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DATA SUMMARY REPORT FOR THE 1990 LANDFARM AREA SAMPLING, SOUTHERN WOOD PIEDMONT COMPANY, WILMINGTON, NORTH CAROLINA

September 1993

NC09006

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DATA SUMMARY REPORT FOR THE 1990 LANDFARM AREA SAMPLING, SOUTHERN WOOD PIEDMONT COMPANY, WILMINGTON, NORTH CAROLINA

September 1993

Geraghty & Miller, Inc., is submitting this report to Southern Wood Piedmont Company for work performed at the landfarm areas in Wilmington, North Carolina. The report was prepared in conformance with Geraghty & Miller's strict quality assurance/quality control procedures to ensure that the report meets the highest standards in terms of the methods used and the information presented. If you have any questions or comments concerning this report, please contact one of the individuals listed below.

Respectfully submitted,

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1.0 INTRODUCTION

Geraghty & Miller, Inc., (G&M) was retained by the Southern Wood Piedmont (SWP) company to sample the soils in the Wilmington landfarm areas. Ground-water samples were also collected from four ground-water monitor wells, one upgradient and three downgradient from the land farm areas. The purpose of the sampling was to provide baseline data with which to conduct a risk assessment. This risk assessment was to evaluate whether a "concentration of residual pentachlorophenol (PCP) and major constituents of creosote is reached which will protect public-health and the environment," according to the terms of the Administrative Order of Consent Agreement (North Carolina Department of Human Resources, 1985), paragraph 10.

This report presents a brief history of the landfarming operations at the site, a discussion of the site environmental setting, the sampling and analysis methodologies used, and a discussion of the results.

2.0 SITE HISTORY AND ENVIRONMENTAL SETTING

This section gives of brief description of the history of the site and landfarming operations and a review of historical landfarm sampling data. Land use for the surrounding area and regional/local geology and hydrogeology are also discussed.

2.1 SITE HISTORY

SWP and its predecessors leased and operated a wood-treatment facility in Wilmington, North Carolina, from approximately 1932 to 1983. In 1932 the North State Company leased the property previously operated by Liberty Shipyards. The North State Company purchased and sold non-treated wood from 1932 to 1935. In 1935, the Taylor Colquitt Company leased the property to establish a wood-preserving facility to treat piling and poles with creosote. ITT, of which SWP is a subsidiary, acquired the company in 1969. SWP added chromated copper arsenate (CCA) to the wood treatment process in the early 1970s, and PCP in the late 1970s. Each of the three preservatives (creosote, PCP, and CCA) were stored on-site in tanks adjacent to the wood treating facility. Additional creosote storage was in the southwestern property corner. In 1983, the SWP facility ceased its wood-treatment operations and began closure procedures.

2.2 HISTORY OF LANDFARMING OPERATIONS AND PREVIOUS SAMPLING

At the northwest corner of the SWP facility property, a 5-acre area was bermed and ditched following the removal of existing rails and crossties and divided into two landfarm areas: Landfarm 1 (LF1), and Landfarm (LF2). Figure 2-1 shows the landfarm areas. This area was formerly used to store treated wood.

During the period of July 1984 through April 1990, soil and material originating from the spoil pile area was applied at regular intervals. Over this period, approximately 17 different soil amendments occurred in LF1 and 20 in LF2. Each amendment consisted of a 2-inch-thick layer of spoil pile material that was added to the surface of the landfarms. During the landfarm operation, irrigation water, 10-10-10 fertilizer, and chicken and turkey manure were added to promote and enhance microbial growth and polycyclic aromatic hydrocarbon (PAH) degradation. The two landfarm areas were tilled to a depth of 4 inches weekly, promoting biological and photochemical treatment of residual chemicals.

Prior to the Geraghty & Miller sampling, soil samples were routinely collected and analyzed during the operation of the landfarm. A total of 37 sampling events occurred for LF1 and 59 for LF2. For each sampling event a composite soil sample was collected at each of the following depth intervals: 0 to 3 inches, 9 to 12 inches and 21 to 24 inches. A composite sample consisted of four subsamples, a subsample from each quadrant of a landfarm area. Soil sampling was initiated in September 1985 for LF2 and November 1985 for LF1.

The soil samples were analyzed for total nitrogen, total phosphorus, chloride, total organic carbon, soil pH, PAHs, PCP, phenol, and microbial counts by the Mississippi State University Forest Products Research Division (MSUFPRD) Laboratory in State College, Mississippi. A discussion of the results of routine soil sampling is provided in Section 2.3, Landfarm Historical Data Review.

The quality of ground water in the two landfarmed areas was monitored during the landfarm operations. Four monitor wells were installed between September 5 and 10, 1985, on the perimeter of the landfarm area. Ground water from the upgradient (MW-6) and three downgradient (MW-7, 8, and 9) monitor wells was initially collected biannually and subsequently annually and analyzed for PCP and the major constituents of creosote. Composite soil samples were also taken directly from the spoil pile and analyzed for PAH constituents.

2.3 LANDFARM HISTORICAL DATA REVIEW

The MSUFPRD analytical data of PAHs in soil taken from two landfarm areas (LF1 and LF2) between 1985 and 1990 were reviewed to determine the efficiency of the landfarm bioremediation activities. Total PAH concentrations substantially declined following applications of discolored spoil pile soil material to the two landfarm areas. As expected, the degradation rates varied between the different PAHs. PAHs with two aromatic rings were found to degrade more rapidly than PAHs with four or more aromatic rings. These findings are in agreement with the literature which showed the degradation rates to be dependent upon the molecular size and structure of the PAHs. According to MSUFPRD, PAHs detected in the landfarms can be divided into three groups based on the observed half-lives: (a) PAHs with half-lives of 10 days or less, (b) PAHs with half-lives of 10 to 100 days, and (c) PAHS with half-lives of more than 100 days (Table 2-1). PAHs with half-lives ranging from 10 to 100 days comprised the majority of the PAHs that were detected in the soil samples obtained from LF1 and LF2.

Generally the PAH concentrations measured in the surficial soil samples (i.e., 0 to 3 inches) exceeded the concentrations measured in the 9- to 12-inch and 21- to 24-inch layers within the two landfarm areas. The comparatively lower levels that were detected in the deeper layers may be explained in two ways: First during the initial period of landfarm operation the deeper soil samples were collected from the indigenous substrate soil, not soil from the spoil pile. It is also conceivable that the deepest soil sampling interval (i.e., 21- to 24-inches) consisted predominantly of indigenous substrate soil even during the final stages of the landfarm operation. The depth of the landfarm material on October 10, 1990 ranged from 12- to 30-inches. Secondly as a result of frequent spoil applications soil below 0 to 3 inch contained spoil pile material which was applied at an earlier date. These earlier applications would be subject to a longer period of bioremediation and enhanced removal of PAHs. For the above reasons, evaluation of the data for short-term degradation rates was limited to the 0- to 3-inch soil layer.

Three 4- to 6-months periods each consisting of 3 to 4 sampling events not interrupted by the addition of soil pile material were used to assess the short-term degradation of PAHs in LF1 and LF2. The first period began with the addition of affected (discolored) soil to LF1 and LF2 on June 5, 1986. The addition resulted in increased total PAH concentrations in samples collected eleven days latter on June 16, 1986. Figures A1 and A2 in Appendix A show total concentrations of PAHs grouped by their half-life spans at different sampling periods. Subsequent samples taken on August 4, October 1 and December 1, 1986, in LF1 and on August 4 and October 1, 1986, in LF2 exhibited a gradual decrease in total PAH concentrations. Total concentrations of PAHs with half-lives of less than 10 days and of PAHs with half-lives of 10 to 100 days were reduced after 2 to 4 months following June 16, 1986. Degradation of total PAHs with half-lives greater than 100 days was also observed but to a much lesser extent. Higher total PAH concentrations were detected in LF2 as compared to LF1 (Figures A1 and A2, Appendix A).

On August 25, 1986, and on August 25 and November 11, 1986, chicken and turkey manure was added to LF1 and LF2, respectively. These manure additions appeared to have enhanced the biodegradation of PAHs. An evaluation of degradation rates of individual PAHs in LF1 indicated that acenaphthene, acenapthylene and 1-methylnaphthalene were completely degraded within 2 months after June 16, 1986, (Figures A3-A5, Appendix A). Fluorene, dibenzofuran, biphenyl, 2-methylnaphthalene, naphthalene, carbazole, benzo(a)pyrene, and benzo(g,h,i)perylene were degraded within 4 months after June 16, 1986, (Figures A6-A13, Appendix A). Anthracene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene and chrysene, however, were found to persist at low concentrations after 6 months starting June 16, 1986, (Figures A14-A19, Appendix A). Although the degradation of individual PAHs in LF2 are not shown here, the trends were similar to individual PAHs in LF1.

Results for phenol and PCP in LF1 are shown in Figure A20 and A21, respectively. Figures A22 and A23 represent soil concentrations of phenol and PCP in LF2. The results in

Figures A20-A23 show persistence at low soil concentrations after 6 months starting June 16, 1986.

The second sampling period that was evaluated extended from November 9, 1987, to April 20, 1988, in LF1 and November 10, 1987, to April 28, 1988, in LF2. Soil samples were collected for laboratory analyses on November 16 (1987), January 19 (1988), March 1 (1988), and April 11 (1989) from LF1 and LF2. The soil samples that were collected on November 16, 1987 exhibited increased concentrations of total PAHs following spoil pile soil application on November 9 (1987) in LF1 and November 10 (1987) in LF2 (Figures A24 and A25, respectively, Appendix A). Total PAH concentration detected during the second sampling period were comparatively higher than those measured during the first sampling period (compare Figure A1-A2 of first sampling period and Figure A24-A25 of second sampling period). Samples collected from LF1 on November 16, 1987 and January 19, March 1 and April 11, 1988 exhibited a gradual decrease in total PAH concentrations (Figure A24, Appendix A) whereas the total PAH concentrations measured in LF2 decreased drastically (Figure A25 , Appendix A). After 6-month of landfarm treatment following spoil pile soil application, PAHs with half-lives of less than 10 days were almost completely degraded. Lower concentrations of PAHs with half-lives of 10 days or greater were detected on March 1 and April 11, 1988, in LF1 and LF2 and on January 19, 1988, in LF1 compared to the levels initially measured on November 16, 1987 in both LF1 and LF2.

Results of PCP from the second sampling period in LF1 and LF2 are presented in Figures A26 and A27, respectively. PCP was not detected in soils collected from LF1 in January and April 1988 (Figure A26, Appendix A). PCP was detected at a relatively constant concentration in every sample collected form LF2 (Figure A27, Appendix A).

The third period extended from June 15 to October 4, 1988 for LF1 and June 20 to October 4, 1988, for LF2. Soil samples were collected on June 21, August 15 and September 27, 1988. The results are shown in Figures A28 and A29, Appendix A. Total PAH

concentrations in LF1 and LF2 decreased with time, a similar trend observed in previous sampling periods. PAHs with half-lives less than 10 days were completely degraded after 3 months whereas PAHs with intermediate and long half-lives persisted throughout this period (Figures A28 and A29, Appendix A). Greater reduction in PAH concentration, however, was observed on September 27, 1988.

PCP concentrations in the third sampling period in LF1 and LF2 are depicted in Figures A30 and A31(Appendix A), respectively. PCP was not detected in soil samples collected from LF1 after 2 months but was found in soil samples taken from LF2 (Figures A30 and A31, Appendix A).

2.4 SURROUNDING LAND USE

The SWP facility, which measures approximately 1,000 feet east to west by 1,600 feet north to south, lies within an industrialized area of Wilmington, North Carolina. Industry in the vicinity includes the Hess Fuel Tank Farms separated from the SWP property by a ditch on the north side and the Poctank, Inc., plant separated by an undeveloped lot on the south side of the SWP property. The major roads in the vicinity of the plant are Greenfield and Surrey Street. Greenfield Street runs in an east-west direction and dead ends into the center of the facility. Surrey Street runs in a north-south direction and is situated east of the property. The Cape Fear River borders the property on the west.

2.5 REGIONAL AND SITE GEOLOGY AND HYDROLOGY

The Wilmington site is located in the Coastal Plain Physiographic Province of North Carolina, a region underlain by Cretaceous and Cenozoic marine and non-marine sedimentary sequences. Approximately 1500 feet of Coastal Plain sediments overlie pre-Mesozoic crystalline basement rock in the Wilmington area (NCGS, 1985). The site is directly underlain by the Cretaceous-age Pee Dee Formation (NCGS, 1985), which consists predominantly of

unconsolidated, dark green to gray, clay-rich, marine sand and which may contain calcareous sandstone ledges (Sohl and Owens, 1991).

Five soil borings were advanced at the site to a maximum depth of approximately 50 feet by Soil and Material Engineers, Inc., during 1981 and an additional four borings (to a maximum depth of 20 feet) were drilled by Law Environmental in 1985. Lithologic logs (presented in Soil and Material Engineers, 1981, and Law Environmental, 1985) indicate that a surficial layer of sandy fill material or sand is present at the site, which varies from less than 1 foot to 18 feet in thickness. This layer, which appears to be thickest in the northern part of the site, is described as consisting of fine to medium sand, with wood, roots, or other material occasionally found. Below this sandy material is a layer consisting of dark brown, organic-rich silt or peat, which may contain traces of fine sand, roots, and wood fragments. This layer ranges in thickness from 5 to 19 feet.in the soil boring locations, and apparently increases in thickness toward the Cape Fear River to the west. Fine to medium sands extend from below the organic rich layers to a depth of 42 to 45.5 feet, below which a gray marl is encountered (Soil and Material Engineers, Inc., 1981).

Based on their observations, Soil and Material Engineers (1981) concluded that the dominant direction of shallow ground-water flow at the site was to the south, parallel to the Cape Fear River. Water table maps prepared by Law Environmental (1985) indicate westward to southwestward flow (toward the river) near the Landfarm areas, and generally southward flow at the eastern part of the site. Tidal influences may cause temporary alterations or reversals in these flow directions. Hydraulic conductivities ranging from 3×10^{-5} centimeters/second (cm/sec) to 10^{-6} cm/sec were determined based on in-situ monitor well tests, and an average ground-water flow velocity of 0.10 feet/year was calculated (Law Environmental, 1985).

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3.0 INVESTIGATIVE METHODS

A soil and ground-water sampling program, separate from the routine sampling described in Chapter 2.0, was designed to provide a baseline of current conditions within the two landfarmed areas (LF1 and LF2). The soil sampling locations and depths were selected to assess the presence of wood-preserving constituents (the list previously monitored by the MSUFPRD) and nutrients. The soil samples were collected in the landfarmed material and underlying substrate in accordance with standard operating procedures presented in the Work Plan (Geraghty & Miller, 1990). Ground water samples were collected from the four monitor wells bordering LF1 and LF2. All samples were analyzed by U.S. Environmental Protection Agency (USEPA) methodologies for the nutrients and selected semi-volatile organic compounds (SVOCs). In addition, two composite surficial soil samples were collected and analyzed to assess the presence of polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) and their respective chlorinated homologues and 2,3,7,8-congeners. The analytical procedures for PCDDs and PCDFs were conducted in accordance with USEPA methodologies. All field records and analytical data were reviewed and validated by a Geraghty & Miller Quality Assurance Officer.

3.1 SOIL SAMPLING

Soil samples were collected at five locations from the two landfarmed areas on October 10, 1990, as illustrated in Figure 3-1. At each location, three samples were collected within the landfarmed material and one sample was taken from the underlying substrate. Soil samples were analyzed for pH and the expanded list of wood-preserving constituents and nutrients (Table 3-1), including those previously monitored by the MSUFPRD and additional constituents (see Section 3.3, Expanded List of Constituents). Table 3-2 lists the analytical methods.

A small-diameter (<4-inch), stainless steel, hand-held bucket auger was used to determine the depth of the substrate layer at each sampling location prior to collecting soil samples. Following this preliminary activity, the auger was decontaminated with a laboratory-grade soap solution and rinsed three times with distilled water. The depth of the landfarmed material in LF1 and LF2 ranged from 12 to 30 inches and 12 to 27 inches, respectively. Three soil samples within the landfarmed material were collected at each sampling location by means of a hand-held bucket auger. Each borehole consisted of a sample taken at the surface, in the center of the landfarmed material and above the substrate layer.

The upper and lower sections of the individual soil cores were removed and discarded to prevent potential contamination between subsequent samples. The landfarmed soil was black, friable and had a moist consistency. Bricks and glass were encountered at the landfarmed material-substrate interface at several borehole locations. A faint creosote odor was also noticed at a few sample locations. The samples were placed in stainless steel bowls and thoroughly mixed prior to being stored in sample containers on ice at 4°C. Following the collection of the samples and the removal of the intermediate soil layers, the bucket auger was decontaminated with a laboratory-grade soap solution and rinsed three times with distilled water. A 3-foot length of polyvinyl chloride (PVC) pipe was inserted into the boreholes prior to the collection of the substrate samples. The upper 6 inches of the substrate were first removed using a 2-inch-diameter probe and discarded. The sampling equipment was decontaminated prior to collecting the substrate samples. The samples were thoroughly mixed in a stainless steel bowl and stored in a sample container on ice at 4°C.

Additional surficial soil samples (0- to 6-inch) were collected on October 9, 1990, for PCDD and PCDF analyses (Table 3-3). The soil cores were taken with a hand-held bucket auger at each of the five borehole locations in LF1 and LF2 and composited into two samples. The samples were thoroughly mixed and stored in containers on ice at 4°C. The bucket auger was decontaminated using the procedures previously described prior to and following the collection of each set of subsamples.

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Four surficial (0- to 6-inch) soil samples were collected with a sampling scoop on October 19, 1990, for grain- and particle-size determination and organic matter analysis. The individual soil samples were thoroughly mixed and placed in sample containers. The results of these analyses are included in Appendix B.

3.2 GROUND-WATER SAMPLING

The three downgradient (MW-7, MW-8, and MW-9) and upgradient (MW-6) monitor wells on the perimeter of LF1 and LF2 were sampled on October 9, 1990. These samples were analyzed for pH and the expanded list of wood-preserving constituents and nutrients (Table 3-1), including those previously monitored by the MSUFPRD and additional constituents (see Section 3.3, Expanded List of Constituents).

Plastic sheeting was placed around the wells to protect the sampling equipment from potential contamination prior to determining the well depth and water elevations using an electronic water-level meter. The wells were evacuated and sampled with disposable polyethylene bailers in accordance with standard operation procedures outlined in the Work Plan (Geraghty & Miller, 1990). The pH and conductance of the ground water were monitored and recorded. The ground-water samples were placed in sample containers and stored on ice at 4°C. The sampling logs completed during the ground-water sampling activities are presented in Appendix C.

3.3 EXPANDED LIST OF CONSTITUENTS

During an investigation of soil quality in the former treated and untreated wood storage area in 1991, several inorganic and semi-volatile organic constituents that were not included in the MSUFPRD list of wood preserving constituents were detected in site soils. Some of these additional constituents, included in Table 3-1 (without asterisks), were included in the analytical method used to analyze the 1990 landfarm soil and ground-water samples (EPA Method 8270),

but had not been reported by the laboratory because they had not been requested. To determine whether these additional organic constituents were also present in the landfarm soil and ground-water samples collected by Geraghty & Miller in 1990, Geraghty & Miller requested that these additional constituents be reported by Savannah Laboratories in 1991. The laboratory complied with the request.

3.4 LABORATORY ANALYSES AND QUALITY ASSURANCE/QUALITY CONTROL PRACTICES

All soil and ground-water samples collected during the 1990 sampling event were analyzed by Savannah Laboratories Environmental Services, Inc., located in Savannah, Georgia, for nutrient (total nitrogen, total phosphorus, total organic carbon, and chloride) and wood-preserving constituents in accordance with USEPA-approved methodologies (Table 3-2). Several field quality control samples were collected during the soil sampling program to assess field techniques and laboratory performance. These samples included a rinsate blank (RB-1) and a field (FB-1). Sample RB-1 was collected using the decontaminated bucket auger and stainless steel bowl following the collection of sample LF1BU. Concurrently, sample FB-1 was taken. The quality control samples were prepared in accordance with procedures described in the Work Plan and analyzed for the list of constituents presented in Table 3-1.

The two composite surficial soil samples collected for PCDD and PCDF determination and their respective tetra-, penta-, hexa-, hepta- and octa-chlorinated homologues and 2,3,7,8-congeners, including 2,3,7,8-TCDD and 2,3,7,8-tetrachlorodibenzo-p-furan (TCDF) (Table 3-3), were analyzed by Triangle Laboratories, Inc., located in Research Triangle Park, North Carolina, in accordance with the USEPA-approved methodology 8290.

The four surficial soil samples (LF1-B, LF1-D, LF2-B, and LF2-D) collected for grain- and (sieve) particle-size and organic mater (loss on ignition, American Society Testing and Materials [ASTM] method) determination were analyzed by Law Environmental, Inc., located

in Kennesaw, Georgia. The silt and clay fractions for sample LF1-D were determined using the hydrometer method.

3.4 CHAIN OF CUSTODY

Samples collected in the field remained in the presence of a project representative at all times until they were shipped to the analytical laboratory. The transfer of the samples to the laboratory was accomplished by means of chain-of-custody forms. Activity documentation logs completed during this investigation are presented in Appendix B, and chain-of-custody forns are included in Appendix D. The placement of the custody seals ensured the integrity of the samples and prevented potential tampering.

3.5 DATA VALIDATION

The purpose of this section is to evaluate the field data for its adherence to the approved sampling Work Plan and to ensure the completion of required documentation. Additionally, the analytical laboratory data were reviewed for the completeness of the data package deliverables and the achievement of project-specific data quality objectives.

All field activities were appropriately documented as illustrated by the sampling logs presented in Appendix B. Field (FB) and rinsate blanks (RB) for nutrient and wood-preserving constituent analysis were taken at a frequency of 1 for every 40 samples collected using procedures described in the Work Plan. Field and rinsate blank sample results are shown in Table 3-4 Total organic carbon was detected at a concentration of 2.4 mg/L in FB-1. This constituent was not found in RB-1.

The requested detection limits for the wood-preserving constituents analyzed in the soil samples were not achieved for 31 out of the 40 samples collected. Samples LF1DM and LF2AL were diluted due to matrix interferences whereas the dilution of the remaining samples was

attributed to PAH concentrations above the calibration range of the gas chromatography/mass spectroscopy (GC/MS) detection system. The matrix spike analyses were conducted on sample LF1AS. These dilutions accounted for the absence of surrogate recoveries. Estimated constituent concentrations were reported for levels below the detection limits where applicable. The remaining quality control (QC) data, however, were within established control limits.

The two surficial soil samples LF1 and LF2 were analyzed for PCDD and PCDF by high resolution GC/MS in accordance with the USEPA Method 8290. The samples were diluted and reanalyzed due to hexa-, hepta- and octa-chlorinated dibenzodioxin and furan isomer concentrations above the calibration range of the mass spectrometer detection system. The data reported herein represent a combination of the two analyses. The isomers 2,3,4,6,7,8-hexachlorodibenzofuran and octa-chlorodibenzodioxin were detected in the laboratory method blank. The concentrations found, however, were acceptable under TLI guidelines. Quantitative interferences were reported for a number isomers in the method blank, and samples LF1 and LF2. The concentration of the affected analytes may be considered qualitative.

All soil, ground-water, and quality control samples collected were analyzed within the required holding times. With the exception of the deviations reported herein, all quality control samples were found to be within established control limits. The enclosed data (Appendix D) are valid and met the data quality objectives stated in the Work Plan.

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4.0 SAMPLING RESULTS

4.1 SOIL SAMPLE RESULTS

The wood-preserving constituent, pH, and nutrient results for soil samples collected from LF1 and LF2 are presented in Tables 4-1 and 4-2, respectively. These data tables present the expanded constituent list which includes additional semi-volatile data reported by the laboratory in 1991. Table 4-3 summarizes the PCDD and PCDF data for the two composite samples. Sample results are identified with a unique sample ID consisting of the landfarm (LF1 or LF2), the location (A through E), and the sampling depth (U [upper], M [middle], L [lower], or S [substrate]). For example, sample LF2BU was the upper sample collected from location B in LF2. Laboratory data reports and the 1991 supplemental data are included in Appendix D.

A total of 15 semi-volatile organic compounds (semi-VOCs) were detected above their respective practical quantitation limits (PQLs) in the landfarm samples. Thirteen are PAHs: naphthalene; 1-methylnaphthalene; 2-methylnaphthalene; acenaphthene; fluorene; phenanthrene; anthracene; pyrene; benzo(a)anthracene; chrysene; benzo(a)pyrene; benzo(g,h,i)perylene; and fluoranthene. Two of the constituents are heterocyclic organics: carbazole and dibenzofuran. An additional 5 constituents were detected in the landfarm samples, but the concentrations were below the PQLs: benzo(b,k)fluoranthene (the laboratory could not resolve the two isomers and reported them together); indeno(1,2,3-cd)pyrene; dibenzo(a,h)anthracene; pentachlorophenol, and tetrachlorophenols (the laboratory did not resolve the tetrachlorophenol isomers and reported them together). The first 3 constituents are PAHs. Compounds detected below PQLs are "J"-qualified on the data tables.

Anthracene, a 3-ring PAH, had the highest concentration of the semi-VOCs: 900 milligrams per kilogram on a dry weight basis (mg/kg dw) in the upper sample from location C in LF2. Fluoranthene and pyrene occurred in the second-highest concentrations: up to 500

mg/kg dw each in the lower sample from location D in LF2. Generally, there was no observable trending in constituent concentrations between the upper, middle and lower samples from the landfarm area. For example, pyrene occurred in concentrations of 51, 66, and 500 mg/kg dw for the upper, middle, and lower samples, respectively, from location D in LF2. The same constituent occurred in concentrations of 130, 36, and 41 mg/kg dw for the upper, middle, and lower samples, respectively, from location C in LF2. Analyses of variance (ANOVA) performed on the data indicate no significant difference in constituent concentrations between the upper, middle, and lower samples. Concentrations of constituents in the substrate samples, however, were significantly lower than those occurring in the overlying landfarm material samples, indicating minimal vertical migration of constituents. Five of the ten substrate samples had no detectable semi-VOCs.

Both composite samples had detectable concentrations of PCDDs and PCDFs. The concentrations for each class of PCDFs ranged from 0.09/0.10 (LF1/LF2) micrograms per kilogram (μg/kg dw) total tetrachlodibenzofurans to 147/164 (LF1/LF2) μg/kg dw total heptachlorodibenzofurans. The concentrations for each class of PCDDs ranged from 0.14/0.17 (LF1/LF2) μg/kg dw total tetrachlodibenzodioxins to 621/932 (LF1/LF2) μg/kg dw total octachlorodibenzodioxins.

4.2 GROUND-WATER SAMPLE RESULTS

The wood-preserving constituent, pH, suspended solids, and nutrient results for ground-water samples collected from monitor wells MW-6, MW-7, MW-8, and MW-9 are presented in Tables 4-4. None of the wood-preserving constituents were detected in any of the ground-water samples.

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TABLES

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Table 2-1. Half-Life Categories for Polycyclic Aromatic Hydrocarbons (PAHs) Monitored by the Mississippi State University Forest Product Division, Southern Wood Piedmont Landfarm Area, Wilmington, North Carolina.

Less Than 10 Days	10 to 100 Days	Greater Than 100 Days
Acenaphthylene	Anthracene	Benzo(a)anthracene
Acenaphthene	Carbazole	Benzo(a)pyrene
Biphenyl	Fluoranthene	Benzo(g,h,i)perylene
Dibenzofuran	Phenanthrene	Chrysene
Fluorene		Pyrene
1-Methylnaphthalene		
2-Methylnaphthalene		
Naphthalene		

Reference: USEPA, 1989.

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Table 2-2. List of Wood-Preserving Constituents and Nutrients Monitored by the Mississippi State University Forest Product Research Division, Southern Wood Piedmont Landfarm Area, Wilmington, North Carolina.

Wood Preserving Constituents
Acenapthylene
Acenaphthene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(g,h,i)perylene
Biphenyl
Carbazole
Chrysene
Dibenzofuran
Fluoranthene
Fluorene
2-Methylnaphthalene
1-Methylnaphthalene
Naphthalene
Oil
Pentachlorophenol
Phenanthrene
Phenol
Pyrene
Nutrients/Other
Chloride
Total nitrogen
Total organic carbon
Total phosphorous

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Table 3-1. Expanded List of Constituents Analyzed for in Landfarm Soil and Ground-Water Samples Collected in 1990 at the Southern Wood Piedmont Facility, Wilmington, North Carolina.

- Base Neutral Acid Extractable Constituents

Naphthalene*
2-Methylnaphthalene*
1-Methylnaphthalene*
1,1-Biphenyl*
Acenaphthylene*
Acenaphthene*
Dibenzofuran*
Fluorene*
Phenanthrene*
Anthracene*
Carbazole*
Pyrene*
Benzo(a)anthracene*
Chrysene*
Benzo(a)pyrene*
Benzo(g,h,i)perylene*
Pentachlorophenol*
Fluoranthene*
2-Chlorophenol
Phenol
2,4-Dimethylphenol
Trichlorophenols
o-Cresol
m- & p-Creosol
p-Chloro-m-cresol
Tetrachlorophenols
2,4-Dinitrophenol
Benzo(k)fluoranthene
Indeno(1,2,3-c,d)pyrene
Dibenzo(a,h)anthracene

- Nitrogen Series

Total Kjeldahl Nitrogen-N*
Nitrate + Nitrite-N*
Total Nitrogen*

- Total Phosphorus*
Total Organic Carbon*
Chloride*

- pH*

* 1990 Mississippi State University Forest Product Research Division (MSUFPRD) Constituent List (also included polychlorinated dibenzodioxins and polychlorinated dibenzofurans). Data for other constituents (1990 sampling program) were requested in 1991.

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Table 3-2. U.S. Environmental Protection Agency Methods of Analysis for Soil and Ground Water, Southern Wood Piedmont Landfarm Area, Wilmington, North Carolina.

Constituents	Method
Polycyclic aromatic hydrocarbons	SW-846 8270
Other Semi-VOCs (phenols, furans, carbazole)	SW-846 8270
Total kjeldahl nitrogen	351.2
Nitrate and nitrite	353.1
Total phosphorus	365.1
Total suspended solids	160.2
Total organic carbon	415.1
Chloride	325.2

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Table 3-3. Polychlorinated Dibenzofurans and Polychlorinated Dibenzodioxins Analyzed at the Southern Wood Piedmont Landfarm Area, Wilmington, North Carolina.

