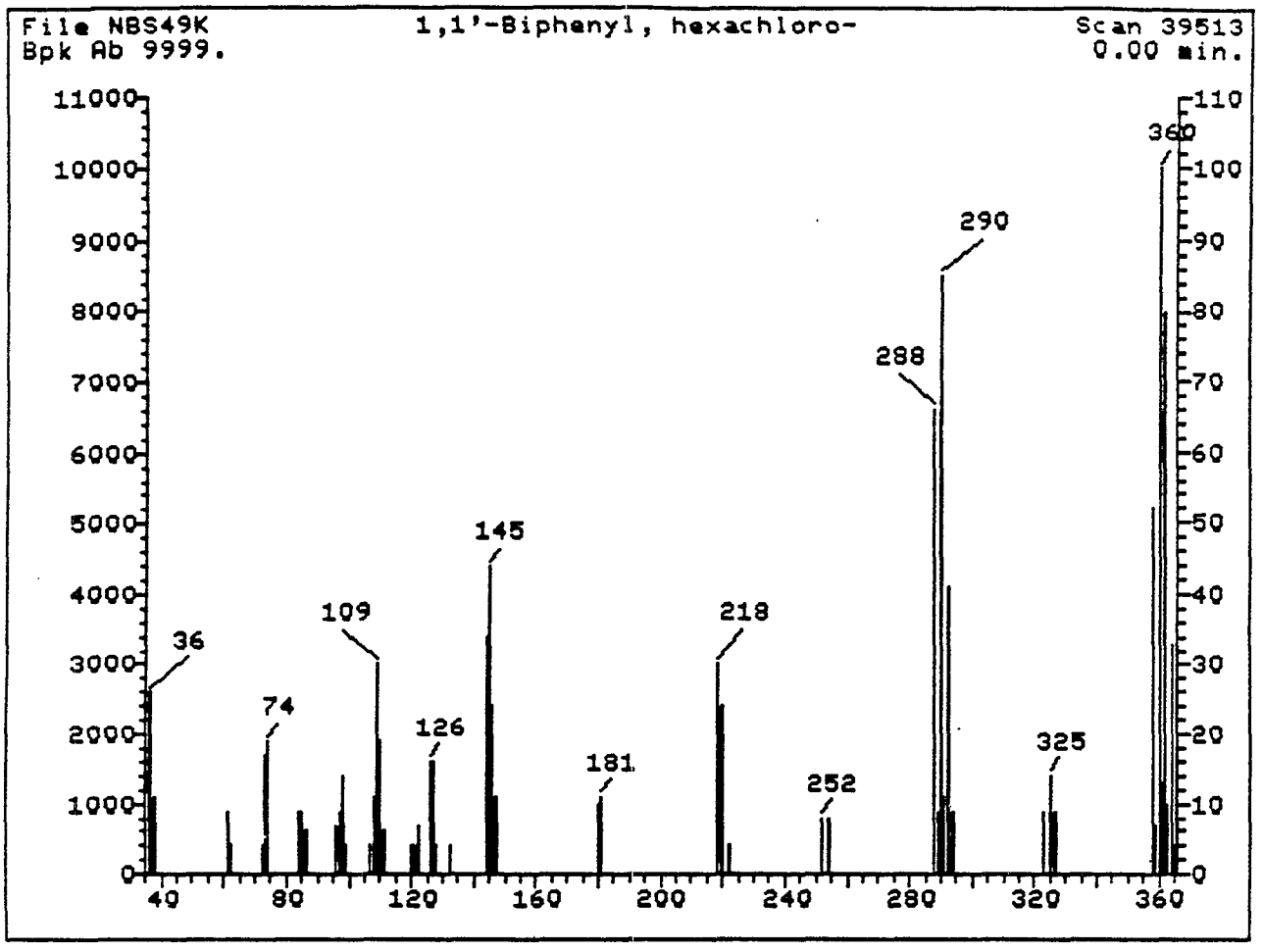
Sum of corrected areas: 13260.



1.	1,1'-Biphenyl, hexachloro-	358	C12H4Cl6
2.	1,1'-Biphenyl, 2,2',3,3',5,6'-hexachloro-	358	C12H4Cl6
3.	1,1'-Biphenyl, 2,2',3,4,5,5'-hexachloro-	358	C12H4Cl6
4.	1,1'-Biphenyl, 2,3',4,4',5,5'-hexachloro-	358	C12H4Cl6
5.	1,1'-Biphenyl, 2,2',3,3',6,6'-hexachloro-	358	C12H4Cl6
6.	1,1'-Biphenyl, 2,3,3',4,4',5'-hexachloro-	358	C12H4Cl6

Sample file: >I8605 Spectrum #: 2695
Search speed: 1 Tilting option: N No. of ion ranges searched: 45

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	89*	26601649	43685	NBS49K	113	106	3	0	90	5	66	76
2.	89*	52744135	43688	NBS49K	114	114	3	0	83	2	66	77
3.	81*	52712046	43682	NBS49K	109	106	3	0	75	18	45	72
4.	73*	52663726	43684	NBS49K	94	112	3	0	87	25	32	60
5.	64*	38411222	43689	NBS49K	80	143	3	0	70	23	28	45
6.	62*	69782907	43585	NBS49K	78	133	3	0	96	30	25	44


File NBS49K
Bpk Ab 9999.
1,1'-Biphenyl, hexachloro-
Scan 39513
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
40
80
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320
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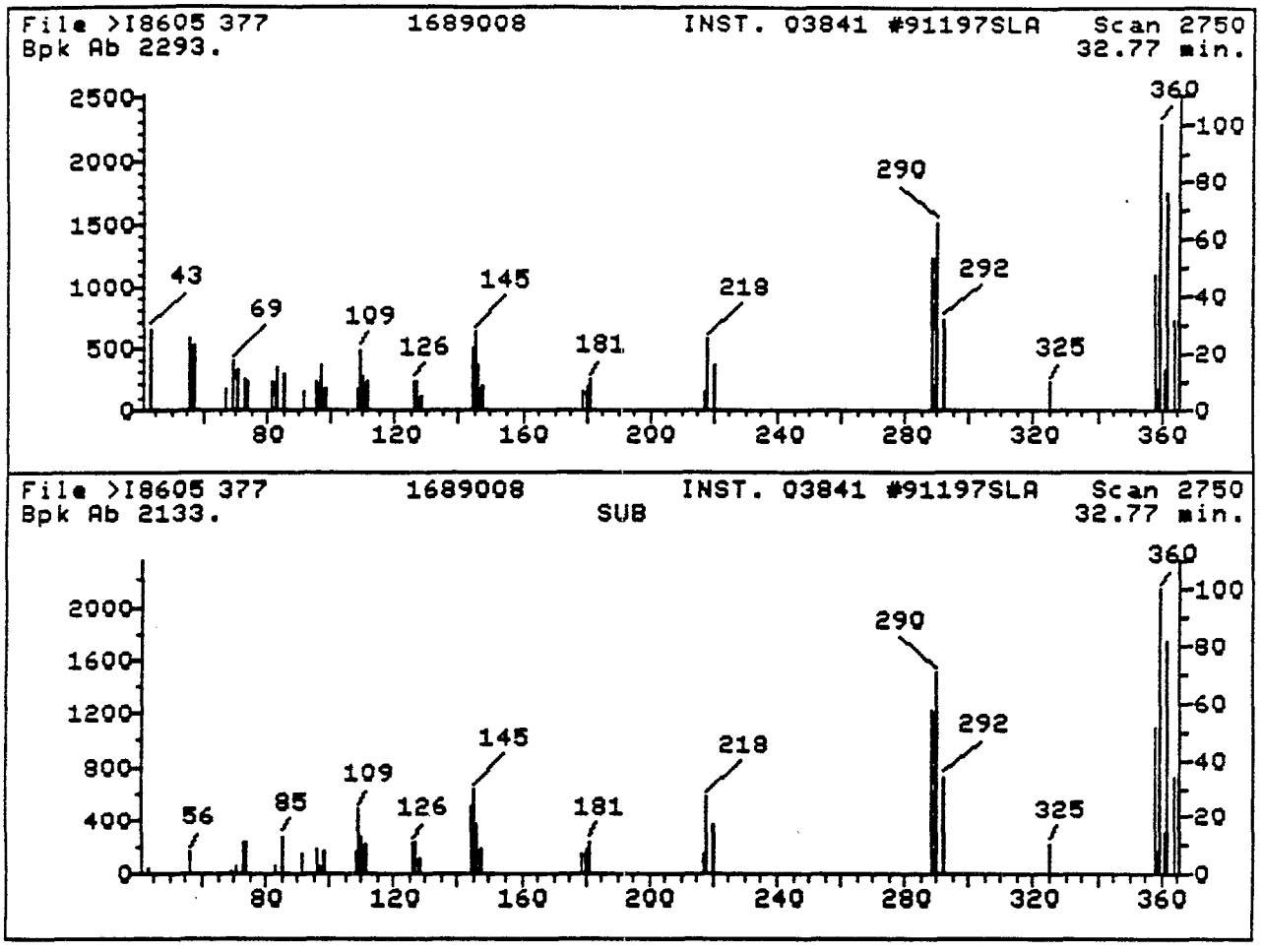
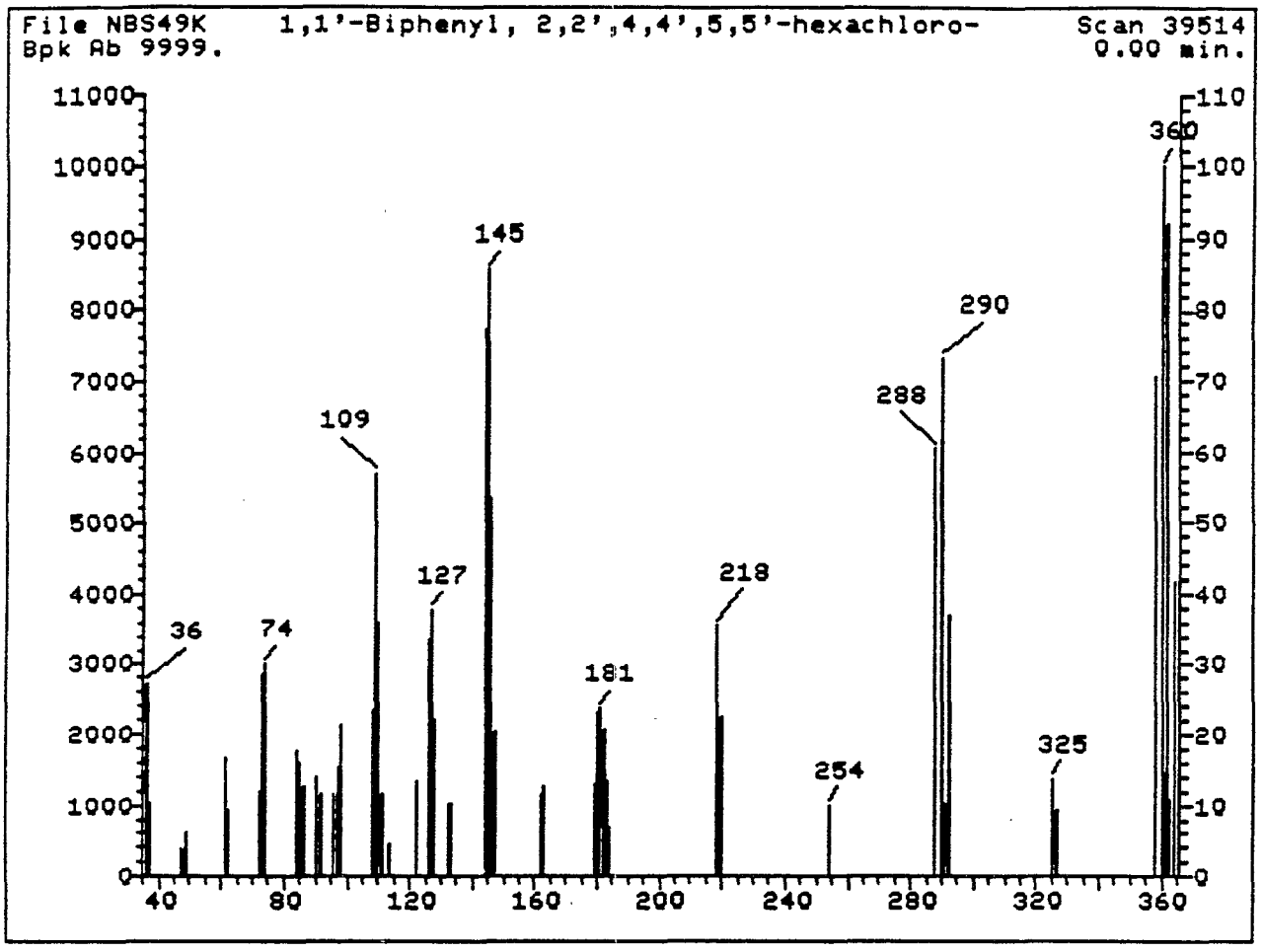
36
74
109
126
145
181
218
252
288
290
325
360



1. 1,1'-Biphenyl, 2,2',4,4',5,5'-hexachloro- 358 C12H4Cl6
2. 1,1'-Biphenyl, hexachloro- 358 C12H4Cl6
3. 1,1'-Biphenyl, 2,2',3,4,5,5'-hexachloro- 358 C12H4Cl6
4. 1,1'-Biphenyl, 2,2',3,3',5,6'-hexachloro- 358 C12H4Cl6
5. 1,1'-Biphenyl, 2,2',3,4',5',6-hexachloro- 358 C12H4Cl6
6. 1,1'-Biphenyl, 2,3,3',4,5,6-hexachloro- 358 C12H4Cl6

Sample file: >I8605 Spectrum #: 2750
Search speed: 1 Tilting option: N No. of ion ranges searched: 45

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	93*	35065271	43686	NBS49K	122	109	3	0	72	0	68	86
2.	89*	26601649	43685	NBS49K	103	116	3	0	83	1	66	66
3.	89*	52712046	43682	NBS49K	98	117	3	0	96	0	66	63
4.	89*	52744135	43688	NBS49K	97	131	3	0	70	4	66	61
5.	89*	38380040	43671	NBS49K	94	133	3	0	81	1	66	60
6.	88*	41411625	43675	NBS49K	91	125	3	0	93	2	65	57


File NBS49K
Bpk Ab 9999.
1,1'-Biphenyl, 2,2',4,4',5,5'-hexachloro-
Scan 39514
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
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127
218
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74
181
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80
120
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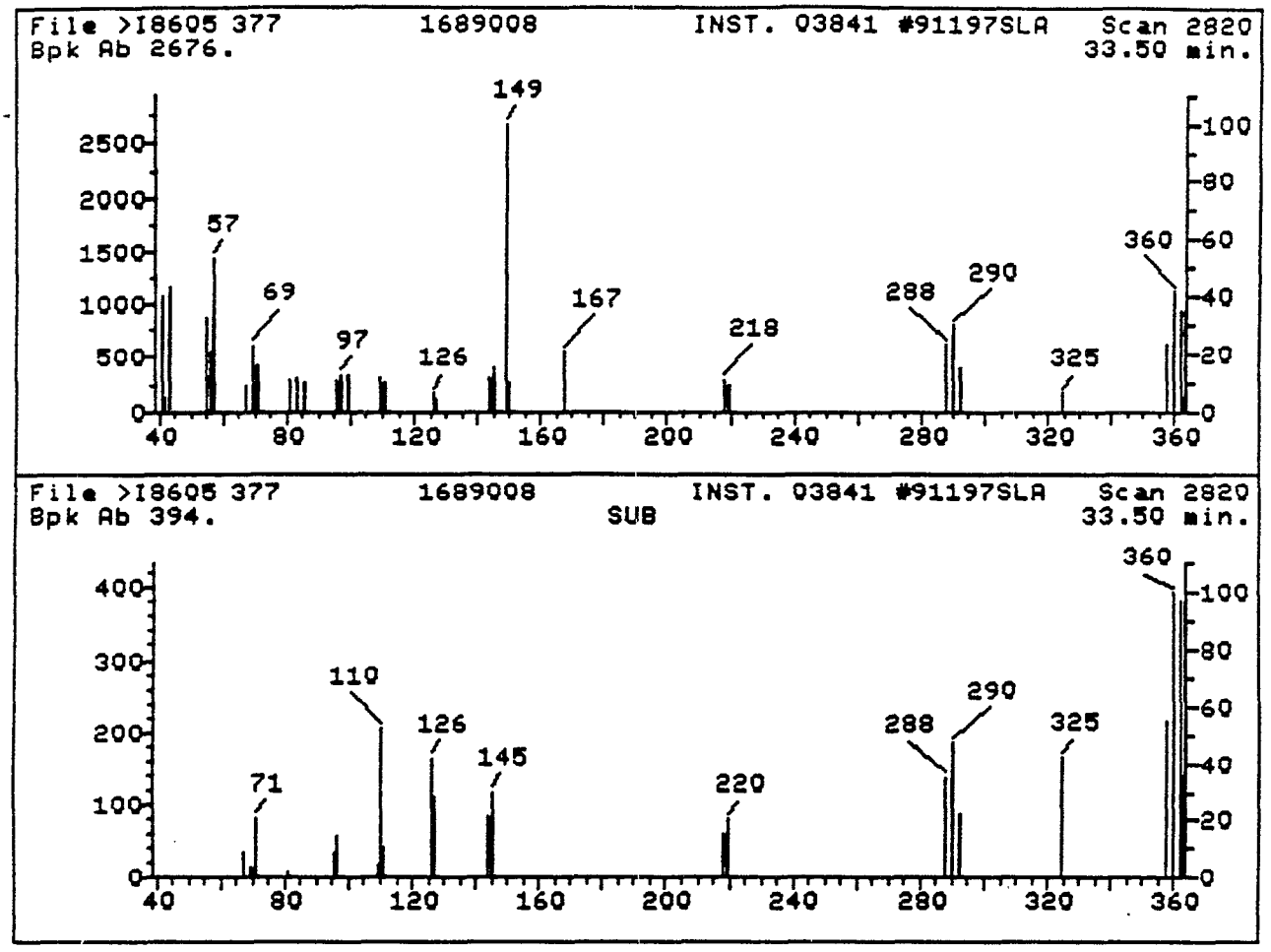
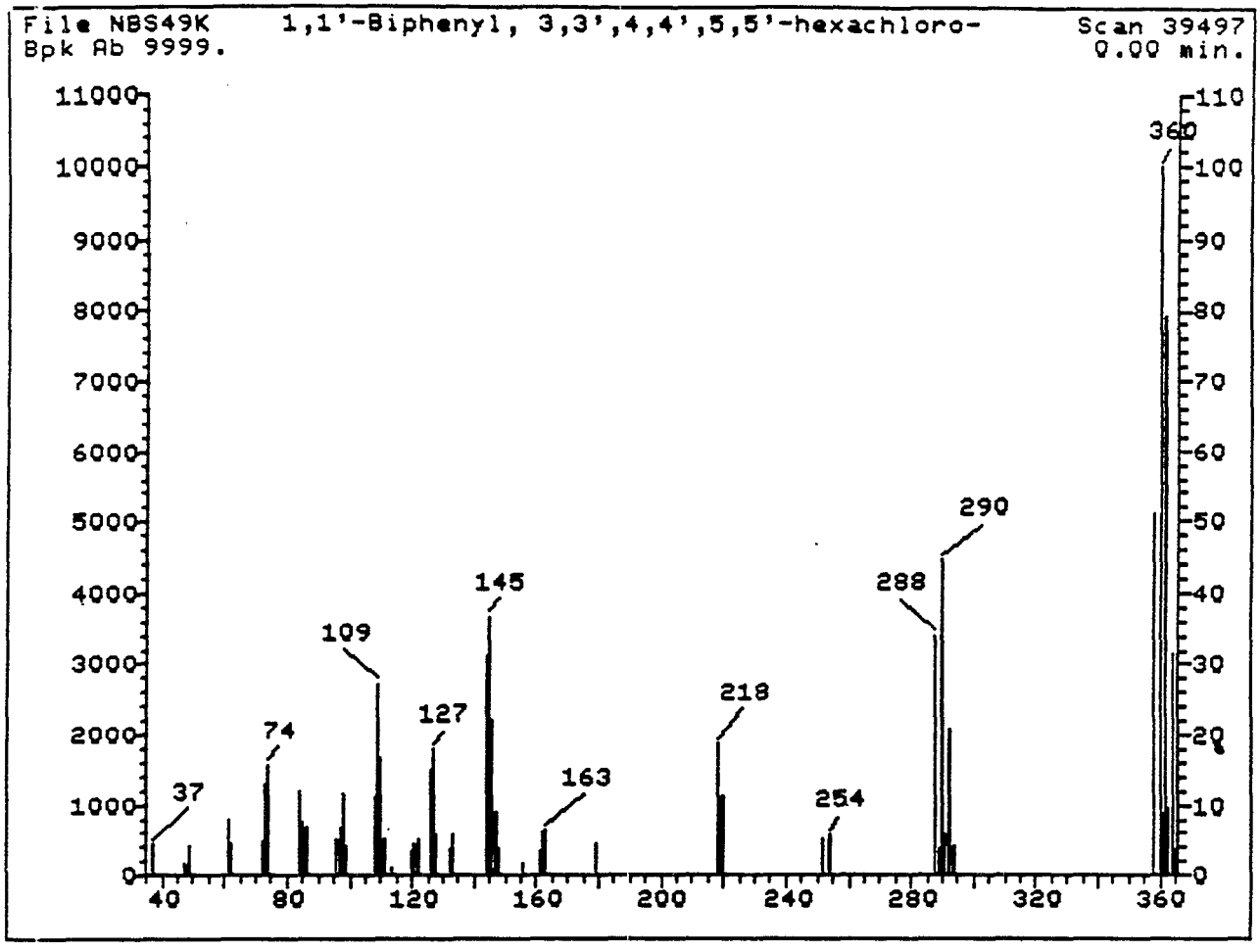
280
320
360



1.	1,1'-Biphenyl, 3,3',4,4',5,5'-hexachloro-	358	C12H4Cl6
2.	1,1'-Biphenyl, 2,3',4,4',5,5'-hexachloro-	358	C12H4Cl6
3.	1,1'-Biphenyl, 2,2',4,4',6,6'-hexachloro-	358	C12H4Cl6
4.	1,1'-Biphenyl, 2,3,3',4,4',5'-hexachloro-	358	C12H4Cl6
5.	1,1'-Biphenyl, 2,2',3,4,5,5'-hexachloro-	358	C12H4Cl6
6.	9H-Xanthen-9-one, 2,4,5-trichloro-1,3,6-trihydroxy-8-methyl-	360	C14H7Cl3O5

Sample file: >I8605 Spectrum #: 2820
Search speed: 1 Tilting option: N No. of ion ranges searched: 71

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	71*	32774166	43673	NBS49K	74	126	3	0	100	15	38	39
2.	71*	52663726	43684	NBS49K	63	143	3	0	80	14	38	31
3.	71*	33979032	43683	NBS49K	63	146	3	0	98	15	38	31
4.	55*	69782907	43585	NBS49K	60	151	3	0	85	23	22	27
5.	52*	52712046	43682	NBS49K	51	164	3	0	78	19	20	14
6.	25*	20716965	43694	NBS49K	32	139	3	0	98	48	7	13


File NBS49K
Bpk Ab 9999.
1,1'-Biphenyl, 3,3',4,4',5,5'-hexachloro-
Scan 39497
0.00 min.
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
110
100
90
80
70
60
50
40
30
20
10
0
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145
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218
127
74
163
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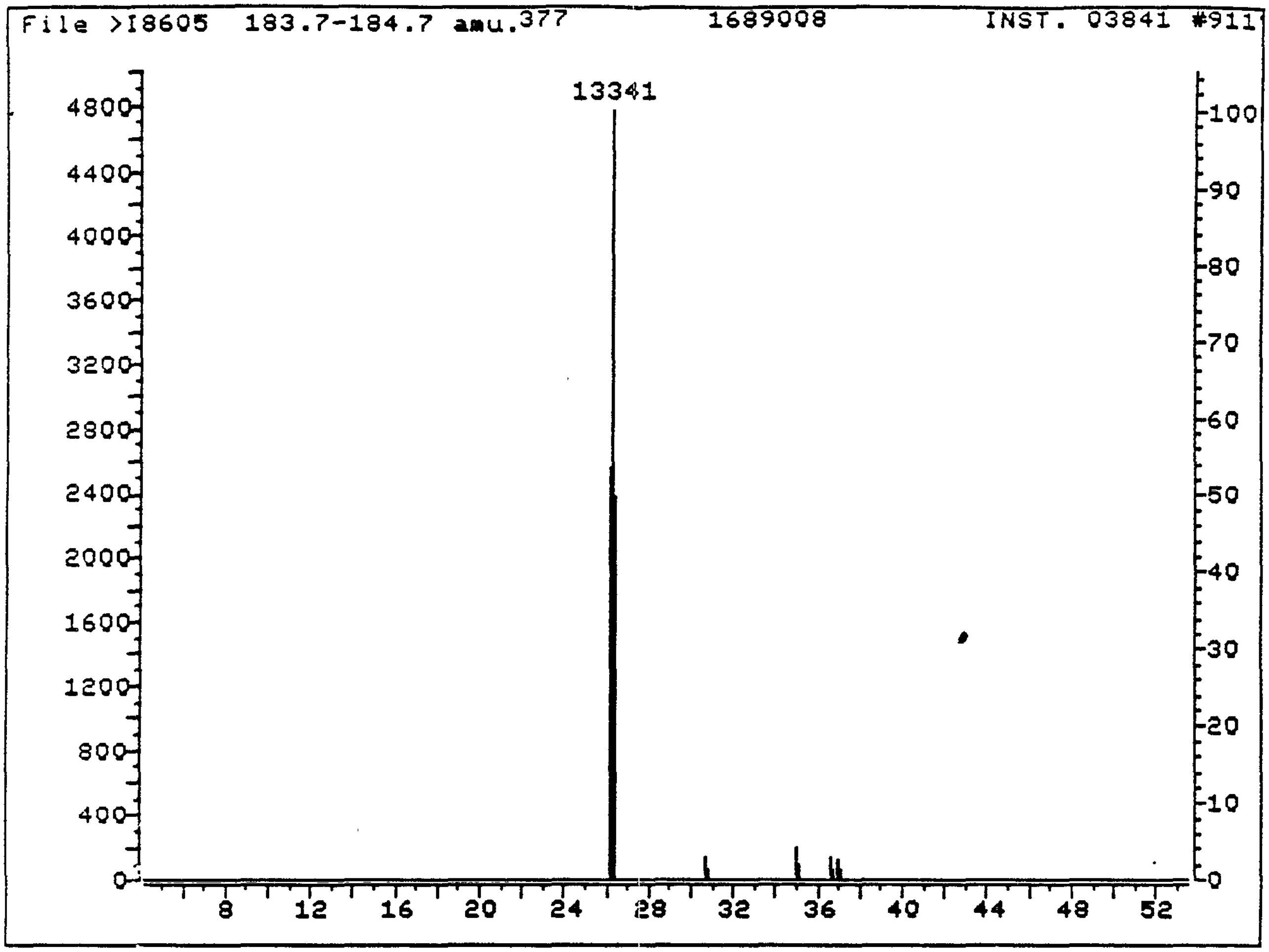
40
80
120
160
200
240
280
320
360



>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

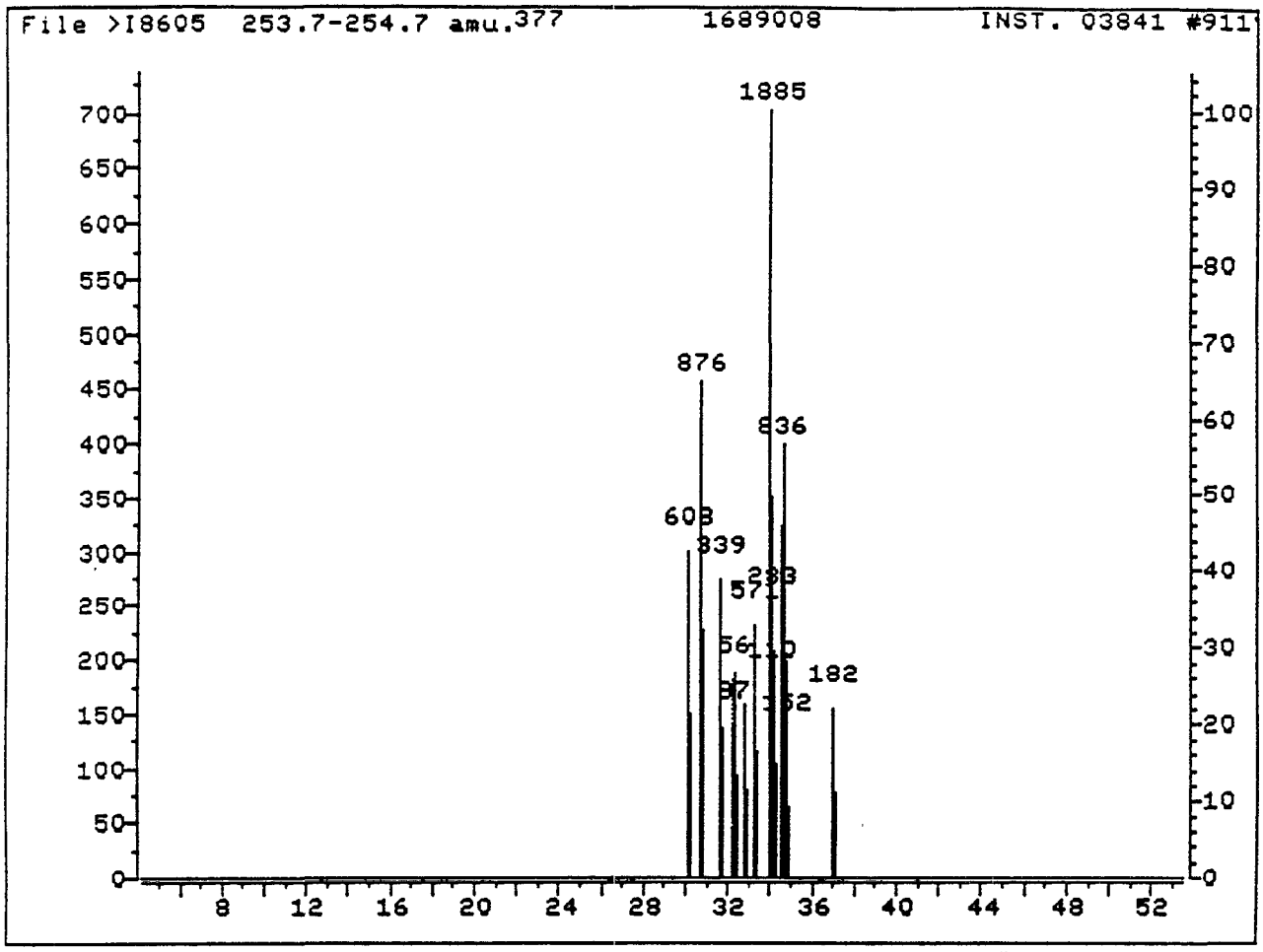
183.7| 184.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 1 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	26.16	2109	2114	2119	4771	13341	13341	100.00	100.000

Sum of corrected areas: 13341.

Pentachlorobiphenyl

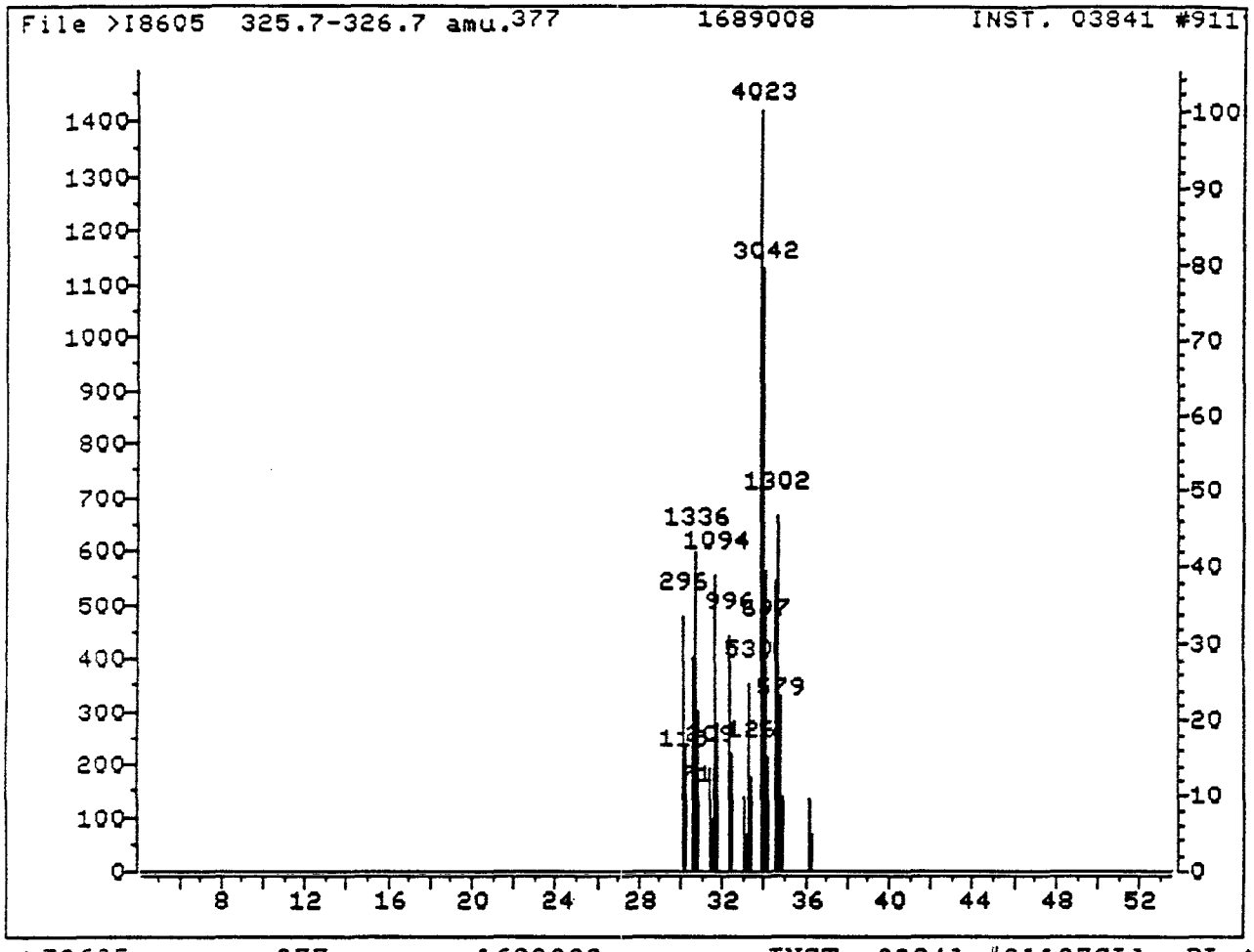
AR001605



253.7| 254.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 12 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	30.06	2486	2489	2491	299	608	608	32.25	10.159
2	30.62	2541	2543	2546	456	876	876	46.47	14.637
3	31.60	2636	2637	2639	274	339	339	17.98	5.664
4	32.20	2694	2695	2696	139	87	87	4.62	1.454
5	32.22	2696	2697	2697	0	113	56*	2.97	.936
6	33.21	2789	2792	2795	232	571	571	30.29	9.541
7	33.91	2855	2859	2862	702	1885	1885	100.00	31.495
8	34.02	2868	2869	2870	176	110	110	5.84	1.838
9	34.04	2870	2871	2873	245	283	283	15.01	4.728
10	34.51	2914	2916	2919	398	836	836	44.35	13.968
11	34.66	2930	2931	2933	129	152	152	8.06	2.540
12	36.87	3140	3142	3143	154	182	182	9.66	3.041

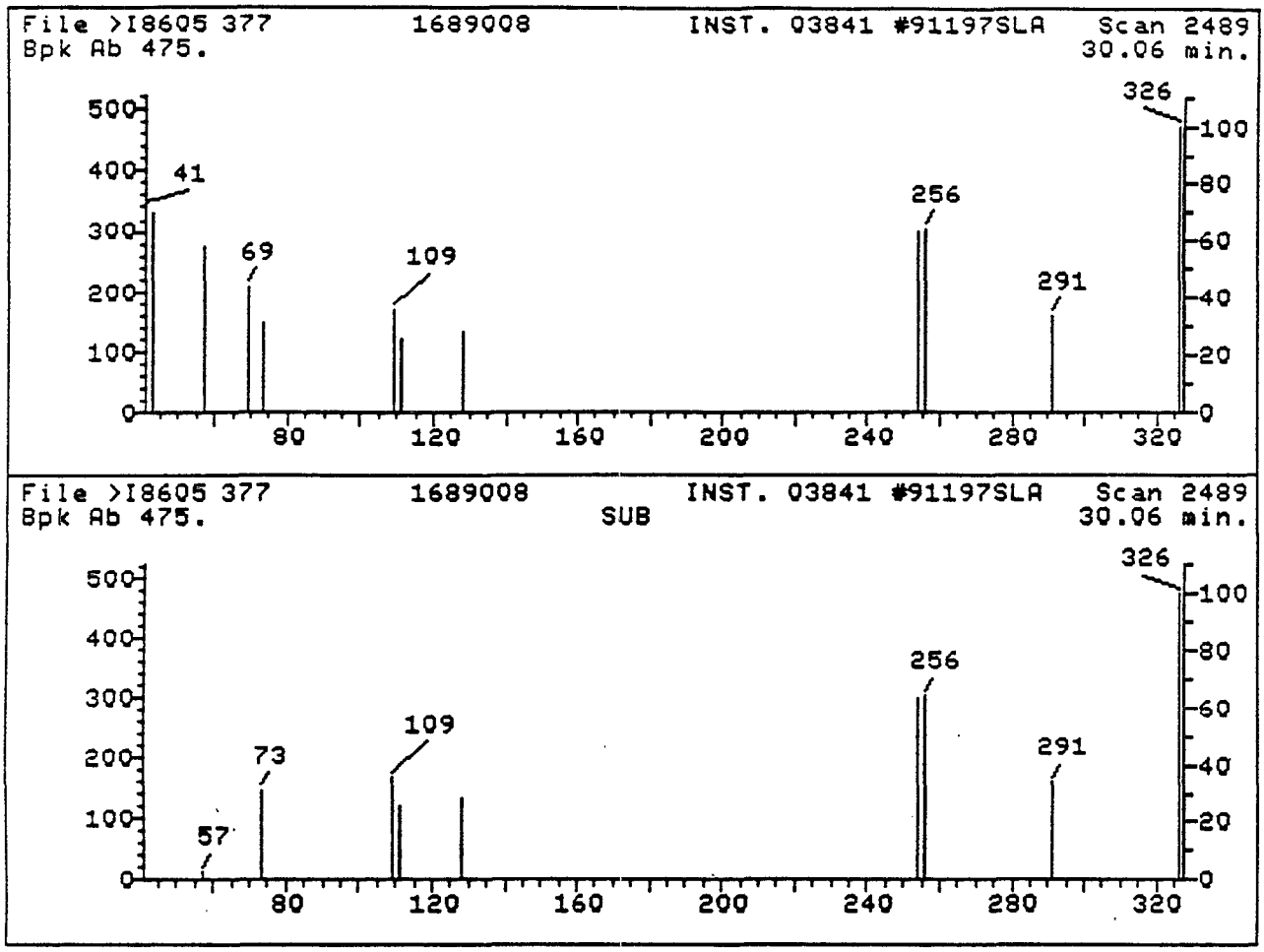
Sum of corrected areas: 5985.



325.7| 326.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 14 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	30.06	2488	2489	2490	475	296	296	7.36	2.053
2	30.08	2490	2491	2492	185	115	115	2.86	.798
3	30.62	2539	2543	2545	595	1336	1336	33.21	9.267
4	30.65	2545	2546	2547	115	71	71	1.76	.493
5	31.35	2611	2613	2614	191	209	209	5.20	1.450
6	31.61	2635	2638	2640	551	1094	1094	27.19	7.589
7	32.23	2695	2698	2701	439	996	996	24.76	6.909
8	33.21	2789	2792	2793	352	530	530	13.17	3.676
9	33.23	2793	2794	2795	203	126	126	3.13	.874
10	33.75	2839	2844	2848	1419	4023	4023	100.00	27.906
11	33.90	2854	2858	2862	1124	3042	3042	75.62	21.102
12	34.04	2868	2871	2872	427	697	697	17.33	4.835
13	34.51	2914	2916	2919	664	1302	1302	32.36	9.032
14	34.65	2928	2930	2933	281	579	579	14.39	4.016

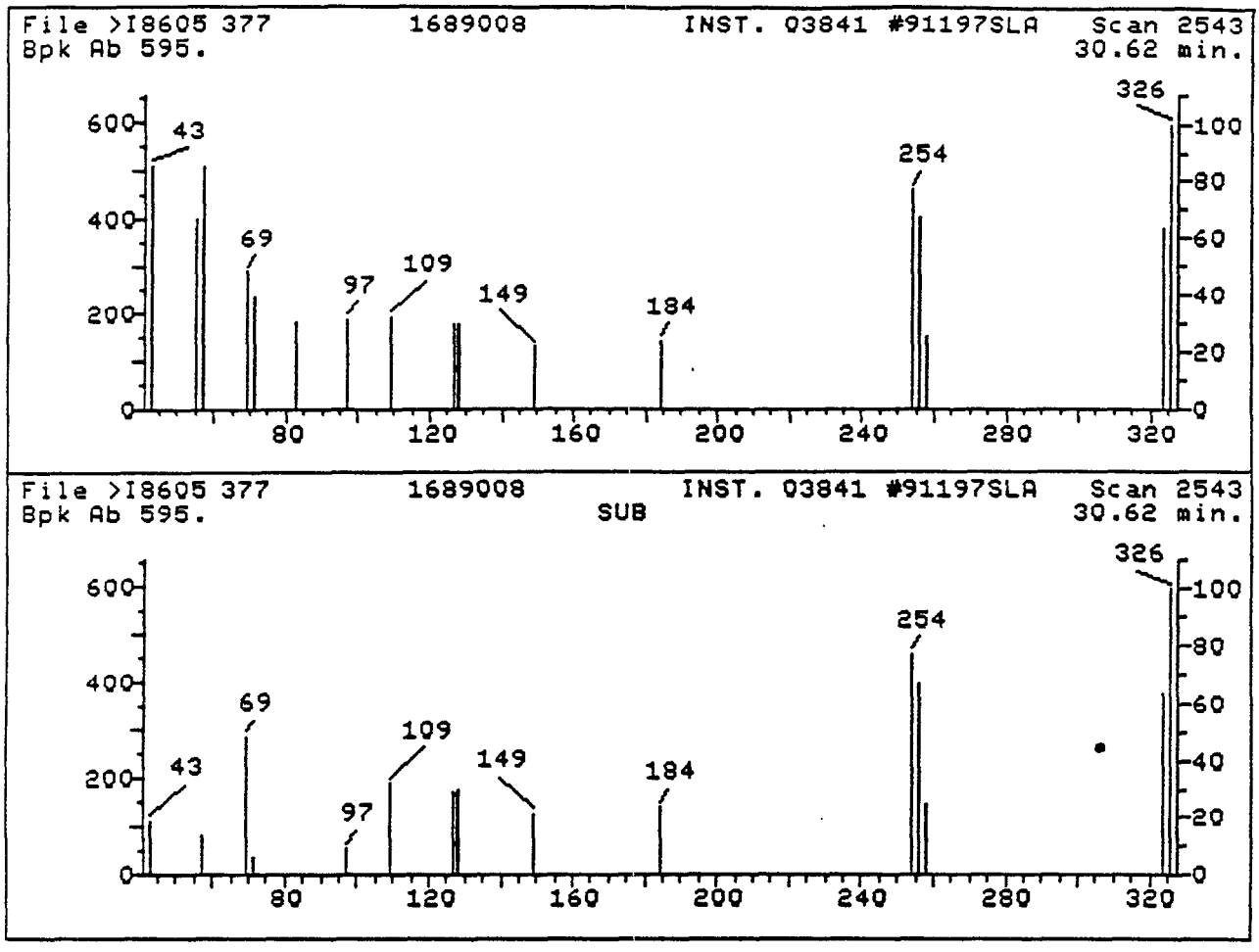
Sum of corrected areas: 14416.



Sample file: >I8605 Spectrum #: 2489

No data base entries were retrieved.

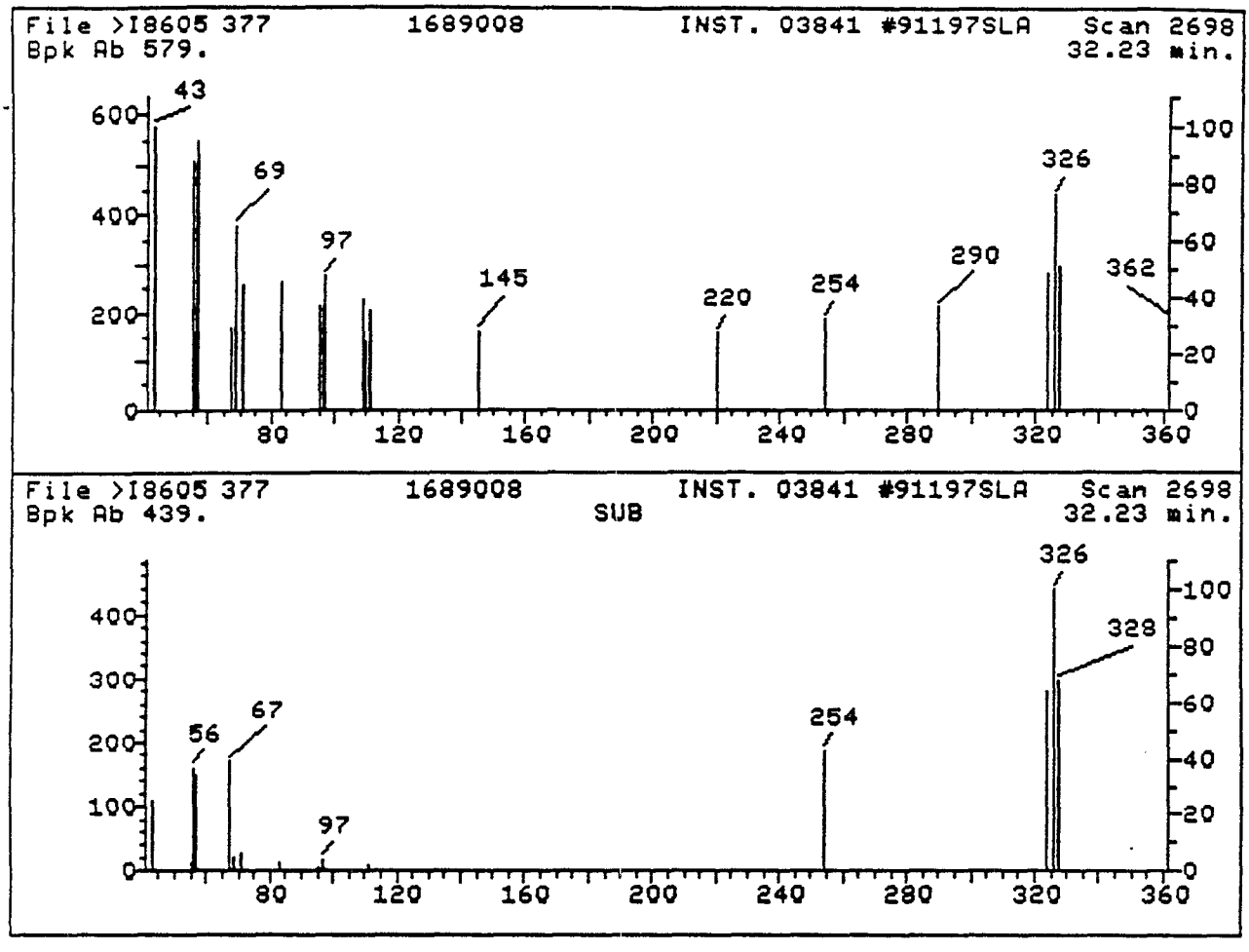
Suspect trichlorobiphenyl



1.	1,1'-Biphenyl, pentachloro-	324	C12H5Cl5
2.	1,1'-Biphenyl, 2,2',4,4',5-pentachloro-	324	C12H5Cl5
3.	1,1'-Biphenyl, 2,3,3',4',6-pentachloro-	324	C12H5Cl5
4.	1,1'-Biphenyl, 2,2',4,4',6-Pentachloro-	324	C12H5Cl5
5.	1,1'-Biphenyl, 2,2',3,4,6-Pentachloro-	324	C12H5Cl5
6.	1,1'-Biphenyl, 2,2',4,5,6'-pentachloro-	324	C12H5Cl5

Sample file: >I8605 Spectrum #: 2543
Search speed: 1 Tilting option: N No. of ion ranges searched: 47

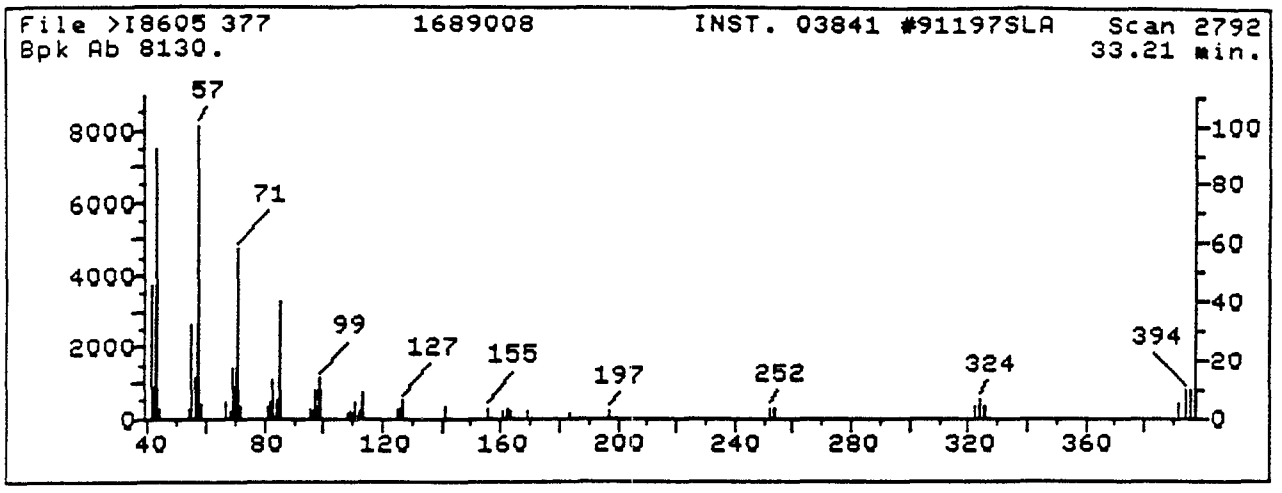
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	89*	25429292	41097	NBS49K	98	93	3	0	96	5	66	63
2.	88*	38380017	41121	NBS49K	91	110	3	0	90	5	65	57
3.	88*	38380039	41093	NBS49K	90	112	3	0	93	3	65	56
4.	86*	39485831	41114	NBS49K	70	129	3	0	100	5	60	36
5.	86*	55215173	41104	NBS49K	71	137	3	0	100	5	60	36
6.	86*	68194069	41094	NBS49K	64	143	3	0	86	5	60	31



1. 1,1'-Biphenyl, 2,3',4,4',6-Pentachloro- 324 C12H5Cl5

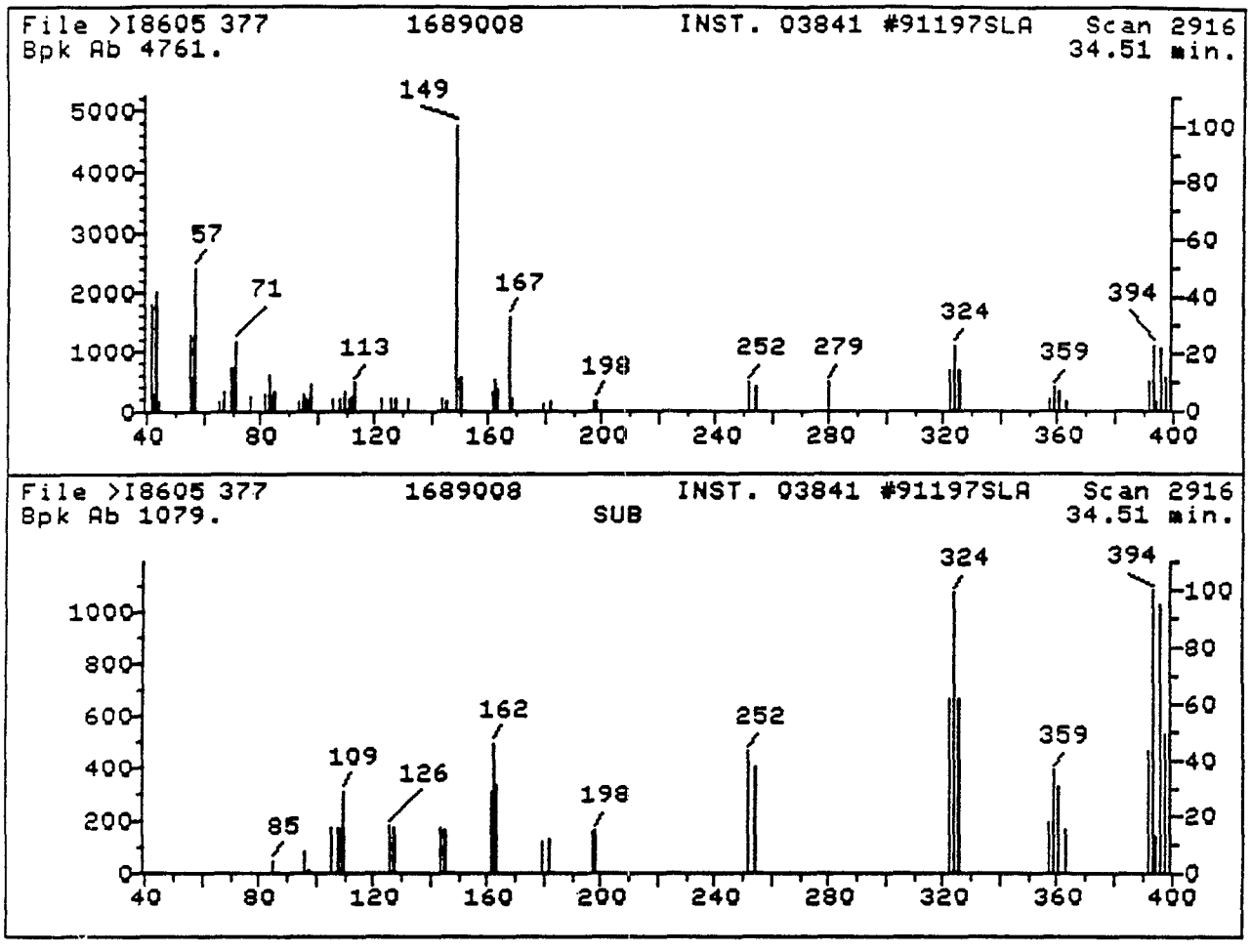
Sample file: >I8605 Spectrum #: 2698
Search speed: 1 Tilting option: N No. of ion ranges searched: 45