Constituents	Abbreviations
Furans	
Tetrachlorodibenzofurans (total)	TCDFs (total)
2,3,7,8-Tetrachlorodibenzofuran	2,3,7,8-TCDF
Pentachlorodibenzofurans (total)	PeCDFs (total)
1,2,3,7,8-Pentachlorodibenzofuran	1,2,3,7,8-PeCDF
2,3,4,7,8-Pentachlorodibenzofuran	2,3,4,7,8-PeCDF
Hexachlorodibenzofurans (total)	HxCDFs (total)
1,2,3,4,7,8-Hexachlorodibenzofuran	1,2,3,4,7,8-HxCDF
1,2,3,6,7,8-Hexachlorodibenzofuran	1,2,3,6,7,8-HxCDF
2,3,4,6,7,8-Hexachlorodibenzofuran	2,3,4,6,7,8-HxCDF
1,2,3,7,8,9-Hexachlorodibenzofuran	1,2,3,7,8,9-HxCDF
Heptachlorodibenzofurans (total)	HpCDFs (total)
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1,2,3,4,6,7,8-HpCDF
1,2,3,4,7,8,9-Heptachlorodibenzufuran	1,2,3,4,7,8,9-HpCDF
Octachlorodibenzofurans (total)	OCDF
Dioxins	
Tetrachlorodibenzodioxins (total)	TCDDs total
2,3,7,8-Tetrachlorodibenzodioxin	2,3,7,8-TCDD
Pentachlorodibenzodioxins (total)	PeCDDs (total)
1,2,3,7,8-Pentachlorodibenzodioxin	1,2,3,7,8-PeCDD
Hexachlorodibenzodioxins (total)	HxCDDs (total)
1,2,3,4,7,8-Hexachlorodibenzodioxin	1,2,3,4,7,8-HxCDD
1,2,3,6,7,8-Hexachlorodibenzodioxin	1,2,3,6,7,8-HxCDD
1,2,3,7,8,9-Hexachlorodibenzodioxin	1,2,3,7,8,9-HxCDD
Heptachlorodibenzodioxins (total)	HpCDDs (total)
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	1,2,3,4,6,7,8-HpCDD
Octachlorodibenzodioxins (total)	OCDD

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Table 3-4. Analytical Results for Quality Control Samples Associated with Ground-Water Samples Collected in 1990, Southern Wood Piedmont Site, Wilmington, North Carolina.

Sample Identification #:	RB-1	FB-1
Constituents (mg/L)		
Semi-Volatile Organic Constituents (8270)		
Naphthalene	ND	ND
1-Methylnaphthalene	ND	ND
2-Methylnaphthalene	ND	ND
1,1-Biphenyl	ND	ND
Acenaphthylene	ND	ND
Acenaphthene	ND	ND
Dibenzofuran	ND	ND
Fluorene	ND	ND
Phenanthrene	ND	ND
Anthracene	ND	ND
Carbazole	ND	ND
Pyrene	ND	ND
Benzo(a)Anthracene	ND	ND
Chrysene	ND	ND
Benzo(a)pyrene	ND	ND
Benzo(g,h,i)perylene	ND	ND
Pentachlorophenol	ND	ND
Fluoranthene	ND	ND
2-Chlorophenol	ND	ND
Phenol	ND	ND
2,4-Dimethylphenol	ND	ND
Trichlorophenols	ND	ND
Creosol (ortho)	ND	ND
Creosol m&p	ND	ND
P-chloro-m-cresol	ND	ND
Tetrachlorophenols	ND	ND
2,4-Dinitrophenol	ND	ND
Benzo(b,k)fluoranthene	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND
Dibenzo(a,h)anthrancene	ND	ND
Total Organic Carbon	ND	ND
Chloride	ND	2.4

RB Rinsate blank.
FB Field blank.
ND Compound was not detected.
NA pH was not analyzed.

1295swp

Table 4-1. Analytical Results for Soil Samples Collected in 1990 Within the River Landfarm 1 and Underlying Substrate at the Southern Wood Piedmont Site, Wilmington, North Carolina.

Sample Identification # /1	LF1AU 9100A	LF1AM 9100B	LF1AL 9100C	LF1AS 9100D	LF1BU 9101A	LF1BM 9101B	LF1BL 9101C	LF1BS 9101D	LF1CU 9102A	LF1CM 9102B
Constituents (mg/kg dw)										
Semi-Volatile Organic Compounds (8270)										
Naphthalene	3.8J	ND	ND	ND	4.4J	12	ND	ND	4.8J	ND
2-Methylnaphthalene	4.0J	ND	ND	ND	5.9J	15	ND	ND	ND	ND
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Biphenyl	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	5.0J	ND	ND	ND	6.7J	11	ND	ND	6.6J	ND
Fluorene	14	ND	ND	ND	4.9J	27	ND	ND	20	ND
Phenanthrene	25	3.9J	6.2J	ND	36	41	ND	ND	130	8.1
Anthracene	88	3.4J	3.7J	ND	230	200	4.6J	ND	29	58
Carbazole	26	ND	ND	ND	46	90	ND	ND	43	9.6
Pyrene	44	13	80	ND	50	27	20	ND	150	11
Benzo(a)Anthracene	20	5.8J	39	ND	19	8.6	10	ND	32	ND
Chrysene	22	9.5	59	ND	27	15	18	ND	42	8.9
Benzo(a)pyrene	19	7.3	32	ND	20	9.4	10	ND	24	ND
Benzo(g,h,i)perylene	8.8	5.0J	16	ND	7.4	ND	3.9J	ND	10	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	58	13	80	ND	19	34	20	ND	140	8.9
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Creosol (ortho)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Creosol m&p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b,k)fluoranthene	35J	19J	100J	ND	43J	19J	27J	ND	49J	14J
Ideno(1,2,3-cd)pyrene	10J	5.2J	17J	ND	10J	4.9J	5.2J	ND	11J	3.3J
Dibenzo(a,h)anthracene	4.2J	2.2J	7.5J	ND	4.3J	2.7J	2.3J	ND	5.0J	1.6J
Nitrogen Series										
Total Kjeldahl Nitrogen-N	1600	500	1200	58	1600	1600	7500	88	1900	1100
Nitrate + Nitrite-N	ND	6.7	ND	ND	ND	16	8.2	ND	8.1	ND
Total Nitrogen	1600	507	1200	58	1600	1616	7508	88	1908	1100
Total Phosphorous	830	560	900	40	1100	840	450	42	1000	620
Total Organic Carbon	35000	18000	25000	ND	32000	26000	15000	120	39000	23000
Chloride	ND	ND	ND	ND	29	28	26	ND	35	ND
pH	6	6.6	6.8	7.3	6.5	6.5	7.7	8	6.6	6.7
Percent Solids %	82	90	90	94	82	84	90	95	70	88

1 Represents Landfarm 1 location (A, B, C, D, or E) depth sampled (U, M, L, or S).
J Estimated concentration below the practical quantitation limit.
ND Compound was not detected.

Table 4-1. Analytical Results for Soil Samples Collected in 1990 Within the River Landfarm 1 and Underlying Substrate at the Southern Wood Piedmont Site, Wilmington, North Carolina.

Sample Identification # /1	LF1CL 9102C	LF1CS 9102D	LF1DU 9103A	LF1DM 9103B	LF1DL 9103C	LF1DS 9103D	LF1EU 9104A	LF1EM 9104B	LF1EL 9104C	LF1ES 9104D
Constituents (mg/kg dw)										
Semi-Volatile Organic Compounds (8270)										
Naphthalene	ND	ND	ND	ND	ND	ND	3.6J	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Biphenyl	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	5.0J	ND	ND	ND	6.0J	ND	ND	ND
Phenanthrene	13	ND	11	ND	14	6.5J	20	4.6J	ND	ND
Anthracene	6.8J	ND	35	4.7J	3.6J	3.0J	70	5.0J	ND	ND
Carbazole	ND	ND	ND	ND	ND	ND	23	ND	ND	ND
Pyrene	110	ND	28	9.5	68	23	41	6.0J	6.5J	ND
Benzo(a)Anthracene	42	ND	11	3.4J	18	13	21	7.4	ND	ND
Chrysene	59	ND	17	7.3	40	19	22	8.1	3.7J	ND
Benzo(a)pyrene	22	ND	16	7.3	16	5.9J	18	8.1	3.5J	ND
Benzo(g,h,i)perylene	6.5J	ND	6.3J	4.8J	7.4J	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	120	ND	29	9.5	71	24	51	4.4J	6.8J	ND
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Creosol (ortho)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Creosol m&p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b,k)fluoranthene	68J	ND	31J	14J	52J	18J	29J	120J	9.1J	1.1J
Ideno(1,2,3-cd)pyrene	9.3J	ND	8.0J	4.9J	8.7J	4.1J	8.1J	14J	2.0J	ND
Dibenzo(a,h)anthracene	4.7J	ND	4.3J	1.6J	3.9J	1.8J	3.2J	4.2J	0.76J	ND
Nitrogen Series										
Total Kjeldahl Nitrogen-N	1300	67	1600	1000	330	1500	1400	ND	470	ND
Nitrate + Nitrite-N	ND	ND	7	6.9	ND	ND	ND	ND	ND	ND
Total Nitrogen	1300	67	1607	1007	330	1500	1400	ND	470	ND
Total Phosphorous	250	66	630	530	240	340	980	640	320	88
Total Organic Carbon	21000	ND	34000	17000	26000	25000	30000	21000	8000	ND
Chloride	77	ND	ND	ND	ND	ND	40	27	ND	21
pH	6.5	6.8	6.3	6.3	6.6	6.9	6.4	6.7	7.1	7.3
Percent Solids %	88	90	86	90	86	87	88	88	91	97

1 Represents Landfarm 1 location (A, B, C, D, or E) depth sampled (U, M, L, or S).
J Estimated concentration below the practical quantitation limit.
ND Compound was not detected.

Table 4-2. Analytical Results for Soil Samples Collected in 1990 Within the Office Landfarm 2 and Underlying Substrate at the Southern Wood Piedmont Site, Wilmington, North Carolina.

Sample Identification # /1	LF2AU 9105A	LF2AM 9105B	LF2AL 9105C	LF2AS 9105D	LF2BU 9106A	LF2BM 9106B	LF2BL 9106C	LF2BS 9106D	LF2CU 9107A	LF2CM 9107B
Constituents (mg/kg dw)										
Semi-Volatile Organic Compounds (8270)										
Naphthalene	ND	ND	ND	0.33J	ND	30	ND	ND	ND	5.1J
2-Methylnaphthalene	ND	10	ND	ND	ND	41	ND	ND	ND	ND
1-Methylnaphthalene	ND	ND	ND	ND	ND	20	ND	ND	ND	ND
1,1-Biphenyl	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	28	ND	ND	49	ND	ND	ND	ND	ND
Dibenzofuran	ND	26	ND	ND	19	20	5.6J	ND	ND	3.8J
Fluorene	22	91	ND	ND	42	57	12	ND	12	ND
Phenanthrene	34	200	ND	0.49	82	86	24	ND	99	17
Anthracene	100	280	ND	0.36J	350	400	66	ND	900	72
Carbazole	45	200	ND	ND	100	160	30	ND	270	23
Pyrene	26	200	4.7J	2.0	55	23	78	0.60	130	36
Benzo(a)Anthracene	20	110	ND	1.2	33	13	21	0.21J	43	19
Chrysene	21	120	3.6J	1.9	35	18	31	0.35J	58	22
Benzo(a)pyrene	16	46	ND	1.3	24	30	41	0.30J	41	16
Benzo(g,h,i)perylene	7.8	17	ND	0.71	12	ND	16	ND	17	13
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	35	300	5.0J	2.3	92	27	82	0.63	110	38
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Creosol (ortho)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Creosol m&p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b,k)fluoranthene	33J	89J	6.2J	2.6J	43J	24J	17J	0.78J	43J	5.7J
Ideno(1,2,3-cd)pyrene	8.6J	18J	1.1J	ND	11J	ND	ND	0.18J	11J	14J
Dibenzo(a,h)anthracene	3.9J	ND	ND	ND	ND	ND	ND	ND	5.3J	6.2J
Nitrogen Series										
Total Kjeldahl Nitrogen-N	1400	1400	170	1100	1700	1400	900	920	2200	340
Nitrate + Nitrite-N	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Nitrogen	1400	1400	170	1100	1700	1400	900	920	2200	340
Total Phosphorous	1100	290	120	800	920	970	390	61	740	90
Total Organic Carbon	37000	51000	3700	26000	36000	34000	31000	230	36000	24000
Chloride	26	51	ND	ND	ND	ND	ND	ND	ND	ND
pH	6.3	6.3	6.6	5.1	6.2	5.8	6.7	7.2	6.2	7.0
Percent Solids %	84	79	92	73	85	84	86	88	86	91

1 Represents Landfarm 2 location (A, B, C, D, or E) depth sampled (U, M, L, or S).
J Estimated concentration below the practical quantitation limit.
ND Compound was not detected.

1387wp

Table 4-2. Analytical Results for Soil Samples Collected in 1990 Within the Office Landfarm 2 and Underlying Substrate at the Southern Wood Piedmont Site, Wilmington, North Carolina.

Sample Identification # /1	LF2CL 9107C	LF2CS 9107D	LF2DU 9108A	LF2DM 9108B	LF2DL 9108C	LF2DS 9108D	LF2EU 9109A	LF2EM 9109B	LF2EL 9109C	LF2ES 9109D
Constituents (mg/kg dw)										
Semi-Volatile Organic Compounds (8270)										
Naphthalene	ND	ND	ND	3.7J	11	ND	3.5J	ND	2.1J	ND
2-Methylnaphthalene	ND	ND	9.5	ND	11	ND	ND	ND	ND	ND
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Biphenyl	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	24	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	20	ND	3.7J	ND	ND	ND
Fluorene	ND	ND	37	ND	54	ND	ND	6.1J	ND	ND
Phenanthrene	6.0J	ND	70	12	130	0.40J	19	14	5.7	ND
Anthracene	ND	ND	170	15	290	0.97	70	50	14	ND
Carbazole	ND	ND	67	4.6J	75	ND	24	17	1.9J	ND
Pyrene	41	ND	51	66	500	2.2	34	34	30	ND
Benzo(a)Anthracene	18	ND	18	27	100	1.0	13	13	11	ND
Chrysene	32	ND	22	40	150	1.4	18	19	16	ND
Benzo(a)pyrene	11	ND	19	33	65	0.97	18	15	12	ND
Benzo(g,h,i)perylene	4.2J	ND	7.9	34	14	0.47	8.1	7.1J	8.6	ND
Pentachlorophenol	ND	ND	ND	ND	20J	0.80J	ND	ND	ND	ND
Fluoranthene	47	ND	74	65	500	2.3	36	36	32	ND
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorophenols	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Creosol (ortho)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Creosol m&p	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorophenols	ND	ND	ND	ND	1.2J	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b,k)fluoranthene	38J	ND	1.4J	82J	99J	2.3J	35J	32J	31J	ND
Ideno(1,2,3-cd)pyrene	23J	ND	ND	19J	19J	0.53J	9.6J	8.3J	9.4J	ND
Dibenzo(a,h)anthracene	15J	ND	ND	8.0J	9.4J	0.23J	4.4J	3.2J	3.9J	ND
Nitrogen Series										
Total Kjeldahl Nitrogen-N	520	67	1300	1400	290	190	190	1400	520	90
Nitrate + Nitrite-N	ND	ND	ND	ND	ND	ND	ND	12	ND	ND
Total Nitrogen	520	67	1300	1400	290	190	190	1400	520	90
Total Phosphorous	200	49	910	250	130	580	1200	940	370	53
Total Organic Carbon	13000	580	36000	49000	44000	4700	35000	31000	20000	490
Chloride	ND	ND	63	99	85	64	27	ND	ND	ND
pH	7.5	7.7	6.5	5.9	5.8	5.6	6.0	6.1	6.7	7.5
Percent Solids %	87	86	83	85	78	77	88	87	80	91

1 Represents Landfarm 2 location (A, B, C, D, or E) depth sampled (U, M, L, or S).
J Estimated concentration below the practical quantitation limit.
ND Compound was not detected.

1387rep

Table 4-3. Dioxin and Furan Concentrations for Composite Soil Samples Collected in Landfarms 1 and 2 at the Southern Wood Piedmont Site, Wilmington, North Carolina.

Parameters	Land Farm 1	Land Farm 2
Furans (µg/kg*)		
Tetrachlorodibenzofurans (total)	0.09	0.10
2,3,7,8-Tetrachlorodibenzofuran	0.02	0.02
Pentachlorodibenzofurans (total)	0.92	0.87
1,2,3,7,8-Pentachlorodibenzofuran	0.06	0.06
2,3,4,7,8-Pentachlorodibenzofuran	0.06	0.06
Hexachlorodibenzofurans (total)	31.4	34.4
1,2,3,4,7,8-Hexachlorodibenzofuran	0.71	0.76
1,2,3,6,7,8-Hexachlorodibenzofuran	0.24	0.21
2,3,4,6,7,8-Hexachlorodibenzofuran	0.16	0.14
1,2,3,7,8,9-Hexachlorodibenzofuran	0.04	0.05**
Heptachlorodibenzofurans (total)	147.0	164.0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	59.5	66.0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.77	0.96
Octachlorodibenzofurans (total)	63.2	83.3
Dioxins (µg/kg*)		
Tetrachlorodibenzodioxins (total)	0.14	0.17
2,3,7,8-Tetrachlorodibenzodioxin	0.004**	0.008
Pentachlorodibenzodioxins (total)	0.48	0.65
1,2,3,7,8-Pentachlorodibenzodioxin	0.03	0.05
Hexachlorodibenzodioxins (total)	16.4	22.5
1,2,3,4,7,8-Hexachlorodibenzodioxin	0.10	0.18
1,2,3,6,7,8-Hexachlorodibenzodioxin	1.3	1.8
1,2,3,7,8,9-Hexachlorodibenzodioxin	0.22	0.89
Heptachlorodibenzodioxins (total)	461	573
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	65.5	98.7
Octachlorodibenzodioxins (total)	621	932

* µg/kg = micrograms per kilogram.
** Estimated Maximum Possible Concentration

1387swp

Table 4-4. Analytical Results for Ground-Water Samples Collected in 1990 From the Upgradient Monitor Well (W-6) and Three Downgradient Monitor Wells (W-7, W-8, and W-9) Located on the Perimeter of Landfarms 1 and 2 at the Southern Wood Piedmont Site, Wilmington, North Carolina.

Sample Identification #	MW-6	MW-7	MW-8	MW-9
Constituents (mg/L)				
Semi-Volatile Organic Compounds (8270)				
Naphthalene	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND
1-Methylnaphthalene	ND	ND	ND	ND
1,1-Biphenyl	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND
Benzo(a)Anthracene	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND
Nitrogen Series				
Total Kjeldahl Nitrogen-N	11	7.2	10	6.7
Nitrate + Nitrite-N	ND	ND	ND	ND
Total Nitrogen	11	7.2	10	6.7
Total Phosphorous	1.0	0.47	0.51	0.35
Suspended Solids	68	130	220	30
Total Organic Carbon	13	22	26	20
Chloride	530	210	110	120

ND Compound was not detected.

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FIGURES

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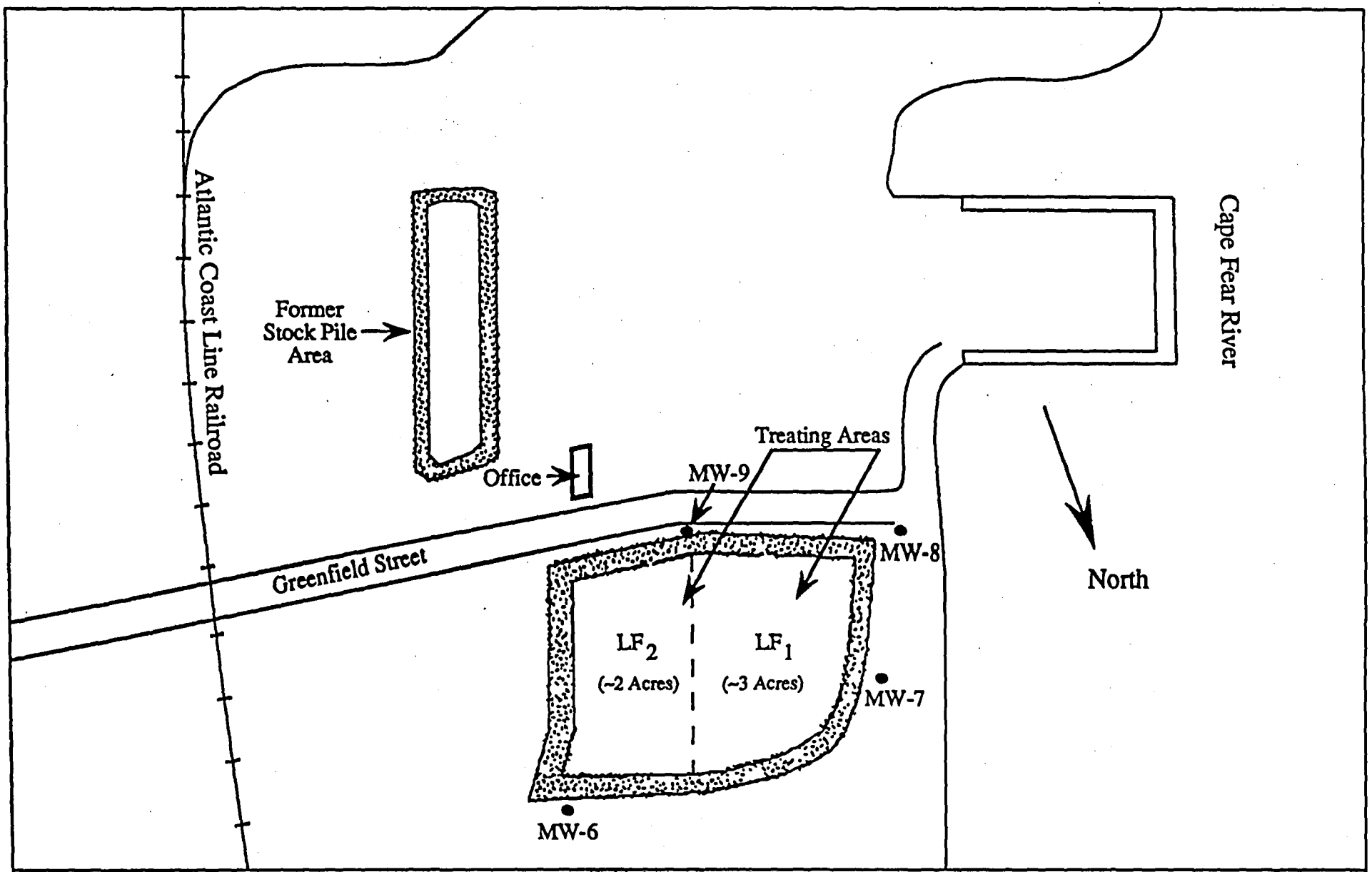

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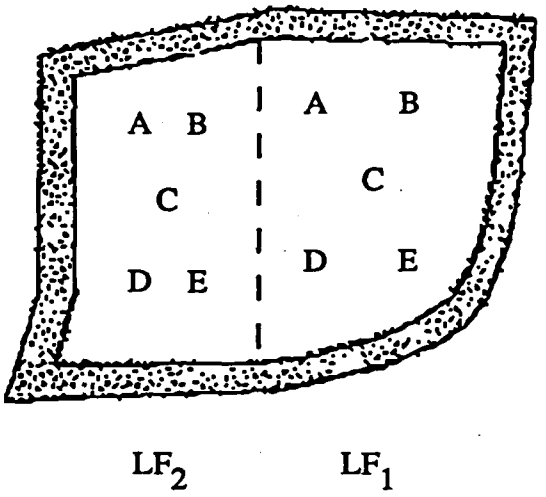
Environmental Services

GENERALIZED SITE MAP
Southern Wood Piedmont, Wilmington, North Carolina
(Not to Scale)

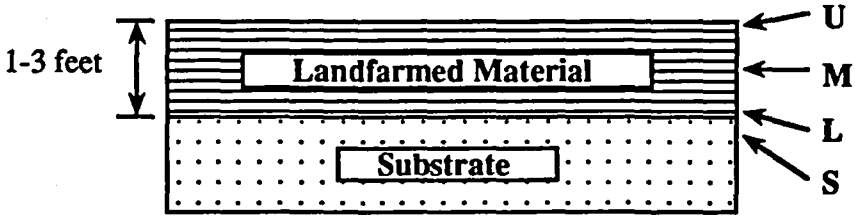
Figure 2-1

Plan View



Soil Sampling Locations in Landfarm Areas 1 and 2 Southern Wood Piedmont, Wilmington

Cross-Sectional View



U Upper soil sample taken approximately 3" below landfarm surface.

M Middle soil sample taken midway through the landfarmed material.

L Lower soil sample taken within the bottom 6" of the landfarmed material.

S Substrate sample taken approximately 6" below the base of the landfarmed material.

GERAGHTY & MILLER, INC. *Environmental Services*	Soil Sampling Locations within the Landfarm Areas at Southern Wood Piedmont's Former Wood-Treatment Facility - Wilmington, North Carolina (Not to Scale)	Figure 3-1

APPENDIX A

Historical Data

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Figure A1. Total PAH Concentrations by Half-Lives in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

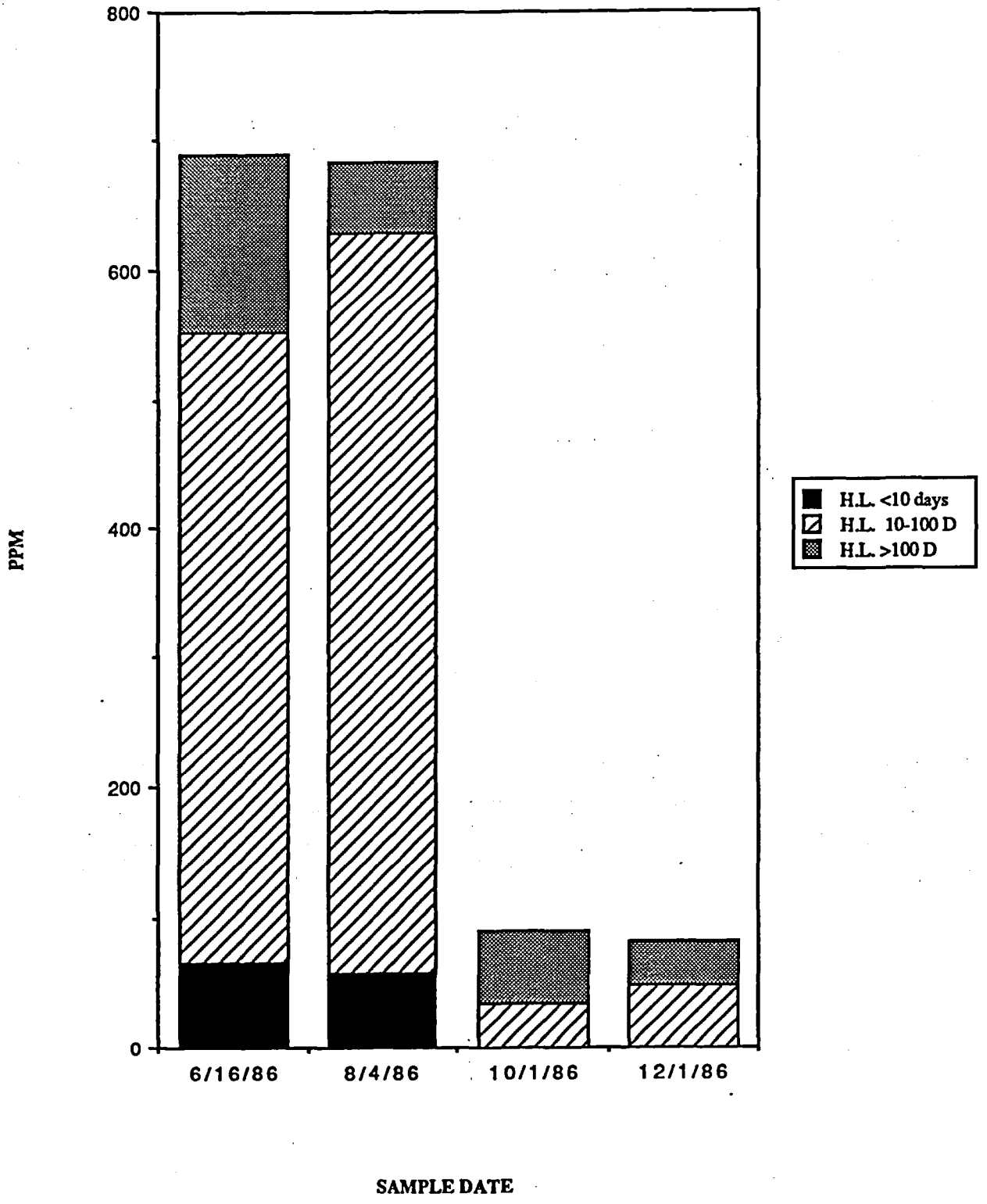


Figure A2. Total PAH Concentrations by Half-Lives in 0- to 3-Inch Soil Samples Collected in Landfarm 2 Between Subsequent Soil Applications Made on June 5 and October 30, 1986