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	30*	56558179	41109	NBS49K	42	147	3	0	100	31	12	13



Sample file: >I8605 Spectrum #: 2792

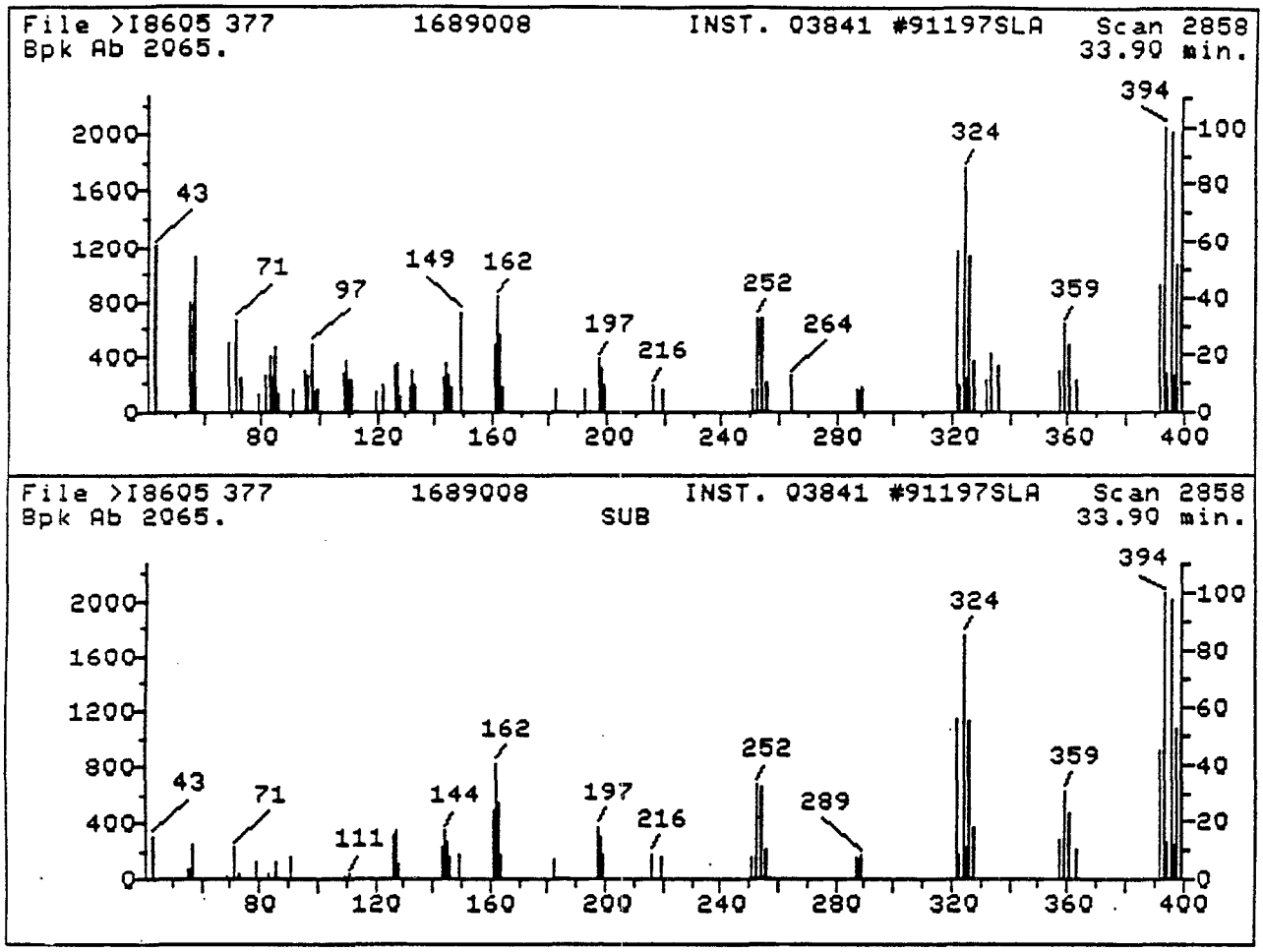
No data base entries were retrieved.



1.	1,1'-Biphenyl, 2,2',3,4,5,6,6'-Heptachloro-	392	C12H3Cl7
2.	1,1'-Biphenyl, 2,3,3',4,4',5,5'-heptachloro-	392	C12H3Cl7
3.	1,1'-Biphenyl, 2,3,3',4,5,5',6-heptachloro-	392	C12H3Cl7
4.	1,1'-Biphenyl, 2,2',3,3',5,5',6-heptachloro-	392	C12H3Cl7
5.	1,1'-Biphenyl, 2,2',3,4,4',5,6-Heptachloro-	392	C12H3Cl7
6.	1,1'-Biphenyl, 2,3,3',4',5,5',6-heptachloro-	392	C12H3Cl7

Sample file: >I8605 Spectrum #: 2916
Search speed: 1 Tilting option: N No. of ion ranges searched: 89

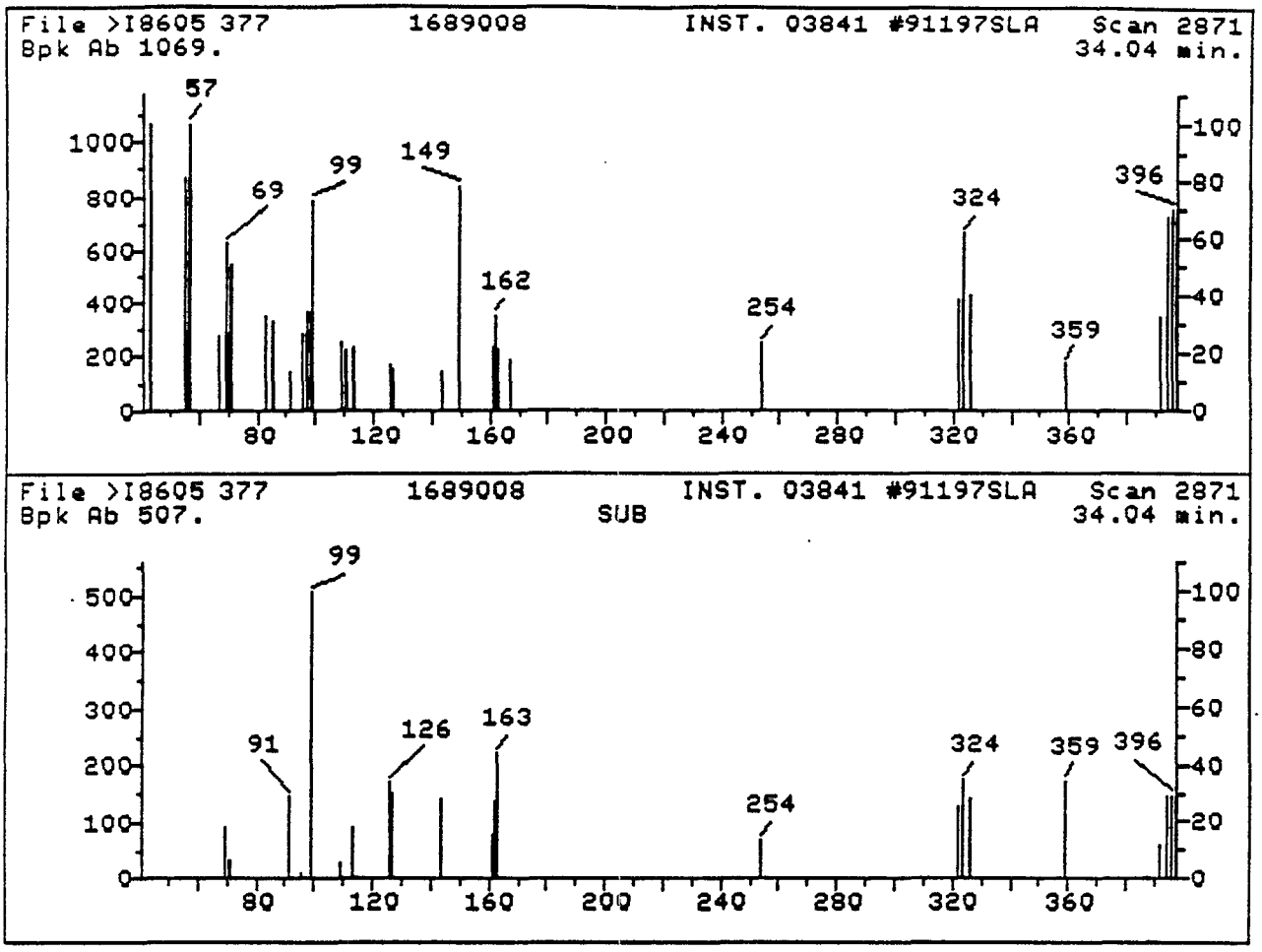
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	86*	74472494	45238	NBS49K	122	109	3	0	70	23	47	86
2.	85*	39635319	45245	NBS49K	110	101	2	0	67	40	37	89
3.	81*	74472518	45240	NBS49K	114	118	3	0	70	19	45	77
4.	79*	52663679	45247	NBS49K	100	112	3	0	95	14	43	65
5.	73*	74472472	45237	NBS49K	98	130	3	0	71	21	32	63
6.	71*	69782918	45249	NBS49K	99	115	3	0	90	28	29	63



1.	1,1'-Biphenyl, 2,2',3,4,4',5,6'-Heptachloro-	392	C12H3Cl7
2.	1,1'-Biphenyl, 2,3,3',4',5,5',6-heptachloro-	392	C12H3Cl7
3.	1,1'-Biphenyl, 2,2',3,3',5,5',6-heptachloro-	392	C12H3Cl7
4.	1,1'-Biphenyl, 2,3,3',4,4',5,5'-heptachloro-	392	C12H3Cl7
5.	1,1'-Biphenyl, 2,2',3,4,4',5,5'-heptachloro-	392	C12H3Cl7
6.	1,1'-Biphenyl, 2,2',3,4,4',5,6-Heptachloro-	392	C12H3Cl7

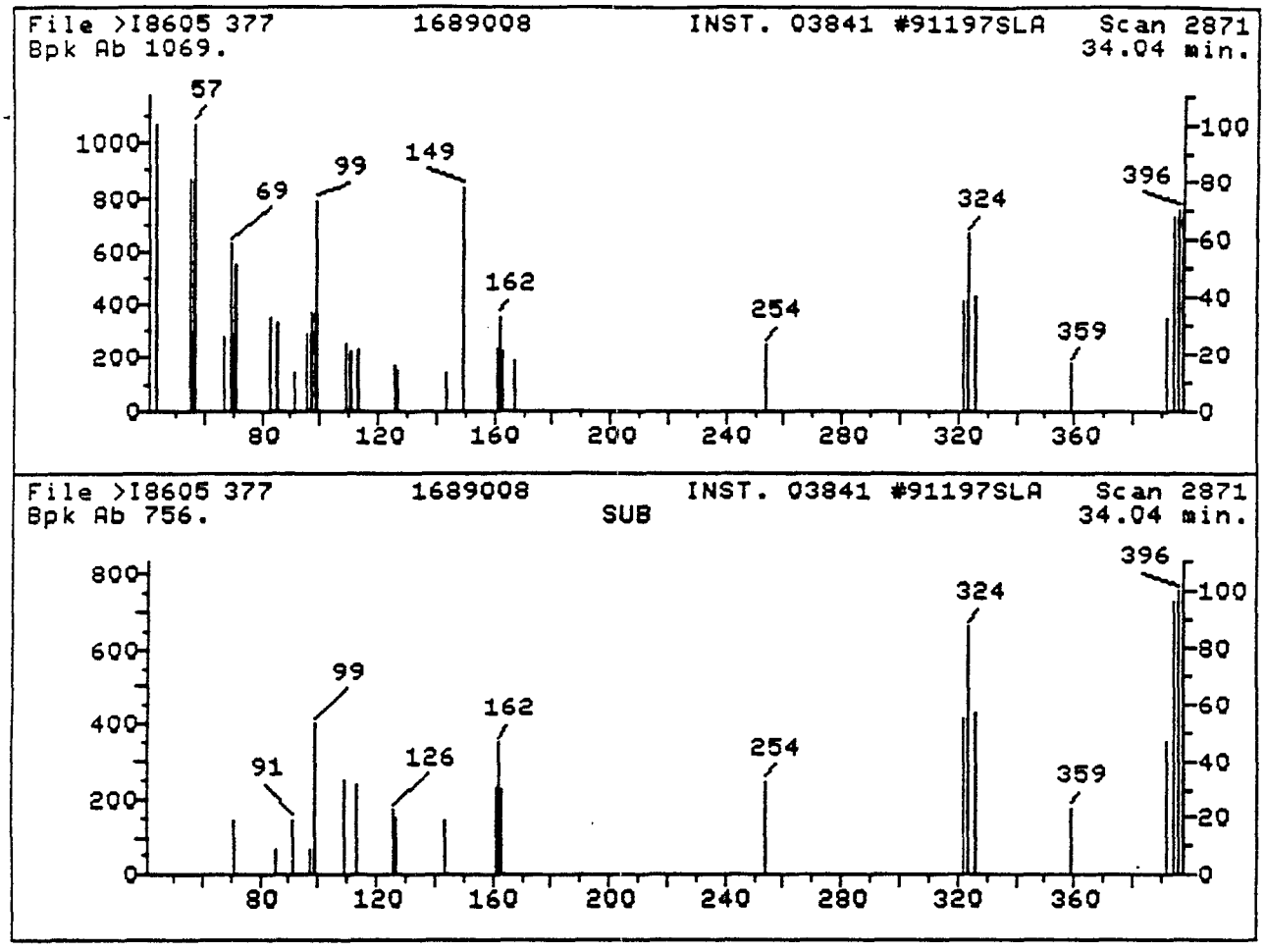
Sample file: >I8605 Spectrum #: 2858
Search speed: 1 Tilting option: N No. of ion ranges searched: 45

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	95*	60145235	45241	NBS49K	131	101	1	0	59	31	50	99
2.	95*	69782918	45249	NBS49K	116	98	1	0	73	24	53	97
3.	94*	52663679	45247	NBS49K	88	124	0	0	73	24	53	96
4.	93*	39635319	45245	NBS49K	116	95	1	0	70	34	50	97
5.	93*	35065293	45254	NBS49K	123	110	3	0	93	2	68	89
6.	73*	74472472	45237	NBS49K	85	143	1	0	55	48	30	83



Sample file: >I8605 Spectrum #: 2871

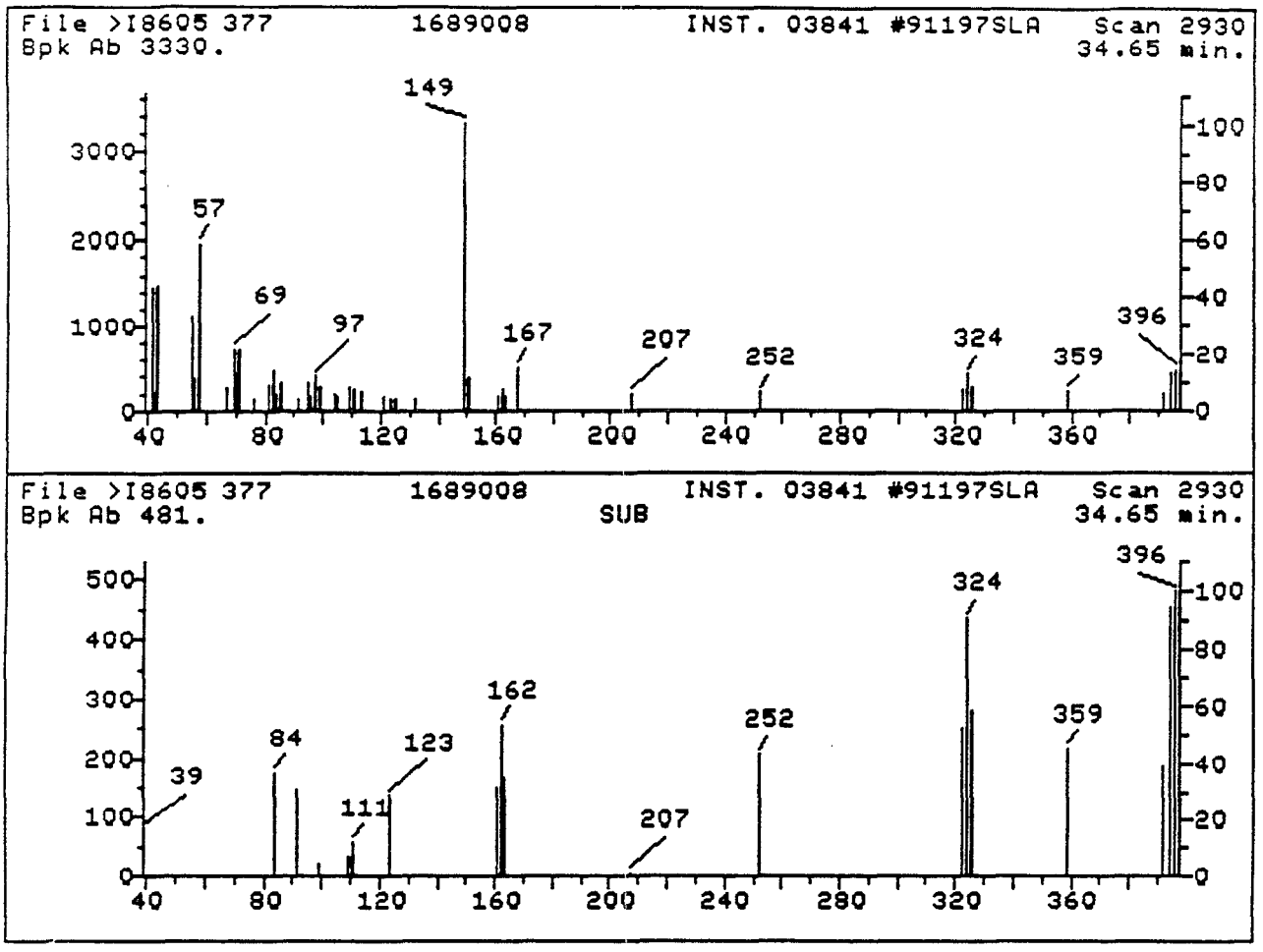
No data base entries were retrieved.



1.	1,1'-Biphenyl, 2,3,3',4,4',5,5'-heptachloro-	392	C12H3Cl7
2.	1,1'-Biphenyl, 2,2',3,4,4',5,6-Heptachloro-	392	C12H3Cl7
3.	1,1'-Biphenyl, 2,3,3',4',5,5',6-heptachloro-	392	C12H3Cl7
4.	1,1'-Biphenyl, 2,2',3,3',4,6,6'-heptachloro-	392	C12H3Cl7
5.	1,1'-Biphenyl, 2,2',3,3',4,4',6-heptachloro-	392	C12H3Cl7
6.	1,1'-Biphenyl, 2,3,3',4,4',5,6-Heptachloro-	392	C12H3Cl7

Sample file: >I8605 Spectrum #: 2871
Search speed: 1 Tilting option: N No. of ion ranges searched: 75

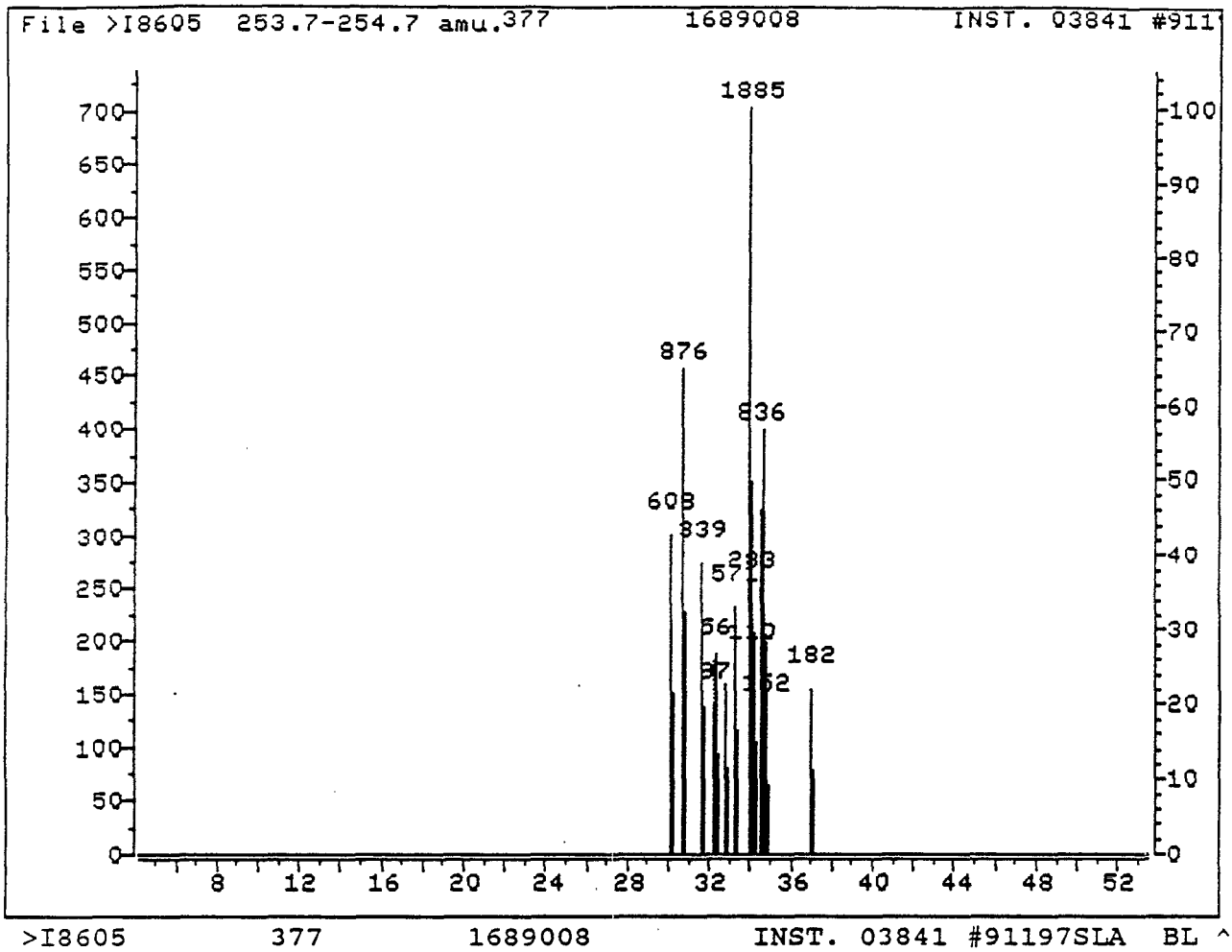
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	70*	39635319	45245	NBS49K	91	120	3	0	85	20	32	57
2.	63*	74472472	45237	NBS49K	74	154	3	0	72	18	30	39
3.	62*	69782918	45249	NBS49K	81	133	3	0	94	27	25	46
4.	62*	52663657	45244	NBS49K	80	143	3	0	69	28	25	45
5.	57*	52663715	45252	NBS49K	62	168	3	0	67	25	22	29
6.	45*	41411647	45239	NBS49K	61	167	3	0	68	31	16	28



1.	1,1'-Biphenyl, 2,2',3,3',4,4',6-heptachloro-	392	C12H3Cl7
2.	1,1'-Biphenyl, 2,2',3,3',5,6,6'-heptachloro-	392	C12H3Cl7
3.	1,1'-Biphenyl, 2,2',3,3',4,6,6'-heptachloro-	392	C12H3Cl7
4.	1,1'-Biphenyl, 2,3,3',4,4',5,5'-heptachloro-	392	C12H3Cl7
5.	1,1'-Biphenyl, 2,3,3',4',5,5',6-heptachloro-	392	C12H3Cl7
6.	1,1'-Biphenyl, 2,2',3,3',5,5',6-heptachloro-	392	C12H3Cl7

Sample file: >I8605 Spectrum #: 2930
Search speed: 1 Tilting option: N No. of ion ranges searched: 43

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	76*	52663715	45252	NBS49K	86	144	3	0	77	11	40	52
2.	64*	52663646	45242	NBS49K	75	153	3	0	79	23	28	40
3.	59*	52663657	45244	NBS49K	64	159	3	0	80	25	27	31
4.	57*	39635319	45245	NBS49K	72	139	3	0	88	26	24	37
5.	53*	69782918	45249	NBS49K	72	142	3	0	89	32	20	37
6.	46*	52663679	45247	NBS49K	54	158	3	0	98	25	17	17



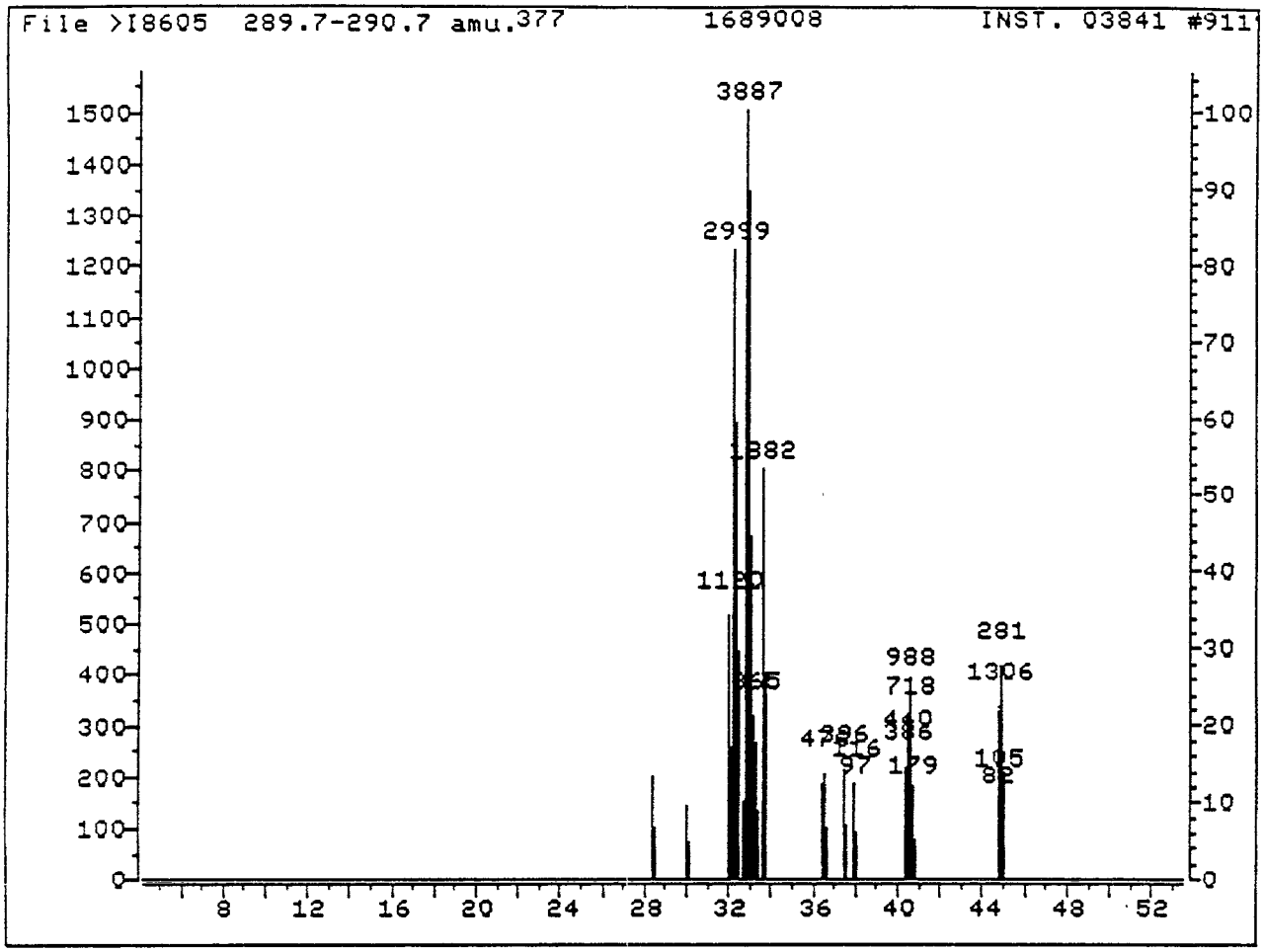
>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

253.7| 254.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 12 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	30.06	2486	2489	2491	299	608	608	32.25	10.159
2	30.62	2541	2543	2546	456	876	876	46.47	14.637
3	31.60	2636	2637	2639	274	339	339	17.98	5.664
4	32.20	2694	2695	2696	139	87	87	4.62	1.454
5	32.22	2696	2697	2697	0	113	56*	2.97	.936
6	33.21	2789	2792	2795	232	571	571	30.29	9.541
7	33.91	2855	2859	2862	702	1885	1885	100.00	31.495
8	34.02	2868	2869	2870	176	110	110	5.84	1.838
9	34.04	2870	2871	2873	245	283	283	15.01	4.728
10	34.51	2914	2916	2919	398	836	836	44.35	13.968
11	34.66	2930	2931	2933	129	152	152	8.06	2.540
12	36.87	3140	3142	3143	154	182	182	9.66	3.041

Sum of corrected areas: 5985.