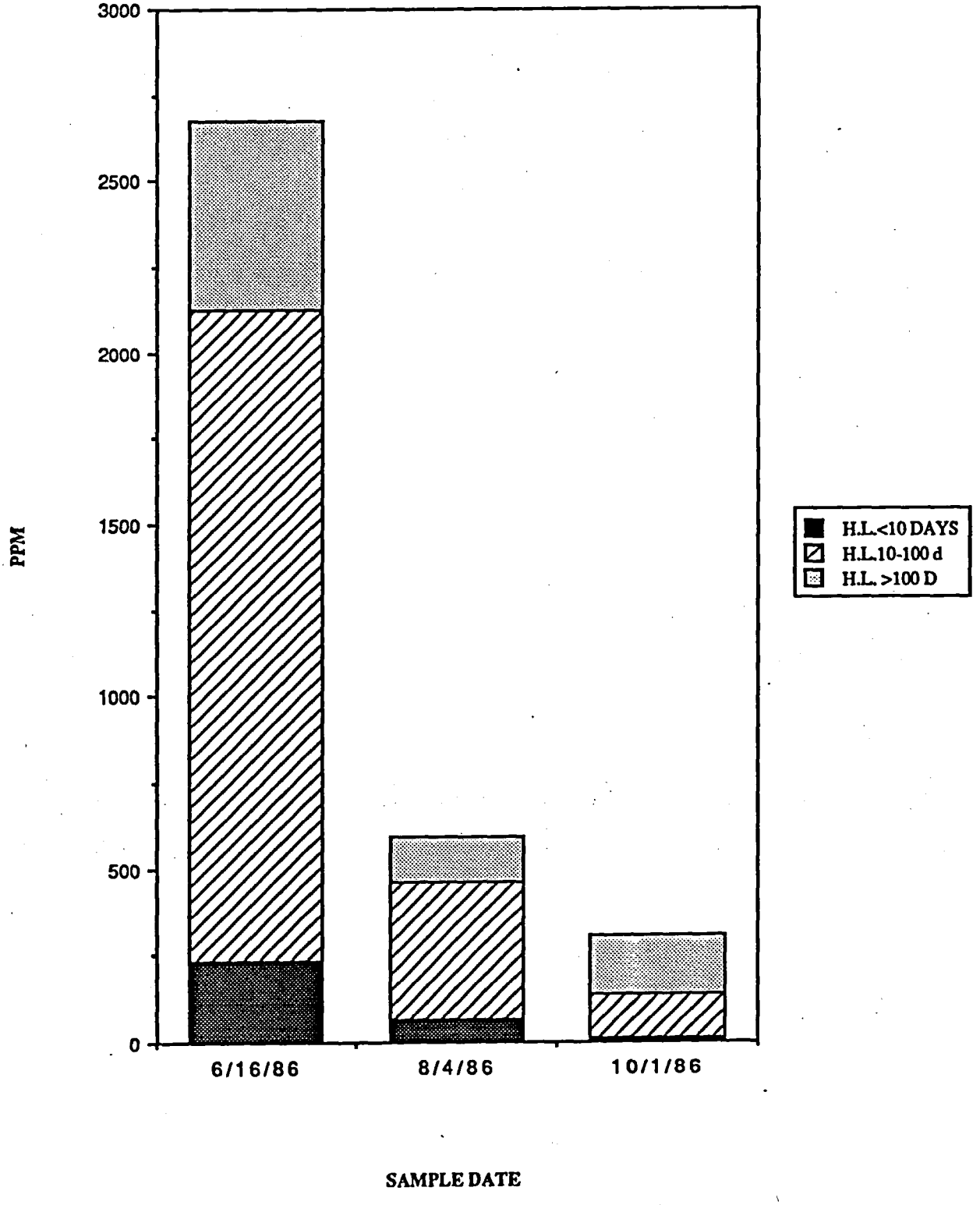


Figure A3. Acenaphthene Concentrations in 0- to 3-inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

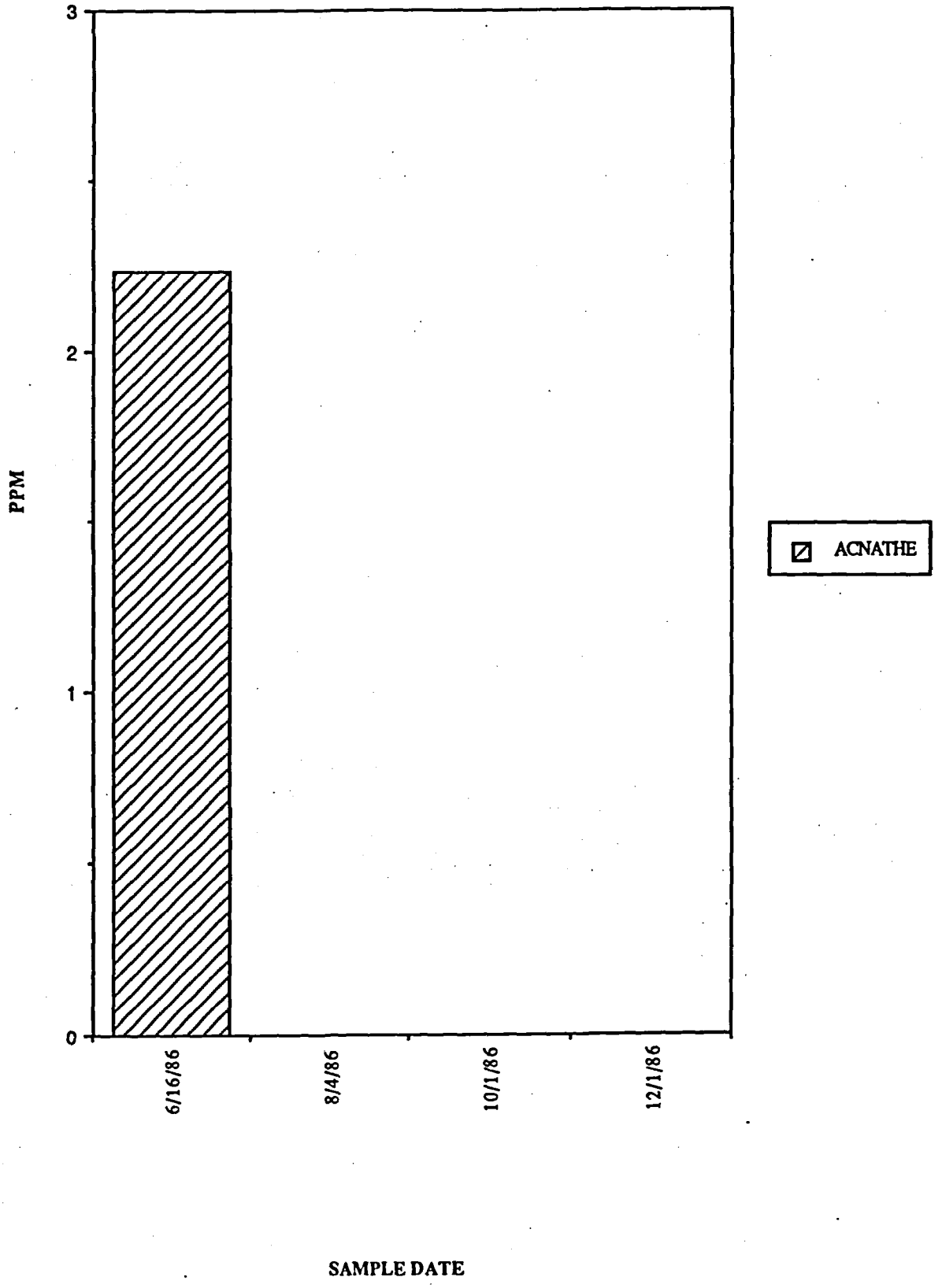


Figure A4. Acenapthylene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

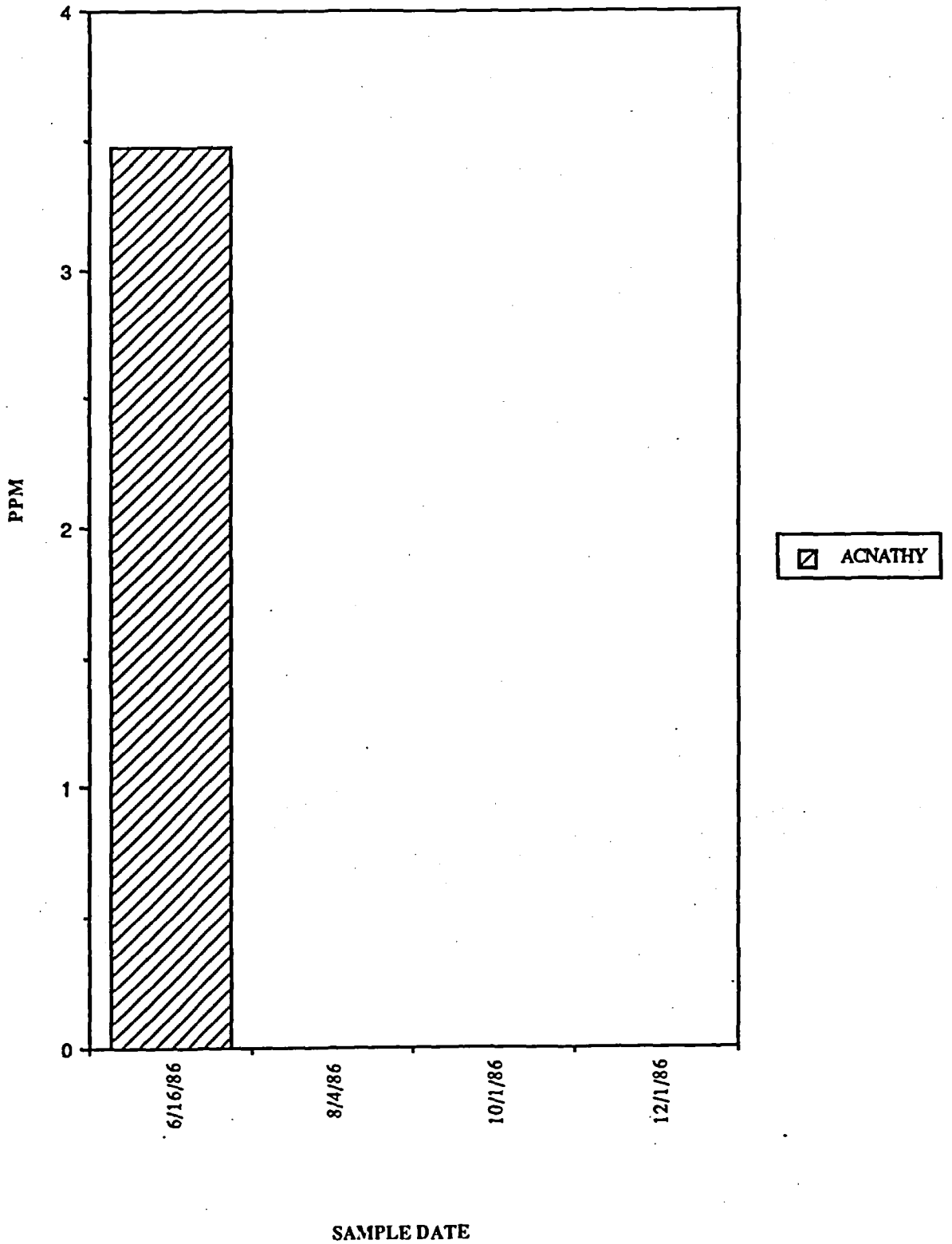


Figure A5. One-Methylnaphthalene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

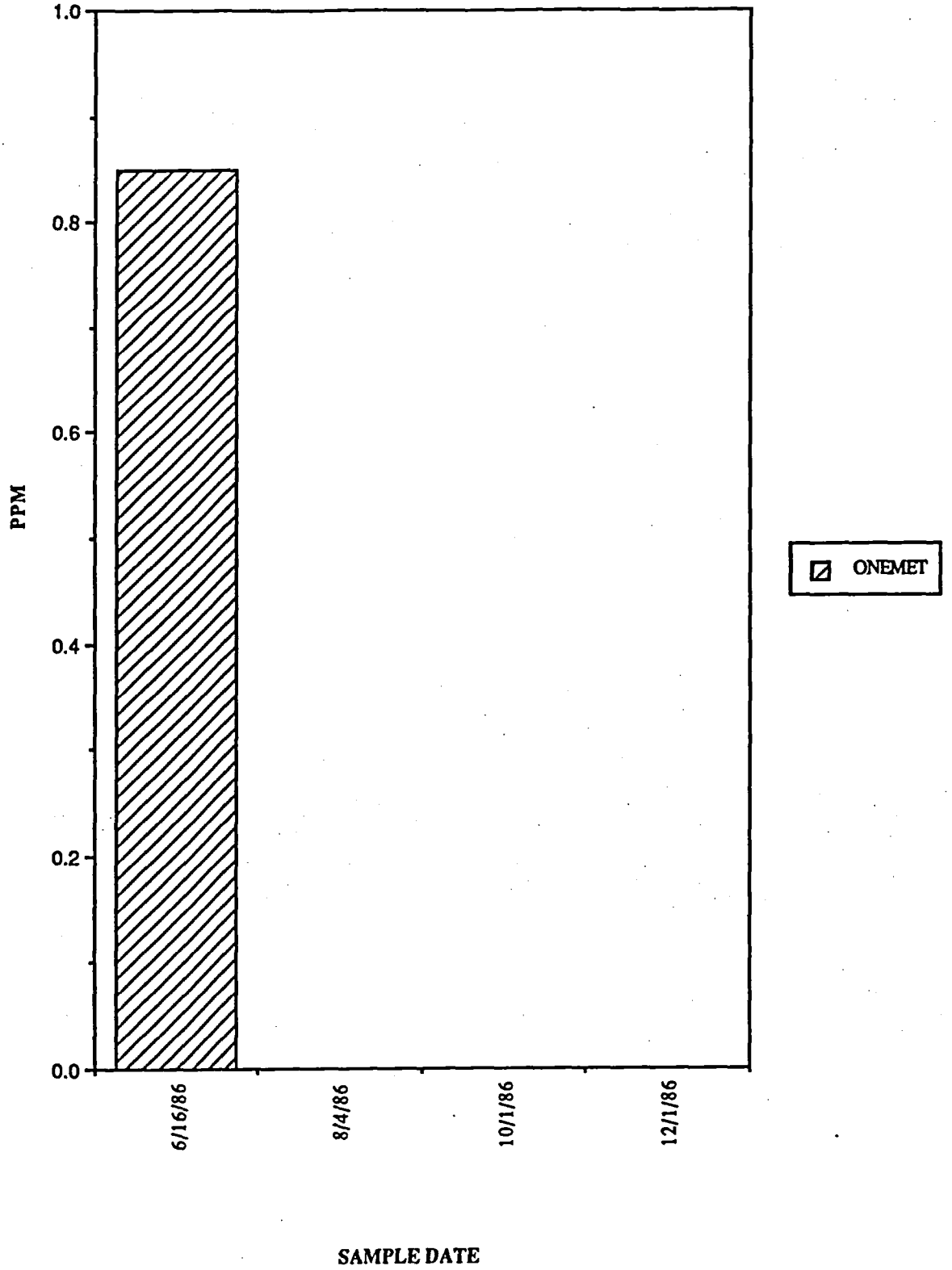


Figure A6. Fluorene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

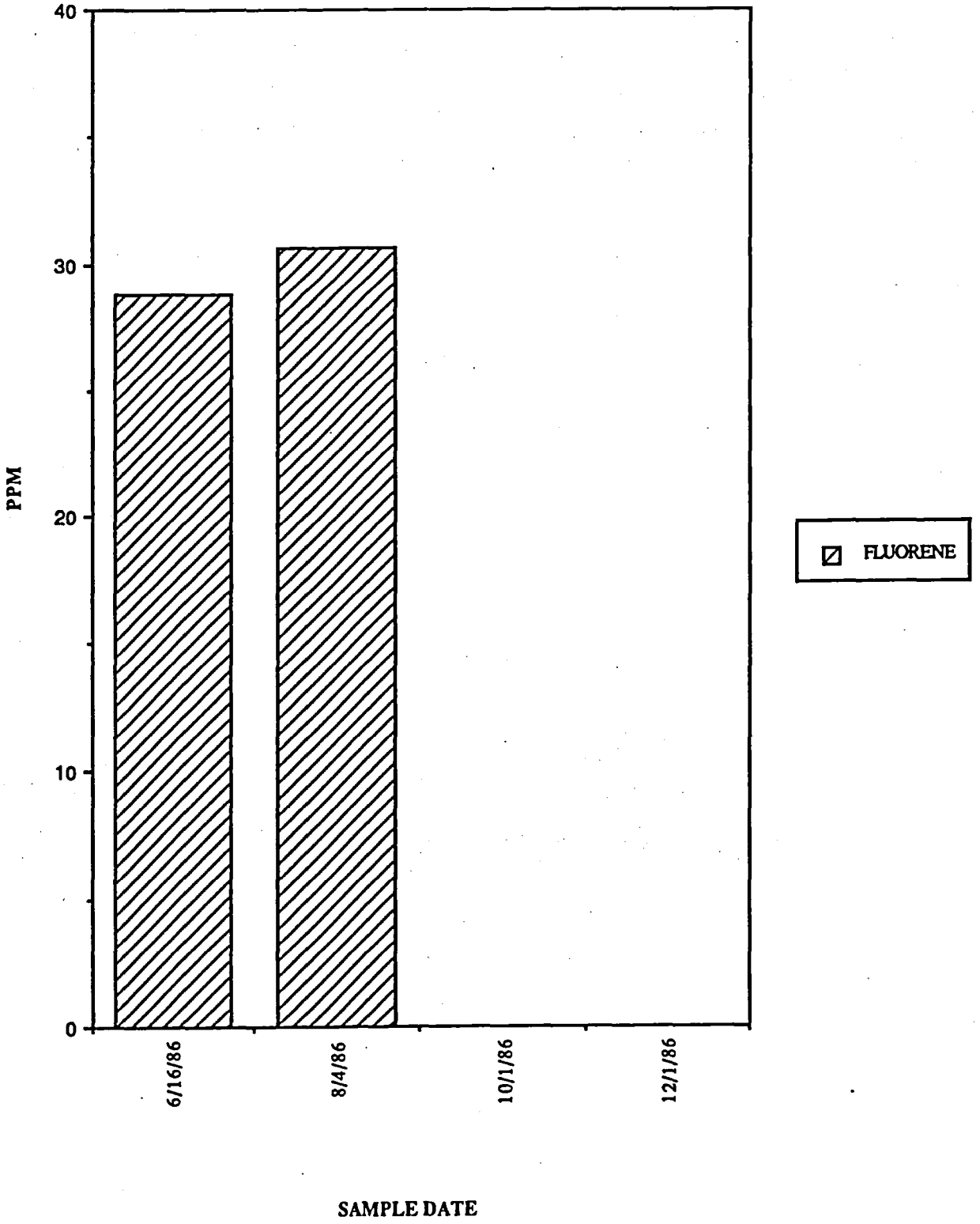


Figure A7. Dibenzofuran Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

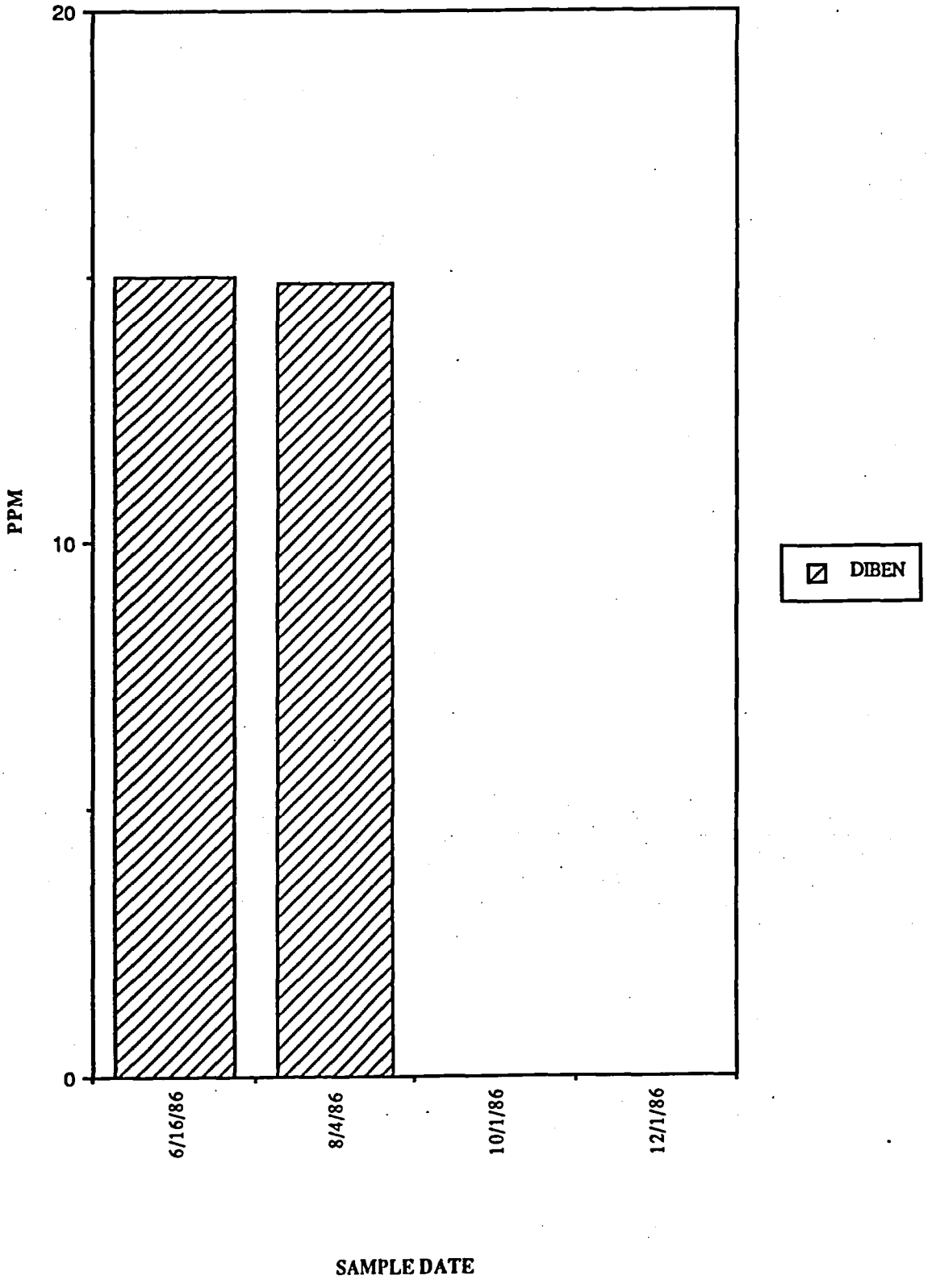


Figure A8. Biphenyl Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

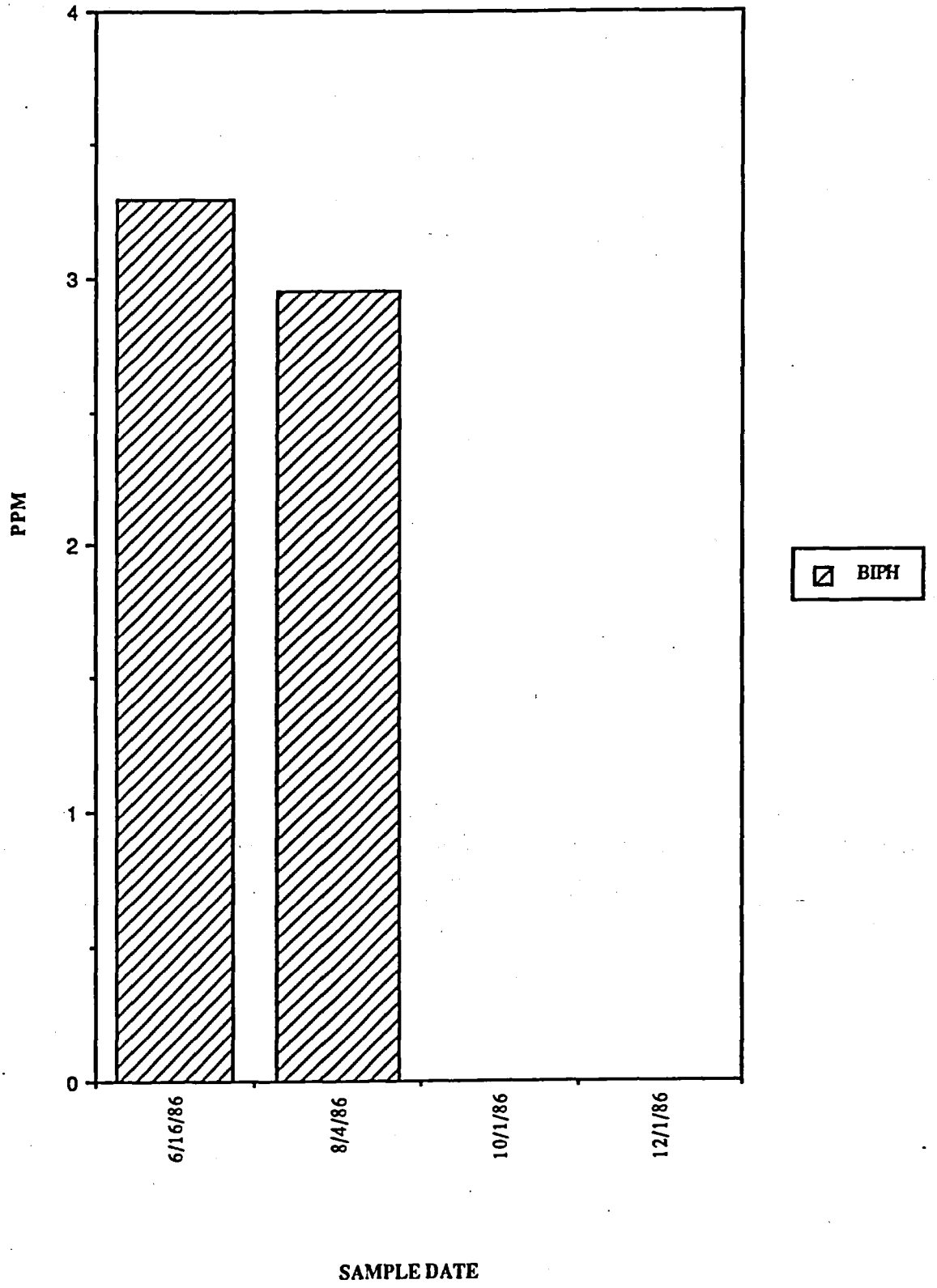


Figure A9. Two-Methylnaphthalene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

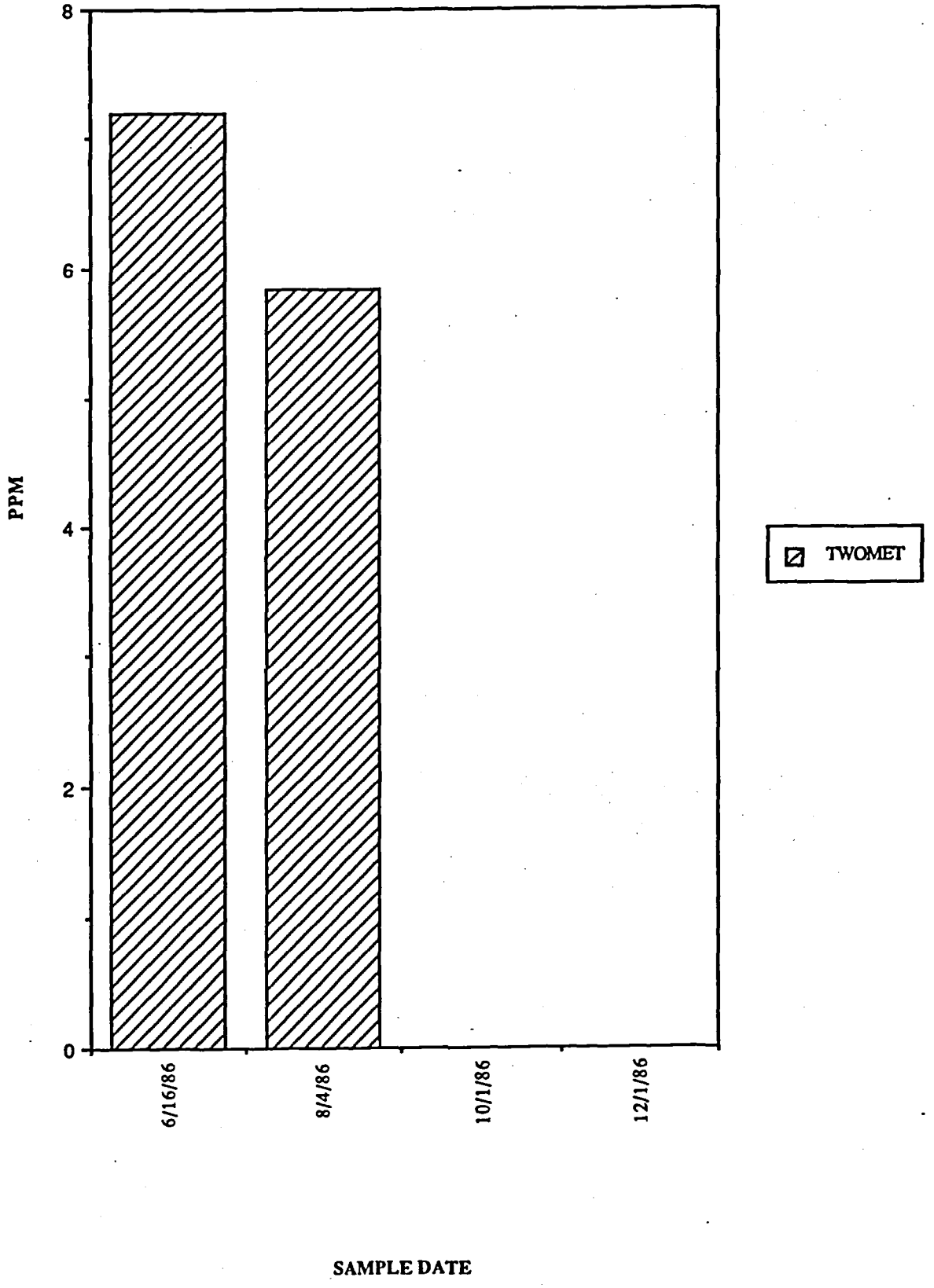


Figure A10. Naphthalene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

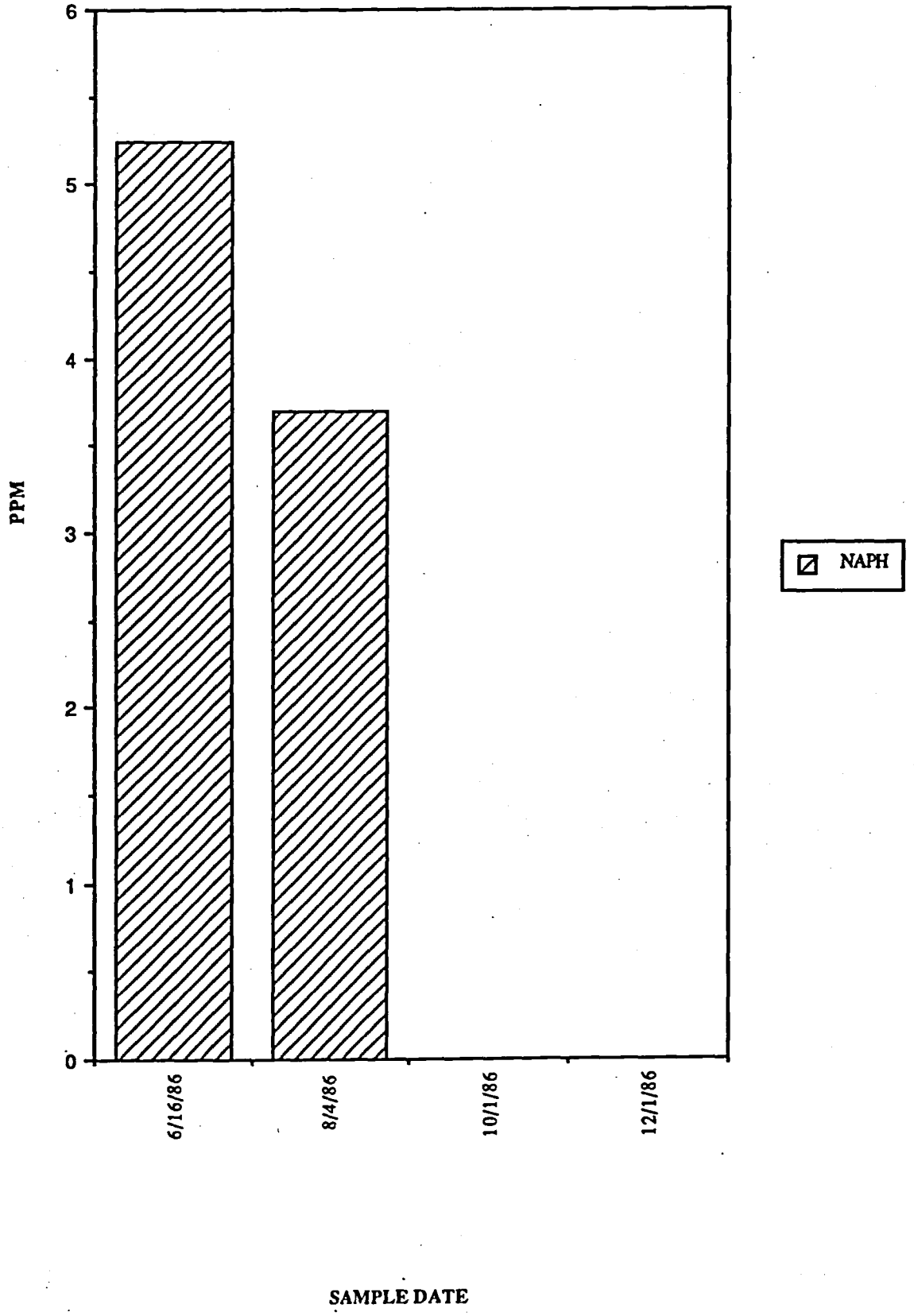


Figure A11. Carbazole Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

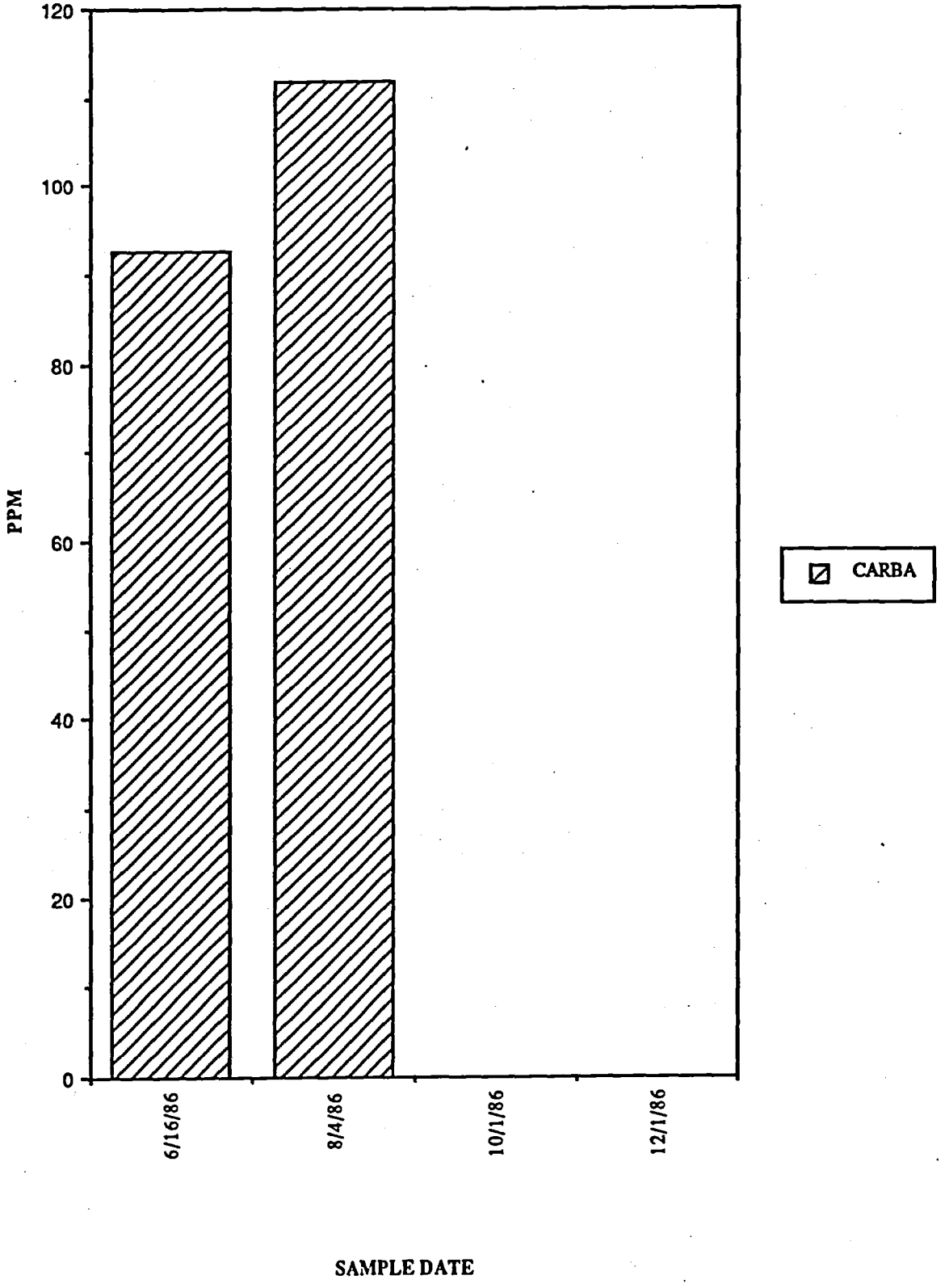


Figure A12. Benzo(a)pyrene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

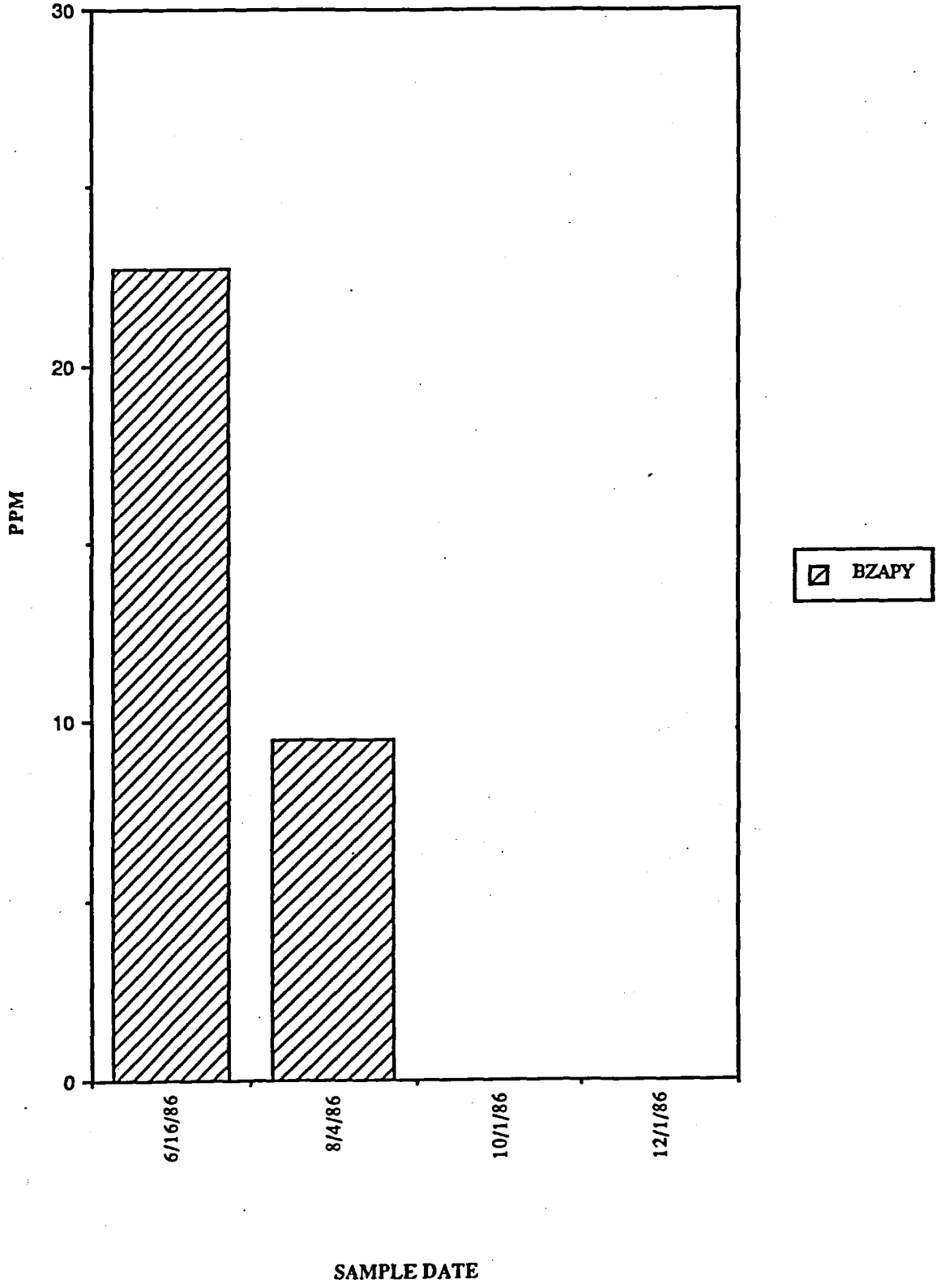


Figure A13. Benzo(g,h,i)perylene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

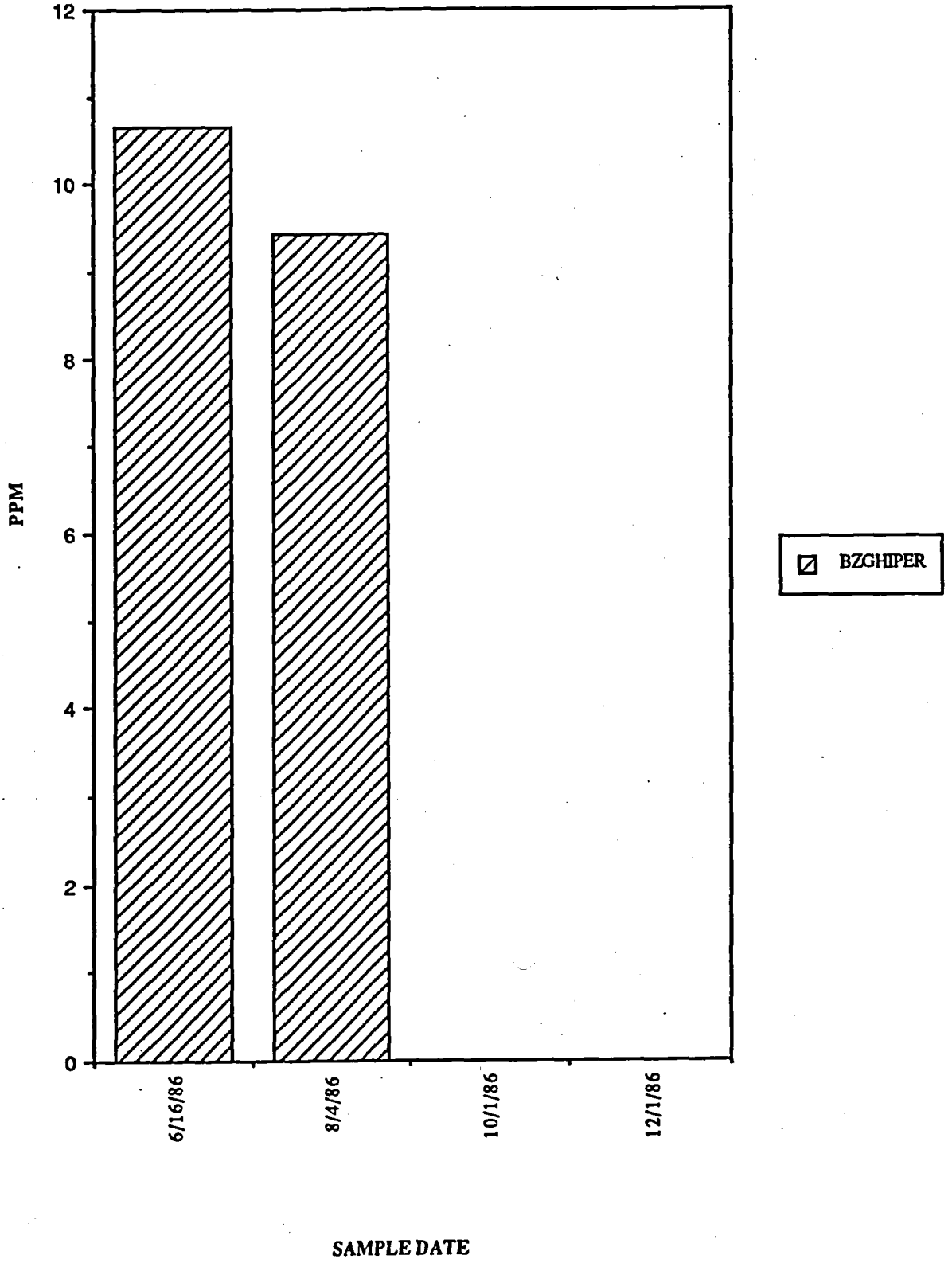


Figure A14. Anthracene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

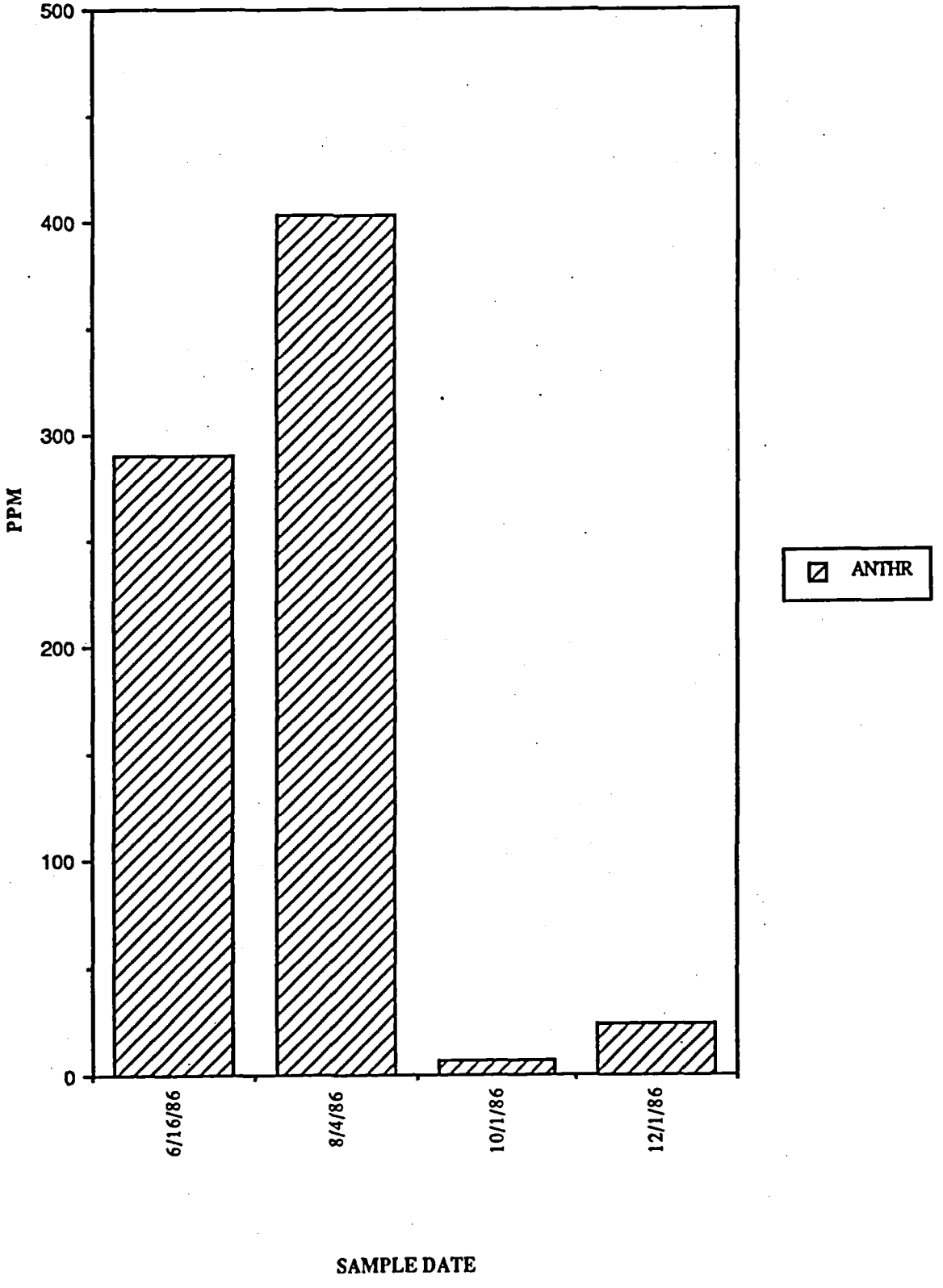


Figure A15. Phenanthrene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

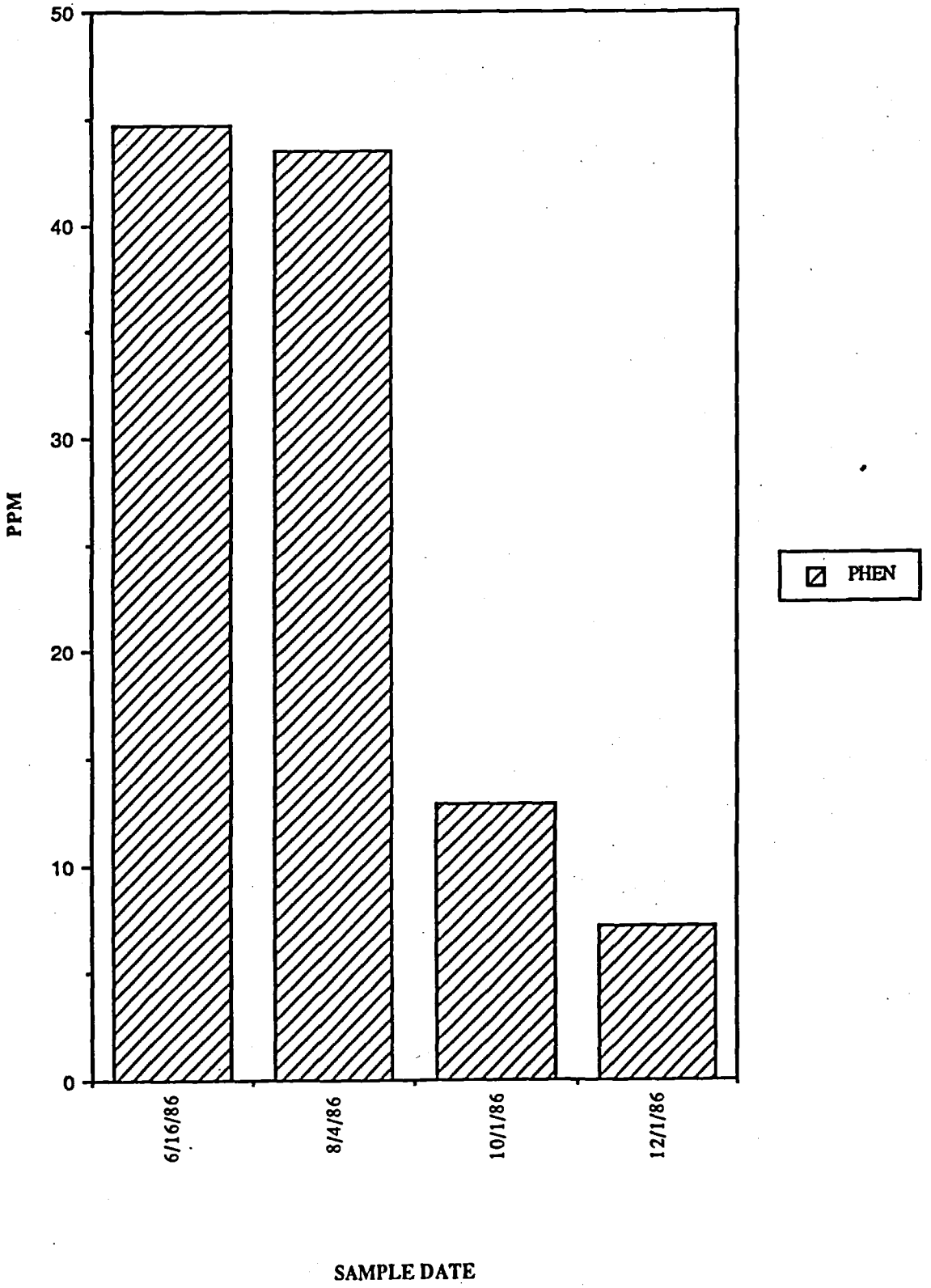


Figure A16. Fluoranthene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

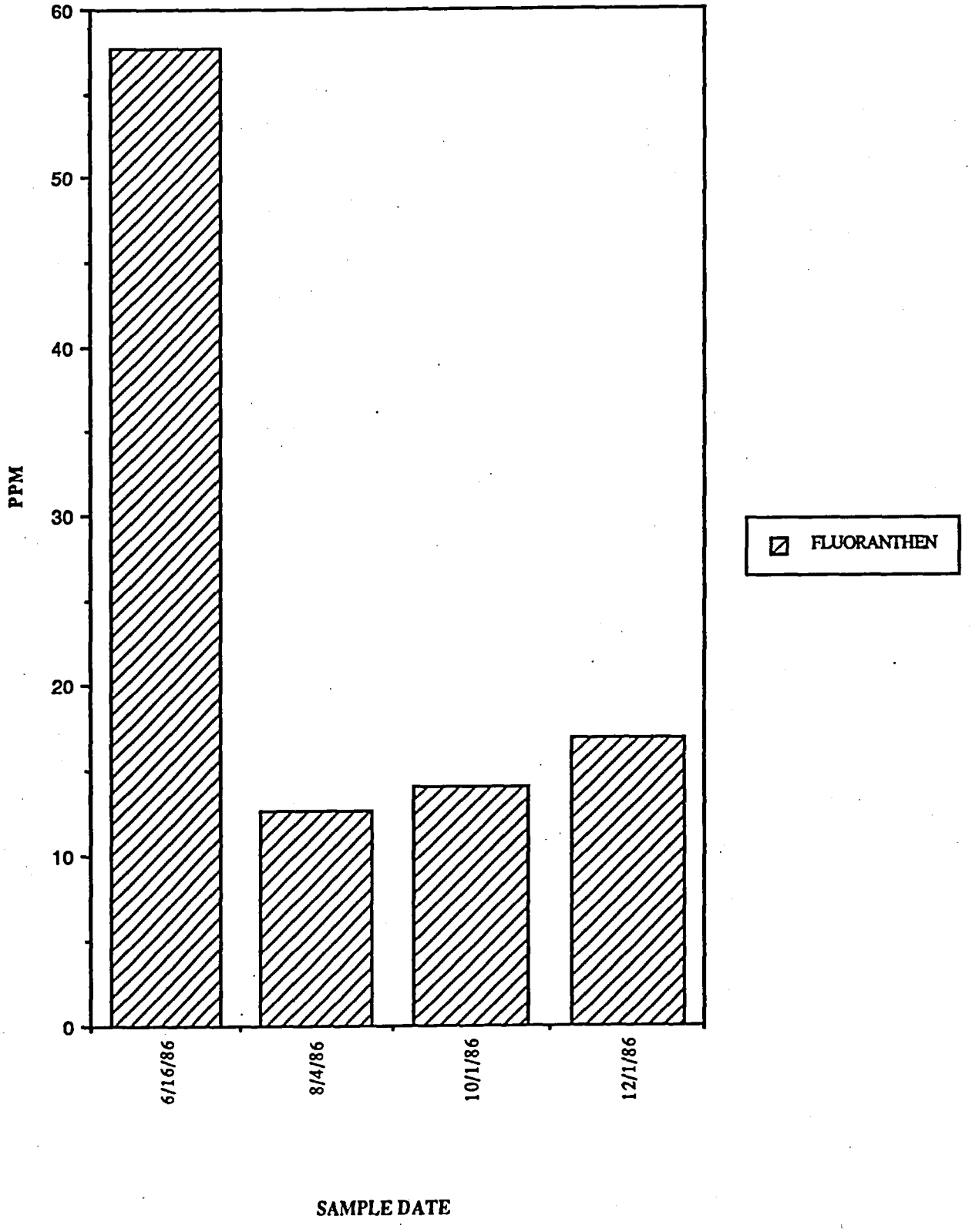


Figure A17. Pyrene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

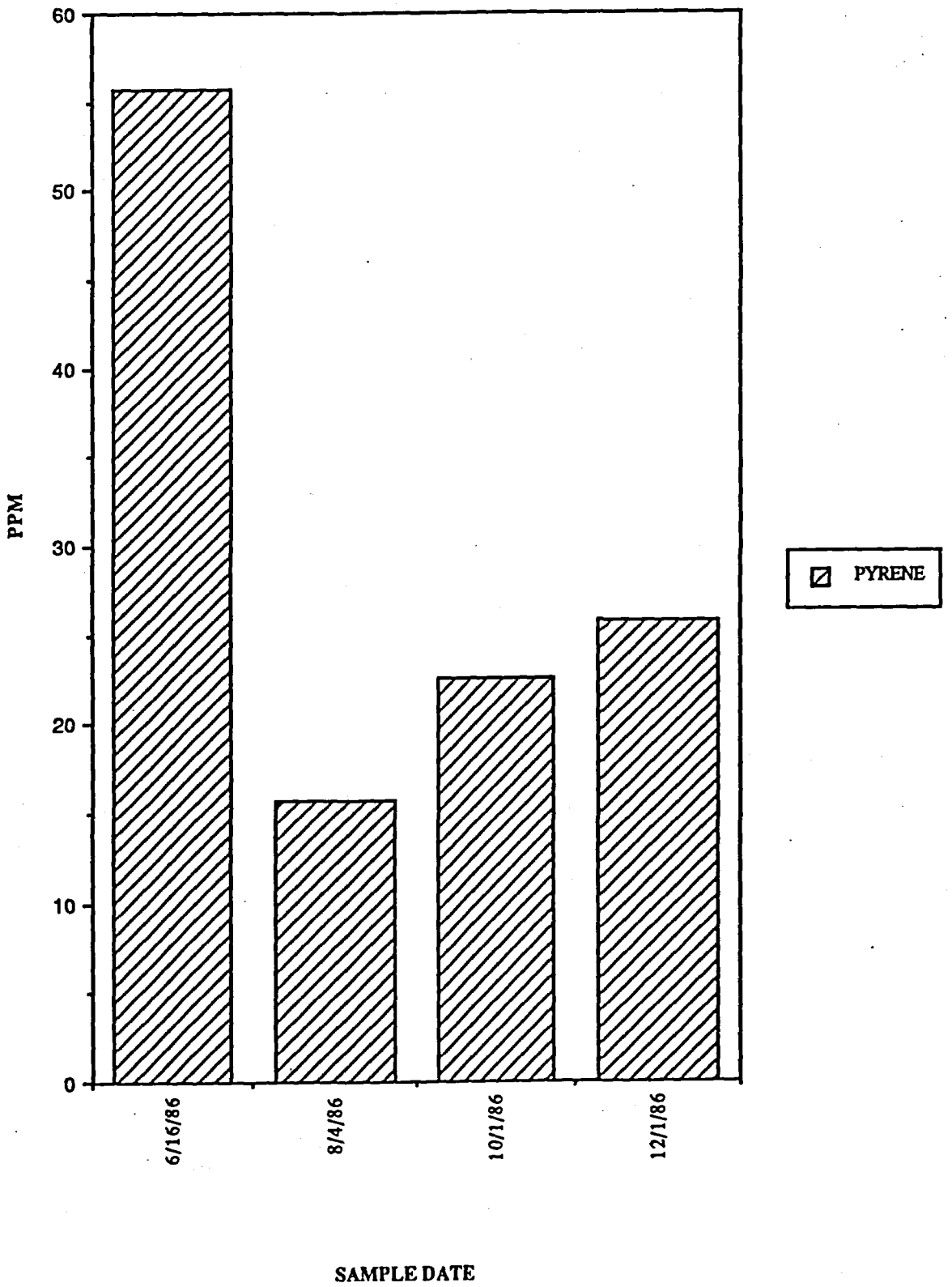


Figure A18. 1,2-Benzo(a)anthracene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