Hexachlorobiphenyl

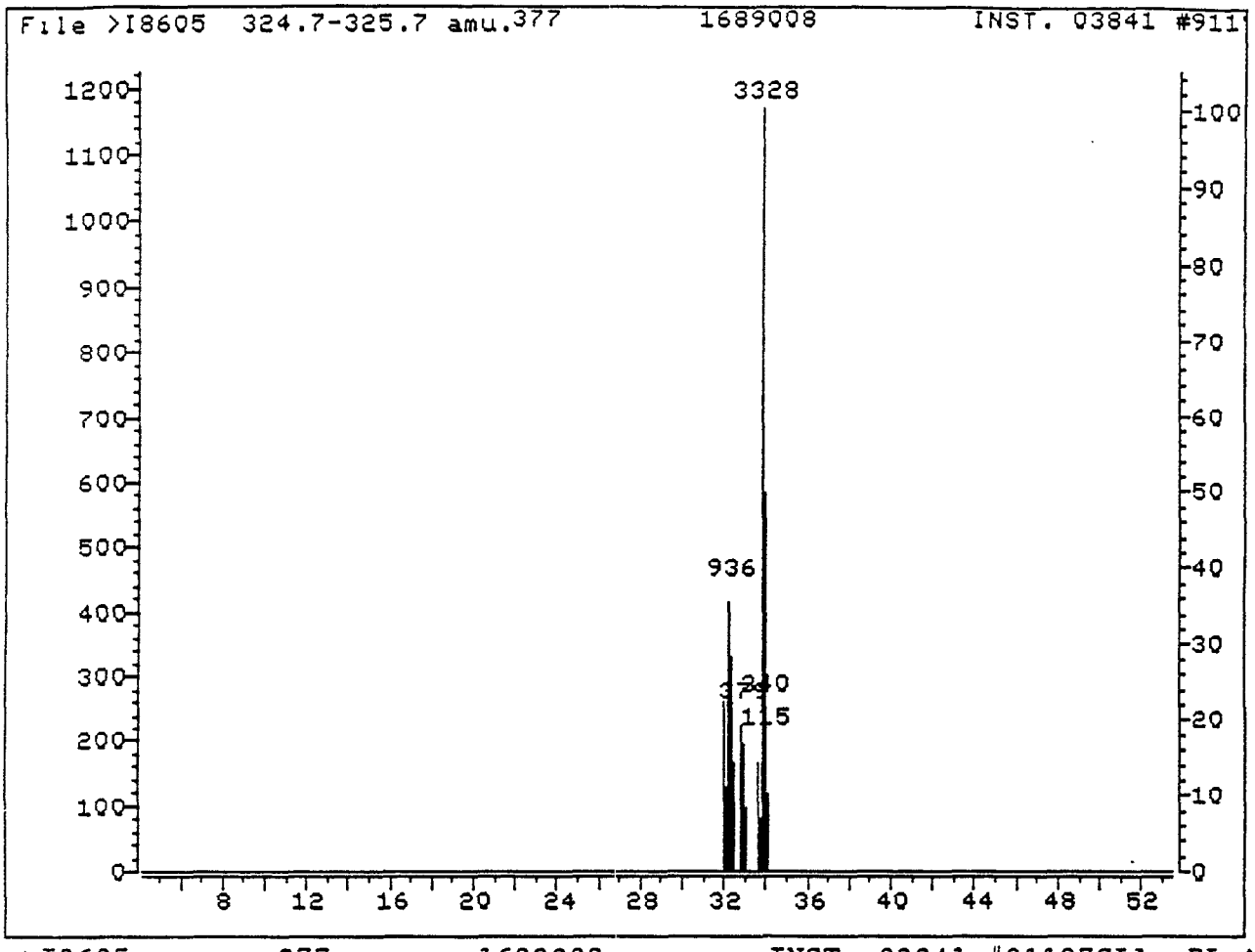


289.7| 290.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 18 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	31.90	2663	2666	2669	513	1120	1120	28.81	7.078
2	32.20	2691	2695	2699	1231	2999	2999	77.15	18.953
3	32.77	2746	2750	2754	1505	3887	3887	100.00	24.566
4	33.12	2782	2783	2785	319	365	365	9.39	2.307
5	33.50	2817	2820	2823	800	1882	1882	48.42	11.894
6	36.40	3094	3097	3099	204	476	476	12.25	3.008
7	37.40	3190	3193	3194	214	396	396	10.19	2.503
8	37.92	3241	3242	3243	185	116	116	2.98	.733
9	37.94	3243	3244	3245	154	97	97	2.50	.613
10	40.37	3474	3476	3477	218	386	386	9.93	2.439
11	40.40	3477	3479	3480	242	440	440	11.32	2.781
12	40.45	3482	3484	3486	306	718	718	18.47	4.538
13	40.51	3486	3489	3492	364	988	988	25.42	6.244
14	40.61	3498	3499	3501	150	179	179	4.61	1.131
15	44.64	3884	3885	3886	132	82	82	2.11	.518
16	44.66	3886	3887	3888	168	105	105	2.70	.664
17	44.74	3889	3895	3896	338	1306	1306	33.60	8.254

18	44.76	3896	3897	3901	166	1148	281*	7.23	1.776

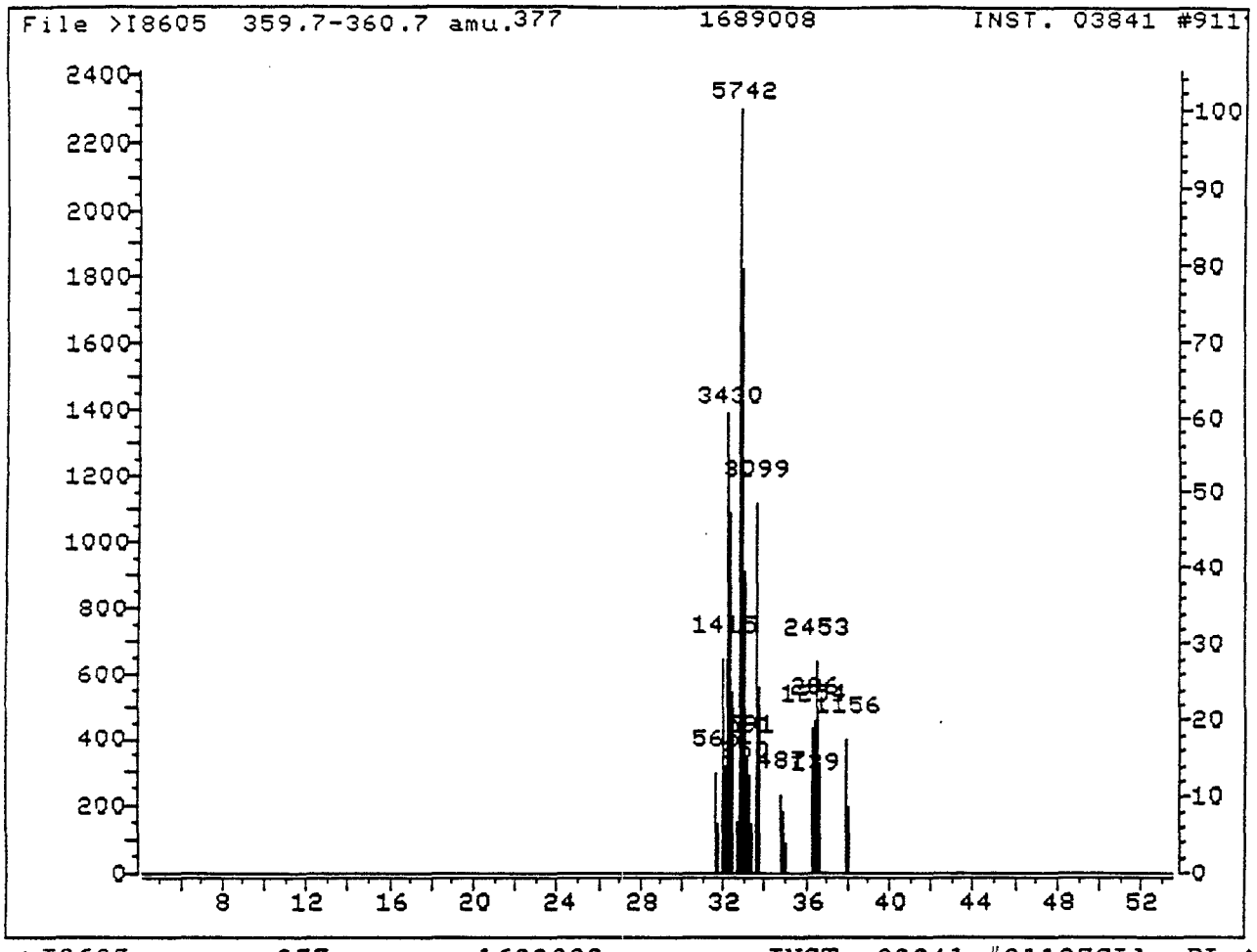
Sum of corrected areas: 15823.



324.7| 325.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 5 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	32.20	2692	2695	2698	412	936	936	28.13	18.360
2	32.77	2748	2750	2752	224	379	379	11.39	7.434
3	33.75	2840	2844	2849	1167	3328	3328	100.00	65.281
4	33.90	2855	2858	2859	233	340	340	10.22	6.669
5	33.92	2859	2860	2861	184	115	115	3.46	2.256

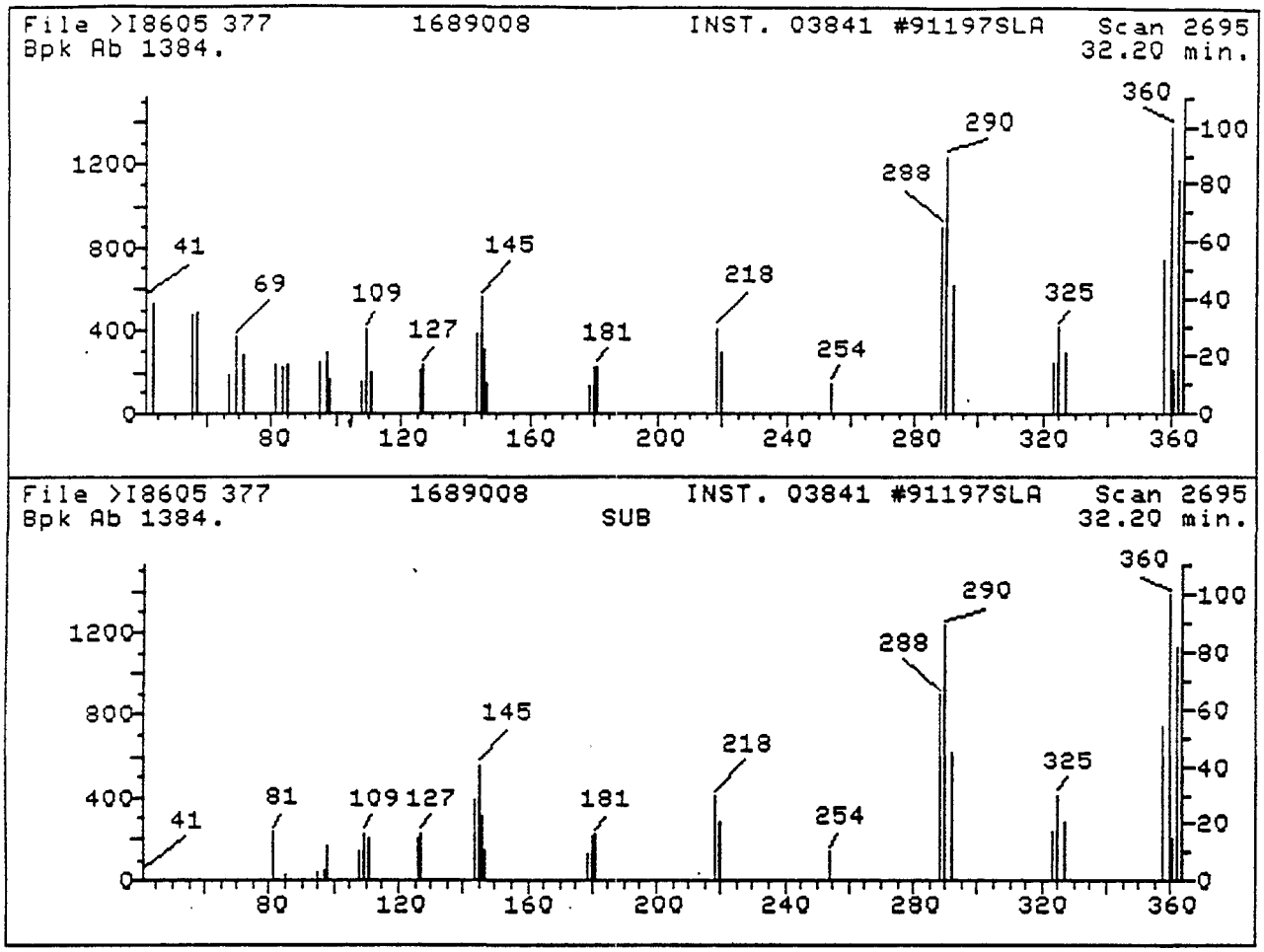
Sum of corrected areas: 5098.



359.7| 360.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 13 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	31.57	2632	2634	2637	298	565	565	9.84	2.708
2	31.90	2663	2666	2669	639	1415	1415	24.64	6.781
3	32.20	2691	2695	2698	1384	3430	3430	59.74	16.437
4	32.77	2745	2750	2754	2293	5742	5742	100.00	27.517
5	32.93	2764	2765	2767	259	250	250	4.35	1.198
6	33.12	2781	2783	2785	338	591	591	10.29	2.832
7	33.50	2816	2820	2824	1117	3099	3099	53.97	14.851
8	34.71	2934	2936	2939	234	487	487	8.48	2.334
9	36.22	3077	3080	3082	431	1254	1254	21.84	6.009
10	36.25	3082	3083	3084	456	286	286	4.98	1.371
11	36.27	3084	3085	3086	222	139	139	2.42	.666
12	36.40	3091	3097	3101	631	2453	2453	42.72	11.755
13	37.93	3239	3243	3246	394	1156	1156	20.13	5.540

Sum of corrected areas: 20867.

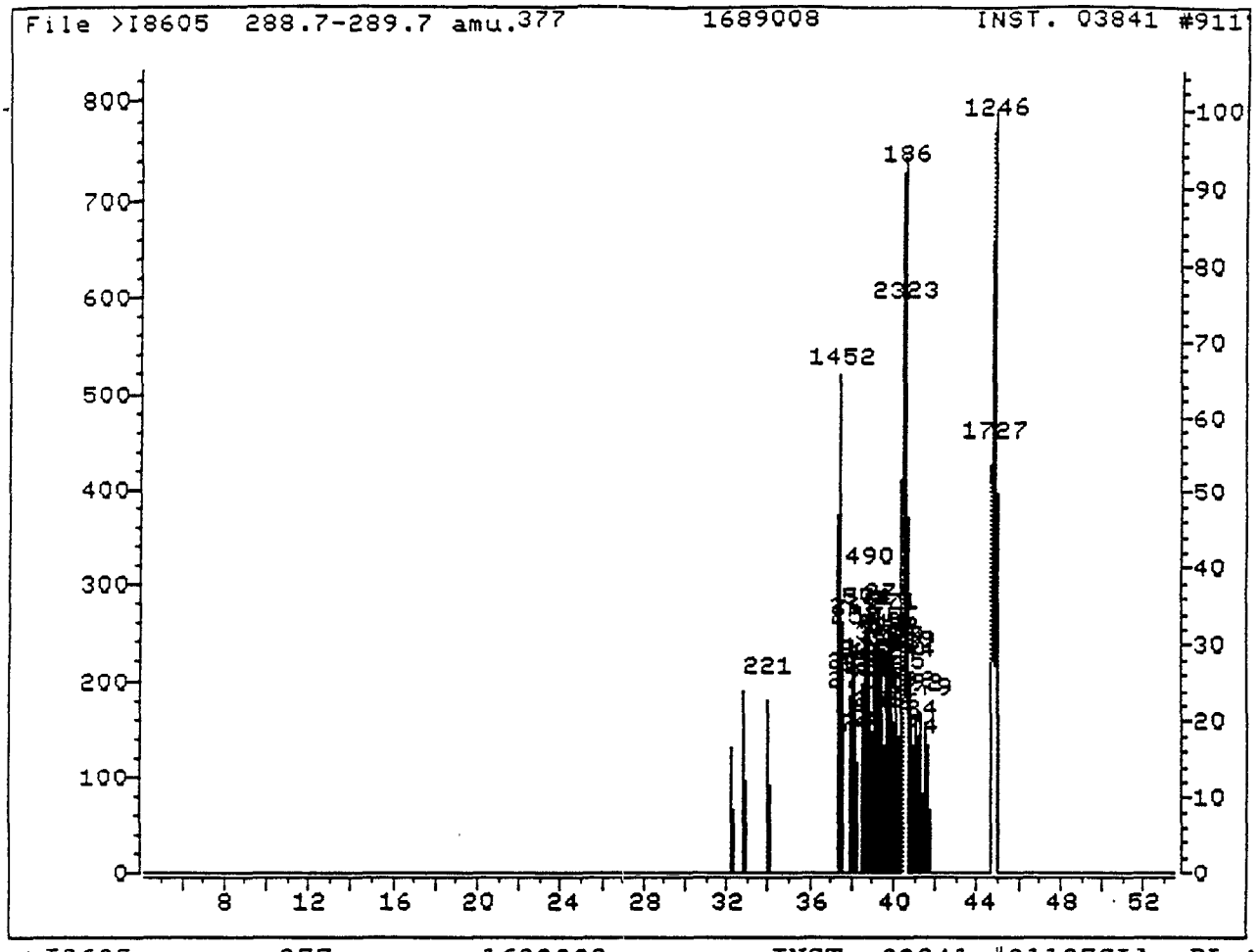


1.	1,1'-Biphenyl, hexachloro-	358	C12H4Cl6
2.	1,1'-Biphenyl, 2,2',3,3',5,6'-hexachloro-	358	C12H4Cl6
3.	1,1'-Biphenyl, 2,2',3,4,5,5'-hexachloro-	358	C12H4Cl6
4.	1,1'-Biphenyl, 2,3',4,4',5,5'-hexachloro-	358	C12H4Cl6
5.	1,1'-Biphenyl, 2,2',3,3',6,6'-hexachloro-	358	C12H4Cl6
6.	1,1'-Biphenyl, 2,3,3',4,4',5'-hexachloro-	358	C12H4Cl6

Sample file: >I8605 Spectrum #: 2695
Search speed: 1 Tilting option: N No. of ion ranges searched: 45

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	89*	26601649	43685	NBS49K	113	106	3	0	90	5	66	76
2.	89*	52744135	43688	NBS49K	114	114	3	0	83	2	66	77
3.	81*	52712046	43682	NBS49K	109	106	3	0	75	18	45	72
4.	73*	52663726	43684	NBS49K	94	112	3	0	87	25	32	60
5.	64*	38411222	43689	NBS49K	80	143	3	0	70	23	28	45
6.	62*	69782907	43585	NBS49K	78	133	3	0	96	30	25	44

Heptachlorodibenzofuran

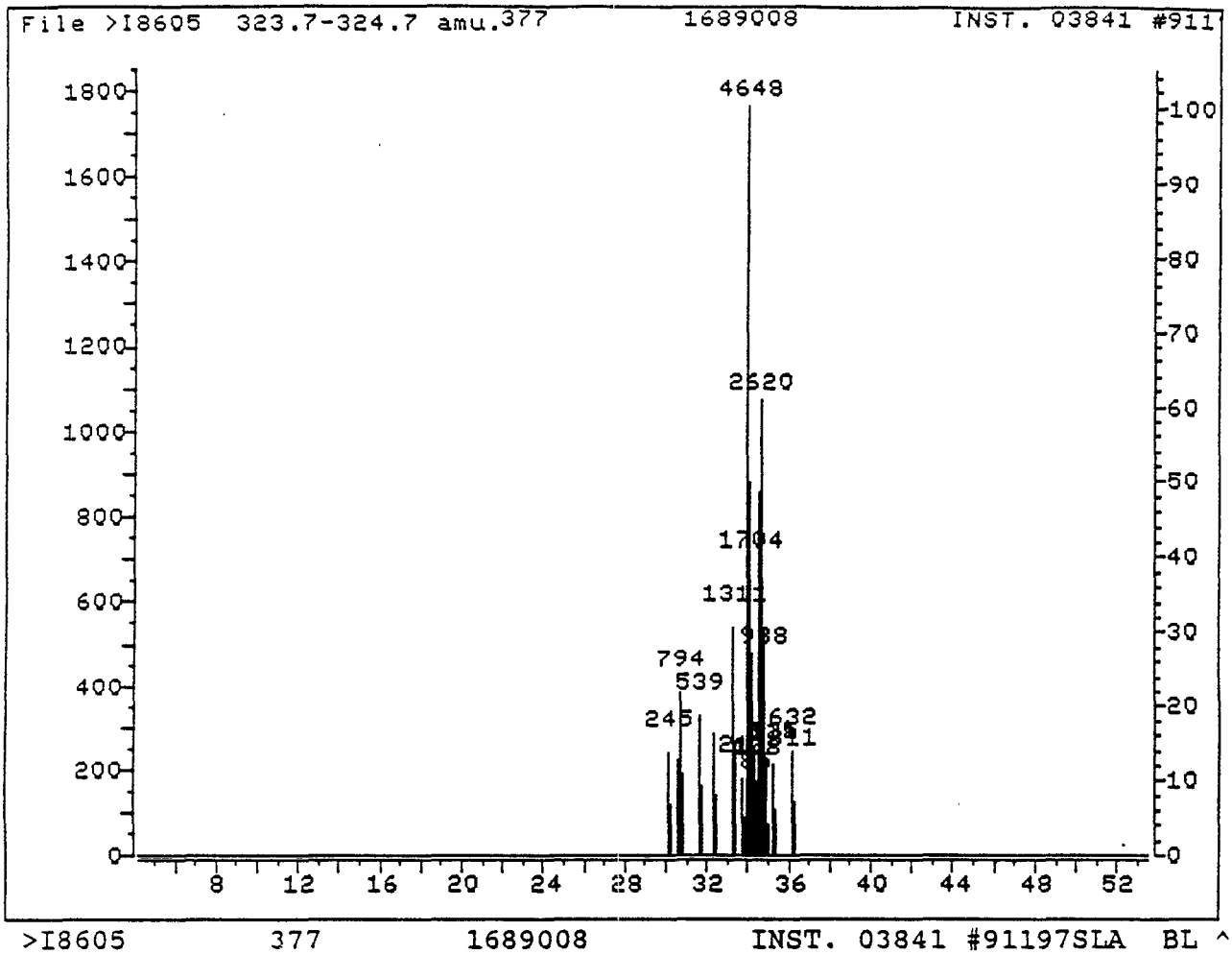


288.7| 289.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 42 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	33.91	2857	2859	2860	180	221	221	9.51	1.436
2	37.39	3188	3192	3195	519	1452	1452	62.51	9.432
3	37.92	3240	3242	3243	185	219	219	9.43	1.423
4	37.94	3243	3244	3247	164	271	271	11.67	1.760
5	38.05	3253	3255	3256	241	268	268	11.54	1.741
6	38.08	3256	3257	3259	232	252	252	10.85	1.637
7	38.11	3259	3260	3261	119	74	74	3.19	.481
8	38.47	3292	3295	3296	196	336	336	14.46	2.183
9	38.49	3296	3297	3298	182	114	114	4.91	.741
10	38.54	3298	3301	3303	188	314	314	13.52	2.040
11	38.58	3304	3305	3307	250	301	301	12.96	1.955
12	38.64	3308	3311	3313	251	574	574	24.71	3.729
13	38.67	3313	3314	3315	200	125	125	5.38	.812
14	38.69	3315	3316	3317	125	78	78	3.36	.507
15	38.77	3320	3323	3324	294	490	490	21.09	3.183
16	39.04	3348	3349	3350	195	122	122	5.25	.793
17	39.06	3350	3351	3352	231	145	145	6.24	.942

18	39.10	3353	3355	3357	179	211	211	9.08	1.371
19	39.17	3358	3361	3362	145	258	258	11.11	1.676
20	39.26	3369	3370	3373	213	361	361	15.54	2.345
21	39.41	3381	3384	3386	224	514	514	22.13	3.339
22	39.44	3386	3387	3388	177	111	111	4.78	.721
23	39.68	3409	3410	3411	224	140	140	6.03	.909
24	39.70	3411	3412	3414	257	276	276	11.88	1.793
25	39.86	3426	3427	3428	222	139	139	5.98	.903
26	39.88	3428	3429	3431	247	271	271	11.67	1.760
27	40.08	3447	3448	3450	205	243	243	10.46	1.579
28	40.13	3451	3453	3454	212	247	247	10.63	1.605
29	40.15	3454	3455	3456	142	89	89	3.83	.578
30	40.31	3469	3470	3471	184	115	115	4.95	.747
31	40.40	3471	3479	3480	589	2323	2323	100.00	15.090
32	40.47	3484	3486	3487	139	1277	186*	8.01	1.208
33	40.66	3502	3504	3507	206	480	480	20.66	3.118
34	40.71	3507	3509	3510	197	244	244	10.50	1.585
35	40.74	3510	3511	3513	164	199	199	8.57	1.293
36	40.77	3513	3514	3515	206	129	129	5.55	.838
37	41.02	3536	3538	3539	162	192	192	8.27	1.247
38	41.24	3558	3559	3560	118	74	74	3.19	.481
39	41.26	3560	3561	3562	135	84	84	3.62	.546
40	41.52	3585	3586	3588	157	179	179	7.71	1.163
41	44.68	3881	3889	3890	443	1727	1727	74.34	11.219
42	44.76	3890	3897	3898	351	3333	1246*	53.64	8.094

Sum of corrected areas: 15394.

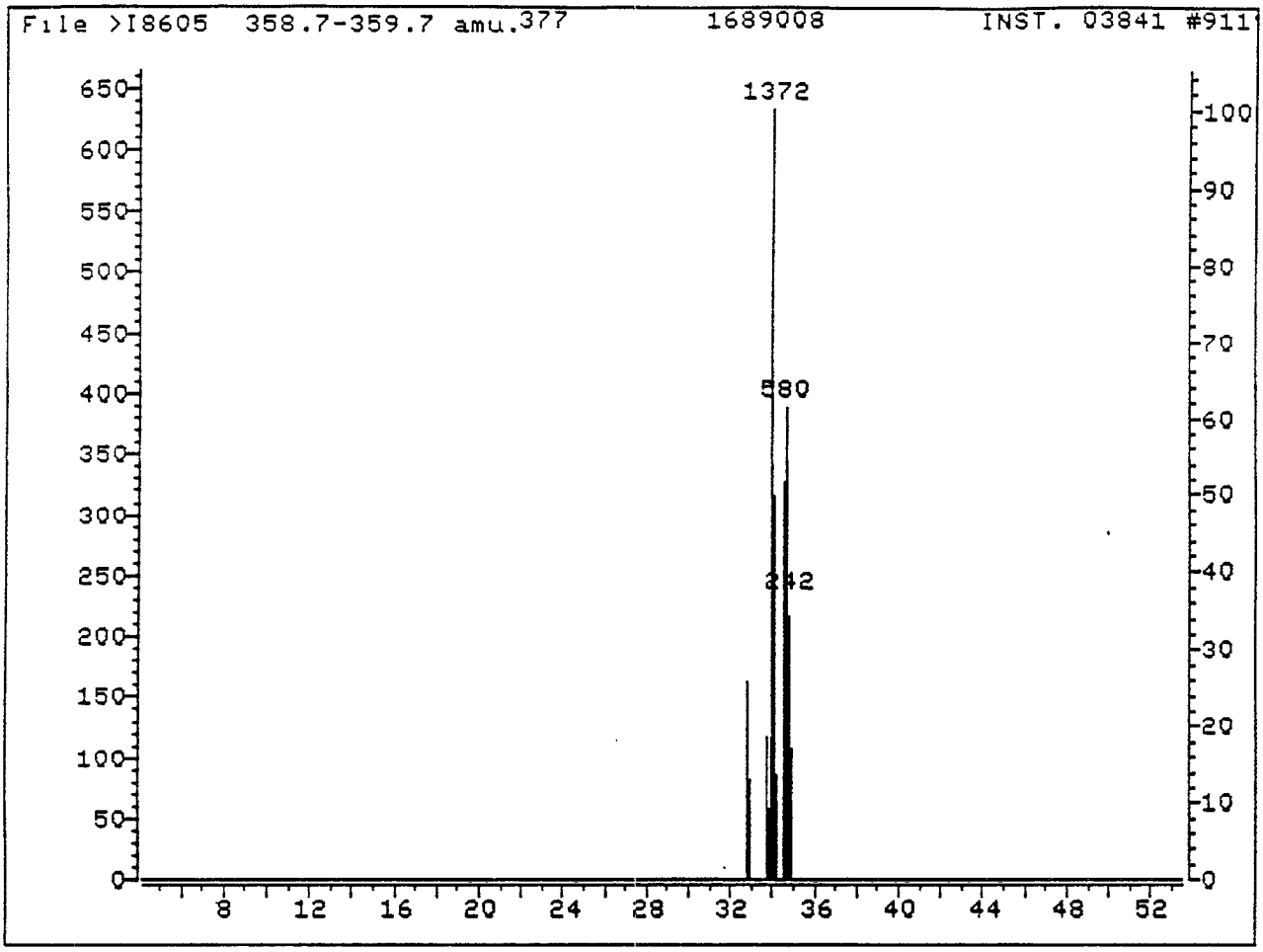


>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

323.7| 324.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 15 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	30.05	2486	2488	2489	239	245	245	5.27	1.685
2	30.61	2540	2542	2545	381	794	794	17.08	5.460
3	31.60	2636	2637	2640	327	539	539	11.60	3.706
4	33.21	2789	2792	2795	538	1311	1311	28.21	9.015
5	33.69	2836	2838	2839	177	212	212	4.56	1.458
6	33.90	2854	2858	2862	1761	4648	4648	100.00	31.960
7	34.03	2867	2870	2874	661	1704	1704	36.66	11.717
8	34.32	2897	2898	2899	174	108	108	2.32	.743
9	34.34	2899	2900	2901	137	85	85	1.83	.584
10	34.51	2912	2916	2920	1070	2620	2620	56.37	18.016
11	34.65	2927	2930	2933	437	988	988	21.26	6.794
12	35.13	2975	2976	2977	209	131	131	2.82	.901
13	35.15	2977	2978	2980	213	215	215	4.63	1.478
14	36.03	3059	3062	3063	197	311	311	6.69	2.138
15	36.08	3064	3067	3070	245	632	632	13.60	4.346

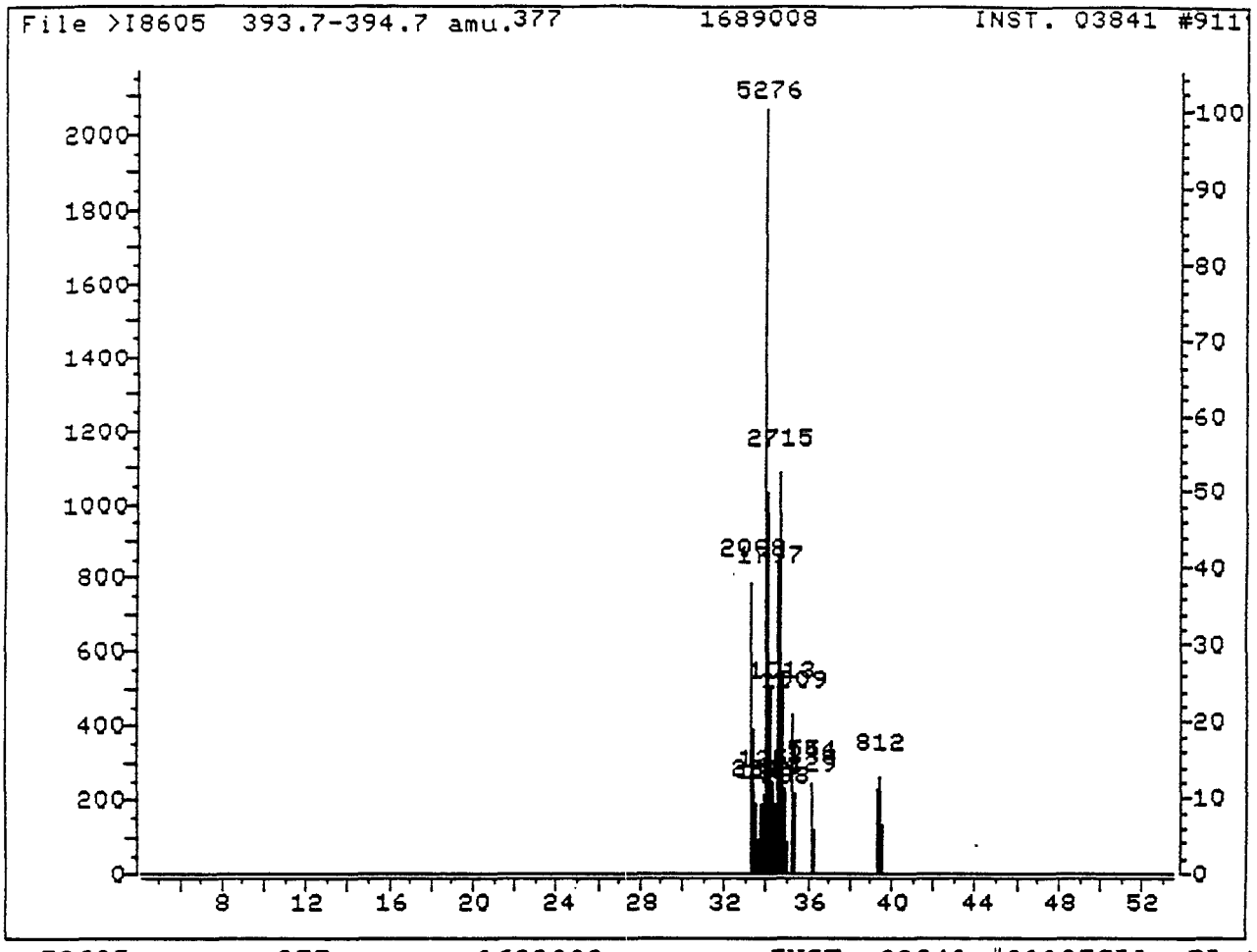
Sum of corrected areas: 14543.



358.7| 359.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 3 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	33.90	2855	2858	2861	632	1372	1372	100.00	62.534
2	34.51	2913	2916	2917	389	580	580	42.27	26.436
3	34.65	2929	2930	2932	217	242	242	17.64	11.030

Sum of corrected areas: 2194.

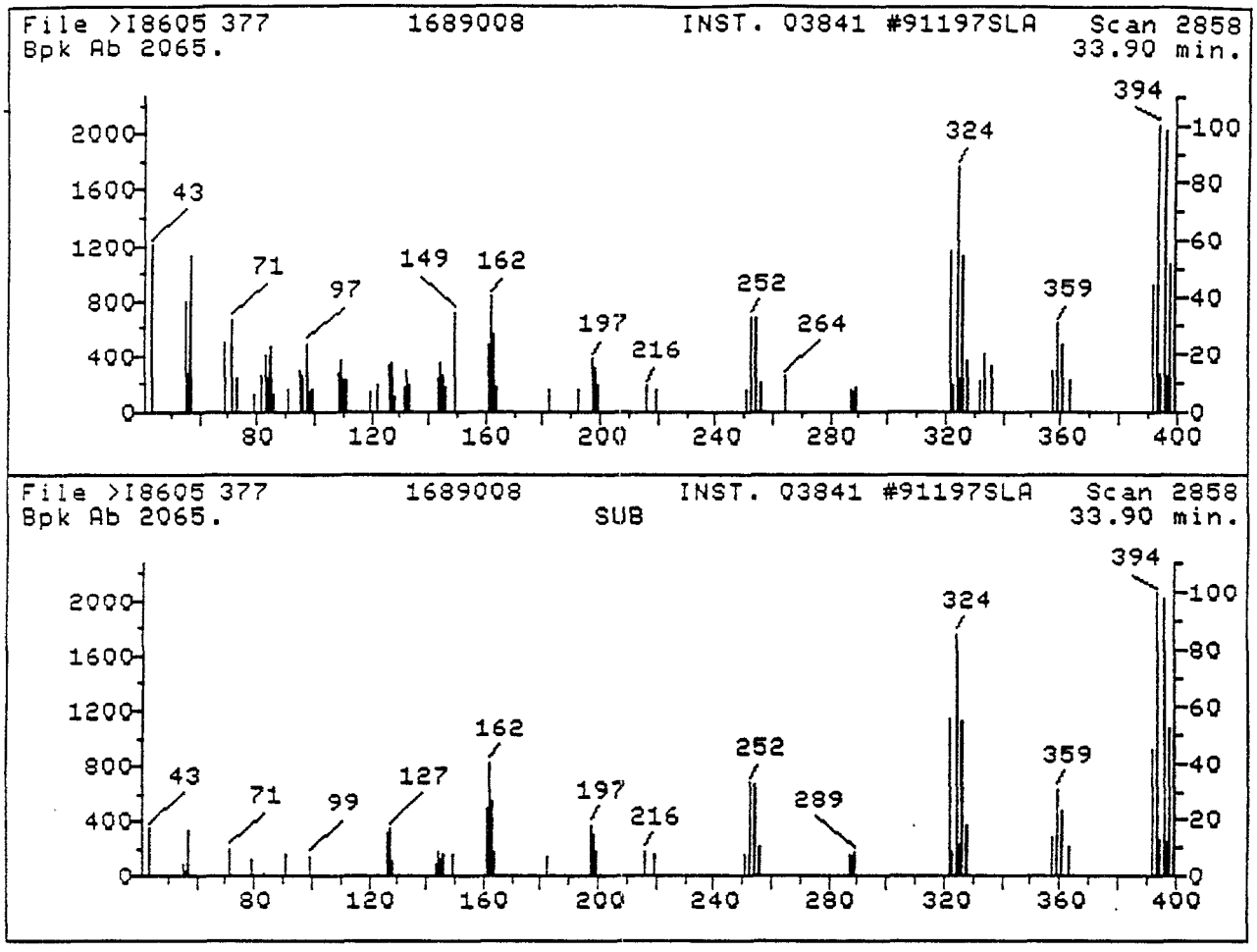


>I8605 377 1689008 INST. 03841 #91197SLA BL ^I8600

393.7| 394.7
Upslope: .2000 Area Reject: .50 % Max Peaks: 15 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR75 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	33.21	2788	2792	2795	785	2009	2009	38.08	12.075
2	33.39	2808	2809	2811	190	220	220	4.17	1.322
3	33.68	2836	2837	2838	186	116	116	2.20	.697
4	33.70	2838	2839	2840	216	135	135	2.56	.811
5	33.90	2854	2858	2862	2065	5276	5276	100.00	31.711
6	34.03	2867	2870	2873	765	1797	1797	34.06	10.801
7	34.32	2897	2898	2901	190	319	319	6.05	1.917
8	34.51	2912	2916	2920	1079	2715	2715	51.46	16.318
9	34.65	2927	2930	2933	452	1013	1013	19.20	6.088
10	34.78	2939	2942	2943	170	288	288	5.46	1.731
11	35.14	2975	2977	2981	426	1009	1009	19.12	6.064
12	36.02	3059	3061	3062	204	229	229	4.34	1.376
13	36.04	3062	3063	3064	234	146	146	2.77	.878
14	36.06	3064	3065	3069	239	554	554	10.50	3.330
15	39.34	3375	3378	3382	259	812	812	15.39	4.880

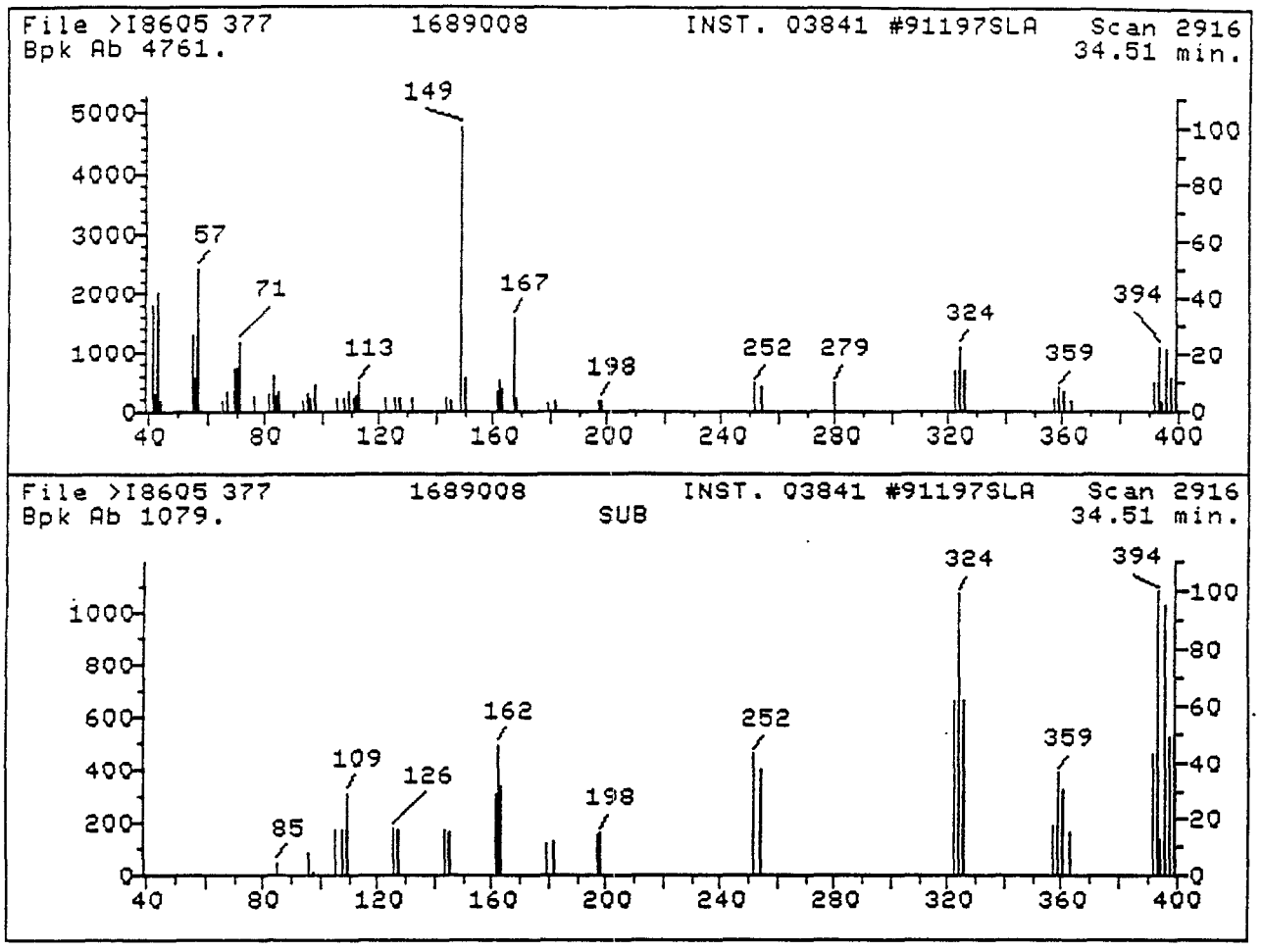
Sum of corrected areas: 16638.



1. 1,1'-Biphenyl, 2,2',3,4,4',5,6'-Heptachloro- 392 C12H3Cl7
2. 1,1'-Biphenyl, 2,2',3,4,4',5,5'-heptachloro- 392 C12H3Cl7
3. 1,1'-Biphenyl, 2,3,3',4,4',5,5'-heptachloro- 392 C12H3Cl7
4. 1,1'-Biphenyl, 2,2',3,3',5,5',6-heptachloro- 392 C12H3Cl7
5. 1,1'-Biphenyl, 2,2',3,3',4,5,6'-heptachloro- 392 C12H3Cl7
6. 1,1'-Biphenyl, 2,3,3',4',5,5',6-heptachloro- 392 C12H3Cl7

Sample file: >I8605 Spectrum #: 2858
Search speed: 1 Tilting option: N No. of ion ranges searched: 45

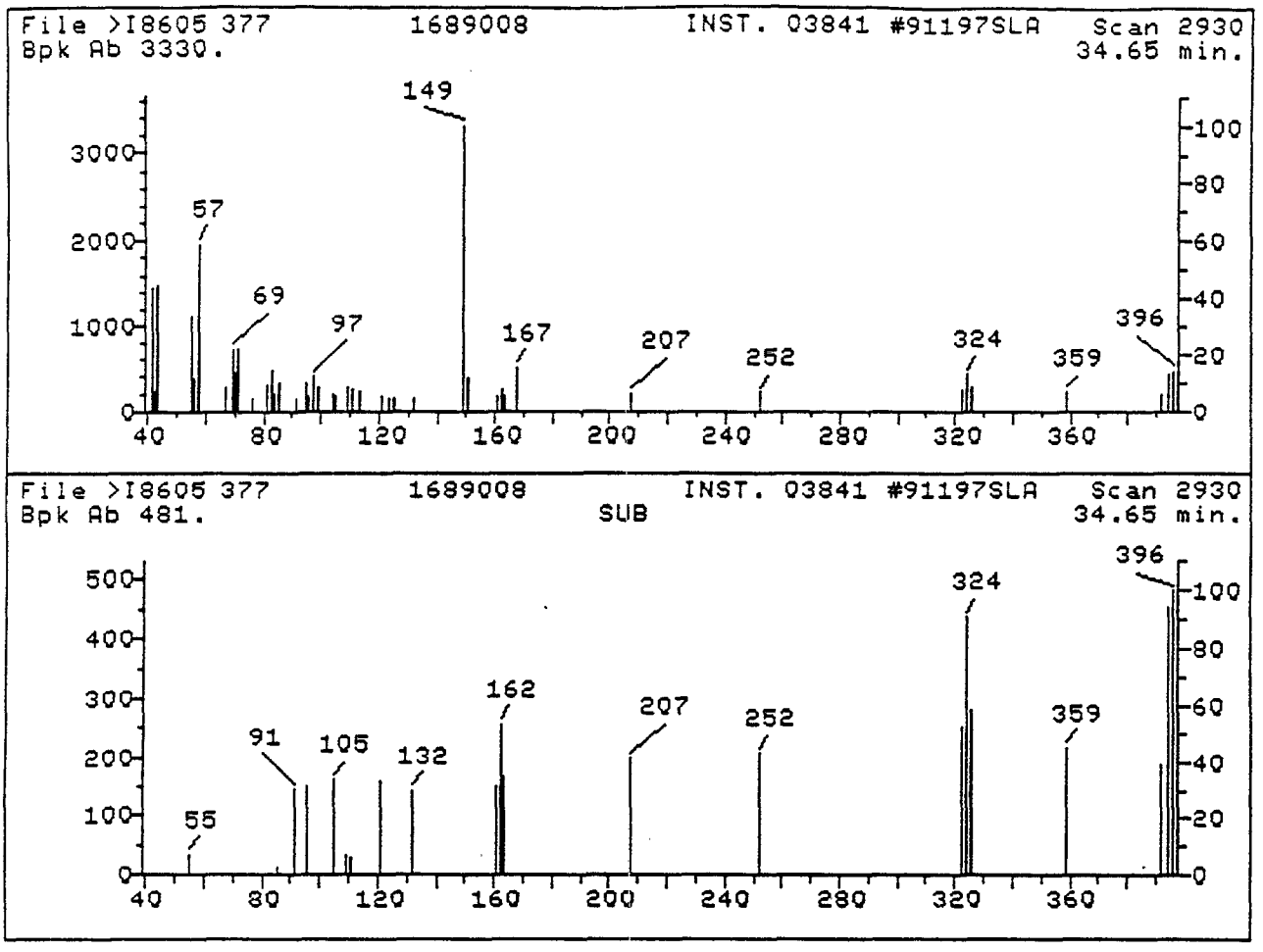
	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	95*	60145235	45241	NBS49K	131	101	1	0	59	31	50	99
2.	93*	35065293	45254	NBS49K	123	110	3	0	93	2	68	89
3.	84*	39635319	45245	NBS49K	107	104	2	0	70	34	40	86
4.	73*	52663679	45247	NBS49K	88	124	2	0	73	24	32	67
5.	70*	38411255	45256	NBS49K	83	129	1	0	47	50	30	80
6.	68*	69782918	45249	NBS49K	94	120	2	0	69	36	28	72



1.	1,1'-Biphenyl, 2,2',3,4,5,6,6'-Heptachloro-	392	C12H3Cl7
2.	1,1'-Biphenyl, 2,3,3',4,4',5,5'-heptachloro-	392	C12H3Cl7
3.	1,1'-Biphenyl, 2,3,3',4,5,5',6-heptachloro-	392	C12H3Cl7
4.	1,1'-Biphenyl, 2,2',3,3',5,5',6-heptachloro-	392	C12H3Cl7
5.	1,1'-Biphenyl, 2,2',3,4,4',5,6-Heptachloro-	392	C12H3Cl7
6.	1,1'-Biphenyl, 2,3,3',4',5,5',6-heptachloro-	392	C12H3Cl7

Sample file: >I8605 Spectrum #: 2916
Search speed: 1 Tilting option: N No. of ion ranges searched: 89

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	86*	74472494	45238	NBS49K	122	109	3	0	70	23	47	86
2.	85*	39635319	45245	NBS49K	110	101	2	0	67	40	37	89
3.	81*	74472518	45240	NBS49K	114	118	3	0	70	19	45	77
4.	79*	52663679	45247	NBS49K	100	112	3	0	95	14	43	65
5.	73*	74472472	45237	NBS49K	98	130	3	0	71	21	32	63
6.	71*	69782918	45249	NBS49K	99	115	3	0	90	28	29	63



1.	1,1'-Biphenyl, 2,2',3,3',4,4',6-heptachloro-	392	C12H3Cl7
2.	1,1'-Biphenyl, 2,2',3,3',5,6,6'-heptachloro-	392	C12H3Cl7
3.	1,1'-Biphenyl, 2,3,3',4,4',5,5'-heptachloro-	392	C12H3Cl7
4.	1,1'-Biphenyl, 2,3,3',4',5,5',6-heptachloro-	392	C12H3Cl7
5.	1,1'-Biphenyl, 2,2',3,3',4,6,6'-heptachloro-	392	C12H3Cl7
6.	1,1'-Biphenyl, 2,2',3,3',5,5',6-heptachloro-	392	C12H3Cl7

Sample file: >I8605 Spectrum #: 2930
Search speed: 1 Tilting option: N No. of ion ranges searched: 43

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	70*	52663715	45252	NBS49K	86	144	3	0	77	19	32	52
2.	62*	52663646	45242	NBS49K	75	153	3	0	79	30	25	40
3.	53*	39635319	45245	NBS49K	72	139	3	0	88	34	20	37
4.	48*	69782918	45249	NBS49K	72	142	3	0	89	40	17	37
5.	47*	52663657	45244	NBS49K	64	159	3	0	80	33	20	31
6.	40*	52663679	45247	NBS49K	54	158	3	0	98	28	14	17

GC/ECD DATA FOR ANALYSIS PERFORMED
29 JULY 1991

Lancaster Laboratories
Where quality is a science.