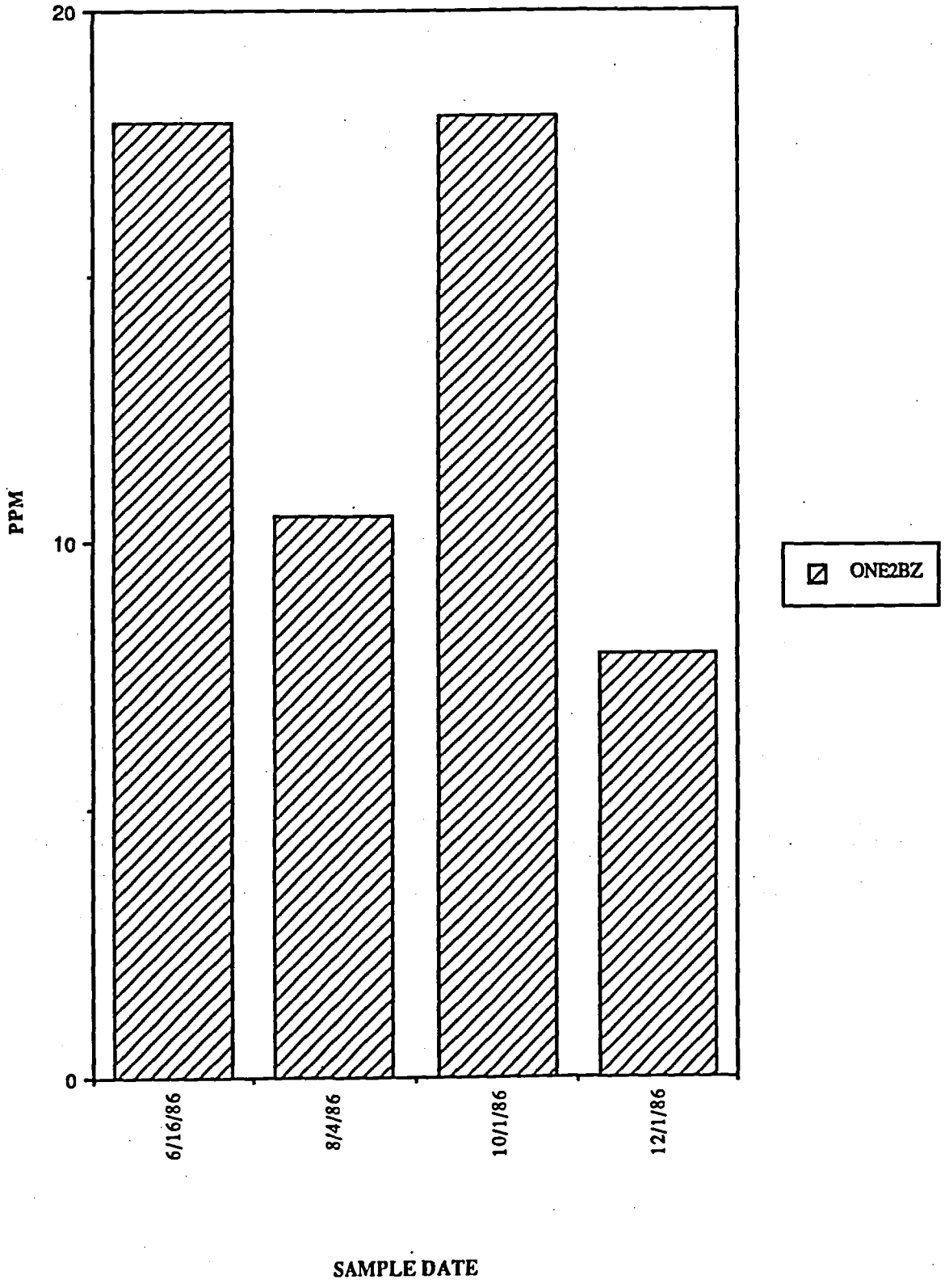


Figure A19. Chrysene Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

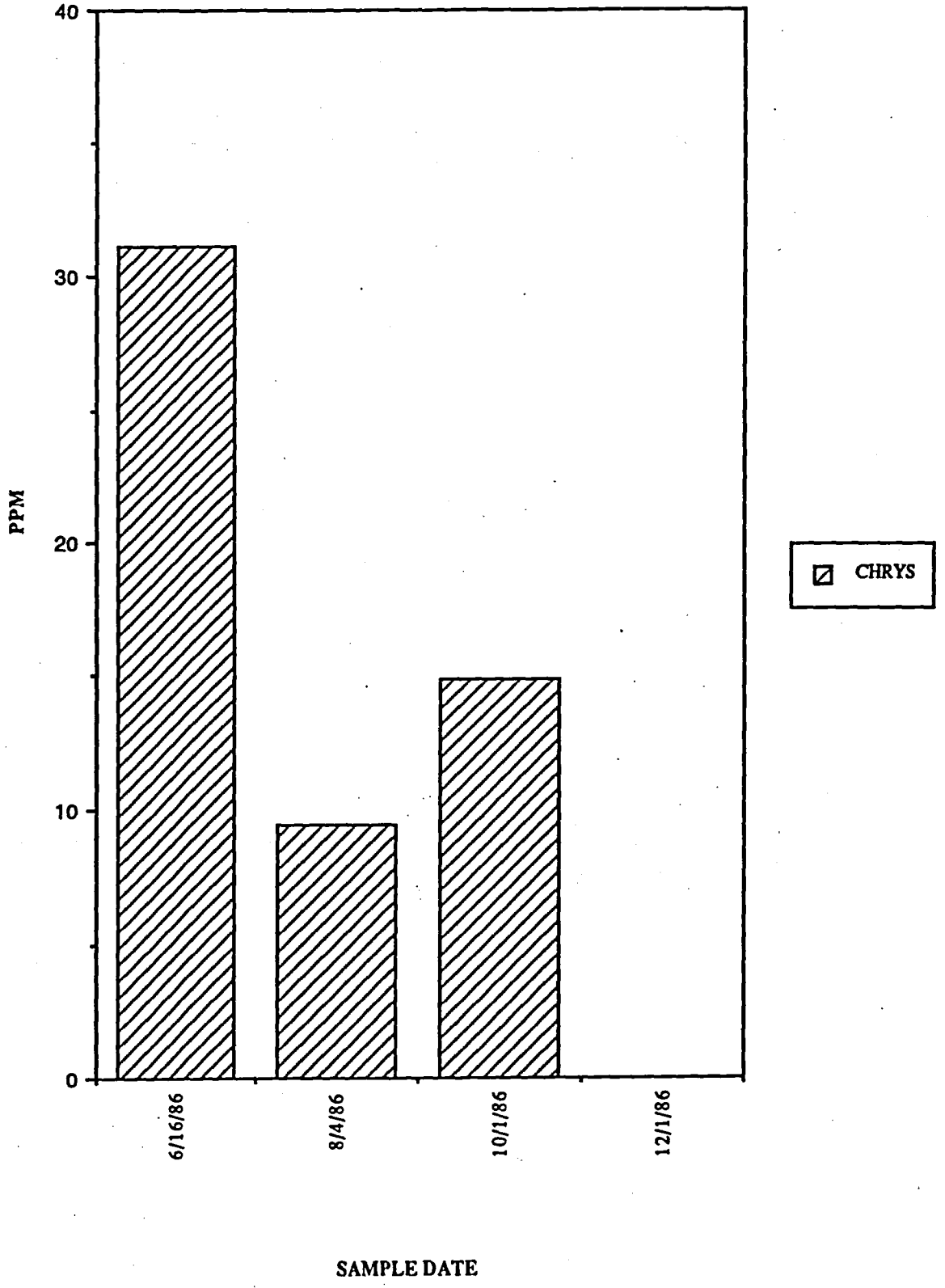


Figure A20. Phenol Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

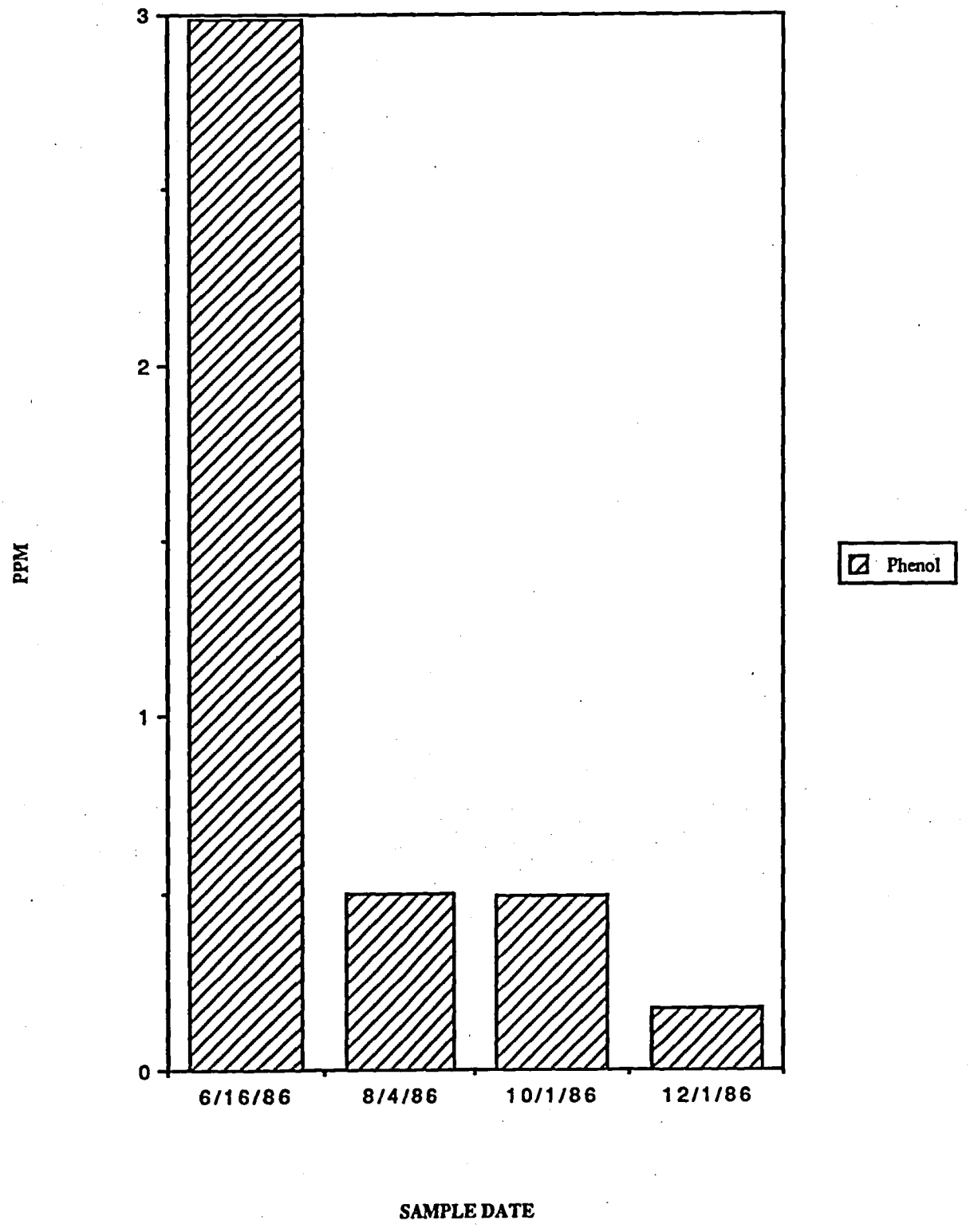


Figure A21. Pentachlorophenol Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 5 and December 16, 1986

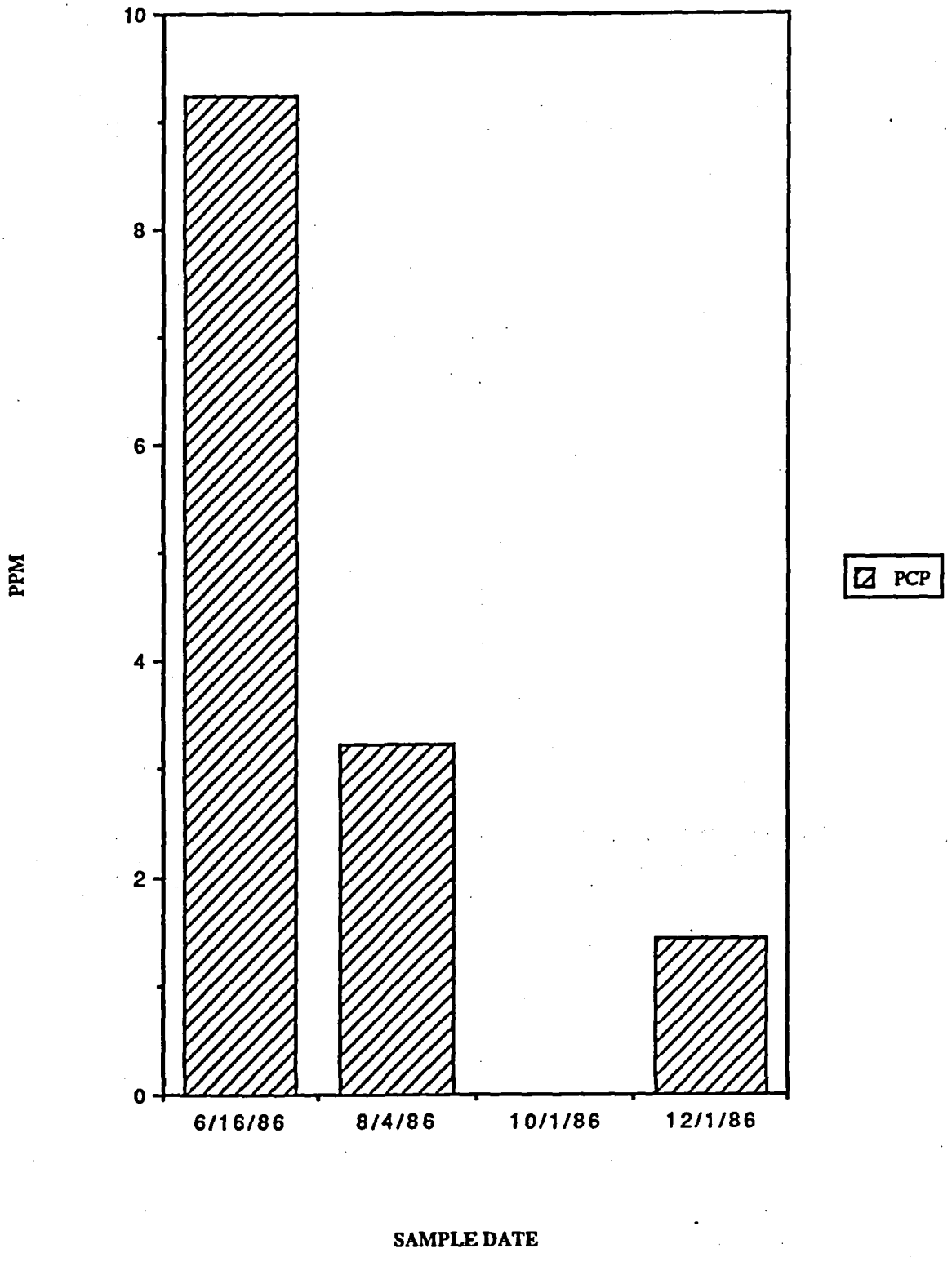


Figure A22. Phenol Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 2 Between Subsequent Soil Applications Made on June 5 and October 30, 1986

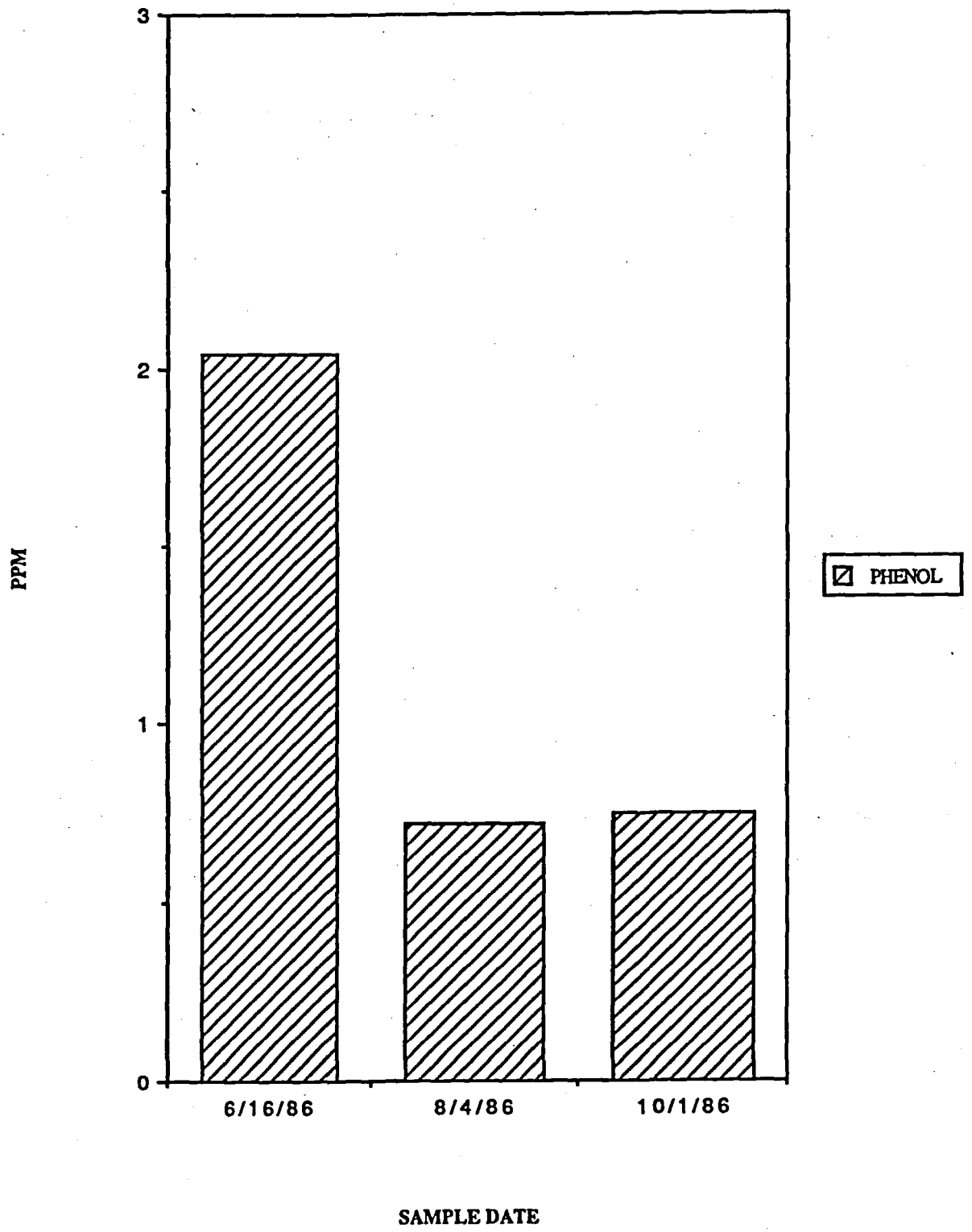


Figure A23. Pentachlorophenol Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 2 Between Subsequent Soil Applications Made on June 5 and October 30, 1986

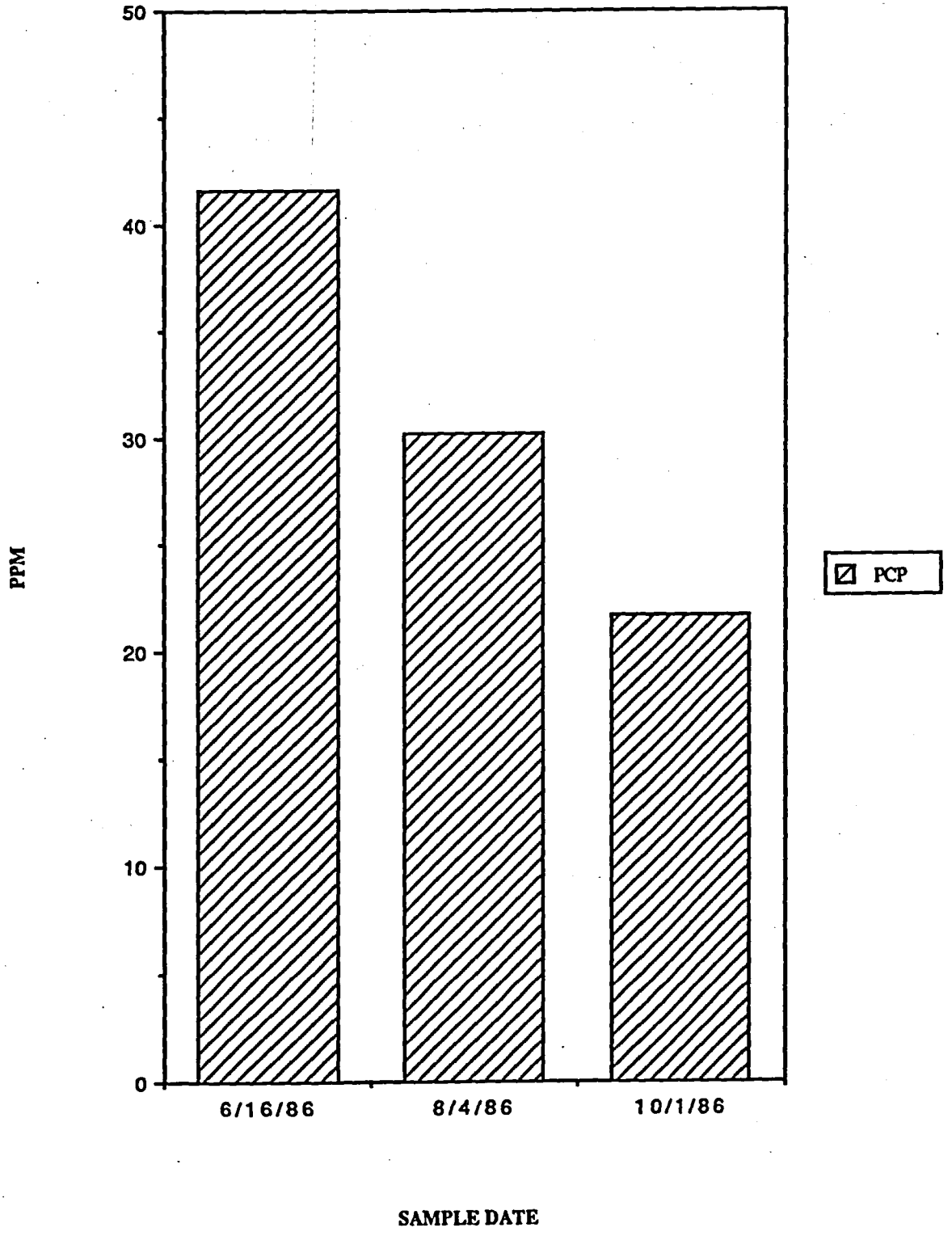


Figure A24. Total PAH Concentrations by Half-Lives in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on November 9, 1987 and April 20, 1988

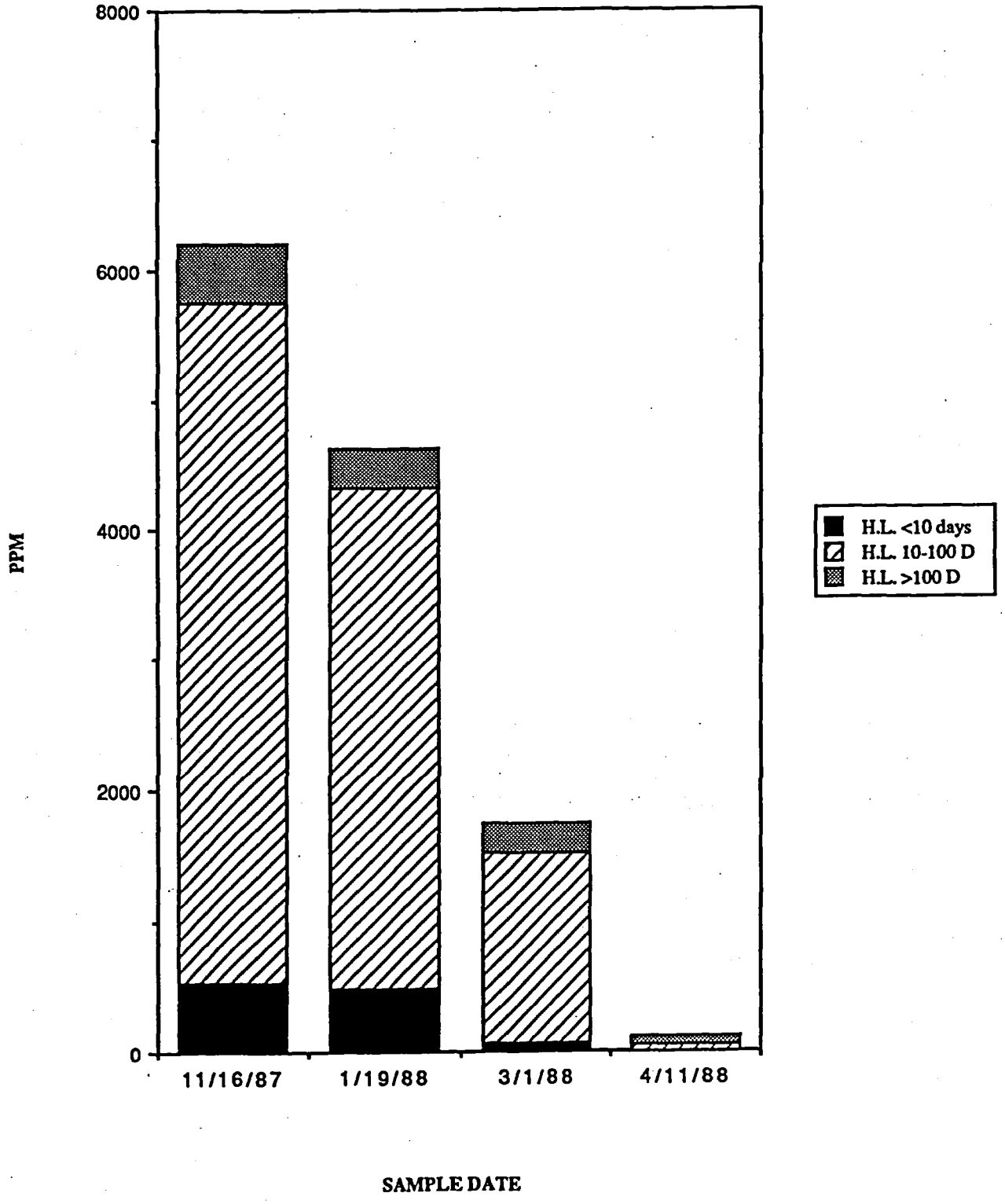


Figure A25. Total PAH Concentrations by Half-Lives in 0- to 3-Inch Soil Samples Collected in Landfarm 2 Between Subsequent Soil Applications Made on November 10, 1987 and April 28, 1988

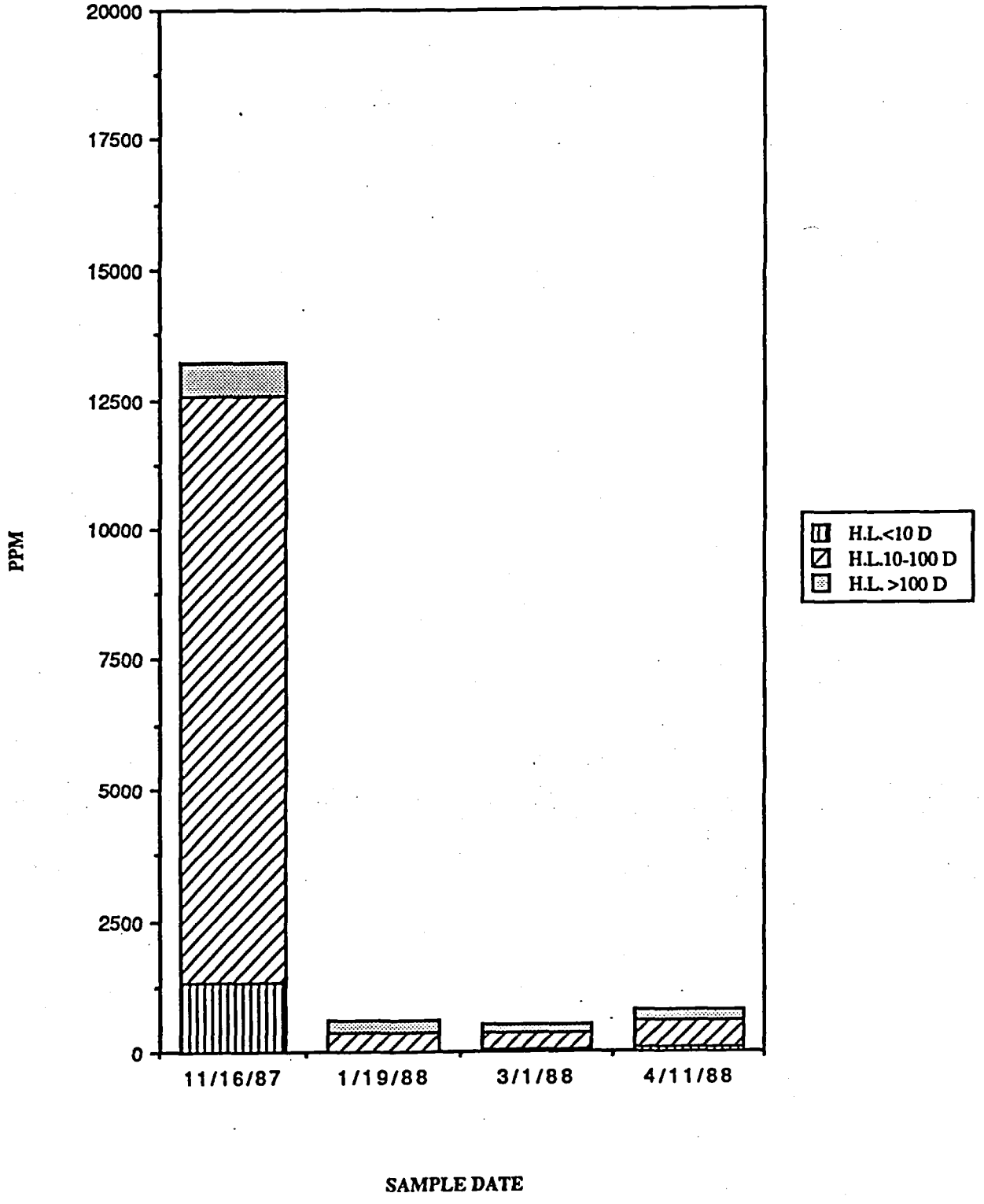


Figure A26. Pentachlorophenol Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on November 9, 1987 and April 20, 1988

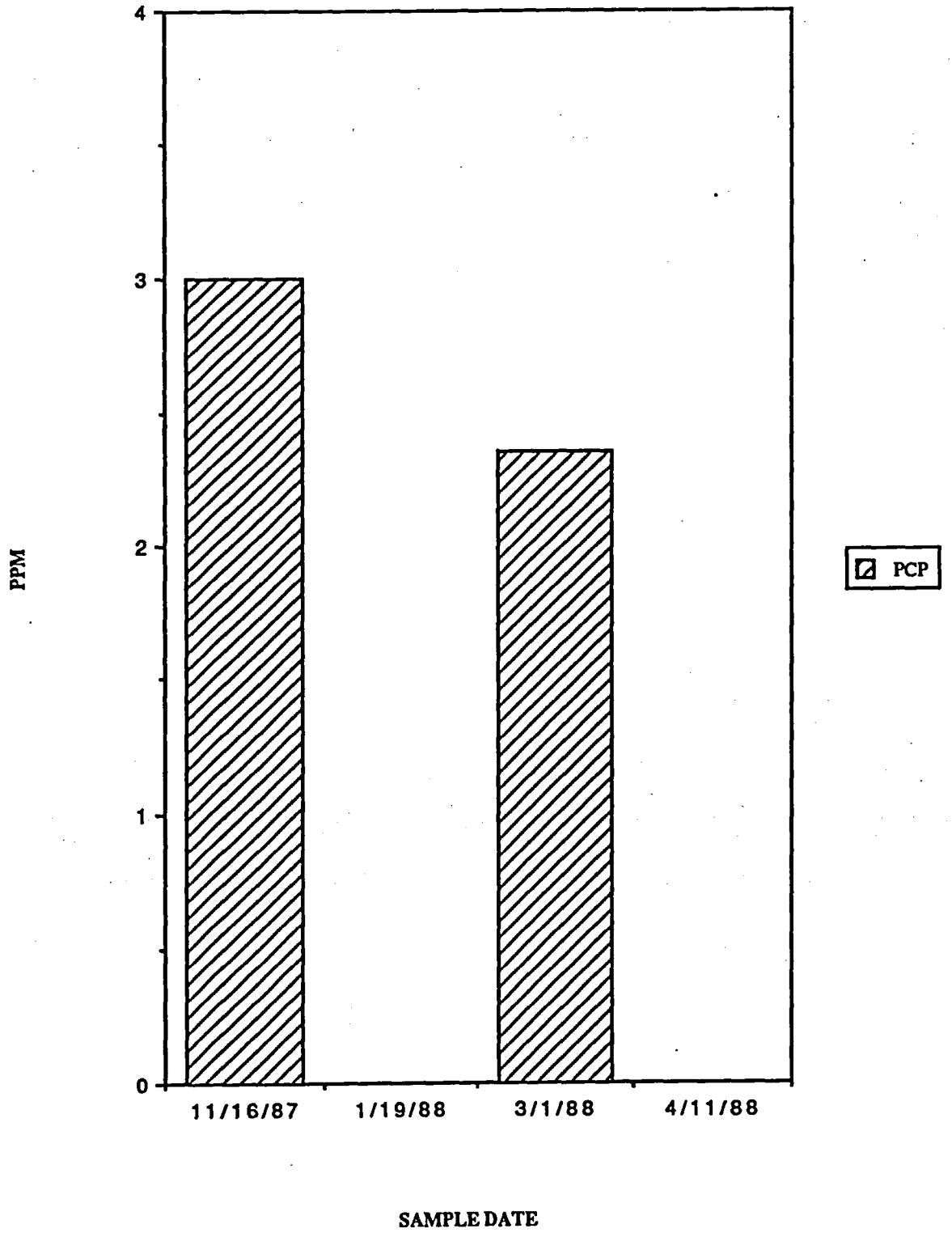


Figure A27. Pentachlorophenol Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 2 Between Subsequent Soil Applications Made on November 10, 1987 and April 28, 1988

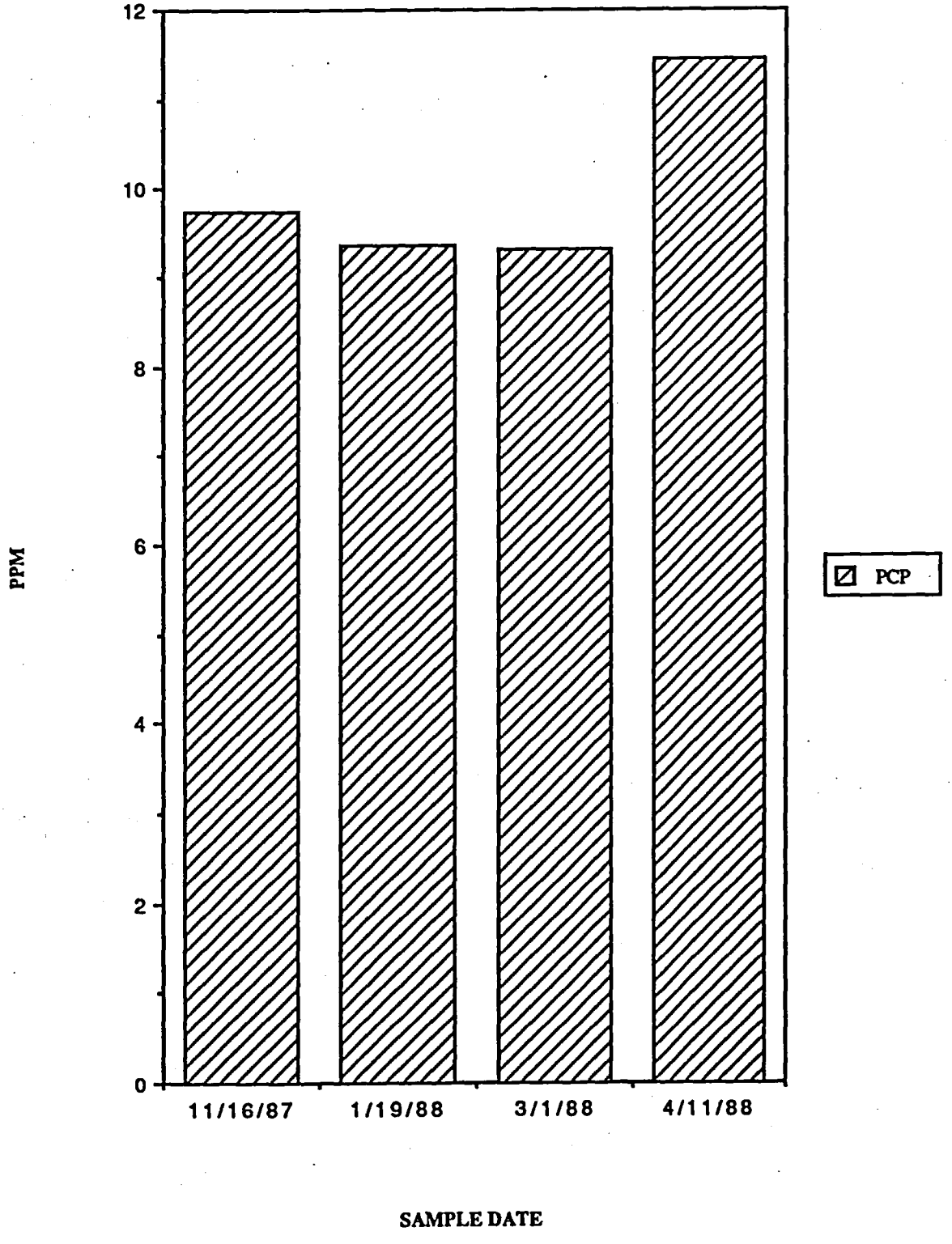


Figure A28. Total PAH Concentrations by Half-Lives in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 15 and October 4, 1988

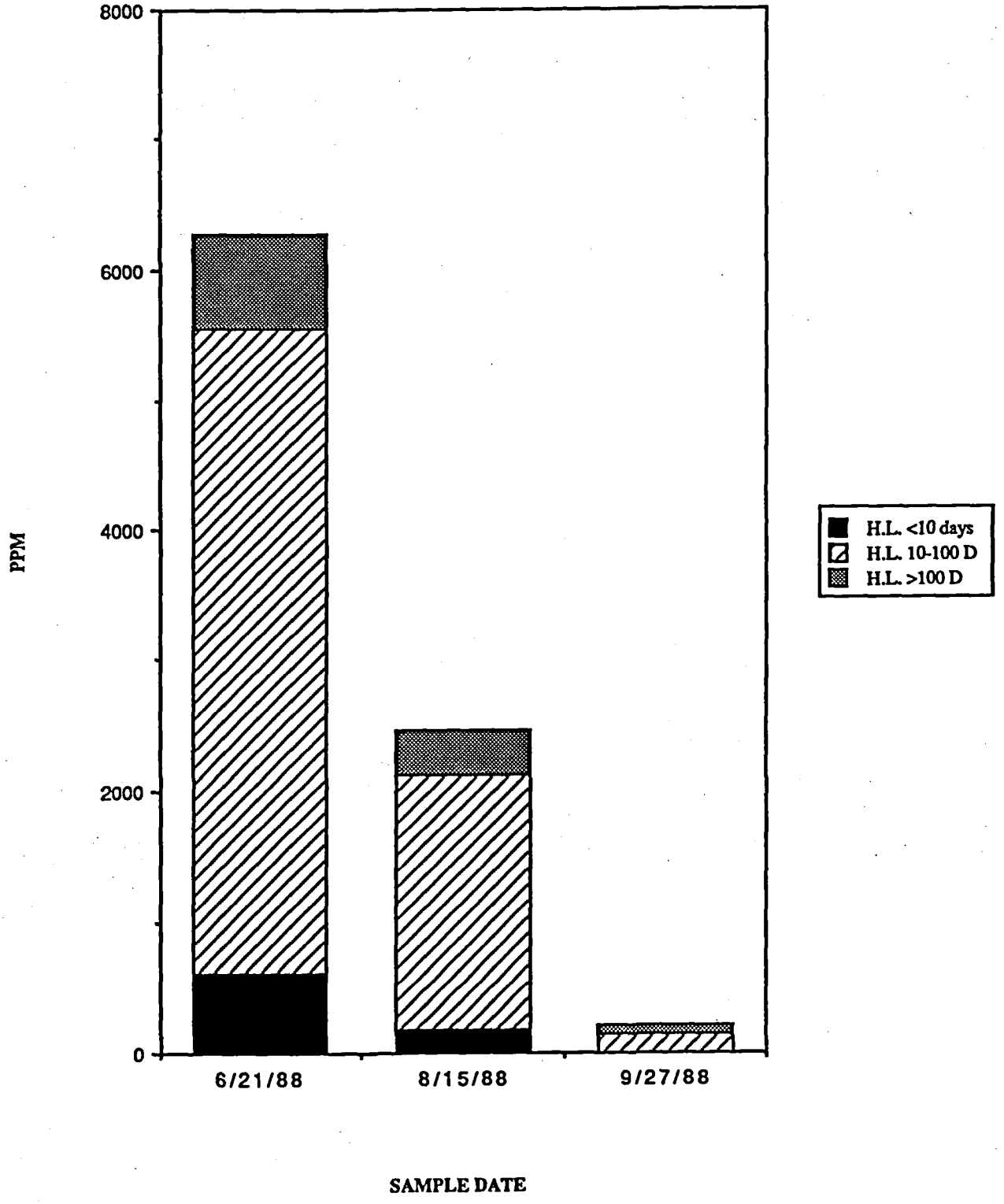


Figure A29. Total PAH Concentrations by Half-Lives in 0- to 3-Inch Soil Samples Collected in Landfarm 2 Between Subsequent Soil Applications Made on June 20 and October 4, 1988

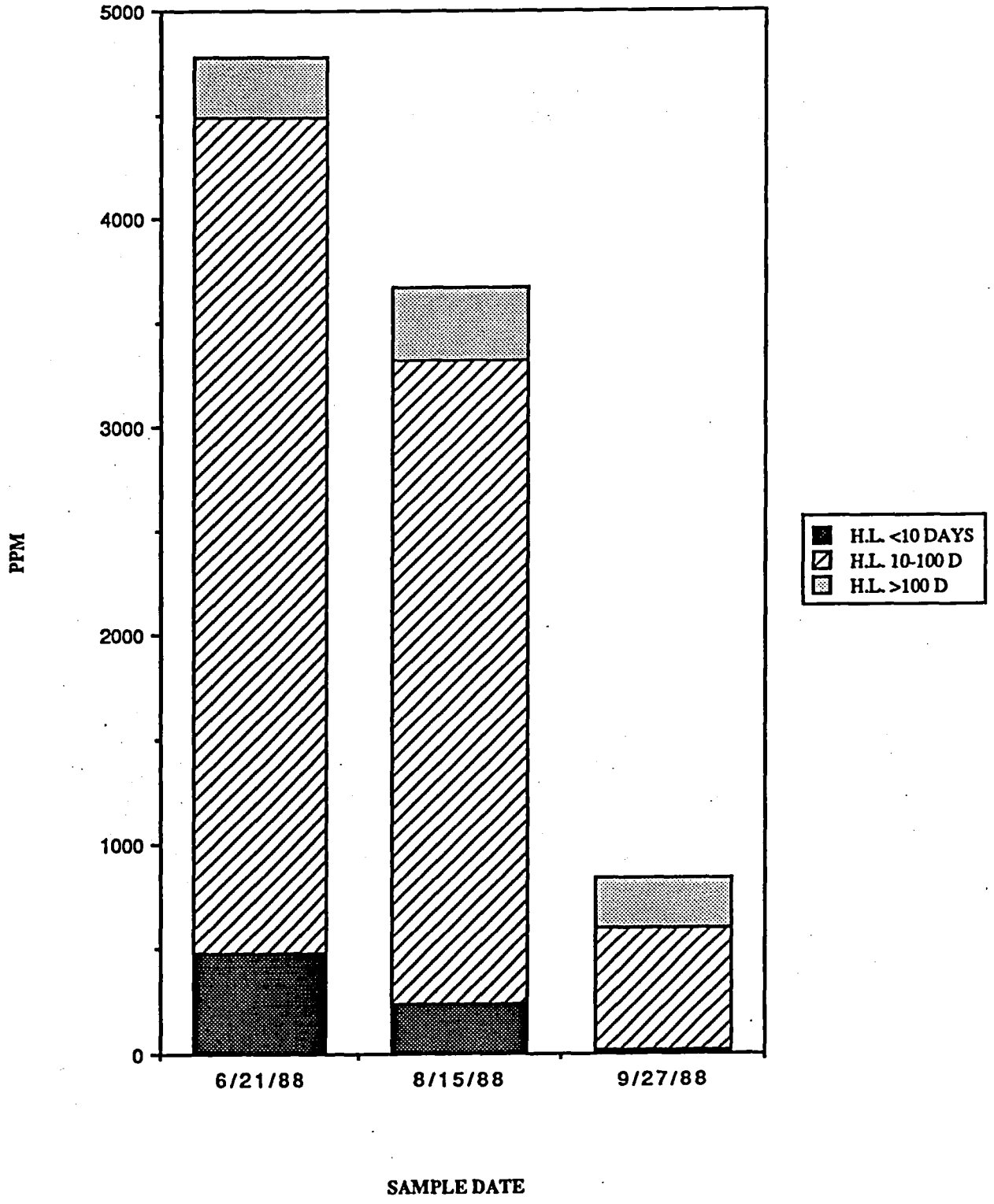


Figure A30. Pentachlorophenol Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 1 Between Subsequent Soil Applications Made on June 15 and October 4, 1988

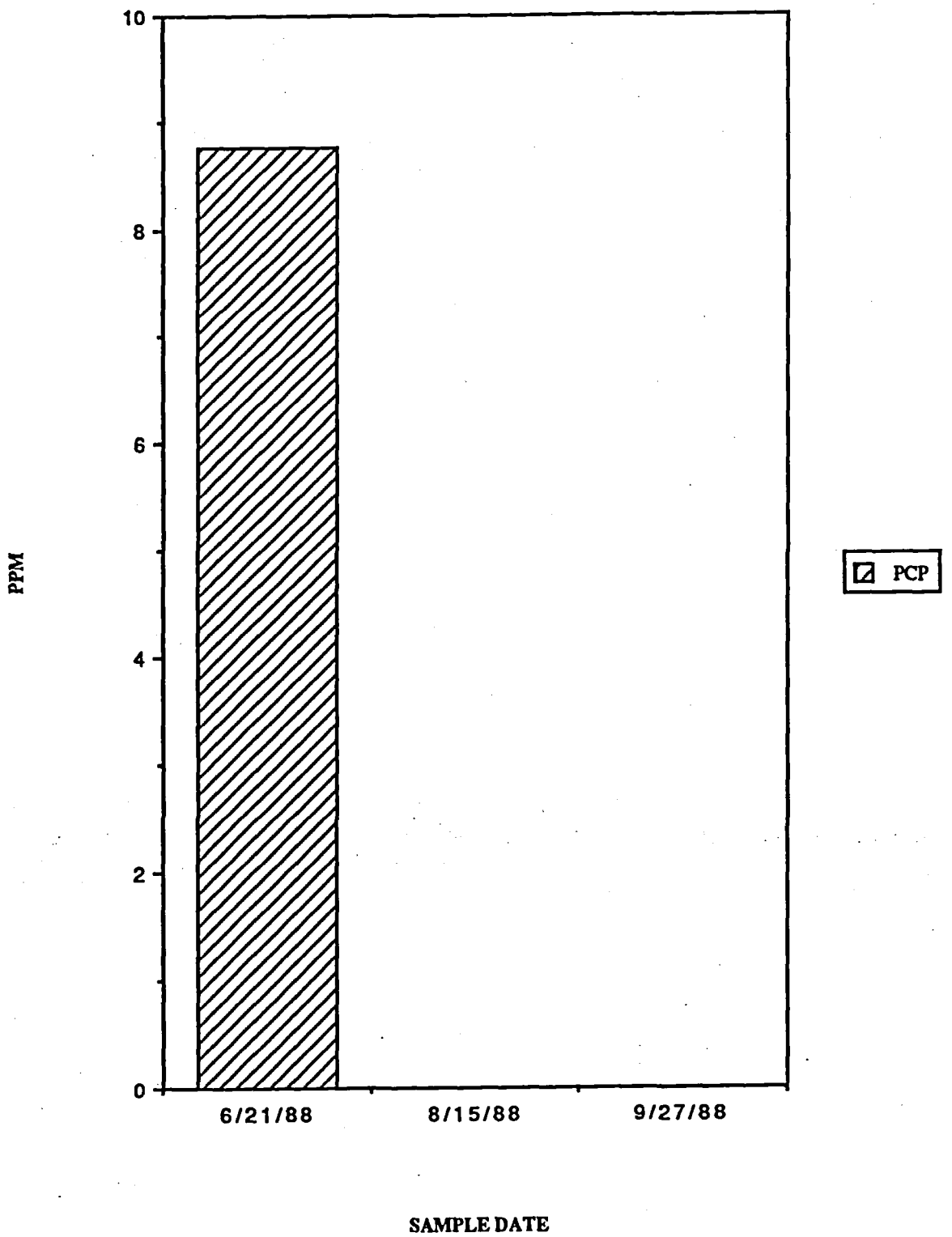
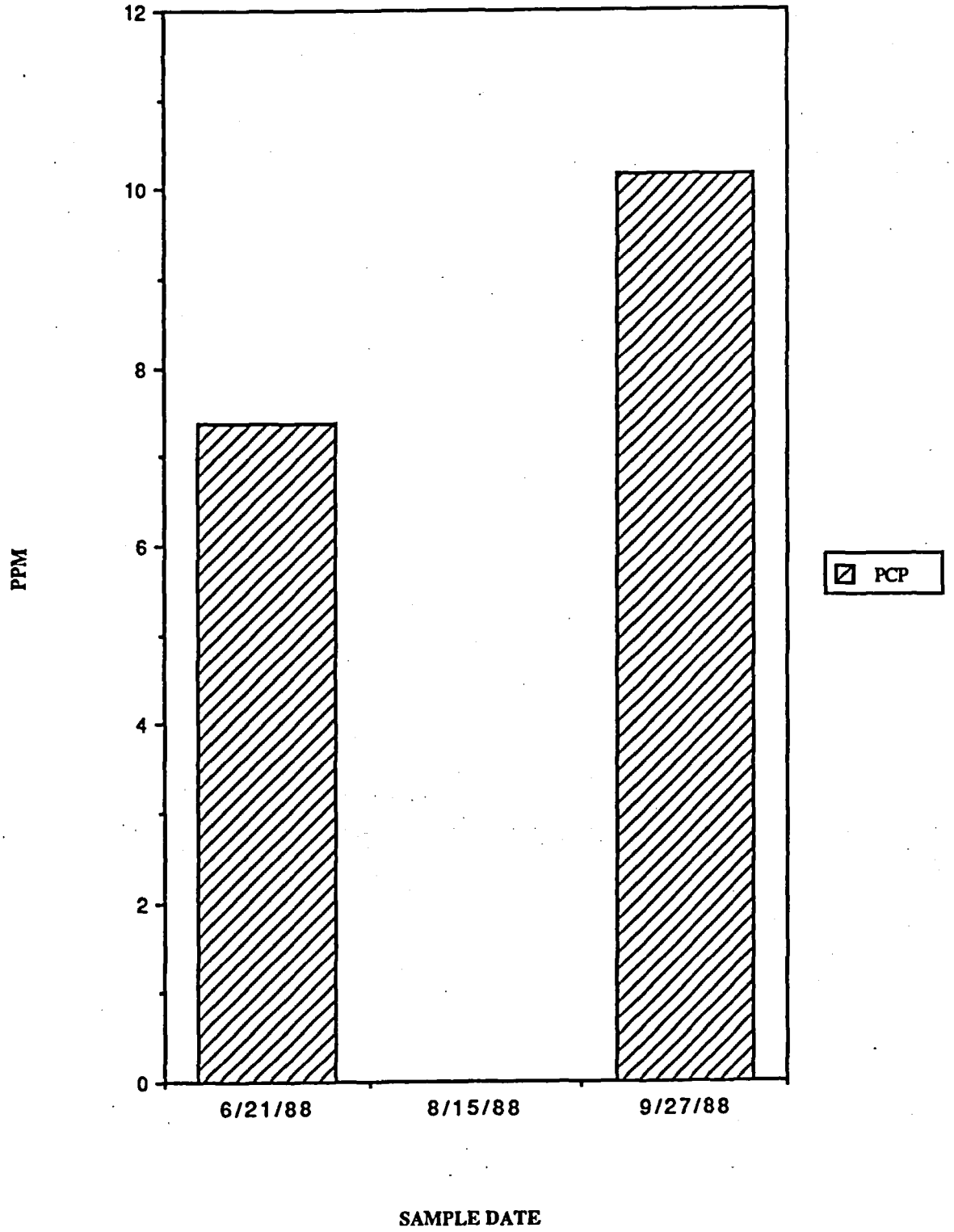


Figure A31. Pentachlorophenol Concentrations in 0- to 3-Inch Soil Samples Collected in Landfarm 2 Between Subsequent Soil Applications Made on June 20 and October 4, 1988



APPENDIX B

Soil Physical Testing Results

1387swp

LAW ENVIRONMENTAL, INC.
112 TOWNPARK DRIVE
KENNESAW, GEORGIA 30144-5599
404-421-3400

October 30, 1990

Geraghty & Miller, Inc.
Koger Center Glenwood
3724 National Drive
Suite 228
Raleigh, North Carolina 27612

Attention: Mr. Charles E. Whipkey

Subject: Physical Testing of Soils
Geraghty & Miller, Inc. Project NC09001
Law Environmental, Inc. Job No. 41-8935.01
Lab No(s). 00456-00459

Dear Mr. Whipkey:

Testing has been completed for the four samples received on October 24,1990. Shipment was via Federal Express.

Please find the data summarized on the attached forms. The information provided applies only to the samples tested. Reproduction of the reports in part for distribution outside of your company is permitted only with authorization from Law Environmental, Inc.

The excess samples will be returned to you.

If we can be of further assistance please contact us at (404)425-7879.

Sincerely,

LAW ENVIRONMENTAL,INC.

Michael A. O'Kelley

Michael A. O'Kelley
Physical Laboratory Supervisor

MAOK/mao
Enclosures

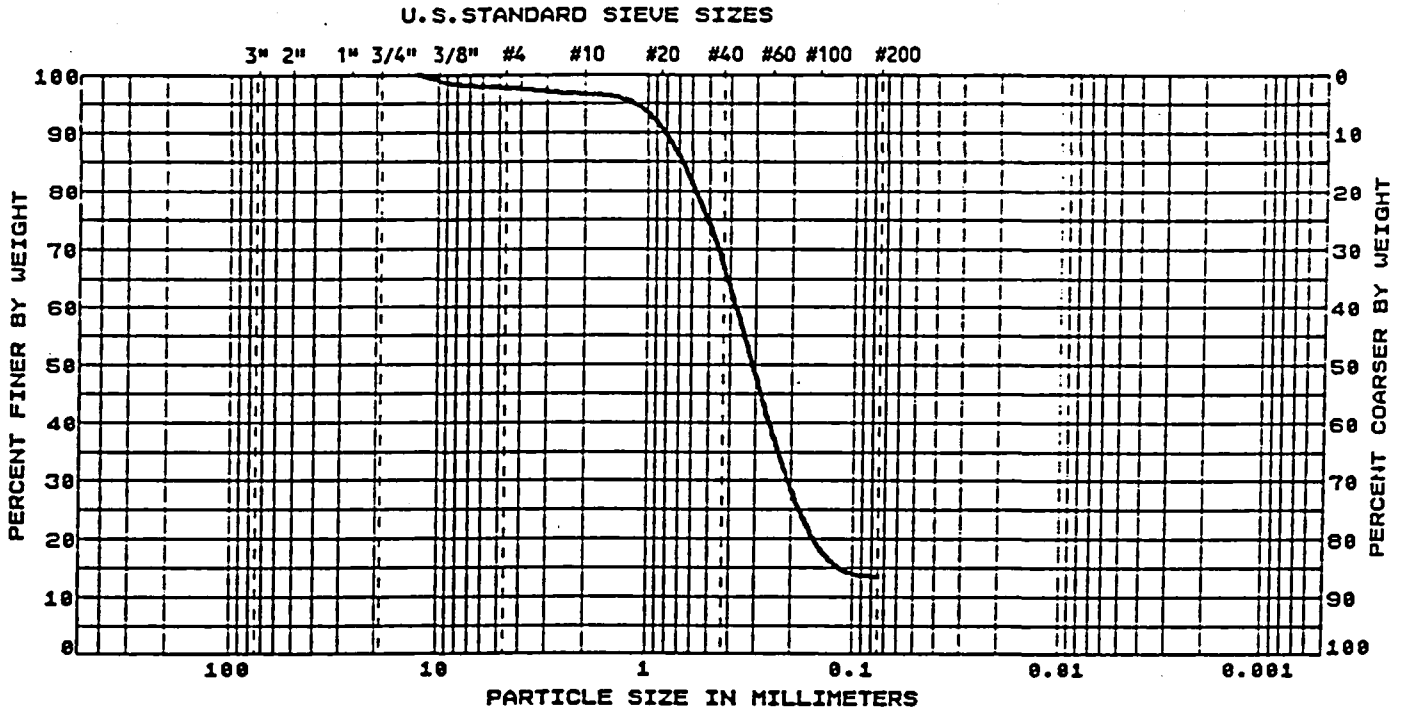
LAW ENVIRONMENTAL, INC.
300 CHASTAIN CNTR BLVD, SUITE 315
KENNESAW, GEORGIA 30144
404-425-7879

PARTICLE SIZE DISTRIBUTION & PHYSICAL PROPERTIES

CLIENT Geraghty and Miller, Inc.
3724 National Dr., Ste. 228
Raleigh, North Carolina 27612

JOB NO. 41-8935.01
LAB NO. 00456
PROJECT GM Project NC27612
SAMPLE ID LF1-B

DATE October 30, 1990
PAGE 1



COBBLES	GRAVEL		SAND			SILT & CLAY
	COARSE	MEDIUM	CO.	MEDIUM	FINE	

U.S.STANDARD SIEVE SIZE		PERCENT PASSING		HYDROMETER
SIEVE NO.	SIEVE SIZE (MILLIMETERS)			PARTICLE DIAMETER (MILLIMETERS)
3"	75			0.050
2"	50			0.020
1-1/2"	37.5			0.005
1"	25			0.002
3/4"	19			0.001
1/2"	12.5	100.0		
3/8"	9.5	98.8		
#4	4.75	97.8		
#10	2.00	96.7		
#20	0.850	90.9		
#40	0.425	66.2		
#60	0.250	38.2		
#100	0.150	19.1		
#200	0.075	13.5		

POROSITY (%)
EFFECTIVE SIZE (mm)
COEFFICIENT OF UNIFORMITY
COEFFICIENT OF CURVATURE
LIQUID LIMIT NP
PLASTIC LIMIT NP
PLASTICITY INDEX NP
CLASSIFICATION SILTY SAND (SM)

WATER CONTENT (%)
DRY DENSITY (PCF)
SPECIFIC GRAVITY
HYDRAULIC CONDUCTIVITY (cm/sec - 20C)
TEST PROCEDURES: ASTM D422, D2487.

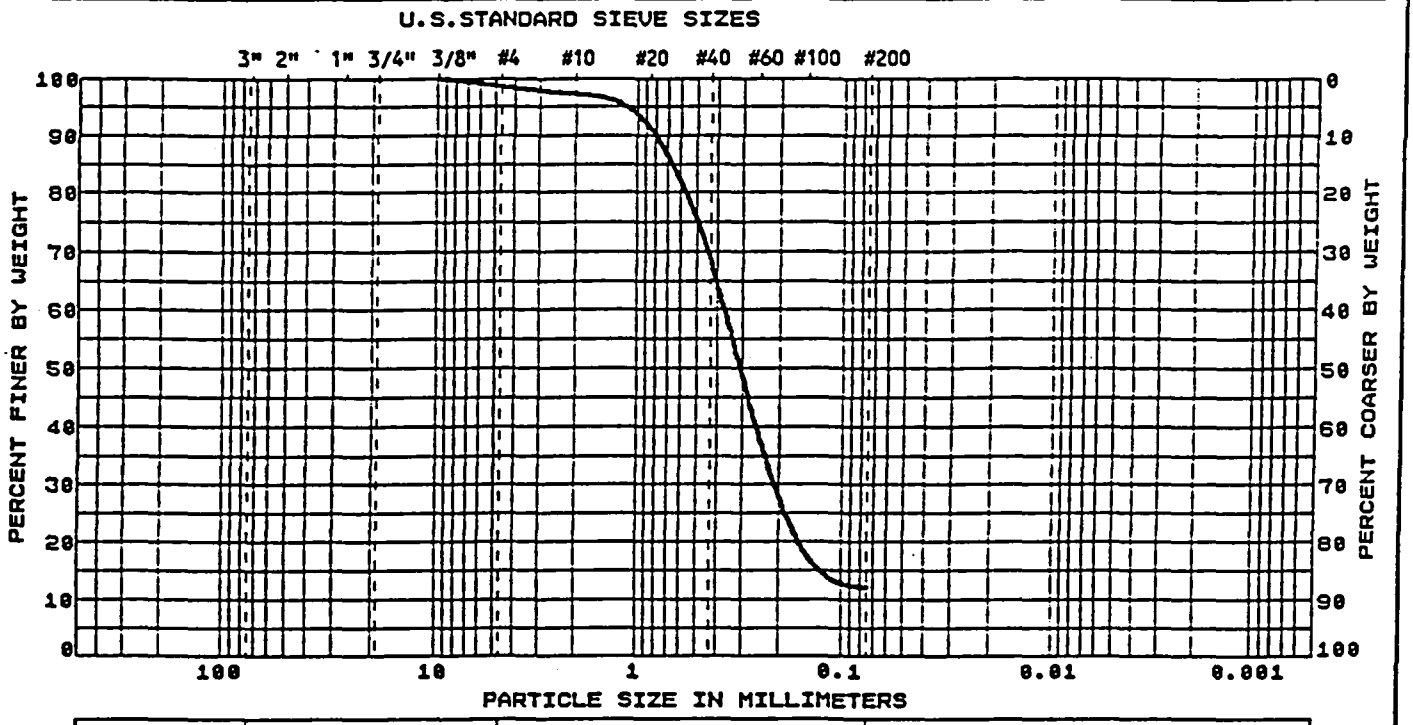
LAW ENVIRONMENTAL, INC.
M.A. O'Kelly

LAW ENVIRONMENTAL, INC.
300 CHASTAIN CNTR BLVD, SUITE 315
KENNESAW, GEORGIA 30144
404-425-7879

PARTICLE SIZE DISTRIBUTION & PHYSICAL PROPERTIES

CLIENT Geraghty and Miller, Inc.
3724 National Dr., Ste. 228
Raleigh, North Carolina 27612

JOB NO. 41-8935.01
DATE October 30, 1990
LAB NO. 00457
PAGE 2
PROJECT GM Project NC27612
SAMPLE ID LF2-8



COBBLES	GRAVEL		SAND			SILT & CLAY
	COARSE	MEDIUM	CO.	MEDIUM	FINE	

U.S.STANDARD SIEVE SIZE		PERCENT PASSING		HYDROMETER
SIEVE NO.	SIEVE SIZE (MILLIMETERS)			PARTICLE DIAMETER (MILLIMETERS)
3"	75			0.050
2"	50			0.020
1-1/2"	37.5			0.005
1"	25			0.002
3/4"	19			0.001
1/2"	12.5			
3/8"	9.5	100.0		
#4	4.75	98.6		
#10	2.00	97.2		
#20	0.850	91.2		
#40	0.425	67.3		
#60	0.250	38.0		
#100	0.150	18.2		
#200	0.075	12.1		

POROSITY (%)
EFFECTIVE SIZE (mm)
COEFFICIENT OF UNIFORMITY 5.3
COEFFICIENT OF CURVATURE 1.6
LIQUID LIMIT NP
PLASTIC LIMIT NP
PLASTICITY INDEX NP
CLASSIFICATION POORLY GRADED SAND with SILT (SP-SM)
WATER CONTENT (%)
DRY DENSITY (PCF)
SPECIFIC GRAVITY
HYDRAULIC CONDUCTIVITY (cm/sec - 20C)
TEST PROCEDURES: ASTM D422, D2487.