Batch No: 9120631511 1

Sample Name: 1689008 DF100
Injected on: JUL 29, 1991 16:28:13 Instrument: VARIAN 3700 BIN 58 Analyst: DKG Area File Name: C: ORIGINAL DATA

Sample Amount: 30 (G) or L DF: 20000 mL

Units: uG/L or mG/kG

Aroclor	Amount Found	No Of Peaks Found	Minimum Required	%RSD	Maximum Allowed %RSD	Worst Case**	Comments
1016 *	161.7961	4	5	141.71040%	1.5000%	3.865170	w 9.5 <20.
1221 *	90.3063	2	2	96.45281%	5.0000%	28.715197	~~w 28.7~~ <20. no 1.7
1232 *	338.5341	4	5	147.41064%	5.0000%	9.427595	w 22.8 <30.
1242 *	6.1901	2	3	45.53165%	20.0000%	4.197134	w 8.18 <20.
1248 *	28.2619	4	5	124.73873%	20.0000%	3.418882	w 17.6 <20.
1254 *	84.0102	2	3	65.13942%	30.0000%	36.636707	w 36.6 <40. **
1260	148.7991	4	3	15.09569%	40.0000%	123.044930	w 168 <200. **

LOQ = .2 x 100 = 20.

* MS & MSD dilutions not run due to high level dilution

Peaks Used To Quantify Above Amount Found Values:
Aroclor Retention Time and Calculated Amount Found for Each Peak

1016	2.080	2.293	2.602	2.860
	3.8652	141.5800	9.5281	492.2112
1221	1.588	2.080		
	151.8974	28.7152		
1232	1.588	2.080	2.602	2.860
	253.9568	9.4276	22.8451	1067.9070
1242	2.080	2.602		
	4.1971	8.1830		
1248	2.080	2.602	3.330	4.107
	11.6524	17.5540	3.4189	80.4226
1254	4.535	5.832		
	45.3147	122.7057		
1260	5.832	6.388	7.125	8.102
	136.9039	167.8888	123.0449	167.3590

** Pattern extremely distorted. Called worst case only.

Non-Quantitation Peaks with matching retention times:

1242	2.860	2.293	
	452.7142	138.2863	
1248	3.600		
	225.5122		
1254	6.388	7.025	5.277
	822.0172	36.6367	239.2741
1260	8.852	7.498	
	388.7003	566.0287	

Reviewed by DKG Date: 7/29/91 %SSR: D.O. %

* This aroclor pattern is not in this sample, but values are supplied anyway.
** Calculated lowest amount found among all peaks with matching retention times.

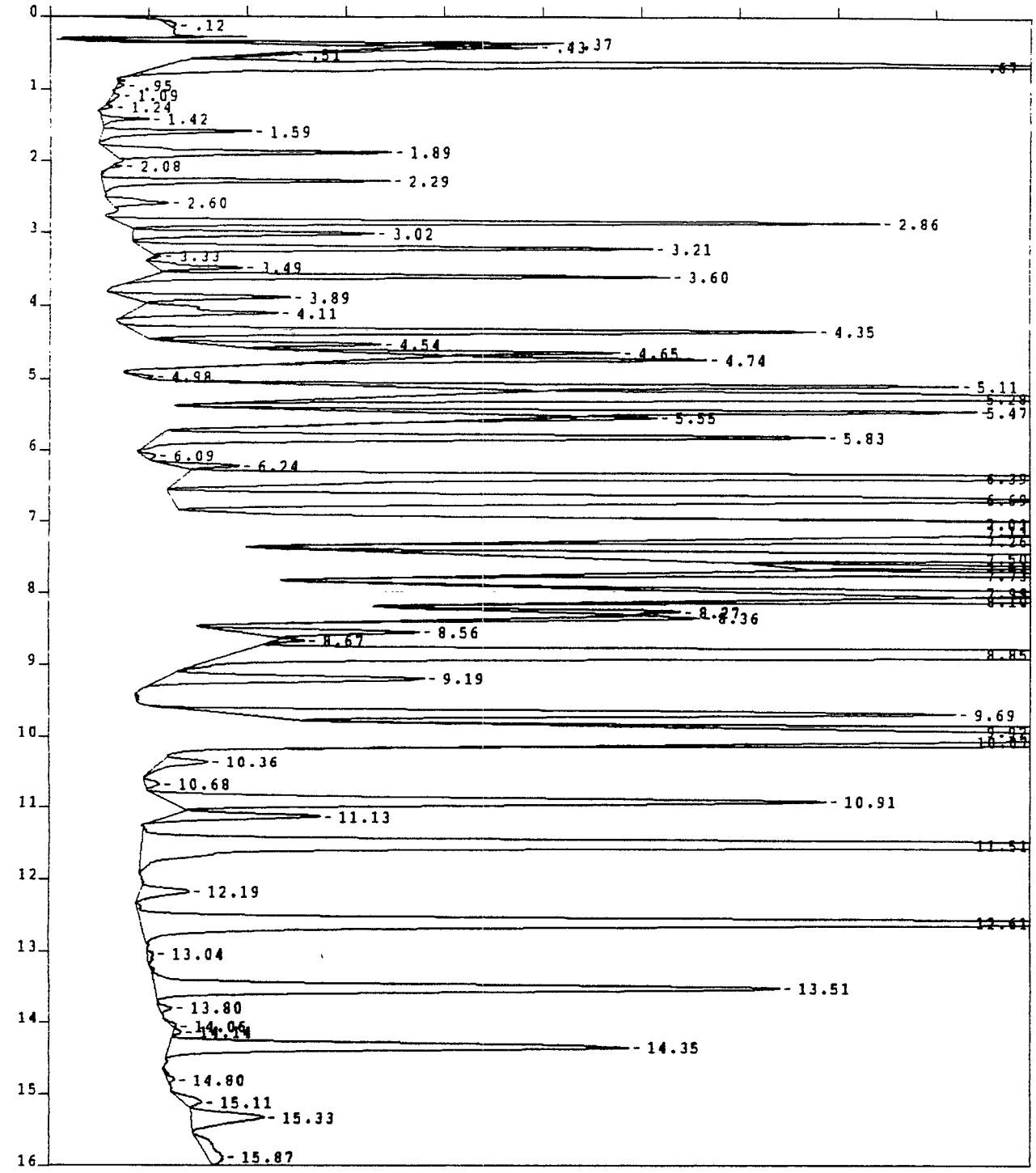
Reported on 07-29-1991 16:50:21 Last Calibrated on 07-29-1991 16:43:36 CheckPC8 Revision 1.12

AR001632

received 8/6/91 DG

1

File=c:\cp\data1\891208.14R Date printed : 07-29-1991 Time : 16:44:53
0.00 to 16.00 min. Low Y : -12.02546 mv High Y : 57.97454 mv Span : 70.00000 mv



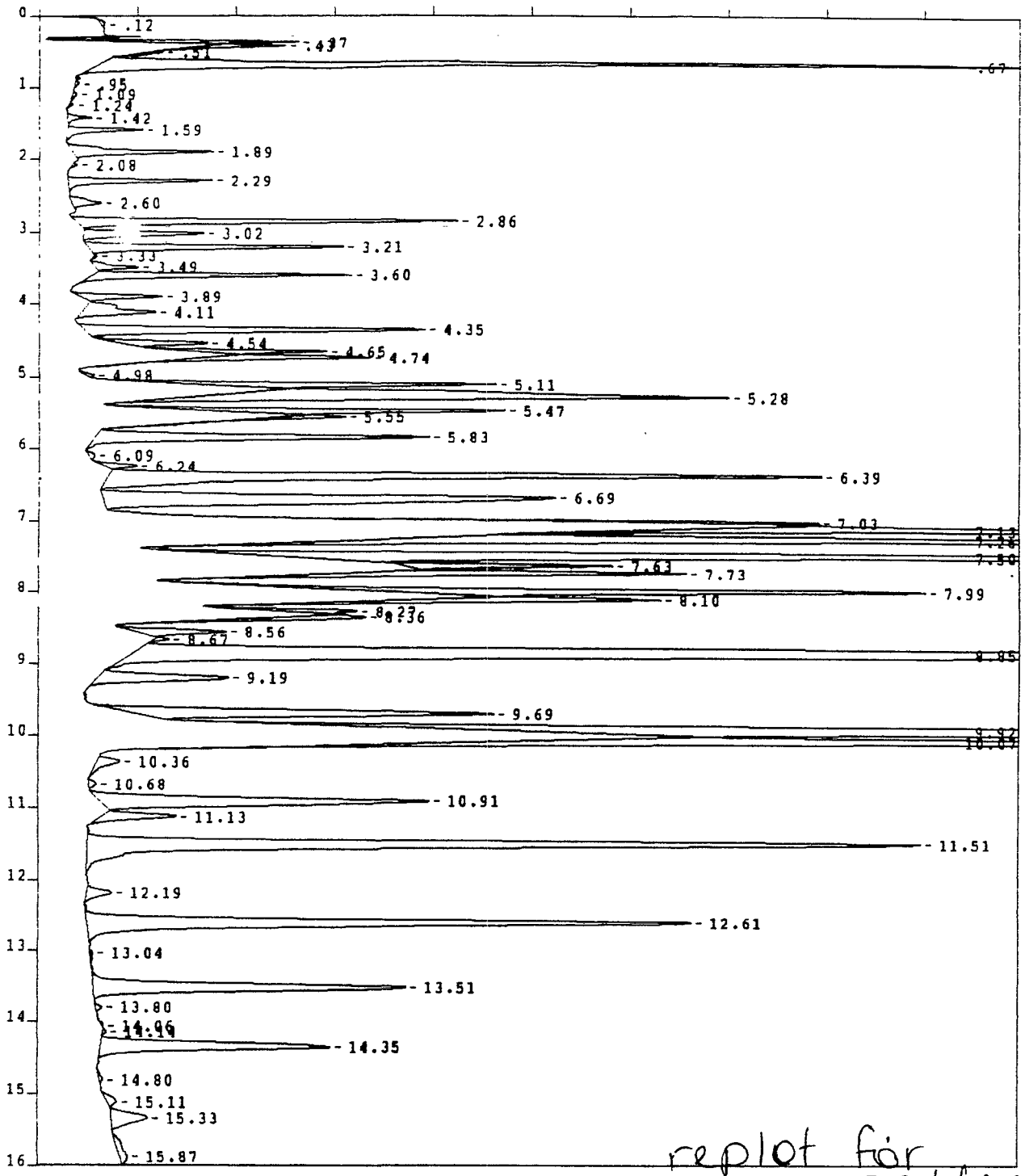
Lancaster Laboratories
Where quality is a science.

Sample name: 1689008 DF100
Instrument ID: VARIAN 3700 BIN 58 GC Column: RTX-5 LLI# 18173C
Volume injected:1 ul Injected on:JUL 29, 1991 16:28:10
Result file: c:\cp\data1\B91208.14R Millivolt Span: 15

AR001633

6

File: co data1 891208.14R Date printed = 07-29-1991 Time = 16:48:06
0.00 to 16.00 min. Low Y = -12.41461 nv High Y = 127.58539 nv Span = 140.00000 nv



replot for pattern

AR001634

(3)

Sample Name: 1689008 DF100
Result File:c:\cp\data1\B91208.14R Instrument ID:VARIAN 3700 BIN 5B

GC Conditions:INJECTOR 250C; DETECTOR 250C; COLUMN 200 to 280, 5C/mi
RTX-5 LLI# 18173C
Run time: 16.00167

Analyst: DKG

Integration & Calculation Parameters:
Threshold: 2 Width: .04 Area Reject: 1000
Sample Weight: 30 Dilution Factor:20000 Volume Injected:1 ul
Calib. Type: EXTERNAL Quantitation: Height
Calib. Descripion:

Peak #	Ret Time (min)	% Delta Ret Time	Peak Name	Amount ug/l	Peak Height	Peak Area	Half Width (min)	Peak Resolution
1.0	0.123	0.00%		0.0000	509	2514	0.090	0.000
3.0	0.372	0.00%		0.0000	21092	45304	0.052	1.467
4.0	0.425	0.00%		0.0000	10983	27877	0.056	0.581
5.0	0.515	0.00%		0.0000	2350	7885	0.059	0.918
6.0	0.667	0.00%		0.0000	161427	486865	0.036	1.861
8.0	0.950	0.00%		0.0000	481	1267	0.066	0.954
9.0	1.087	0.00%		0.0000	534	2669	0.098	0.983
10.0	1.243	0.00%		0.0000	656	1917	0.065	1.131
11.0	1.418	0.00%		0.0000	3410	10478	0.040	1.949
12.0	1.588	0.00%		0.0000	10681	36953	0.048	2.252
13.0	1.887	0.00%		0.0000	20081	80487	0.057	3.321
14.0	2.080	0.00%		0.0000	761	1297	0.054	2.044
15.0	2.293	0.00%		0.0000	20615	71516	0.051	2.394
16.0	2.602	0.00%		0.0000	4105	19175	0.089	2.594
17.0	2.860	0.00%		0.0000	54399	196374	0.056	2.091
18.0	3.017	0.00%		0.0000	17222	67602	0.063	1.550
19.0	3.212	0.00%		0.0000	36426	140634	0.060	1.867
20.0	3.330	0.00%		0.0000	572	1403	0.052	1.241
21.0	3.488	0.00%		0.0000	6114	21466	0.053	1.781
22.0	3.600	0.00%		0.0000	37321	132247	0.057	1.202
23.0	3.892	0.00%		0.0000	11575	45793	0.071	2.698
24.0	4.107	0.00%	Oxychlordane	1.0596	10712	62351	0.124	1.297
25.0	4.352	0.00%		0.0000	48674	221184	0.073	1.457
26.0	4.535	0.00%		0.0000	12484	44018	0.071	1.497
27.0	4.648	0.00%		0.0000	18034	50616	0.066	0.975
28.0	4.740	0.00%		0.0000	24360	87863	0.090	0.689
29.0	4.982	0.00%		0.0000	883	2380	0.053	1.982
30.0	5.105	0.00%		0.0000	40963	141044	0.076	1.121
31.0	5.277	0.00%		0.0000	77087	437629	0.123	1.012
32.0	5.467	0.00%		0.0000	40328	142213	0.085	1.075
33.0	5.553	0.00%		0.0000	9661	36432	0.087	0.593
34.0	5.832	0.00%		0.0000	47734	249557	0.082	1.929
35.0	6.092	0.00%		0.0000	849	3644	0.093	1.743
36.0	6.238	0.00%		0.0000	4516	15840	0.075	1.025
37.0	6.388	0.00%		0.0000	101885	551678	0.078	1.153
38.0	6.687	0.00%		0.0000	64687	501940	0.129	1.699
39.0	7.025	0.00%		0.0000	11862	53595	0.050	2.220
40.0	7.125	0.00%		0.0000	73673	298124	0.089	0.842
41.0	7.262	0.00%		0.0000	129111	570118	0.084	0.927
42.0	7.498	0.00%		0.0000	166889	769088	0.079	1.713
43.0	7.625	0.00%		0.0000	29486	85321	0.051	1.147
44.0	7.733	0.00%		0.0000	50630	198498	0.090	0.901
45.0	7.992	0.00%		0.0000	75041	302997	0.084	1.747
46.0	8.102	0.00%		0.0000	37857	155372	0.092	0.737
47.0	8.268	0.00%		0.0000	9347	36260	0.075	1.173
48.0	8.355	0.00%		0.0000	13222	63271	0.095	0.598
49.0	8.560	0.00%		0.0000	12541	54550	0.085	1.340

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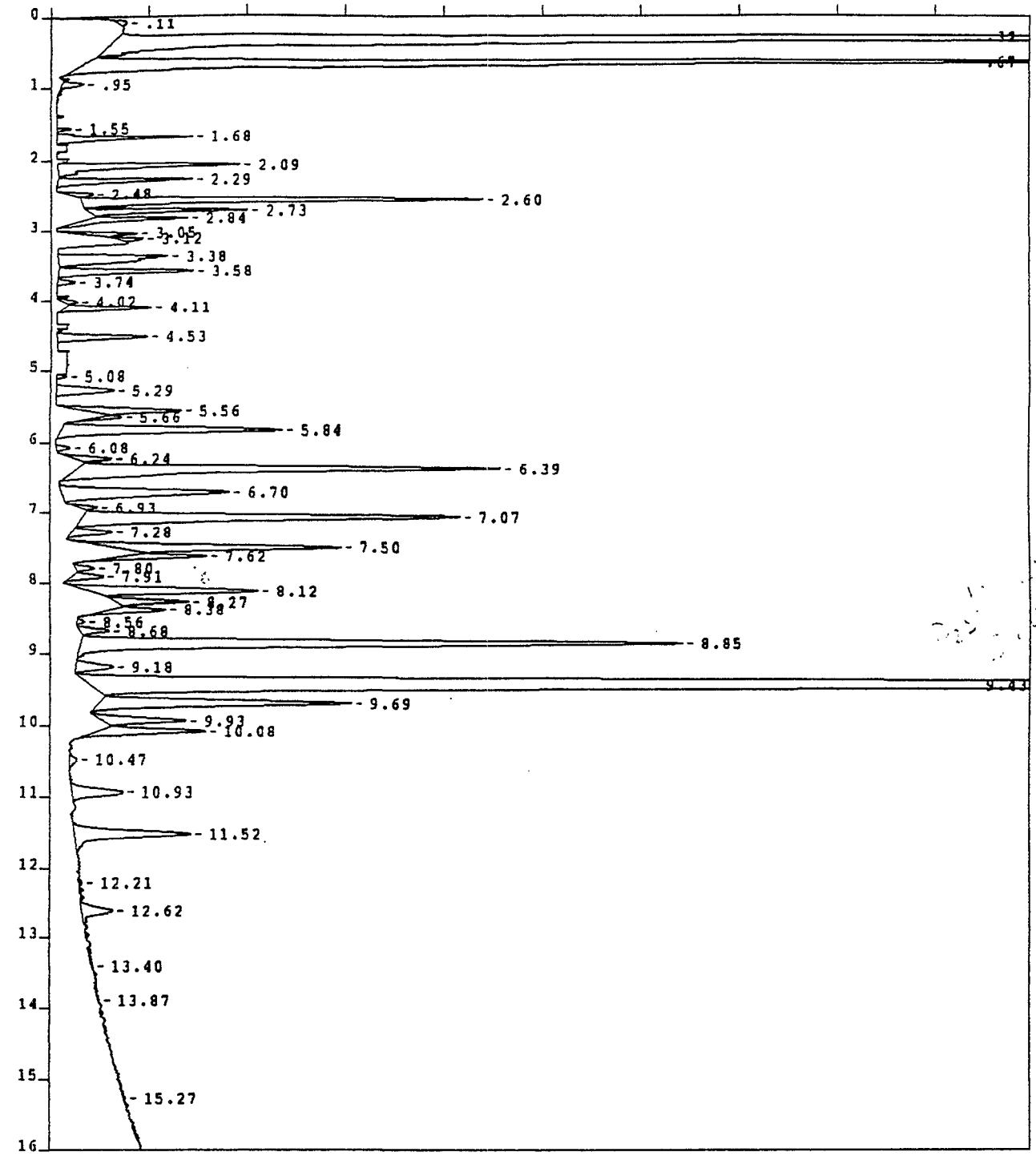
51.0	8.852	0.00%	0.0000	320841	1883555	0.091	1.460
52.0	9.190	0.00%	0.0000	18672	113995	0.104	2.047
54.0	9.687	0.00%	0.0000	51219 ✓	287121	0.100	1.636
55.0	9.923	0.00%	0.0000	194443	1037406	0.100	1.392
56.0	10.070	0.00%	0.0000	146719	653358	0.089	0.912
57.0	10.358	0.00%	0.0000	3303	22042	0.120	1.621
58.0	10.677	0.00%	0.0000	1029	5010	0.089	1.794
59.0	10.908	0.00%	0.0000	46974	315262	0.112	1.361
60.0	11.127	0.00%	0.0000	10836	57748	0.096	1.237
61.0	11.508	0.00%	0.0000	119189	818580	0.103	2.257
62.0	12.192	0.00%	0.0000	3553	23651	0.108	3.817
63.0	12.607	0.00%	0.0000	86307	615516	0.106	2.281
64.0	13.042	0.00%	0.0000	423	2823	0.156	1.951
66.0	13.513	0.00%	0.0000	44590	319498	0.111	1.757
67.0	13.800	0.00%	0.0000	889	3244	0.074	1.827
68.0	14.058	0.00%	0.0000	256	1465	0.084	1.923
69.0	14.135	0.00%	0.0000	565	2031	0.070	0.584
70.0	14.348	0.00%	0.0000	32846	224740	0.109	1.404
71.0	14.805	0.00%	0.0000	521	3276	0.144	2.129
72.0	15.112	0.00%	0.0000	1307	10010	0.165	1.169
73.0	15.327	0.00%	0.0000	5195	47813	0.152	0.799
74.0	15.873	0.00%	0.0000	1139	19628	0.357	1.264

Files:
  Area File: c:\cp\data1\B91208.14A
  Method File: c:\cp\data1\PCB8.MET
  Calibration File: c:\cp\data1\PCBB.CAL
  Format File: c:\cp\data1\PCBB.FMT
  Injected on: JUL 29, 1991 16:28:13

  %SSR = 3.178804

File=c:\cp\data1\B91208.02R Date printed = 07-29-1991 Time = 12:42:11

0.00 to 16.00 min. Low Y = -12.29160 mv High Y = 57.70840 mv Span = 70.00000 mv



Lancaster Laboratories

Where quality is a science.

Sample name: 911660W275-2

Instrument ID: VARIAN 3700 BIN 5B GC Column: RTX-5 LLI# 18173C

Volume injected:1 ul Injected on:JUL 29, 1991 12:45:38

Result file: c:\cp\data1\B91208.02R Millivolt Span: 15

AR001637

⑥

Sample name: 911660W275-2

Result File:c:\cp\data1\B91208.02R Instrument ID:VARIAN 3700 BIN 5B

GC Conditions:INJECTOR 250C; DETECTOR 250C; COLUMN 200 to 280, 5C/mi
RTX-5 LLI# 18173C
Run time: 16.00167

Analyst: DKG

Integration & Calculation Parameters:

Threshold: 2 Width: .04 Area Reject: 1000
Sample Weight: 1 Dilution Factor:1 Volume Injected:1 ul
Calib. Type: EXTERNAL Quantitation: Height
Calib. Descripion:

Peak #	Ret Time (min)	% Delta Ret Time	Peak Name	Amount ug/l	Peak Height	Peak Area	Half Width (min)	Peak Resolution
1.0	0.110	0.00%		0.0000	643	2722	0.090	0.000
2.0	0.322	0.00%		0.0000	112250	622913	0.086	1.415
3.0	0.665	0.00%		0.0000	159204	443511	0.033	3.407
5.0	0.950	0.00%		0.0000	1514	6172	0.069	0.876
7.0	1.552	0.00%		0.0000	1014	1851	0.030	3.488
8.0	1.685	0.00%		0.0000	9763	30086	0.041	2.193
9.0	2.085	0.00%		0.0000	13120	55187	0.062	4.557
10.0	2.287	0.00%		0.0000	9707	31768	0.050	2.111
11.0	2.480	0.00%		0.0000	1725	5655	0.071	1.874
12.0	2.595	0.00%		0.0000	28724	114102	0.064	1.001
13.0	2.733	0.00%		0.0000	11315	33766	0.049	1.434
14.0	2.837	0.00%		0.0000	7368	27533	0.061	1.105
15.0	3.047	0.00%		0.0000	3485	9618	0.061	2.023
16.0	3.120	0.00%		0.0000	1749	4142	0.057	0.729
17.0	3.377	0.00%		0.0000	7883	47357	0.111	1.802
18.0	3.583	0.00%		0.0000	9724	40446	0.066	1.375
19.0	3.735	0.00%		0.0000	1319	4373	0.054	1.482
20.0	4.020	0.00%		0.0000	835	2942	0.069	2.726
21.0	4.113	0.00%	Oxychlordane	0.0022	6341	20864	0.054	0.891
22.0	4.533	0.00%		0.0000	6461	25748	0.065	4.148
23.0	5.080	0.00%		0.0000	720	1712	0.042	6.035
24.0	5.287	0.00%		0.0000	4151	22561	0.093	1.806
25.0	5.557	0.00%		0.0000	6832	29084	0.088	1.756
26.0	5.657	0.00%		0.0000	1778	6019	0.073	0.729
27.0	5.837	0.00%		0.0000	15887	84685	0.089	1.309
28.0	6.080	0.00%		0.0000	978	3544	0.063	1.887
29.0	6.238	0.00%		0.0000	2611	9541	0.085	1.260
30.0	6.385	0.00%		0.0000	30397 ✓	175289	0.083	1.031
31.0	6.703	0.00%		0.0000	12019	79322	0.107	1.974
32.0	6.935	0.00%		0.0000	1158	3938	0.075	1.496
33.0	7.067	0.00%		0.0000	27014	154140	0.089	0.944
34.0	7.278	0.00%		0.0000	2949	13071	0.077	1.498
35.0	7.495	0.00%		0.0000	16224	76670	0.087	1.550
36.0	7.618	0.00%		0.0000	5869	24027	0.092	0.809
37.0	7.797	0.00%		0.0000	1324	4748	0.065	1.335
38.0	7.910	0.00%		0.0000	2345	9877	0.083	0.903
39.0	8.117	0.00%		0.0000	12089	67096	0.101	1.321
40.0	8.268	0.00%		0.0000	5140	18704	0.063	1.086
41.0	8.380	0.00%		0.0000	4033	18232	0.102	0.796
42.0	8.560	0.00%		0.0000	533	1662	0.055	1.348
43.0	8.680	0.00%		0.0000	2059	8183	0.068	1.143
44.0	8.855	0.00%		0.0000	42996	255426	0.092	1.284
45.0	9.178	0.00%		0.0000	2713	15933	0.101	1.969
46.0	9.428	0.00%		0.0000	158611	1000724	0.100	1.458
47.0	9.688	0.00%		0.0000	18158 ✓	103686	0.095	1.566
48.0	9.925	0.00%		0.0000	5862	29399	0.090	1.506

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50.0	10.473	0.00%	0.0000	533	3729	0.104	2.348
51.0	10.933	0.00%	0.0000	3668	24762	0.109	2.540
52.0	11.518	0.00%	0.0000	8321	57708	0.104	3.243
53.0	12.210	0.00%	0.0000	272	1062	0.075	4.557
56.0	12.620	0.00%	0.0000	2244	16521	0.117	1.327
58.0	13.402	0.00%	0.0000	134	1860	0.282	1.392
60.0	13.873	0.00%	0.0000	129	1163	0.177	1.963
63.0	15.265	0.00%	0.0000	228	1926	0.165	3.372