LAW ENVIRONMENTAL, INC.
M.A. O'Kelly

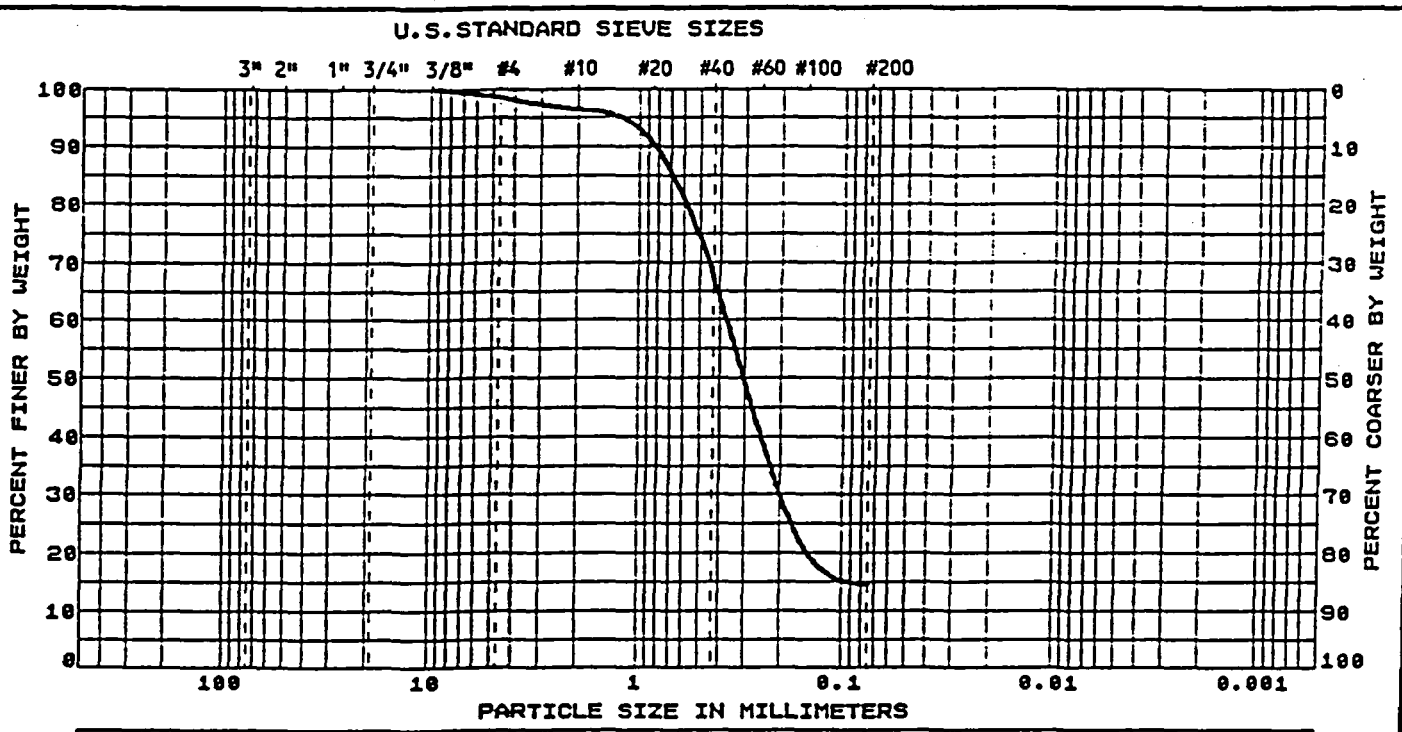
LAW ENVIRONMENTAL, INC.
300 CHASTAIN CNTR BLVD, SUITE 315
KENNESAW, GEORGIA 30144
404-425-7879

PARTICLE SIZE DISTRIBUTION & PHYSICAL PROPERTIES

CLIENT Geraghty and Miller, Inc.
3724 National Dr., Ste. 228
Raleigh, North Carolina 27612

JOB NO. 41-8935.01
LAB NO. 00458
PROJECT GM Project NC27612
SAMPLE ID LF1-D

DATE October 30, 1990
PAGE 3



COBBLES	GRAVEL		SAND			SILT & CLAY
	COARSE	MEDIUM	CO.	MEDIUM	FINE	

U.S.STANDARD SIEVE SIZE		PERCENT PASSING		HYDROMETER
SIEVE NO.	SIEVE SIZE (MILLIMETERS)			PARTICLE DIAMETER (MILLIMETERS)
3"	75			0.050
2"	50			0.020
1-1/2"	37.5			0.005
1"	25			0.002
3/4"	19			0.001
1/2"	12.5			
3/8"	9.5	100.0		
#4	4.75	98.5		
#10	2.00	96.4		
#20	0.850	90.5		
#40	0.425	66.5		
#60	0.250	39.7		
#100	0.150	20.7		
#200	0.075	14.5		

POROSITY (%)
EFFECTIVE SIZE (mm)
COEFFICIENT OF UNIFORMITY
COEFFICIENT OF CURVATURE
LIQUID LIMIT NP
PLASTIC LIMIT NP
PLASTICITY INDEX NP
CLASSIFICATION SILTY SAND (SM)

WATER CONTENT (%)
DRY DENSITY (PCF)
SPECIFIC GRAVITY
HYDRAULIC CONDUCTIVITY (cm/sec - 20C)
TEST PROCEDURES: ASTM D422, D2487.

LAW ENVIRONMENTAL, INC.
M.A. O'Kelley

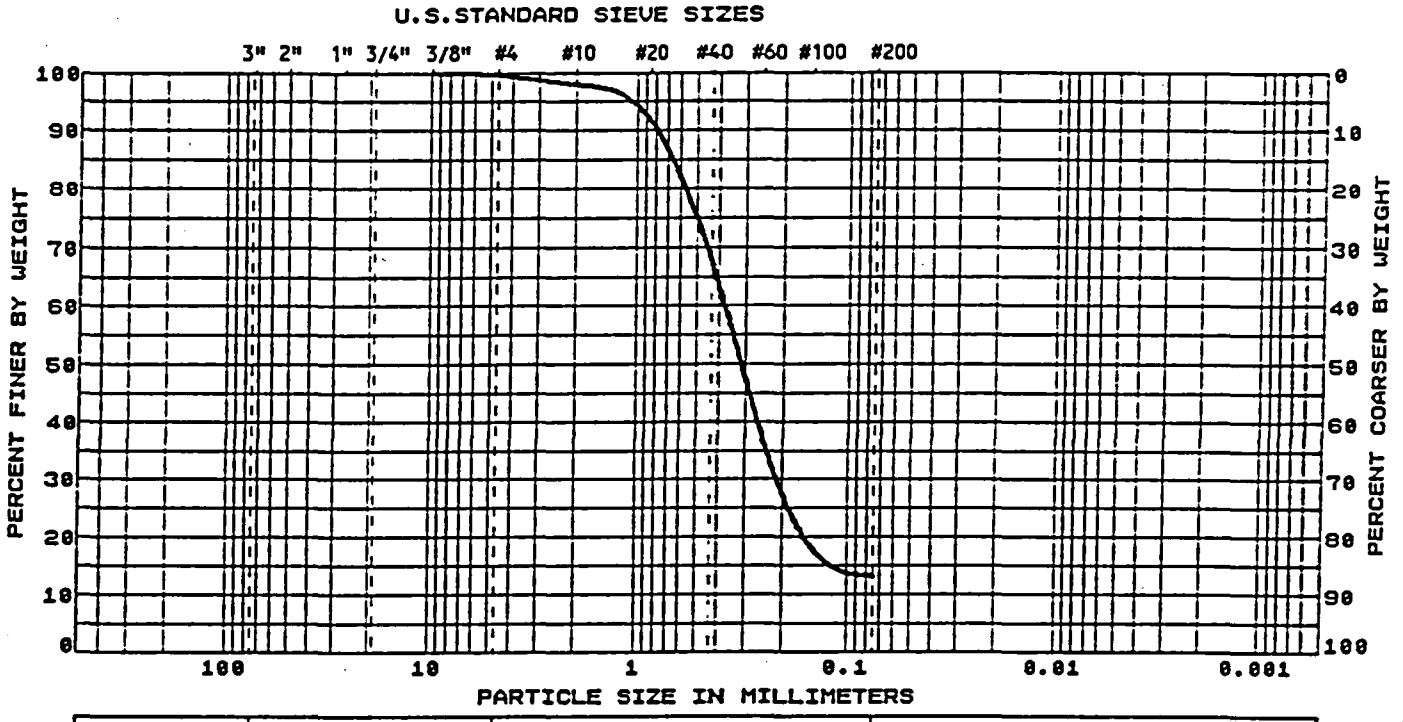
LAW ENVIRONMENTAL, INC.
300 CHASTAIN CNTR BLVD, SUITE 315
KENNESAW, GEORGIA 30144
404-425-7879

PARTICLE SIZE DISTRIBUTION & PHYSICAL PROPERTIES

CLIENT Geraghty and Miller, Inc.
3724 National Dr.,Ste. 228
Raleigh, North Carolina 27612

JOB NO. 41-8935.01
LAB NO. 00459
PROJECT GM Project NC27612
SAMPLE ID LF2-D

DATE October 30, 1990
PAGE 4



COBBLES	GRAVEL		SAND			SILT & CLAY
	COARSE	MEDIUM	CO.	MEDIUM	FINE	

U.S.STANDARD SIEVE SIZE		PERCENT PASSING		HYDROMETER
SIEVE NO.	SIEVE SIZE (MILLIMETERS)			PARTICLE DIAMETER (MILLIMETERS)
3"	75			0.050
2"	50			0.020
1-1/2"	37.5			0.005
1"	25			0.002
3/4"	19			0.001
1/2"	12.5			
3/8"	9.5	100.0		
#4	4.75	99.6		
#10	2.00	97.9		
#20	0.850	91.7		
#40	0.425	66.5		
#60	0.250	37.1		
#100	0.150	18.6		
#200	0.075	13.1		

POROSITY (%)
EFFECTIVE SIZE (mm)
COEFFICIENT OF UNIFORMITY
COEFFICIENT OF CURVATURE
LIQUID LIMIT NP
PLASTIC LIMIT NP
PLASTICITY INDEX NP
CLASSIFICATION SILTY SAND (SM)

WATER CONTENT (%)
DRY DENSITY (PCF)
SPECIFIC GRAVITY
HYDRAULIC CONDUCTIVITY (cm/sec - 20C)
TEST PROCEDURES: ASTM D422, D2487.

LAW ENVIRONMENTAL, INC.
M. A. O'Kelly

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 10/31/90
Page 1

--- Project Information ---

Lab Number : 90-7131-01
Project No. : 4142
Cust. No. :
Project Name : GERAGHTY & MILLER NCO-9001

Manager: MIKE O'KELLY

--- Sample Information ---

Station ID : LF1-B
Matrix : SO
Type : GRAB
Collector : C

Sampled Date/Time : / /
Received Date/Time : 10/24/90 12:45
Received From/By : JM/KOP
Chain of Custody : 0
Number of Containers : 1

Remarks :

--- Test Data ---

Parameter	Method	Units	PQL	Results	Test Date	Analy
-- INORGANIC CHEMISTRY RESULTS --						
Loss on Ignition	ASTM	wt %		4.8	10/29/90	GW

Signed

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 10/31/90
Page 1

--- Project Information ---

Lab Number : 90-7131-02
Project No. : 4142 Cust. No. :
Project Name : GERAGHTY & MILLER NCO-9001

Manager: MIKE O'KELLY

--- Sample Information ---

Station ID : LF2-B
Matrix : SO
Type : GRAB
Collector : C

Sampled Date/Time : / /
Received Date/Time : 10/24/90 12:45
Received From/By : JM/KOP
Chain of Custody : 0
Number of Containers : 1

Remarks :

--- Test Data ---

Parameter	Method	Units	PQL	Results	Test Date	Analy
-- INORGANIC CHEMISTRY RESULTS --						
Loss on Ignition	ASTM	wt %		5.7	10/29/90	GW

Signed

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 10/31/90
Page 1

--- Project Information ---

Lab Number : 90-7131-03
Project No. : 4142 Cust. No. :
Project Name : GERAGHTY & MILLER NCO-9001

Manager: MIKE O'KELLY

--- Sample Information ---

Station ID : LF1-D
Matrix : SO
Type : GRAB
Collector : C

Sampled Date/Time : / /
Received Date/Time : 10/24/90 12:45
Received From/By : JM/KOP
Chain of Custody : 0
Number of Containers : 1

Remarks :

--- Test Data ---

Parameter	Method	Units	PQL	Results	Test Date	Analy
-- INORGANIC CHEMISTRY RESULTS --						
Loss on Ignition	ASTM	wt %		4.8	10/29/90	GW

Signed

LAW ENVIRONMENTAL NATIONAL LABORATORIES
TEST DATA REPORT

Date 10/31/90
Page 1

--- Project Information ---

Lab Number : 90-7131-04
Project No. : 4142 Cust. No. :
Project Name : GERAGHTY & MILLER NCO-9001

Manager: MIKE O'KELLY

--- Sample Information ---

Station ID : LF2-D
Matrix : SO
Type : GRAB
Collector : C

Sampled Date/Time : / /
Received Date/Time : 10/24/90 12:45
Received From/By : JM/KOP
Chain of Custody : 0
Number of Containers : 1

Remarks :

--- Test Data ---

Parameter	Method	Units	PQL	Results	Test Date	Analy
-- INORGANIC CHEMISTRY RESULTS --						
Loss on Ignition	ASTM	wt %		46	10/29/90	GW

Signed

LAW ENVIRONMENTAL, INC.
112 TOWNPARK DRIVE
KENNESAW, GEORGIA 30144-5599
404-421-3400

November 8, 1990

Geraghty & Miller, Inc.
Koger Center Gleenwood
Suite 228
3724 National Drive
Raleigh, North Carolina 27612

Attention: Mr. Charles E. Whipkey

Subject: Physical Testing of Soils
Geraghty & Miller, Inc. Project NC09001
Law Environmental, Inc. Job No. 41-8935.01
Lab No(s). 00458

Dear Mr. Whipkey

We have completed the hydrometer analysis for your sample. Please find the report form attached. Because we have already performed a sieve analysis on this sample the cost will only be for the hydrometer portion, $58.00. The invoice will be prepared shortly.

The information provided applies only to the samples tested. Reproduction of the reports in part for distribution outside of your company is permitted only with authorization from Law Environmental, Inc.

The excess samples will be returned to you.

If we can be of further assistance please contact us at (404)425-7879.

Sincerely,

LAW ENVIRONMENTAL, INC.

Michael A. O'Kelley

Michael A. O'Kelley
Physical Laboratory Supervisor

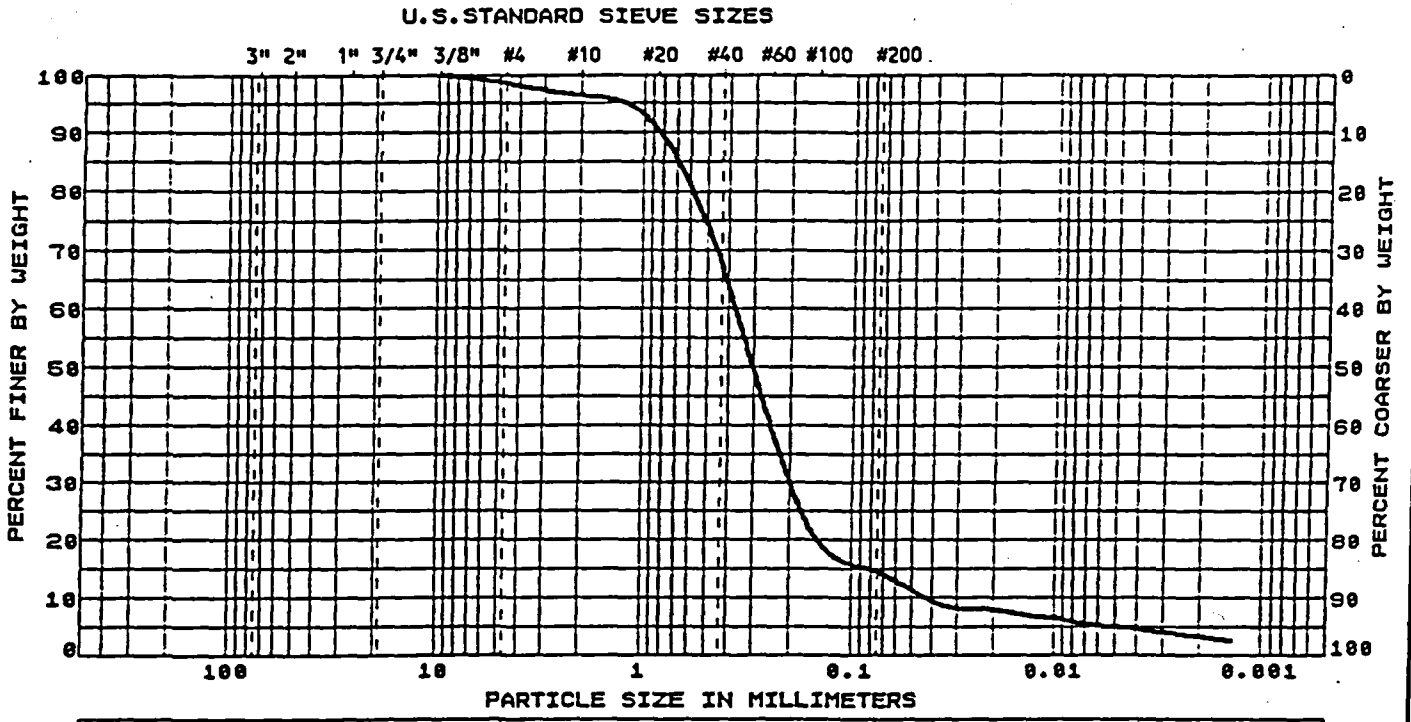
MAOK/mao
Enclosures

LAW ENVIRONMENTAL, INC.
300 CHASTAIN CNTR BLVD, SUITE 315
KENNESAW, GEORGIA 30144
404-425-7879

PARTICLE SIZE DISTRIBUTION & PHYSICAL PROPERTIES

CLIENT Geraghty and Miller, Inc.
3724 National Dr., Ste. 228
Raleigh, North Carolina 27612

JOB NO. 41-8935.01 DATE November 6, 1990
LAB NO. 00458 PAGE 1
PROJECT GM Project NC27612
SAMPLE ID LF1-D



COBBLES	GRAVEL		SAND			SILT & CLAY
	COARSE	MEDIUM	CO.	MEDIUM	FINE	

U.S.STANDARD SIEVE SIZE		PERCENT PASSING		HYDROMETER
SIEVE NO.	SIEVE SIZE (MILLIMETERS)			PARTICLE DIAMETER (MILLIMETERS)
3"	75		11.5	0.050
2"	50		7.7	0.020
1-1/2"	37.5		4.9	0.005
1"	25		3.2	0.002
3/4"	19			0.001
1/2"	12.5			
3/8"	9.5	100.0		
#4	4.75	98.5		
#10	2.00	96.4		
#20	0.850	90.5		
#40	0.425	66.5		
#60	0.250	39.7		
#100	0.150	20.7		
#200	0.075	14.5		

POROSITY (%)
EFFECTIVE SIZE (mm)
COEFFICIENT OF UNIFORMITY
COEFFICIENT OF CURVATURE
LIQUID LIMIT NP
PLASTIC LIMIT NP
PLASTICITY INDEX NP
CLASSIFICATION SILTY SAND (SM)

WATER CONTENT (%)
DRY DENSITY (PCF)
SPECIFIC GRAVITY
HYDRAULIC CONDUCTIVITY (cm/sec - 20C)
TEST PROCEDURES: ASTM D422, D2487.

LAW ENVIRONMENTAL, INC.
M.A. O'Kelley

APPENDIX C

Ground-Water Sampling Logs

1387swp

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NC09001 Date 10/9/90
Site Location SWP - Wilmington
Site/Well No. MW-6 (~~MW-4~~) MK Rep./Field Blank No. ____
Weather Cloudy Sampling Began 1640 Ended 1730
Description of Measuring Point (MP) TOC
MP Elevation 5.12 'msl Water Level Elevation 1.82

Evacuation Data

Height of MP			
Depth of Well Below MP			21.40
Held ____	Depth to Water Below MP	-	3.30
Wet ____	Water Column in Well	=	18.10
Casing Diameter ____	Gal./ft.	x	0.16
Gallons in Well		=	2.90 ~ 3.0
Evacuation Volume	x 3	=	

Gallons	3.0	6.0	9.0			
pH	6.02	6.04	6.09			
Spec. Conductance	1350	1950	2050			
Temperature (°C/°F)	23	23	22.5			

Sampling Data/Field Parameters

Color ____ Odor ____ Appearance Slightly Cloudy 1730
Comments:
Spec. Cond. (umhos/cm) 2100 pH 6.12 T(°C/°F) 23
Sampling Method Disposable Bailer

Analyses	Container Type (Lab ✓ G&M ___)	Preservative
Kool	1 Liter Amber Glass	4°c
TN TP	250 ml Plastic	H_2SO_4
TSS	100 ml Plastic	4°c
TOC	250 ml Plastic	H_2SO_4
Cl^-	250 ml Plastic	4°c

Remarks:

Sampling Personnel: G. D. Rumford

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NCO 9001 Date 10/9/90
Site Location SWP - Wilmington
Site/Well No. MW-9 (MW-1) Rep./Field Blank No. ____
Weather Sunny 80's Sampling Began 1300 Ended 1430
Description of Measuring Point (MP) TOC
MP Elevation 6.49 Water Level Elevation 2.01

Evacuation Data

Height of MP			____
Depth of Well Below MP			21.42
Held ____ Depth to Water Below MP		-	4.48
Wet ____ Water Column in Well		=	16.94
Casing Diameter ____	Gal./ft.	x	0.16
Gallons in Well		=	2.71 ~ 3.0
Evacuation Volume	x ____	=	____

Gallons	2.0	4	6			
pH	5.72	5.76	5.86			
Spec. Conductance	550	600	600			
Temperature (°C) °F)	24	23	23			

Sampling Data/Field Parameters

1430

Color None Odor Sulfide Appearance Cloudy
Comments: ____
Spec. Cond. (umhos/cm) 700 pH 6.05 T (°C) °F) ~~20~~ 25
Sampling Method Disposable Bailer

Analyses	Container Type (Lab G&M)	Preservative
K001	1 Liter Amber Glass	4°C
TN TP	250 ml Plastic	H_2SO_4
TSS	100 ml Plastic	4°C
TOC	250 ml Plastic	H_2SO_4
Cl^-	250 ml Plastic	4°C

Remarks: ____

Sampling Personnel: G.D. Rumford

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NCO 9001 Date 10/9/90
Site Location SWP - Wilmington
Site/Well No. MW-8 (~~MW-2~~) Rep./Field Blank No. ____
Weather Cloudy Sampling Began 1445 Ended 1530
Description of Measuring Point (MP) TOC
MP Elevation 6.86' msl Water Level Elevation 2.12' msl

Evacuation Data

Height of MP ____
Depth of Well Below MP 21.42
Held ____ Depth to Water Below MP - 4.74
Wet ____ Water Column in Well = 16.68
Casing Diameter ____ Gal./ft. x .16
Gallons in Well = 2.67 ~2.6
Evacuation Volume x 3 = ____

Gallons	2.0	4.0	6.0			
pH	5.76	5.73	5.81			
Spec. Conductance	600	600	600			
Temperature (°C/°F)	24	23	23			

Sampling Data/Field Parameters

Color ____ Odor Sulfide Appearance ____ 1530
Comments: organic Coloration
Spec. Cond. (umhos/cm) 600 pH 5.87 T(°C/°F) 23
Sampling Method Disposable Bailer

Analyses	Container Type (Lab G&M)	Preservative
KOOL	1 Liter Amber Glass	4°C
TN TP	250 ml Plastic	H_2SO_4
TSS	100 ml Plastic	4°C
TOC	250 ml Plastic	H_2SO_4
Cl^-	250 ml Plastic	4°C

Remarks: ____

Sampling Personnel: G.D. Rumford

GERAGHTY & MILLER, INC.
Environmental Services

WATER SAMPLING LOG

Project/No. NC09001 Date 10/4/90
Site Location SWP - Wilmington
Site/Well No. MW-7 (~~MW-3~~) Rep./Field Blank No. ____
Weather overcast Sampling Began 1550 Ended 1630
Description of Measuring Point (MP) TOC
MP Elevation 6.09 Water Level Elevation 1.79

Evacuation Data

Height of MP			____
Depth of Well Below MP			21.38
Held ____	Depth to Water Below MP	-	4.30
Wet ____	Water Column in Well	=	17.08
Casing Diameter ____	Gal./ft.	x	0.16
Gallons in Well		=	2.73
Evacuation Volume	x 3	=	____

Gallons	2.0	4.0	6.0	____	____	____
pH	5.92	5.84	6.08	____	____	____
Spec. Conductance	800	800	850	____	____	____
Temperature (°C/°F)	24	23	23	____	____	____

Sampling Data/Field Parameters

Color Brown Odor Sulfide Appearance Cloudy 1630
Comments: Sandy
Spec. Cond. (umhos/cm) 1000 pH 6.15 T(°C/°F) 24
Sampling Method Disposable Bailer

Analyses	Container Type (Lab ___ G&M ___)	Preservative
Kool	1 Liter Amber Glass	4°c
TN TP	250 ml Plastic	H_2SO_4
TSS	100 ml Plastic	4°c
TOC	250 ml Plastic	H_2SO_4
Cl⁻	250 ml Plastic	4°c

Remarks: ____

Sampling Personnel: G.D. Rumford

APPENDIX D

Analytical Laboratory Reports and Chain-of-Custody Forms

1387swp

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-12806

Received: 10 OCT 90

Ms. Sandra Watson
Southern Wood Piedmont (SP)
P. O. Box 5447
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
12806-1	MW-9 (# 9112) 10-9-90	Client
12806-2	MW-8 (# 9113) 10-9-90	
12806-3	MW-7 (# 9114) 10-9-90	
12806-4	MW-6 (# 9115) 10-9-90	
12806-5	TB-1 10-9-90	

PARAMETER	12806-1	12806-2	12806-3	12806-4	12806-5
Semi Volatiles					
Naphthalene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
2-Methylnaphthalene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
1-Methylnaphthalene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
1,1-Biphenyl, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Acenaphthylene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Acenaphthene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Dibenzofuran, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Fluorene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Phenanthrene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Anthracene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Carbazole, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Pyrene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)Anthracene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Chrysene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)pyrene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(g,h,i)perylene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
Pentachlorophenol, mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene, mg/l	<0.010	<0.010	<0.010	<0.010	<0.010
% R Surrogate-2FP (CL 21-100)	46 %	36 %	42 %	25 %	30 %

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-12806

Received: 10 OCT 90

Ms. Sandra Watson
Southern Wood Piedmont (SP)
P. O. Box 5447
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
12806-1	MW-9 (# 9112) 10-9-90	Client
12806-2	MW-8 (# 9113) 10-9-90	
12806-3	MW-7 (# 9114) 10-9-90	
12806-4	MW-10 (# 9115) 10-9-90	
12806-5	TB-1 10-9-90	

PARAMETER	12806-1	12806-2	12806-3	12806-4	12806-5
% R Surrogate-PHL (CL 10-94)	26 %	22 %	64 %	38 %	34 %
% R Surrogate-NBZ (CL 35-114)	46 %	50 %	65 %	56 %	54 %
% R Surrogate-2FBP (CL 43-116)	46 %	45 %	64 %	59 %	50 %
% R Surrogate-TBP (CL 10-123)	58 %	55 %	50 %	72 %	67 %
% R Surrogate-TPH (CL 33-141)	60 %	46 %	66 %	65 %	69 %
Date Extracted	10.16.90	10.16.90	10.16.90	10.16.90	10.16.90
Date Analyzed	10.18.90	10.18.90	10.18.90	10.18.90	10.18.90
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/l	6.7	10	7.2	11	<0.10
Nitrate + Nitrite-N, mg/l	<0.050	<0.050	<0.050	<0.050	<0.050
Total Nitrogen, mg/l	6.7	10	7.2	11	<0.10
Total Phosphorus, mg/l	0.35	0.51	0.47	1.0	<0.050
Suspended Solids, mg/l	30	220	130	68	<5.0
Total Organic Carbon, mg/l	20	26	22	13	<1.0
Chloride, mg/l	120	110	210	530	<1.0

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Received: 10 OCT 90

Ms. Sandra Watson
Southern Wood Piedmont (SP)
P. O. Box 5447
Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
12806-6	Method Blank (MB) Result	Client
12806-7	Lab Control Standard (LCS) Result	
12806-8	LCS Expected Value	
12806-9	LCS % Recovery	
12806-10	LCS % Recovery Limits	