Files:
  Area File: c:\cp\data1\B91208.02A
  Method File: c:\cp\data1\PCBB.MET
  Calibration File: c:\cp\data1\PCB1.CAL
  Format File: c:\cp\data1\PCB1.FMT
  Injected on: JUL 29, 1991 12:25:34

SSR = 4.433761

(8)

::: CheckPCB Calibration File Report :::

Pattern Name: 1016
Calibration Levels: 1 Concentration: .1
Minimum Required Hits: 5 Maximim Allowable %RSD: 1.5

Peak Data

	1	2	3	4	5	6	7	8	9	10
Retention Time:	1.690	2.090	2.290	2.600	2.730	2.840	0.000	0.000	0.000	0.000
RT Window (mins)	0.04000	0.05000	0.04000	0.05000	0.04000	0.05000	0.00000	0.00000	0.00000	0.00000
Height	9763	13120	9707	28724	11315	7368	0	0	0	0
RF (Height/Conc)	97630	131200	97070	287240	113150	73680	0	0	0	0

Pattern Name: 1221
Calibration Levels: 1 Concentration: .1
Minimum Required Hits: 2 Maximim Allowable %RSD: 5

Peak Data

	1	2	3	4	5	6	7	8	9	10
Retention Time:	1.560	1.700	2.120	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT Window (mins)	0.04000	0.04000	0.04000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Height	4688	12666	1766	0	0	0	0	0	0	0
RF (Height/Conc)	46880	126660	17660	0	0	0	0	0	0	0

Pattern Name: 1232
Calibration Levels: 1 Concentration: .1
Minimum Required Hits: 5 Maximim Allowable %RSD: 5

Peak Data

	1	2	3	4	5	6	7	8	9	10
Retention Time:	1.560	1.690	2.100	2.610	2.750	2.850	0.000	0.000	0.000	0.000
RT Window (mins)	0.05000	0.05000	0.05000	0.05000	0.05000	0.05000	0.00000	0.00000	0.00000	0.00000
Height	2804	9211	5379	11980	4737	3396	0	0	0	0
RF (Height/Conc)	28040	92110	53790	119800	47370	33960	0	0	0	0

Pattern Name: 1242
Calibration Levels: 5 Average Concentration: .77
Minimum Required Hits: 3 Maximim Allowable %RSD: 20

Peak Data

	1	2	3	4	5	6	7	8	9	10
Retention Time:	1.690	2.090	2.290	2.610	2.740	2.850	0.000	0.000	0.000	0.000
RT Window (mins)	0.05000	0.05000	0.06000	0.06000	0.07000	0.07000	0.00000	0.00000	0.00000	0.00000
Average Height	63990	93034	76526	257529	89576	61683	0	0	0	0
RF (Height/Conc)	83104	120823	99382	334454	116333	80108	0	0	0	0
%RSD for RF	8.248%	10.490%	9.071%	23.609%	12.768%	10.486%	0.000%	0.000%	0.000%	0.000%
Level 1 Height	9045	10837	9162	26715	10052	7412	0	0	0	0
Conc.	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
Level 2 Height	19714	28475	23402	70269	26674	18560	0	0	0	0
Conc.	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.0000	0.0000	0.0000	0.0000
Level 3 Height	36994	59048	49799	147157	57369	37995	0	0	0	0
Conc.	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000

	Conc.	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000
Level 5	Height	177652	283132	228980	907410	278222	187800	0	0	0	0
	Conc.	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	0.0000	0.0000	0.0000	0.0000

Pattern Name: 1248
Calibration Levels: 1 Concentration: .1
Minimum Required Hits: 5 Maximia Allowable %RSD: 20

Peak Data

	1	2	3	4	5	6	7	8	9	10
Retention Time:	2.080	2.590	3.380	3.590	4.120	4.450	0.000	0.000	0.000	0.000
RT Window (mins)	0.05000	0.06000	0.06000	0.05000	0.05000	0.05000	0.00000	0.00000	0.00000	0.00000
Height	4352	15591	11155	11033	8880	10087	0	0	0	0
RF (Height/Conc)	43520	155910	111550	110330	88800	100870	0	0	0	0

17866

Pattern Name: 1254
Calibration Levels: 1 Concentration: .1
Minimum Required Hits: 3 Maximia Allowable %RSD: 30

Peak Data

	1	2	3	4	5	6	7	8	9	10
Retention Time:	4.530	5.290	5.860	6.380	6.490	7.070	0.000	0.000	0.000	0.000
RT Window (mins)	0.05000	0.05000	0.05000	0.05000	0.05000	0.05000	0.00000	0.00000	0.00000	0.00000
Height	18366	21478	25934	8263	9868	21584	0	0	0	0
RF (Height/Conc)	183660	214780	259340	82630	98680	215840	0	0	0	0

8 = 3

Pattern Name: 1260
Calibration Levels: 5 Average Concentration: .77
Minimum Required Hits: 3 Maximia Allowable %RSD: 40

Peak Data

	1	2	3	4	5	6	7	8	9	10
Retention Time:	5.870	6.410	7.110	7.540	8.160	8.910	0.000	0.000	0.000	0.000
RT Window (mins)	0.05000	0.05000	0.05000	0.05000	0.07000	0.07000	0.00000	0.00000	0.00000	0.00000
Average Height	178982	311521	307357	151352	116116	423716	0	0	0	0
RF (Height/Conc)	232444	404573	399165	196562	150801	550280	0	0	0	0
%RSD for RF	19.999%	23.285%	23.410%	25.057%	12.971%	24.502%	0.000%	0.000%	0.000%	0.000%
Level 1 Height	20301	32265	29541	17114	13283	44084	0	0	0	0
Conc.	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
Level 2 Height	50645	80279	83119	42254	33683	115235	0	0	0	0
Conc.	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.0000	0.0000	0.0000	0.0000
Level 3 Height	100040	186454	191872	84709	72889	268398	0	0	0	0
Conc.	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000
Level 4 Height	249661	476592	458899	189968	161356	778989	0	0	0	0
Conc.	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0000
Level 5 Height	613779	1059199	1050587	566532	358614	1067669	0	0	0	0
Conc.	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	0.0000	0.0000	0.0000	0.0000

156588
405215
904362

Reported on 07-29-1991 16:43:17 Last Calibrated on 07-29-1991 16:43:11 PCBCheck Revision1.12

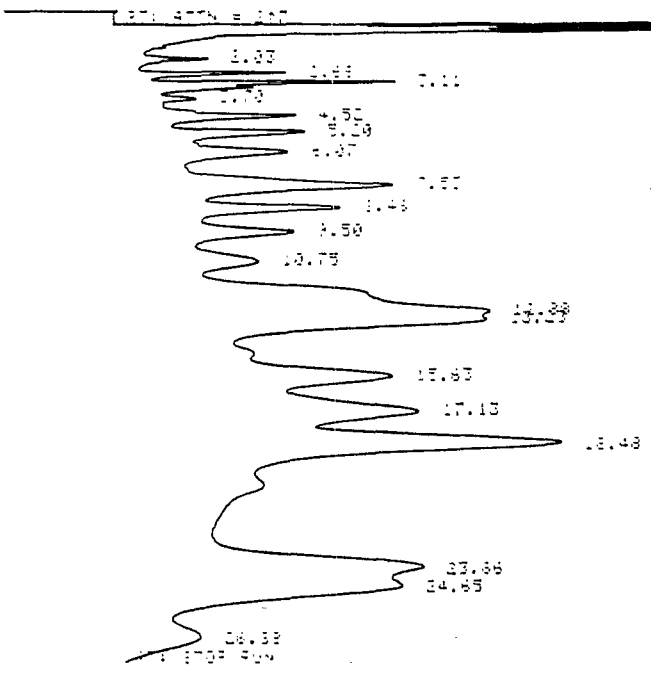
AR001641

SS = 336991
4.04

(10)

GC/ECD DATA FOR ANALYSES PERFORMED
19 OCTOBER 1984

333285 DF1000
10.58g → 200ml



$\frac{x}{117} = \frac{179}{958}$ x=,202

$\frac{x}{,200} = \frac{404}{,173}$ x= 472

492-472 = 20

$\frac{x}{20} = \frac{,41}{2359}$

EXP# 3388A MANUAL INJECTION @ 03:19 OCT 19, 1984
ESTD

RT	EXP RT	HEIGHT	TYPE	WIDTH	C#L	AMOUNT	NAME
0.00		BASELINE @ START RUN = 783.94					
0.00		THRESHOLD @ START RUN = 7					
0.00		PEAK WIDTH @ START RUN = 0.32					
2.68	2.71	391.17	PV	0.130	2	2.827	#2-1241
3.11	3.12	670.43	VV	------	3	3.791	#3-1241
3.70	3.86	103.32	V8	-----	4	3.410	#4-1343
7.53	7.36	634.76	VV	------	7	17.399	#7-1260
8.46	8.14	492.34	VV	-----	8	17.878	#8-1260
9.50	9.11	370.98	VV	-----	9	9.151	#9-1241
10.75	10.30	378.29	VV	-----	10	7.550	#10-1260
12.38	12.39	912.36	VV	------	12	16.366	#8-1230
15.63	15.09	651.17	VV	-----	15	20.641	#7-1260
19.48	17.85	1116.56	VV	-----	19	11.426	#8-1260
23.86	23.01	753.37	VV	-----	15	18.187	#9-1260

MULTIPLIER = 66.67

---- ALL KNOWN PEAKS ARE NOT PRESENT ----
---- 1380 IONS (PPM) --> 5.85923
EXP# 3388A MANUAL INJECTION @ 03:19 OCT 19, 1984
AREA %

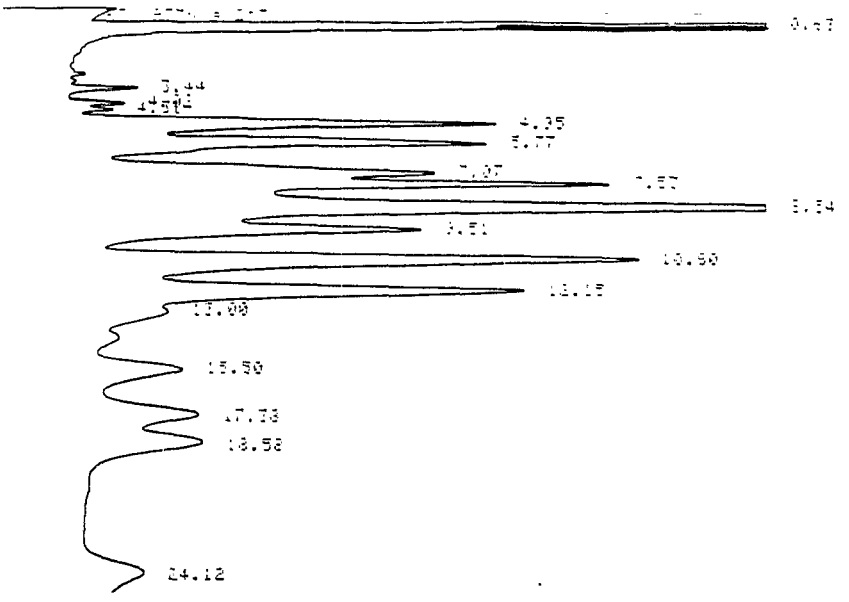
RT	AREA	TYPE	WIDTH	HEIGHT	BASELINE	AREA %
0.00			BASELINE @ START RUN = 783.94			
0.00			THRESHOLD @ START RUN = 7			
0.00			PEAK WIDTH @ START RUN = 0.32			
1.62	46447.00	BV	0.073	9731.73	775.44	591.613
0.39	26739.90	VV	-----	3403.77	784.06	336.539
2.03	1484.06	VP	-----	203.07	310.61	28.358
2.68	3259.41	PV	0.130	392.17	843.91	39.803
3.11	3797.49	VV	------	670.43	863.01	437.432
3.70	1132.31	V8	-----	103.32	890.15	13.827
4.52	8001.63	BV	-----	361.43	901.94	73.290
5.20	7453.89	VV	-----	387.66	899.91	91.024
5.07	10834.70	VV	-----	347.00	897.43	132.310
7.53	23038.30	VV	------	634.76	893.39	305.637
8.46	14646.70	VV	-----	492.34	890.63	178.861
9.50	13621.00	VV	-----	370.98	887.66	166.336
10.75	13734.30	VV	-----	378.29	884.10	167.725
12.38	59398.50	VV	------	912.36	878.84	725.355
13.13	35140.00	VV	-----	904.03	877.06	429.113
15.63	38226.00	VV	-----	651.17	870.21	467.536
17.13	59917.00	VV	-----	728.48	865.94	631.782
19.48	74948.40	VV	-----	1116.56	861.08	915.245
23.86	53494.00	VV	-----	753.37	846.73	653.250
24.65	41717.30	VV	-----	596.20	844.53	509.430
26.33	9950.87	A VP	-----	153.49	838.17	121.517

TOTAL AREA = 545953.00
MULTIPLIER = 66.67

91

ARCO 01643

1254



[<>] 3388A MANUAL INJECTION @ 12:45 OCT 19, 1984
1875

RT	EXP RT	HEIGHT	TYPE	WIDTH	CAL	AMOUNT	NAME
0.00			BASELINE @ START RUN = 422.49				
0.00			THRESHOLD @ START RUN = 7				
0.00			PEAK WIDTH @ START RUN = 0.32				
3.44	3.30	182.10	PP	0.176	5	4.763	#5-1242
4.02	3.86	149.72	PV	-----	6	4.941	#6-1242
4.31	4.32	119.78	VV	-----	16	4.941	INT. STD.
7.53	7.36	1455.87	VV	-----	7	59.963	#1-1260
8.54	8.14	2359.49	VV	-----	8	74.039	#2-1260
9.51	9.11	936.95	VV	-----	9	15.796	#3-1260
10.80	10.30	1522.93	VV	0.562	10	44.064	#4-1260
12.15	12.39	1209.18	VV	-----	12	33.176	#6-1260
15.50	15.09	279.91	VV	-----	13	8.447	#7-1260
17.38	17.05	310.54	VV	-----	14	3.178	#8-1260
24.12	23.01	160.62	A BH	-----	15	3.181	#9-1260

MULTIPLIER = 66.67

**** 1243 MAY BE PRESENT ****
**** ALL 1242 PEAKS ARE NOT PRESENT ****
**** 1260 CONC (PPM) --> 6.3245
[<>] 3388A MANUAL INJECTION @ 12:45 OCT 19, 1984
AREA %

RT	AREA	TYPE	WIDTH	HEIGHT	BASELINE	AREA %
0.00			BASELINE @ START RUN = 422.49			
0.00			THRESHOLD @ START RUN = 7			
0.00			PEAK WIDTH @ START RUN = 0.32			
0.63	230701.00	BB	0.05 *	72304.80	405.58	2369.700
3.44	2046.86	PP	0.176	182.10	294.08	21.025
4.02	1643.84	PV	-----	149.72	290.38	16.885
4.31	1530.73	VV	-----	119.78	291.23	15.723
4.95	28432.20	VV	+------	1155.32	293.15	292.049
5.77	33125.60	VV	------+	1128.27	295.63	340.258
7.07	31344.40	VV	+------	982.57	299.51	321.963
7.53	37809.40	VV	-----	1455.87	300.91	388.369
8.54	61014.00	VV	-----	2359.49	303.92	832.156
9.51	31481.60	VV	-----	936.95	306.85	323.371
10.80	54664.10	VV	0.562	1522.93	310.72	561.496
12.15	46408.10	VV	-----	1209.18	314.76	476.693
13.00	10465.00	VV	-----	240.78	317.32	107.494
15.50	13837.40	VV	-----	279.91	324.81	142.134
17.38	17174.60	VV	-----	310.54	330.47	176.415
18.58	17923.00	VB	-----	315.91	334.07	184.101
24.12	9459.19	A BH	-----	160.62	328.49	97.162

TOTAL AR[redacted].00
MULTIPLI[redacted]

110

AR001644

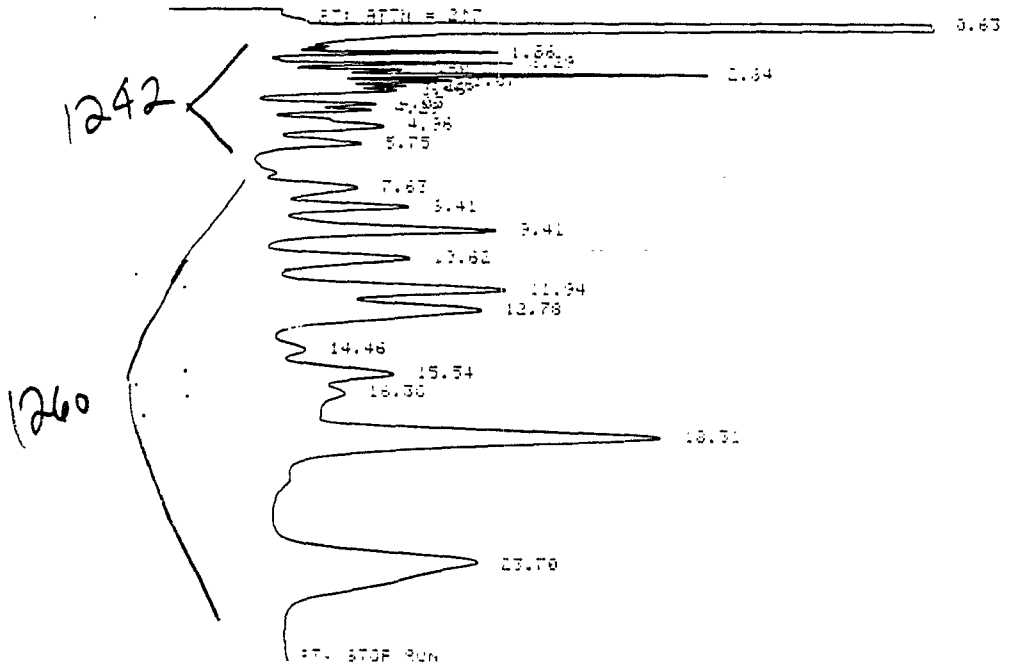
(42)

------FILE NO---- 230
[illegible] FOR INJECTION

[illegible] = 2223.00
[illegible] = 99.97

1260

******FILE NO***** 126
READY FOR INJECTION



102

[exp] 3333A MANUAL INJECTION @ 09:19 OCT 19, 1984
1STD

RT	EXP RT	HEIGHT	TYPE	WIDTH	CAL	AMOUNT	NAME
0.00				BASELINE @ START RUN = 378.52			
0.00				THRESHOLD @ START RUN = 7			
0.00				PEAK WIDTH @ START RUN = 0.32			
1.60	1.71	366.21	VV	-----	3	3.275	#3-1242
3.07	3.13	502.47	VV	-----	4	10.176	#4-1242
3.36	3.30	388.28	VV	-----	5	10.166	#5-1242
4.03	3.86	316.94	PV	-----	6	10.460	#6-1242
4.39	4.22	306.64	VV	-----	16	13.650	INT. STD.
7.63	7.36	273.26	VV	------*	7	10.459	#1-1260
8.41	8.14	404.48	VV	-----	8	11.089	#2-1260
9.41	9.11	634.87	VV	0.454	9	10.527	#3-1260
10.62	10.30	391.09	VV	0.464	10	10.581	#4-1260
11.94	11.58	642.57	VV	-----	11	10.514	#5-1260
12.78	12.39	568.95	VP	------*	12	10.157	#6-1260
13.54	13.09	368.02	PV	-----	13	8.356	#7-1260
15.54	15.05	957.86	BP	0.725	14	9.801	#8-1260
18.30	17.91	545.56	BB	------*	15	10.605	#9-1260

MULTIPLIER = 66.67

**** 1242 MAY BE PRESENT ****
**** ALL 1242 PEAKS ARE NOT PRESENT ****
**** 1260 CONC (PPM) = 10.281
[exp] 3338A MANUAL INJECTION @ 09:19 OCT 19, 1984
AREA %

RT	AREA	TYPE	WIDTH	HEIGHT	BASELINE	AREA %
0.00				BASELINE @ START RUN = 378.52		
0.00				THRESHOLD @ START RUN = 7		
0.00				PEAK WIDTH @ START RUN = 0.32		
0.63	431484.00	BV	0.056	134797.00	366.07	4295.060
1.86	4034.78	VV	0.108	586.56	345.41	35.992
2.29	4642.14	VV	0.113	645.44	338.30	41.410
2.60	3984.27	VV	-----	366.21	333.06	35.542
2.64	10223.30	VV	-----	1192.83	329.01	91.196
3.07	4597.03	VV	-----	502.47	325.13	41.008
3.36	3437.44	VV	-----	388.28	321.89	30.664
3.46	5047.98	VP	-----	368.20	318.63	45.030
4.03	3679.31	PV	-----	316.94	311.57	32.821
4.39	4319.91	VV	-----	306.64	310.04	38.536
4.76	9976.54	VV	*-----	344.76	308.22	88.995
5.75	7530.83	VP	-----	388.41	306.73	67.179
	8961.78	VV	------*	273.26	306.73	79.943
	9616.60	VV	-----	404.48	312.43	85.785
	18411.20	VV	0.454	634.87	319.67	164.237
10.62	12083.10	VV	0.484	391.09	338.50	107.787
11.94	21710.00	VV	-----	642.57	338.10	193.663
12.78	25642.20	VP	------*	568.95	344.18	228.740
14.46	1793.25	PP	-----	66.71	1.31	15.997

(13)

AR001645

103

1260 (cont.)

0.00		BASELINE @ START RUN = 373.52					
0.00		THRESHOLD @ START RUN = 7					
0.00		PEAK WIDTH @ START RUN = 0.32					
1.60	1.71	366.31	VV	------	3	2.279	#3-1240
3.07	3.12	501.47	VV	------	4	10.176	#4-1240
3.16	3.20	388.38	VV	------	5	10.186	#5-1240
4.07	3.36	316.34	PV	------	6	10.460	#6-1240
4.29	4.22	306.64	VV	------	16	12.650	INT. 370.
7.63	7.36	373.26	VV	------	7	10.459	#1-1260
8.41	8.14	404.48	VV	------	8	11.039	#2-1260
9.64	9.11	634.87	VV	0.454	9	10.527	#3-1260
10.54	10.20	391.09	VV	0.484	10	10.582	#4-1260
11.34	11.51	642.57	VV	------	11	10.514	#5-1260
11.78	11.79	568.95	VP	------	12	10.157	#6-1260
12.54	12.69	268.02	PV	------	13	9.956	#7-1260
13.31	13.15	957.36	BP	0.726	14	9.802	#8-1260
14.70	14.11	543.56	BB	------	15	10.309	#9-1260

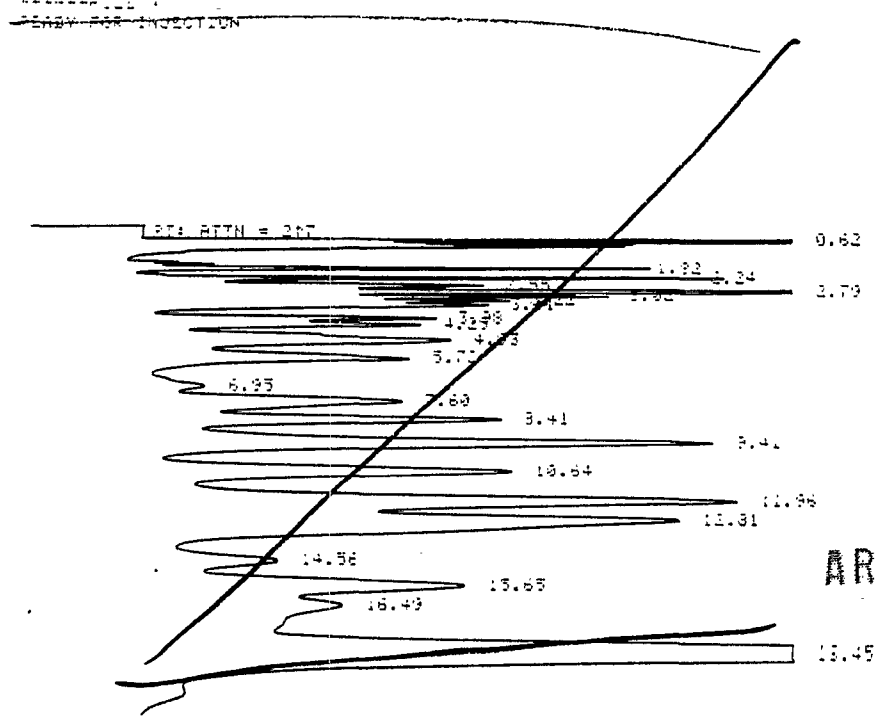
MULTIPLIER = 66.67

---- LESS THAN 4, IS PRESENT ----
---- ALL LESS PEAKS ARE NOT PRESENT ----
---- 1260 INJ PEAK ---> 10.231
[-A] I385A MANUAL INJECTION @ 09:19 OCT 19, 1984
AREA %

RT	AREA	TYPE	WIDTH	HEIGHT	BASELINE	AREA %
0.00			BASELINE @ START RUN = 373.52			
0.00			THRESHOLD @ START RUN = 7			
0.00			PEAK WIDTH @ START RUN = 0.32			
0.63	481484.00	BV	0.056	134797.00	366.07	4295.060
1.66	4034.73	VV	0.138	586.56	345.41	35.992
2.29	4642.14	VV	0.117	645.44	333.30	41.410
2.60	3984.27	VV	------	366.31	333.06	35.542
3.34	10213.30	VV	------	1192.33	329.01	91.106
3.97	4597.07	VV	------	502.47	325.13	41.008
5.24	3437.44	VV	------	386.28	321.89	30.664
5.46	5176.96	VP	------	368.30	318.63	45.330
6.03	3617.31	PV	------	316.34	311.57	32.331
6.29	4319.31	VV	------	306.64	310.04	38.736
7.36	9976.54	VV	------	944.76	304.11	88.945
8.03	7530.83	VP	------	838.41	301.73	67.179
8.29	8961.78	VV	------	873.26	306.73	79.943
9.14	9616.60	VV	------	404.48	312.43	85.789
9.64	18411.20	VV	0.454	634.87	319.67	164.237
10.62	12083.10	VV	0.484	391.09	321.70	107.787
11.34	21710.00	VV	------	642.57	323.10	193.615
11.78	25642.20	VP	------	568.95	324.16	228.740
12.46	1793.25	PP	------	66.31	324.81	15.997
12.54	9530.63	PV	------	268.02	325.33	85.013
13.38	3836.10	VB	------	102.16	325.45	34.220
13.31	44407.40	BP	0.726	957.36	325.51	396.104
13.70	48432.40	BB	------	543.56	324.51	432.040

TOTAL AREA = 1121211.00
MULTIPLIER =

103



AR001

CHROM. 6123

A simple differentiation of polychlorobiphenyls from chlorinated naphthalenes

In a recent paper[1], ARMOUR AND BURKE have drawn attention to the fact that many of the uses and properties of chlorinated naphthalenes are similar to those of the polychlorobiphenyls (PCB). They have also shown that the chlorinated naphthalenes appear in exactly the same fraction as the PCB isomers, when a column of silicic acid and Celite, on which they have been adsorbed, is eluted with petroleum ether[2].

An identical fractionation occurs when the chlorinated naphthalenes are adsorbed on a column of silica gel (containing 2.5% moisture) and the column then eluted with *n*-hexane; a technique which is used in this laboratory to separate PCB from organochlorine pesticide residues[3,4]. In addition, the behaviour of the chlorinated naphthalenes on thin-layer chromatography[4,5] is closely similar to that of the PCB isomers.

The usual procedure for the determination of PCB is electron capture gas–liquid chromatography (GLC), following extraction and columnar clean-up[4]. The nature and identity of the PCB is inferred from the multiple peak pattern given by the chromatogram. However, the chlorinated naphthalenes give similar peak patterns. Therefore, since the two groups of compounds cannot be easily separated from each other by present procedures, it is possible that there could be interference from the presence of the chlorinated naphthalenes in the estimation of the PCB content of some samples, leading to an incorrect interpretation of the nature of the compounds present with an overestimation of the PCB content. A simple method to differentiate between the PCB and the chlorinated naphthalenes would be obviously an advantage.

Following an investigation with hexane solutions of Aroclor 1254 (a commercial PCB preparation) and the Halowaxes 1005, 1013 and 2148 (commercial chlorinated naphthalenes) at concentrations of 10 μg/ml, the following method has been found to remove any interference caused by the chlorinated naphthalenes. It is based on the relative ease of oxidation of the latter compounds as opposed to the resistance to oxidation of the PCB isomers, and has been used previously to differentiate *p,p'*-DDE in the presence of PCB[4].

Experimental

Apparatus. A Kuderna–Danish type evaporator with interchangeable 10-ml graduated collection tubes; two-bubble Snyder micro-columns[6], with groundglass cones to fit the Kuderna–Danish collection tubes.

Reagents. Acetic acid, glacial, redistilled; *n*-hexane, redistilled from potassium hydroxide; sodium hydroxide, a 5 *N* solution in water; chromium trioxide, general purpose reagent.

Adjust the volume of the PCB fraction, suspected of containing chlorinated naphthalenes, to 2 ml, using a Kuderna–Danish evaporator. Remove the collection tube and add 2 ml of glacial acetic acid. Fit a Snyder column to the tube and heat it carefully in a steam bath until all the original petroleum ether or *n*-hexane has evaporated, as judged by the reduction in volume. Introduce 100 mg of chromium trioxide and place the tube in boiling water for 20 min. Cool the mixture and shake it vigorously with 2.0 ml of *n*-hexane in the stoppered tube. Neutralise the acid with approximately 7 ml of 5 *N* sodium hydroxide solution. Shake the tube again and allow the two phases to separate. Examine an aliquot portion of the upper hexane layer by GLC, using electron capture detection[4]. The peaks which appear on the GLC chart are those due to the PCB isomers only; these compounds are unaffected by the oxidation, whereas the chlorinated naphthalenes are oxidised completely and do not show any GLC peaks when similarly treated.

It must be stressed, however, that the method is designed only to eliminate the possibility of interference by any chlorinated naphthalenes which may be present in the sample fraction. It must not be considered as a positive means of identification of either of the two groups of compounds involved.

We would like to thank the Government Chemist for permission to publish this note.

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Received April 27th, 1972

The New York Times

New York: Today, a shower early, periods of sun, afternoon thunder. High 86. Tonight, fog. Low 70. Tomorrow, sun, wind. High 90. Yesterday, high 91, low 72. Details, page B14

NEW YORK, THURSDAY, AUGUST 15, 1991

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U.S. Accuses G.E. of Fraud In Israeli Deal

$30 Million Overbilling in Military Jobs Cited

By RICHARD W. STEVENSON

The Justice Department has accused the General Electric Company of defrauding the Pentagon of more than $30 million on the sale of jet engines and support services to the Israeli Air Force, according to a lawsuit made public yesterday.

The civil fraud charges are the first against an American military contractor in the case, which has already led to a guilty plea in Israel by an Israeli Air Force general on fraud and bribery charges. The case has deeply embarrassed the Israeli military, which receives $1.8 billion from the United States annually to finance weapons purchases from American contractors, and has led to a Federal criminal investigation in the United States of General Electric and several of its current and former employees.

The accusations were included in a lawsuit unsealed yesterday by a Federal judge in Cincinnati, where General Electric's military jet-engine business is based.

Equipment Never Delivered

The suit said that between 1985 and 1988 G.E. conspired with the Israeli general, Rami Dotan, to submit fraudulent claims for work for the Israeli Air Force that would ultimately be paid for by the United States. The fraud included claims for engine-testing equipment, software and support services that were never provided and an arrangement by which Israel and G.E. would overcharge the Pentagon for F-16 fighter engines, the suit said.

General Dotan pleaded guilty to similar charges in an Israeli military court in March and was sentenced to 13 years in prison. General Electric said earlier this year that it had been contacted by Israeli investigators in December and that it was conducting its own inquiry. In March, G.E. dismissed its international sales manager for military engines, Herbert Steindler, who was named in the lawsuit as a key participant in the transactions.

The lawsuit was filed under seal in November by a whistle-blowing G.E. employee, Chester L. Walsh, under the Federal False Claims Act. The act requires the Justice Department to investigate claims made by whistle-blowers and to decide whether they

Continued on Page D17, Column 4

Bill Stover for The New York Times

After finding high levels of dioxin contamination, the Federal Government in 1982 evacuated all 2,240 residents of Times Beach, Mo. They say now that new data indicate the move may have been unnecessary.

U.S. OFFICIALS SAY DANGERS OF DIOXIN WERE EXAGGERATED

E.P.A. BEGINS YEAR'S STUDY

Some Health Research Experts Believe Science Does Not Justify Rigid Standards

By KEITH SCHNEIDER

Special to The New York Times

WASHINGTON, Aug. 14 — In a rare official reassessment, several top Federal health authorities are backing away from the position that the chemical compound dioxin is toxic enemy No.1. Exposure to the chemical, once thought to be much more hazardous than chain smoking, is now considered by some experts to be no more risky than spending a week sunbathing.

For years the Federal Government has required industrial companies to invest billions of dollars to prevent dioxin's release into the environment and to clean up what is already there.

In the most dramatic move to protect citizens, the Government in 1982 and early 1983 permanently evacuated all 2,240 residents of Times Beach, Mo., where the dirt roads had become contaminated with dioxin.

Review Is Begun

But now some scientists believe that the Government's stringent health standards for dioxin are not supported by the latest scientific evidence.

The Federal Environmental Protection Agency has opened a yearlong review to develop a new formal opinion of the risks of dioxin.

"I don't want to prejudge the issue, but we are seeing new information on dioxin that suggests a lower risk assessment for dioxin should be applied," said William K. Reilly, the Administrator of the Environmental Protection Agency, who asked for the review.

"I know the stakes and that I'm unraveling something here," Mr. Reilly said. "There is not much precedence in the Federal establishment for pulling back from a judgment of toxicity. But we need to be prepared to adjust, to raise or lower standards, as new science becomes available."

Hindsight on Evacuation

The human dimension of this change in approach emerged most vividly several months ago when the Federal scientist who made the original decision to evacuate Times Beach said he believed he had erred. "We used the best scientific evidence at the time to make the decision we did," said the scientist, Dr. Vernon N. Houk.

"Given what we now know about this chemical's toxicity and its effects on human health, it looks as though the evacuation was unnecessary," Dr. Houk, the assistant Surgeon General and Director of the Center for Environmental Health and Injury Control at the Centers for Disease Control in Atlanta, said in a recent interview. "If it's a carcinogen," he said of dioxin, "it's a very weak carcinogen and Federal policy needs to reflect that."

The revised view of the dangers of dioxin has raised serious concerns within the E.P.A., which used many of

Continued on Page D23, Column 3

Parts of China Forcibly Sterilizing The Retarded Who Wish to Marry

By NICHOLAS D. KRISTOF

Special to The New York Times

BEIJING, Aug. 14 — With the aim of improving the "population quality," a number of Chinese provinces are banning mentally retarded people from marrying unless they are sterilized first. If they evade sterilization and become pregnant, abortions are obligatory.

Gansu Province in northwestern China in 1988 became the first to adopt a law of eugenics, the study of how to improve a population by limiting reproduction of those who are deemed to be less capable. That law has led to the sterilization of more than 5,000 mentally retarded people in Gansu. Since then several other regions in China have adopted similar eugenics laws and Prime Minister Li Peng has backed such measures. A national eugenics law is also being drafted.

The eugenics measures have aroused a ripple of protest abroad, but virtually no opposition in China. In a country where the accent has historically been on the collective interest rather than on individual rights, where a prime slogan is "limit the population quantity, improve the population quality," eugenics seems natural.

"Mentally retarded people give birth to idiots," Prime Minister Li Peng was officially quoted as telling a committee last year. "They can't take care of themselves, they and their parents will suffer, and they'll be detrimental to our aim of raising the quality of the people." Peasants Daily, an official newspaper, expressed the view more concisely: "Idiots produce idiots."

Still, the Chinese authorities are aware of the Western concerns, particularly in the United States Congress and among American critics of China's family planning program, and consequently the drafting of a national eugenics law has been delayed. At least one decision seems to have been made:

Continued on Page A8, Column 4

BANKS IN U.S. SHUN A LOAN TO MOSCOW

Worries on Repayment Cited, Despite Federal Guarantee

By KEITH BRADSHER

Special to The New York Times

WASHINGTON, Aug. 14 — American banks have not put up any money to finance Soviet purchases of American grain, despite the Bush Administration's efforts to facilitate such loans.

No American banks participated last month in a $600 million loan to the Soviet Union for grain purchases, even though the United States guaranteed repayment of almost all of the principal and half of the interest, banking and grain industry executives said.

Despite the Government loan guarantees, American bankers said that they were worried about the declining ability of the Soviet Union to pay its bills and that their own financial problems had limited their ability to make loans to anyone. Eventually four European banks stepped forward to make the loans, reportedly under pressure from their governments. The loans have an adjustable interest rate that is initially set slightly below 7 percent.

Believed to Be a First

Agriculture Department and banking officials said they could not recall a previous instance in which a major guaranteed agricultural-export loan had been claimed entirely by foreign banks.

The absence of American banks is likely to embarrass the Administration, which certified the Soviet Union as creditworthy when it arranged the guarantee. It also spells further trouble for the crippled and shrinking Soviet economy, which desperately needs for-

Continued on Page D21, Column 1

Washington at Work

A Spy's Bequest: Riddles He Might Love

By ANDREW ROSENTHAL

Special to The New York Times

WASHINGTON, Aug. 14 — Now is the summer of conspiracy in Washington: new disclosures about the Iran-contra affair, the confirmation agonies of President Bush's nominee for America's spymaster, more questions about whether the 1980 Reagan-Bush campaign engineered a politically convenient delay in the release of the Teheran Embassy hostages.

And one man stands at the cen-

But Mr. Helms paused and remembered Mr. Casey's legendary impatience with Congressional investigators and reporters. "I also think," he said, "that by this time he would have been questioned so mercilessly by everyone involved that he would have been sick of the whole thing."

Casey stories abound, stories

about his love of intrigue, his grotesque table manners, the famous mumble he used to dodge questions, his alleged penchant for secret trips and secret deals. All that is window dressing to the central question of what Mr. Casey knew about mysteries that are vexing President Bush and fascinating much of Washington this summer.

How high did the Iran-contra cover-up extend? With renewed vigor, prosecutors are clearly aiming at the Reagan White House.

Californians ' Water Spigot

:EINHOLD
· ork Times

ffice of Technology Assessment found hat the pipeline was neither needed or economically feasible.

Though not new, the notion gained ew life recently after conversations etween Governor Hickel and Kenneth ahn, a veteran Los Angeles County upervisor "The big question is what ill happen to California if we do not ave water," Mr. Hahn said. "Will it ecome a desert again?"

Trillion Gallons a Year

Harold C. Heinze, Alaska's Commissioner of Natural Resources, said the ipeline would carry about a trillion allons a year, a little less than a tenth California's current demand.

He and Mr. Hickel said the project's nvironmental effects would be minimal because the water would be drawn nly at the rivers' mouths and would onstitute only half a percent of the water discharged in southeast Alaska.

Mr. Heinze said that for its part Alaska would gain jobs for building and maintaining the pipeline and money hat would be used in part to provide safe water supplies and sewerage to 30,000 to 50,000 rural Alaskans. He cited no specific income figures.

Many at the workshop doubted that California needed to import water.

The five-year drought has forced new thinking about water allocation, with many arguing that California has plenty of water if it makes more efficient use of it. Already, efforts are under way to store more water, to reclaim waste water, to conserve, to desalinate and to shift more water away from farming to urban uses.

"I do not believe we need to divert more water from other states," said Christine E. Reed of Santa Monica, a member of the board of the Metropolitan Water District, the politically powerful agency that distributes water to 15 million people in Southern California. Her sentiments were echoed by Carlos Madrid of the California Department of Water Resources.

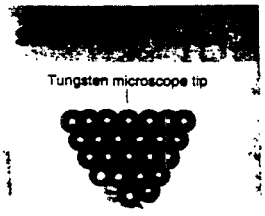
Both Mr. Hattoy of the Sierra Club and Tom Cassidy of American Rivers, a Washington-based environmental group that focuses on rivers, said California should concentrate on conservation. They asserted that the estuaries and wetlands at the mouths of Alaskan rivers were prime fishing grounds that might suffer from changes in salinity, caused by the project.

"The Copper River delta is one of the most productive waterfowl habitats in the world," Mr. Cassidy said in an interview, adding that it was "offensive" to sell this river water "to the highest bidder."

Mr. Hattoy said the pipeline would bring roads, housing and other industrialization associated with its construction through hundreds of miles of mostly undeveloped coastline. "We are not just downhill from Alaska," he But economic rather than environmental realities are probably the greater threat. While California's population continues to grow, the question is how can pipeline water compete with local water that studies suggest could cost 10 times less for urban users.

Governor Hickel said new technology, along with economies of scale, could reduce the cost. "We are here saying this might be a solution," he said.

New Heights: On-Off Switch



Bill Stover for The New York Times

Scientists say some researchers are narrowly interpreting new data on dioxin hazards to reduce the chemical industry's cleanup and disposal costs. Gravel contaminated with oil containing dioxin being removed from a road in St. Louis County, near Times Beach, Mo.

U.S. Backs Away From Deadly Ranking of Dioxin

Continued From Page A1

the same procedures to determine the hazards of dioxin as it did to set air and water pollution limits for most of the other chemicals that the agency regulates. If Dr. Houk is right and dioxin is much less dangerous than had been determined, that could mean the Government's regulations for other compounds will need to be adjusted.

Under the current Federal guidelines, the E.P.A. says that ingesting more than .006 trillionths of a gram of dioxin for each kilogram (2.2 pounds) of body weight daily over an average lifetime may cause one fatal cancer for each million people. Thus a man weighing 80 kilograms, or 176 pounds, is urged by the Government not to eat, drink, or breathe more than 0.5 trillionths of a gram of dioxin every day. Such an amount would be roughly equivalent to slicing a grain of sand a billion times.

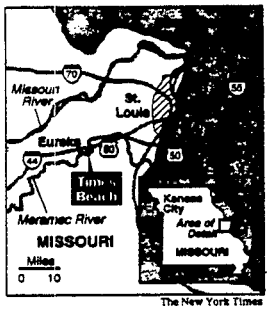
The same statistical method used to calculate the safe exposure to dioxin was also used by the Environmental Protection Agency to set a safe level in water of 13 parts per quintillion and by the Centers for Disease Control at 1 part per billion in soil.

The World Health Organization supports the revised view of dioxin's danger and suggests that the United States exposure standards are wrong. Earlier this year the group officially set a new limit for the daily intake of dioxin at 10 trillionths of a gram of dioxin per kilogram of body weight, a concentration that is 1,600 times greater than the level set by the Environmental Protection Agency and closer to the concentration considered scientifically accurate by Dr. Houk and others.

Scientists at leading environmental groups say the Government's original assessment of dioxin's dangers is supported by the new data. They also contend that the researchers are narrowly interpreting the new data to reduce the cleanup and disposal costs of industries whose manufacturing processes produce dioxin as a byproduct, particularly paper pulp mills, hazardous waste incinerators and municipal incinerators.

"Nothing that has been learned about dioxin since 1985 when E.P.A. first published its risk assessment finding on dioxin in the environment supports a revision of science-based policy or action," said Dr. Ellen K. Silbergeld, professor of pathology at the University of Maryland in Baltimore.

'Protected Industries'



The New York Times

Times Beach, Mo., was permanently evacuated because of the perceived threat from dioxin.

doses. Guinea pigs fed minute amounts died within weeks. Subsequent studies have shown trout and salmon may be even more sensitive.

Studies of workers exposed to dioxin in chemical plants during routine operations, and as a result of explosions, showed conclusively that exposure to dioxin at levels of several hundred parts per billion could cause chloracne, a potentially disfiguring skin disease.

Other effects were less certain, said scientists in and out of Government. For every study that found dioxin could raise a person's chance of developing cancer or some other disease, another study reported that there was no effect at all.

At the center of the debate is an inexact science known as risk assessment. It uses animal studies and human health studies, when possible, combined with statistics and formal scientific assumptions and a great deal of expert opinion to develop an estimate of how much exposure to a chemical is likely to cause cancer and birth defects in people.

The technique, which the experts agree is as much art as science, was widely employed by the Government in the 1970's and 1980's because there was almost no other scientifically acceptable means for determining a compound's hazards.

Improved Techniques

Scientists say better techniques are now available to more accurately reflect the toxic properties of chemicals, particularly those used by molecular biologists. More is known about how chemicals react with biological organisms, how they exert their toxic effects on cells and what the ultimate result is likely to be.

Vietnam veterans exposed to dioxin in the defoliant Agent Orange blame it for cancer, nervous system disorders, a host of other injuries, and for producing birth defects in their children. Legislation passed this year requires the Department of Veterans Affairs to pay disability benefits to soldiers who can prove they were exposed to Agent Orange and suffer from chloracne, non-Hodgkins lymphoma, soft-tissue sarcoma and a liver disease called porphyria cutanea tarda.

In lawsuit involving a death attributed to exposure to dioxin, a St. Louis jury last month awarded $1.5 million to the family of a truck driver who died in 1984 of soft-tissue sarcoma. The loading area where he worked had been sprayed with the same oil that contaminated Times Beach.

In the late 1970's, dioxin contamination lead to the ban of a weed killer, 2,4,5-T, a component of Agent Orange, once used widely in American farming and forestry. The environmental agency said it caused miscarriages and birth defects.

In the 1980's the paper industry came under criticism for producing dioxin during the bleaching of pulp, polluting rivers and streams.

For the former residents of Times Beach, the new debate over dioxin has added to the hurt, anger and exasperation that many feel every day.

"You just don't know what to think," said Marilyn Leistner, the former Mayor of Times Beach who now works for the state at the site. "If dioxin is less dangerous, that should be good news. The truth is, it's not. People have been hurt, their lives ruined by what happened in this area. One minute it's bad. The next it's good. It's a roller coaster that just won't stop."

For Mrs. Leistner and the other 2,239 former residents of Times Beach, the introduction to dioxin came out of the blue in December 1982. Soil samples the Environmental Protection Agency collected weeks earlier contained dioxin at levels exceeding 100 parts for every billion parts of soil.

The agency's samples had been taken as part of an investigation of dioxin contamination in the St. Louis region. The inquiry began after a hazardous waste trucking company sprayed roads and parking lots for dust control with waste oil containing dioxin in the early 1970's.

Few of the town's former residents are more distraught than Laverne Baker, who lived in Times Beach for almost 30 years. For four years after the Government said dioxin contamination made Times Beach too dangerous to live in, Mrs. Baker's former husband, Leroy, drove to the barricaded bridge every day and stared across the Meramec River at the jungle of weeds and young trees that had overgrown his home. One morning in January 1987 Mr. Baker stopped coming

Times Beach Warning: Regrets a Decade Later

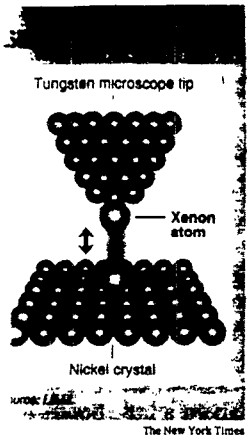
By KEITH SCHNEIDER
Special to The New York Times

WASHINGTON, Aug. 14 — For Dr. Vernon N. Houk, the Federal official who urged the evacuation of Times Beach, Mo., nearly a decade ago and now believes it may have been a mistake, there is only one regret.

"The only thing I would have done differently," Dr. Houk said, "I would have said we may be wrong. If we're going to be wrong, we'll be wrong on the side of protecting human health.

"I don't think we ever said we may be wrong."

ew Heights: n-Off Switch



The New York Times

inging the polarity of an elec- al pulse makes a xenon atom ve from a nickel crystal to the roscope tip and back again.

e inventors of the scanning tunnel- nicroscope, Dr. Gerd Binnig and Heinrich Rohrer, both of I.B.M., awarded the 1986 Nobel Prize in ics for their achievement. Since other I.B.M. scientists have dem- rated that the tip of the microscope e used as a kind of tweezer capa- f moving a single atom to any ed spot on a flat surface.

April 1990 the same team used the oscope to to spell "IBM" in xenon s on a nickel crystal.

their latest work, Dr. Donald M. r and his colleagues at the Alma- Research Center found that by ing a brief electrical difference, tential, between the tungsten mi- ope probe and a flat nickel crystal ath it, a single atom of xenon can ade to jump from the probe to the al. Application of a pulse of the sed polarity causes the xenon to jump back to the probe.

Y KIDS LOVE COUNTRY FUN: VE TO THE FRESH AIR FUND

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Scientists at leading environmental groups say the Government's original assessment of dioxin's dangers is supported by the new data. They also contend that the researchers are narrowly interpreting the new data to reduce the cleanup and disposal costs of industries whose manufacturing processes produce dioxin as a byproduct, particularly paper pulp mills, hazardous waste incinerators and municipal incinerators.

"Nothing that has been learned about dioxin since 1985 when E.P.A. first published its risk assessment finding on dioxin in the environment supports a revision of science-based policy or action," said Dr. Ellen K. Silbergeld, professor of pathology at the University of Maryland in Baltimore.

'Protected Industries'

Dr. Mary H. O'Brien, a botanist and a director of the Dioxin-Organochlorines Center, a research group in Eugene, Ore., said: "What's being protected here is not people or the environment but industries favored by the Government. The Government begins with the assumption that these industrial activities have to go on and they adjust the data to make the existing pollution practices acceptable."

Soil at 28 sites in the St. Louis region, including Times Beach, was found to be contaminated with dioxin at levels higher than 1,000 parts per billion. Because the Centers for Disease Control thought the exposure to dioxin would be highest at Times Beach, the state and Federal governments bought the property of residents for $37 million.

Cleanup work at the other sites has been going on for a decade and has cost $100 million. About 100,000 cubic yards of soil contaminated with dioxin from the sites is being stored, awaiting the construction of an incinerator at Times Beach. It is expected to take 10 more years and cost $150 million more to tear down the buildings at Times Beach, burn the contaminated soil, bury debris in specially designed landfills and convert the land into a park.

The work is being paid for by the Syntex Corporation, under a court-ordered agreement with the Enviornmental Protection Agency that will not be affected by any reassessment of dioxin's danger, said Gary J. Pendergrass, who heads the Syntex cleanup program.

Produced during chemical reactions that involve heat and chlorine compounds, dioxins comes in 75 different varieties, with one form thought to be the most dangerouus: 2,3,7,8 tetrachlorodibenzo dioxin or TCDD.

In the early 1980's, the compound's deadly reputation was based in large measure on its ability to cause cancer in laboratory animals, even when the animals were exposed to very small

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"The only thing I would have done differently," Dr. Houk said, "I would have said we may be wrong. If we're going to be wrong, we'll be wrong on the side of protecting human health.

"I don't think we ever said we may be wrong."

But Dr. Houk, a pulmonary disease specialist, has no doubts that his decision earlier this year to second-guess himself was correct. "Times Beach was an overreaction," he said. "It was based on the best scientific information we had at the time. It turns out we were in error."

Now, Dr. Houk is at the center of a national dispute over the hazards of dioxin. He is the director of the Center for Environmental Health and Injury Control at the Centers for Disease Control in Atlanta; his is one of the Government's most senior posts for deciding which environmental contaminants pose risks to health.

Career With Government

Born in the San Joaquin Valley of California, Dr. Houk has spent his entire career with the Government, first as a physician in the Navy and since 1968 as a researcher and administrator with the Centers for Disease Control. He has lived in Atlanta for 23 years.

Researchers in Dr. Houk's 400-person office were among the first to discover that lead in paint and gasoline posed a severe hazard to children. Dr. Houk's center also helped to defend a study that found that World War II veterans who participated in an atomic-weapon test in Nevada in the 1950's developed higher-than-expected levels of cancer.

One twist in the ongoing debate over the dangers of dioxin is that Dr. Houk now finds himself siding with some of his longtime adversaries. Industrial companies that produce dioxin as a waste product now lionize him, saying he has put an end to the "dioxin scare." Environmental organizations, labor groups and Vietnam veterans, meanwhile, have called his recent reversal narrow-minded and dangerous.

The New York Times

Dr. Vernon N. Houk of the Centers for Disease Control said new data indicated that the evacuation of Times Beach, Mo., might have been unnecessary.

Dr. Houk maintains that the reversal was the logical outgrowth of the ongoing examination of scientific data. "Beginning in about 1986, the information was beginning to accumulate that dioxin's effect on human health was probably not as bad as we had feared in the early 1980's," Dr. Houk said in an interview. "We now know a lot more about the mechanisms of how these chemicals act in biological systems.

"We're public health officials. When something is worse than we thought, we seem to be able to move very rapidly at gathering the data and making the decision to restrict its use. When something is not as bad as we thought it was, I think it's fair to bring that issue forward, too."

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Friends found his body at his new home, a suicide. "Times Beach was his whole life," said Mrs. Baker, who divorced Mr. Baker in 1974. "After he was forced out, Leroy just never was the same. You can hardly imagine what it feels like for somebody to come in your home and say you can't come back.

"How do you forgive what happened here?" she said, in an interview at the bridge. "It's all a mistake? They took our homes, our lives, and now they say it's a mistake?"

Other Inmates 'Lost' In the Baltimore Jail

BALTIMORE, Aug. 14 (AP) — The 54-year-old homeless man who spent 13 months in the Baltimore jail without being formally accused was freed today when the arson charges against him were dropped by the State's Attorney.

But officials now say that the defendant, Martin R. Henn, is only one of seven inmates found waiting at the jail without court dates since the building was taken over by the state last month because the financially squeezed city could not afford to run it. In the six other cases, the prisoners had been waiting three to four months for arraignment, said the state's acting jail commissioner, Lamont Flanagan.

Mr. Henn was offered a home in an alcohol rehabilitation center today after the prosecution's motion to drop the charges was accepted by Judge Ellen M. Heller of Baltimore Circuit Court, who described the case as "just one more story of bureaucratic inefficiency." Mr. Henn, in custody since July 1990, was never taken to court by his jailers because a paperwork error led them to believe that he had been released.