PARAMETER	12806-6	12806-7	12806-8	12806-9	12806-10
Semi Volatiles					
Naphthalene, mg/l	<0.010	71	100	71 %	39-140 %
2-Methylnaphthalene, mg/l	<0.010	---	---	---	---
1-Methylnaphthalene, mg/l	<0.010	---	---	---	---
1,1-Biphenyl, mg/l	<0.010	---	---	---	---
Acenaphthylene, mg/l	<0.010	103	100	103 %	36-140 %
Acenaphthene, mg/l	<0.010	101	100	101 %	46-118 %
Dibenzofuran, mg/l	<0.010	---	---	---	---
Fluorene, mg/l	<0.010	---	---	---	---
Phenanthrene, mg/l	<0.010	114	100	114 %	54-140 %
Anthracene, mg/l	<0.010	105	100	105 %	40-140 %
Carbazole, mg/l	<0.010	---	---	---	---
Pyrene, mg/l	<0.010	---	---	---	---
Benzo(a)Anthracene, mg/l	<0.010	118	100	118 %	29-140 %
Chrysene, mg/l	<0.010	105	100	105 %	17-168 %
Benzo(a)pyrene, mg/l	<0.010	119	100	119 %	25-160 %
Benzo(g,h,i)perylene, mg/l	<0.010	---	---	---	---
Pentachlorophenol, mg/l	<0.050	77	100	77 %	9-103 %
Fluoranthene, mg/l	<0.010	96	100	96 %	26-140 %

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LOG NO: S0-12806

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Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
12806-6	Method Blank (MB) Result	Client
12806-7	Lab Control Standard (LCS) Result	
12806-8	LCS Expected Value	
12806-9	LCS % Recovery	
12806-10	LCS % Recovery Limits	

PARAMETER	12806-6	12806-7	12806-8	12806-9	12806-10
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/l	<0.10	5.0	5.0	100 %	90-110 %
Nitrate + Nitrite-N, mg/l	<0.050	0.89	0.93	96 %	90-110 %
Total Nitrogen, mg/l	<0.10	---	---	---	---
Total Phosphorus, mg/l	<0.050	10.4	10	104 %	75-125 %
Suspended Solids, mg/l	<5.0	360	399	90 %	60-140 %
Total Organic Carbon, mg/l	<1.0	6.3	6.1	104 %	60-140 %
Chloride, mg/l	<1.0	211	222	95 %	90-110 %

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Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
12806-11	Matrix Spike (MS) Result/Dup	Client
12806-12	MS Expected Value	
12806-13	MS % Recovery/Duplicate	
12806-14	MS % Recovery Limit	
12806-15	MS % RPD (Limit)	

PARAMETER	12806-11	12806-12	12806-13	12806-14	12806-15
Semi Volatiles					
Naphthalene, mg/l	103/98	100	103/98 %	39-140 %	5.0(<40)%
Acenaphthylene, mg/l	118/120	100	118/120 %	36-140 %	1.7(<40)%
Acenaphthene, mg/l	105/109	100	105/109 %	46-118 %	3.7(<31)%
Phenanthrene, mg/l	115/116	100	115/116 %	54-140 %	0.87(<40)%
Anthracene, mg/l	113/111	100	113/111 %	40-140 %	1.8(<40)%
Carbazole, mg/l	157/175	100	157/175 %	---	---
Benzo(a)Anthracene, mg/l	121/120	100	121/120 %	29-140 %	0.83(<40)%
Chrysene, mg/l	112/111	100	112/111 %	17-168 %	0.90(<48)%
Benzo(a)pyrene, mg/l	119/122	100	119/122 %	25-160 %	2.5(<40)%
Pentachlorophenol, mg/l	127/125	100	127/125 %	9-103 %	1.6(<50)%
Fluoranthene, mg/l	100/112	100	100/112 %	26-140 %	11(<40)%
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/l	4.18/4.18	4.0	105/105 %	75-125 %	0(<40)%
Nitrate + Nitrite-N, mg/l	.183/.184	0.20	91/92 %	75-125 %	1.1(<30)%
Total Nitrogen, mg/l	---	---	---	---	---
Total Phosphorus, mg/l	.514/.509	0.50	103/102 %	75/125 %	0.98(<30)%
Suspended Solids, mg/l	---	---	---	---	---
Total Organic Carbon, mg/l	124/126	100	124/126 %	60-140 %	1.6(<40)%
Chloride, mg/l	4.65/4.93	5.0	93/99 %	75-125 %	6.3(<30)%

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Received: 10 OCT 90

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Spartanburg, SC 29304

CC: Mark Radecke

Project: Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
12806-16	Methods	Client

PARAMETER	12806-16
Semi Volatiles	
Naphthalene	8270
2-Methylnaphthalene	8270
1-Methylnaphthalene	8270
1,1-Biphenyl	8270
Acenaphthylene	8270
Acenaphthene	8270
Dibenzofuran	8270
Fluorene	8270
Phenanthrene	8270
Anthracene	8270
Carbazole	8270
Pyrene	8270
Benzo(a)Anthracene	8270
Chrysene	8270
Benzo(a)pyrene	8270
Benzo(g,h,i)perylene	8270
Pentachlorophenol	8270
Fluoranthene	8270
Nitrogen Series	
Total Kjeldahl Nitrogen-N	351.2
Nitrate + Nitrite-N	353.1
Total Phosphorus	365.1
Suspended Solids	160.2
Total Organic Carbon	415.1
Chloride	325.2

Methods: EPA SW-846 & 40 CFR Part 136

J. W. Andrews

J. W. Andrews, Ph. D.

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. N/A

CHAIN-OF-CUSTODY RECORD

Project Number NC09001

Project Location WILMINGTON, NC

Laboratory SAVANNAH LABORATORIES

Sampler(s)/Affiliation M. RADECKE G&M
D. RUMFORD, III G&M

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	1 Liter amber glass 4°C *KOOT PAH's	250ml plastic 4°C Total N TOTAL P H2SO4	100ml plastic 4°C TSS	250ml amber glass 4°C H2SO4 TOC	250ml plastic 4°C Cl-					TOTAL
TB-1	L	10/9/90		1	1	1	1	1					5
MW9 / 9112	L	10/9/90 14:20		1	1	1	1	1					5
MW8 / 9113	L	10/9/90 15:30		1	1	1	1	1					5
MW7 / 9114	L	10/9/90 16:30		1	1	1	1	1					5
/ 9115	L	10/9/90		1	1	1	1	1					5
12806													

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 25

Relinquished by: Mark E. Radecke Organization: Geraghty & Miller, Inc. 10/9/90 19:00
Received by: L. Bonds Organization: Sath. Labs Date 10/10/90 Time 10:30 am
Seal Intact? Yes No N/A

Relinquished by: Organization:
Received by: Organization: Date / / Time
Seal Intact? Yes No N/A

Special Instructions/Remarks: *~~KOOT~~ PAH's Site Specific list + PCP

KOOT changed to PAH's per Mark Radecke 10/24/90. GF

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: S0-12822

Received: 11 OCT 90

Ms. Sandra Watson
Southern Wood Piedmont (SP)
P. O. Box 5447
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-1	LF1BL (# 9101C) 10-10-90	Client
12822-2	LF1BU (# 9101A) 10-10-90	
12822-3	LF1BM (# 9101B) 10-10-90	
12822-4	LF1BS (# 9101D) 10-10-90	
12822-5	LF1ES (# 9104D) 10-10-90	

PARAMETER	12822-1	12822-2	12822-3	12822-4	12822-5
Semi Volatiles					
Naphthalene, mg/kg dw	<7.3	4.4J	12	<0.35	<0.34
2-Methylnaphthalene, mg/kg dw	<7.3	5.9J	15	<0.35	<0.34
1-Methylnaphthalene, mg/kg dw	<7.3	<7.4	<7.8	<0.35	<0.34
1,1-Biphenyl, mg/kg dw	<7.3	<7.4	<7.8	<0.35	<0.34
Acenaphthylene, mg/kg dw	<7.3	<7.4	<7.8	<0.35	<0.34
Acenaphthene, mg/kg dw	<7.3	<7.4	<7.8	<0.35	<0.34
Dibenzofuran, mg/kg dw	<7.3	6.7J	11	<0.35	<0.34
Fluorene, mg/kg dw	<7.3	4.9J	27	<0.35	<0.34
Phenanthrene, mg/kg dw	<7.3	36	41	<0.35	<0.34
Anthracene, mg/kg dw	4.6J	230	200	<0.35	<0.34
Carbazole, mg/kg dw	<7.3	46	90	<0.35	<0.34
Pyrene, mg/kg dw	20	50	27	<0.35	<0.34
Benzo(a)Anthracene, mg/kg dw	10	19	8.6	<0.35	<0.34
Chrysene, mg/kg dw	18	27	15	<0.35	<0.34
Benzo(a)pyrene, mg/kg dw	10	20	9.4	<0.35	<0.34
Benzo(g,h,i)perylene, mg/kg dw	3.9J	7.4	<7.8	<0.35	<0.34
Pentachlorophenol, mg/kg dw	<37	<37	<39	<1.8	<1.7
Fluoranthene, mg/kg dw	20	19	34	<0.35	<0.34
% R Surrogate-2FP (CL 21-100)	*	*	*	97 %	88 %

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

LOG NO: SO-12822

Received: 11 OCT 90

Ms. Sandra Watson
Southern Wood Piedmont (SP)
P. O. Box 5447
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-1	LF1BL (# 9101C) 10-10-90	Client
12822-2	LF1BU (# 9101A) 10-10-90	
12822-3	LF1BM (# 9101B) 10-10-90	
12822-4	LF1BS (# 9101D) 10-10-90	
12822-5	LF1ES (# 9104D) 10-10-90	

PARAMETER	12822-1	12822-2	12822-3	12822-4	12822-5
% R Surrogate-PHL (CL 10-94)	*	*	*	87 %	80 %
% R Surrogate-NBZ (CL 35-114)	*	*	*	94 %	91 %
% R Surrogate-2FBP (CL 43-116)	*	*	*	104 %	101 %
% R Surrogate-TBP (CL 10-123)	*	*	*	81 %	90 %
% R Surrogate-TPH (CL 33-141)	*	*	*	103 %	89 %
Date Extracted	10.23.90	10.23.90	10.23.90	10.23.90	10.23.90
Date Analyzed	11.01.90	11.01.90	11.01.90	11.01.90	11.01.90
pH, units	7.7	6.5	6.5	8.0	7.3
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	7500	1600	1600	88	<15
Nitrate + Nitrite-N, mg/kg dw	8.2	<2.0	16	<2.0	<2.0
Total Nitrogen, mg/kg dw	7500	1600	1600	88	<15
Total Phosphorus, mg/kg dw	450	1100	840	42	88
Total Organic Carbon, mg/kg dw	15000	32000	26000	120	<0.50
Chloride, mg/kg dw	26	29	28	<20	21
Percent Solids, %	90 %	82 %	84 %	95 %	97 %

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Received: 11 OCT 90

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Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-6	LF1EM (# 9104B) 10-10-90	Client
12822-7	LF1EL (# 9104C) 10-10-90	
12822-8	LF1EU (# 9104A) 10-10-90	
12822-9	LF1CU (# 9102A) 10-10-90	
12822-10	LF1CM (# 9102B) 10-10-90	

PARAMETER	12822-6	12822-7	12822-8	12822-9	12822-10
Semi Volatiles					
Naphthalene, mg/kg dw	<7.4	<7.2	3.6J	4.8J	<7.4
2-Methylnaphthalene, mg/kg dw	<7.4	<7.2	<7.5	<9.4	<7.4
1-Methylnaphthalene, mg/kg dw	<7.4	<7.2	<7.5	<9.4	<7.4
1,1-Biphenyl, mg/kg dw	<7.4	<7.2	<7.5	<9.4	<7.4
Acenaphthylene, mg/kg dw	<7.4	<7.2	<7.5	<9.4	<7.4
Acenaphthene, mg/kg dw	<7.4	<7.2	<7.5	<9.4	<7.4
Dibenzofuran, mg/kg dw	<7.4	<7.2	<7.5	6.6J	<7.4
Fluorene, mg/kg dw	<7.4	<7.2	6.0J	20	5.8J
Phenanthrene, mg/kg dw	4.6J	<7.2	20	130	8.1
Anthracene, mg/kg dw	5.0J	<7.2	70	29	58
Carbazole, mg/kg dw	<7.4	<7.2	23	43	9.6
Pyrene, mg/kg dw	6.0J	6.5J	41	150	11
Benzo(a)Anthracene, mg/kg dw	7.4	<7.2	21	32	3.7J
Chrysene, mg/kg dw	8.1	3.7J	22	42	8.9
Benzo(a)pyrene, mg/kg dw	8.1	3.5J	18	24	6.5J
Benzo(g,h,i)perylene, mg/kg dw	<7.4	<7.2	<7.5	10	<7.4
Pentachlorophenol, mg/kg dw	<37	<36	<38	<47	<37
Fluoranthene, mg/kg dw	4.4J	6.8J	51	140	8.9
% R Surrogate-2FP (CL 21-100)	*	*	*	*	*

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LOG NO: S0-12822

Received: 11 OCT 90

Ms. Sandra Watson
Southern Wood Piedmont (SP)
P. O. Box 5447
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-6	LF1EM (# 9104B) 10-10-90	Client
12822-7	LF1EL (# 9104C) 10-10-90	
12822-8	LF1EU (# 9104A) 10-10-90	
12822-9	LF1CU (# 9102A) 10-10-90	
12822-10	LF1CM (# 9102B) 10-10-90	

PARAMETER	12822-6	12822-7	12822-8	12822-9	12822-10
% R Surrogate-PHL (CL 10-94)	*	*	*	*	*
% R Surrogate-NBZ (CL 35-114)	*	*	*	*	*
% R Surrogate-2FBP (CL 43-116)	*	*	*	*	*
% R Surrogate-TBP (CL 10-123)	*	*	*	*	*
% R Surrogate-TPH (CL 33-141)	*	*	*	*	*
Date Extracted	10.23.90	10.23.90	---	---	---
Date Analyzed	11.01.90	11.01.90	---	---	---
pH, units	6.7	7.1	6.4	6.6	6.7
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	<15	470	1400	1900	1100
Nitrate + Nitrite-N, mg/kg dw	<2.0	<2.0	<2.0	8.1	<2.0
Total Nitrogen, mg/kg dw	<15	470	1400	1900	1100
Total Phosphorus, mg/kg dw	640	320	980	1000	620
Total Organic Carbon, mg/kg dw	21000	8000	30000	39000	23000
Chloride, mg/kg dw	27	<20	40	35	<20
Percent Solids, mg/kg dw	88 %	91 %	88 %	70 %	88 %

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LOG NO: S0-12822

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Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-11	LF1CL (# 9102C) 10-10-90	Client
12822-12	LF1CS (# 9102D) 10-10-90	
12822-13	LF1AU (# 9100A) 10-10-90	
12822-14	LF1AM (# 9100B) 10-10-90	
12822-15	LF1AL (# 9100C) 10-10-90	

PARAMETER	12822-11	12822-12	12822-13	12822-14	12822-15
Semi Volatiles					
Naphthalene, mg/kg dw	<7.5	<0.36	3.8J	<7.3	<7.3
2-Methylnaphthalene, mg/kg dw	<7.5	<0.36	4.0J	<7.3	<7.3
1-Methylnaphthalene, mg/kg dw	<7.5	<0.36	<8.0	<7.3	<7.3
1,1-Biphenyl, mg/kg dw	<7.5	<0.36	<8.0	<7.3	<7.3
Acenaphthylene, mg/kg dw	<7.5	<0.36	<8.0	<7.3	<7.3
Acenaphthene, mg/kg dw	<7.5	<0.36	<8.0	<7.3	<7.3
Dibenzofuran, mg/kg dw	<7.5	<0.36	5.0J	<7.3	<7.3
Fluorene, mg/kg dw	<7.5	<0.36	14	<7.3	<7.3
Phenanthrene, mg/kg dw	13	<0.36	25	3.9J	6.2J
Anthracene, mg/kg dw	6.8J	<0.36	88	3.4J	3.7J
Carbazole, mg/kg dw	<7.5	<0.36	26	<7.3	<7.3
Pyrene, mg/kg dw	110	<0.36	44	13	80
Benzo(a)Anthracene, mg/kg dw	42	<0.36	20	5.8J	39
Chrysene, mg/kg dw	59	<0.36	22	9.5	59
Benzo(a)pyrene, mg/kg dw	22	<0.36	19	7.3	32
Benzo(g,h,i)perylene, mg/kg dw	6.5J	<0.36	8.8	5.0J	16
Pentachlorophenol, mg/kg dw	<38	<1.8	<40	<37	<37
Fluoranthene, mg/kg dw	120	<0.36	58	13	80
% R Surrogate-2FP (CL 21-100)	*	92 %	*	*	*

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LOG NO: S0-12822

Received: 11 OCT 90

Ms. Sandra Watson
Southern Wood Piedmont (SP)
P. O. Box 5447
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-16	LF1AS (# 9100D) 10-10-90	Client
12822-17	LF2BU (# 9106A) 10-10-90	
12822-18	LF2BM (# 9106B) 10-10-90	
12822-19	LF2BL (# 9106C) 10-10-90	
12822-20	LF2BS (# 9106D) 10-10-90	

PARAMETER	12822-16	12822-17	12822-18	12822-19	12822-20
Semi Volatiles					
Naphthalene, mg/kg dw	<0.35	<7.7	30	<7.6	<0.37
2-Methylnaphthalene, mg/kg dw	<0.35	<7.7	41	<7.6	<0.37
1-Methylnaphthalene, mg/kg dw	<0.35	<7.7	20	<7.6	<0.37
1,1-Biphenyl, mg/kg dw	<0.35	<7.7	<7.8	<7.6	<0.37
Acenaphthylene, mg/kg dw	<0.35	<7.7	<7.8	<7.6	<0.37
Acenaphthene, mg/kg dw	<0.35	49	<7.8	<7.6	<0.37
Dibenzofuran, mg/kg dw	<0.35	19	20	5.6J	<0.37
Fluorene, mg/kg dw	<0.35	42	57	12	<0.37
Phenanthrene, mg/kg dw	<0.35	82	86	24	<0.37
Anthracene, mg/kg dw	<0.35	350	400	66	<0.37
Carbazole, mg/kg dw	<0.35	100	160	30	<0.37
Pyrene, mg/kg dw	<0.35	55	23	78	0.60
Benzo(a)Anthracene, mg/kg dw	<0.35	33	13	21	0.21J
Chrysene, mg/kg dw	<0.35	35	18	31	0.35J
Benzo(a)pyrene, mg/kg dw	<0.35	24	30	41	0.30J
Benzo(g,h,i)perylene, mg/kg dw	<0.35	12	<7.8	16	<0.37
Pentachlorophenol, mg/kg dw	<1.8	<39	<39	<38	<1.9
Fluoranthene, mg/kg dw	<0.35	92	27	82	0.63
% R Surrogate-2FP (CL 21-100)	97 %	*	*	*	96 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-21	LF2EU (# 9109A) 10-10-90	Client
12822-22	LF2EM (# 9109B) 10-10-90	
12822-23	LF2EL (# 9109C) 10-10-90	
12822-24	LF2ES (# 9109D) 10-10-90	
12822-25	LF2AU (# 9105A) 10-10-90	

PARAMETER	12822-21	12822-22	12822-23	12822-24	12822-25
Semi Volatiles					
Naphthalene, mg/kg dw	3.5J	<7.5	2.1J	<0.36	<7.8
2-Methylnaphthalene, mg/kg dw	<7.4	<7.5	<4.1	<0.36	<7.8
1-Methylnaphthalene, mg/kg dw	<7.4	<7.5	<4.1	<0.36	<7.8
1,1-Biphenyl, mg/kg dw	<7.4	<7.5	<4.1	<0.36	<7.8
Acenaphthylene, mg/kg dw	<7.4	<7.5	<4.1	<0.36	<7.8
Acenaphthene, mg/kg dw	<7.4	<7.5	<4.1	<0.36	<7.8
Dibenzofuran, mg/kg dw	3.7J	<7.5	<4.1	<0.36	<7.8
Fluorene, mg/kg dw	<7.4	6.1J	<4.1	<0.36	22
Phenanthrene, mg/kg dw	19	14	5.7	<0.36	34
Anthracene, mg/kg dw	70	50	14	<0.36	100
Carbazole, mg/kg dw	24	17	1.9J	<0.36	45
Pyrene, mg/kg dw	34	34	30	<0.36	26
Benzo(a)Anthracene, mg/kg dw	13	13	11	<0.36	20
Chrysene, mg/kg dw	18	19	16	<0.36	21
Benzo(a)pyrene, mg/kg dw	18	15	12	<0.36	16
Benzo(g,h,i)perylene, mg/kg dw	8.1	7.1J	8.6	<0.36	7.8
Pentachlorophenol, mg/kg dw	<37	<38	<21	<1.8	<39
Fluoranthene, mg/kg dw	36	36	32	<0.36	35
% R Surrogate-2FP (CL 21-100)	*	*	*	106 %	*

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-21	LF2EU (# 9109A) 10-10-90	Client
12822-22	LF2EM (# 9109B) 10-10-90	
12822-23	LF2EL (# 9109C) 10-10-90	
12822-24	LF2ES (# 9109D) 10-10-90	
12822-25	LF2AU (# 9105A) 10-10-90	

PARAMETER	12822-21	12822-22	12822-23	12822-24	12822-25
% R Surrogate-PHL (CL 10-94)	*	*	*	87 %	*
% R Surrogate-NBZ (CL 35-114)	*	*	*	99 %	*
% R Surrogate-2FBP (CL 43-116)	*	*	*	97 %	*
% R Surrogate-TBP (CL 10-123)	*	*	*	103 %	*
% R Surrogate-TPH (CL 33-141)	*	*	*	101 %	*
Date Extracted	10.23.90	10.23.90	10.23.90	10.23.90	10.23.90
Date Analyzed	11.01.90	11.01.90	11.01.90	11.01.90	11.01.90
pH, units	6.0	6.1	6.7	7.5	6.3
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	190	1400	520	90	1400
Nitrate + Nitrite-N, mg/kg dw	<2.0	12	<2.0	<2.0	<2.0
Total Nitrogen, mg/kg dw	190	1400	520	90	1400
Total Phosphorus, mg/kg dw	1200	940	370	53	1100
Total Organic Carbon, mg/kg dw	35000	31000	20000	490	37000
Chloride, mg/kg dw	27	<20	<20	<20	26
Percent Solids, %	88 %	87 %	80 %	91 %	84 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-26	LF2AM (# 9105B) 10-10-90	Client
12822-27	LF2AL (# 9105C) 10-10-90	
12822-28	LF2AS (# 9105D) 10-10-90	
12822-29	LF2CM (# 9107B) 10-10-90	
12822-30	LF2CU (# 9107A) 10-10-90	

PARAMETER	12822-26	12822-27	12822-28	12822-29	12822-30
Semi Volatiles					
Naphthalene, mg/kg dw	<8.3	<7.1	0.33J	5.1J	<7.6
2-Methylnaphthalene, mg/kg dw	10	<7.1	<0.44	<7.3	<7.6
1-Methylnaphthalene, mg/kg dw	<8.3	<7.1	<0.44	<7.3	<7.6
1,1-Biphenyl, mg/kg dw	<8.3	<7.1	<0.44	<7.3	<7.6
Acenaphthylene, mg/kg dw	<8.3	<7.1	<0.44	<7.3	<7.6
Acenaphthene, mg/kg dw	28	<7.1	<0.44	<7.3	<7.6
Dibenzofuran, mg/kg dw	26	<7.1	<0.44	3.8J	<7.6
Fluorene, mg/kg dw	91	<7.1	<0.44	<7.3	12
Phenanthrene, mg/kg dw	200	<7.1	0.49	17	99
Anthracene, mg/kg dw	280	<7.1	0.36J	72	900
Carbazole, mg/kg dw	200	<7.1	<0.44	23	270
Pyrene, mg/kg dw	200	4.7J	2.0	36	130
Benzo(a)Anthracene, mg/kg dw	110	<7.1	1.2	19	43
Chrysene, mg/kg dw	120	3.6J	1.9	22	58
Benzo(a)pyrene, mg/kg dw	46	<7.1	1.3	16	41
Benzo(g,h,i)perylene, mg/kg dw	17	<7.1	0.71	13	17
Pentachlorophenol, mg/kg dw	<42	<36	<2.2	<37	<38
Fluoranthene, mg/kg dw	300	5.0J	2.3	38	110
% R Surrogate-2FP (CL 21-100)	*	*	84 %	*	*

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Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-26	LF2AM (# 9105B) 10-10-90	Client
12822-27	LF2AL (# 9105C) 10-10-90	
12822-28	LF2AS (# 9105D) 10-10-90	
12822-29	LF2CM (# 9107B) 10-10-90	
12822-30	LF2CU (# 9107A) 10-10-90	

PARAMETER	12822-26	12822-27	12822-28	12822-29	12822-30
% R Surrogate-PHL (CL 10-94)	*	*	74 %	*	*
% R Surrogate-NBZ (CL 35-114)	*	*	76 %	*	*
% R Surrogate-2FBP (CL 43-116)	*	*	92 %	*	*
% R Surrogate-TBP (CL 10-123)	*	*	83 %	*	*
% R Surrogate-TPH (CL 33-141)	*	*	72 %	*	*
Date Extracted	10.23.90	10.23.90	10.23.90	10.23.90	10.23.90
Date Analyzed	11.01.90	11.01.90	11.01.90	11.01.90	11.01.90
pH, units	6.3	6.6	5.1	7.0	6.2
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	1400	170	1100	340	2200
Nitrate + Nitrite-N, mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nitrogen, mg/kg dw	1400	170	1100	340	2200
Total Phosphorus, mg/kg dw	290	120	800	90	740
Total Organic Carbon, mg/kg dw	51000	3700	26000	24000	36000
Chloride, mg/kg dw	51	<20	<20	<20	<20
Percent Solids, %	79 %	92 %	73 %	91 %	86 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-31	LF2CL (# 9107C) 10-10-90	Client
12822-32	LF2CS (# 9107D) 10-10-90	
12822-33	LF2DS (# 9108D) 10-10-90	
12822-34	LF2DU (# 9108A) 10-10-90	
12822-35	LF2DL (# 9108C) 10-10-90	

PARAMETER	12822-31	12822-32	12822-33	12822-34	12822-35
Semi Volatiles					
Naphthalene, mg/kg dw	<7.5	<0.39	<0.42	<7.9	11
2-Methylnaphthalene, mg/kg dw	<7.5	<0.39	<0.42	9.5	11
1-Methylnaphthalene, mg/kg dw	<7.5	<0.39	<0.42	<7.9	<8.5
1,1-Biphenyl, mg/kg dw	<7.5	<0.39	<0.42	<7.9	<8.5
Acenaphthylene, mg/kg dw	<7.5	<0.39	<0.42	<7.9	<8.5
Acenaphthene, mg/kg dw	<7.5	<0.39	<0.42	<7.9	24
Dibenzofuran, mg/kg dw	<7.5	<0.39	<0.42	<7.9	20
Fluorene, mg/kg dw	<7.5	<0.39	<0.42	37	54
Phenanthrene, mg/kg dw	6.0J	<0.39	0.40J	70	130
Anthracene, mg/kg dw	<7.5	<0.39	0.97	170	290
Carbazole, mg/kg dw	<7.5	<0.39	<0.42	67	75
Pyrene, mg/kg dw	41	<0.39	2.2	51	500
Benzo(a)Anthracene, mg/kg dw	18	<0.39	1.0	18	100
Chrysene, mg/kg dw	32	<0.39	1.4	22	150
Benzo(a)pyrene, mg/kg dw	11	<0.39	0.97	19	65
Benzo(g,h,i)perylene, mg/kg dw	4.2J	<0.39	0.47	7.9	14
Pentachlorophenol, mg/kg dw	<38	<2.0	0.80J	<40	20J
Fluoranthene, mg/kg dw	47	<0.39	2.3	74	500
% R Surrogate-2FP (CL 21-100)	*	97 %	94 %	*	*

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-31	LF2CL (# 9107C) 10-10-90	Client
12822-32	LF2CS (# 9107D) 10-10-90	
12822-33	LF2DS (# 9108D) 10-10-90	
12822-34	LF2DU (# 9108A) 10-10-90	
12822-35	LF2DL (# 9108C) 10-10-90	

PARAMETER	12822-31	12822-32	12822-33	12822-34	12822-35
% R Surrogate-PHL (CL 10-94)	*	90 %	76 %	*	*
% R Surrogate-NBZ (CL 35-114)	*	92 %	90 %	*	*
% R Surrogate-2FBP (CL 43-116)	*	95 %	94 %	*	*
% R Surrogate-TBP (CL 10-123)	*	107 %	96 %	*	*
% R Surrogate-TPH (CL 33-141)	*	101 %	92 %	*	*
Date Extracted	10.23.90	10.23.90	10.23.90	10.23.90	10.23.90
Date Analyzed	11.01.90	11.01.90	11.01.90	11.01.90	11.01.90
pH, units	7.5	7.7	5.6	6.5	5.8
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	520	67	190	1300	290
Nitrate + Nitrite-N, mg/kg dw	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nitrogen, mg/kg dw	520	67	190	1300	290
Total Phosphorus, mg/kg dw	200	49	580	910	130
Total Organic Carbon, mg/kg dw	13000	580	4700	36000	44000
Chloride, mg/kg dw	<20	<20	64	63	85
Percent Solids, %	87 %	86 %	77 %	83 %	78 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-36	LF2DM (# 9108B) 10-10-90	Client
12822-37	LF1DL (# 9103C) 10-10-90	
12822-38	LF1DU (# 9103A) 10-10-90	
12822-39	LF1DM (# 9103B) 10-10-90	
12822-40	LF1DS (# 9103D) 10-10-90	

PARAMETER	12822-36	12822-37	12822-38	12822-39	12822-40
Semi Volatiles					
Naphthalene, mg/kg dw	3.7J	<7.6	<7.6	<7.3	<7.6
2-Methylnaphthalene, mg/kg dw	<7.8	<7.6	<7.6	<7.3	<7.6
1-Methylnaphthalene, mg/kg dw	<7.8	<7.6	<7.6	<7.3	<7.6
1,1-Biphenyl, mg/kg dw	<7.8	<7.6	<7.6	<7.3	<7.6
Acenaphthylene, mg/kg dw	<7.8	<7.6	<7.6	<7.3	<7.6
Acenaphthene, mg/kg dw	<7.8	<7.6	<7.6	<7.3	<7.6
Dibenzofuran, mg/kg dw	<7.8	<7.6	<7.6	<7.3	<7.6
Fluorene, mg/kg dw	<7.8	<7.6	5.0J	<7.3	<7.6
Phenanthrene, mg/kg dw	12	14	11	<7.3	6.5J
Anthracene, mg/kg dw	15	3.6J	35	4.7J	3.0J
Carbazole, mg/kg dw	4.6J	<7.6	<7.6	<7.3	<7.6
Pyrene, mg/kg dw	66	68	28	9.5	23
Benzo(a)Anthracene, mg/kg dw	27	18	11	3.4J	13
Chrysene, mg/kg dw	40	40	17	7.3	19
Benzo(a)pyrene, mg/kg dw	33	16	16	7.3	5.9J
Benzo(g,h,i)perylene, mg/kg dw	34	7.4J	6.3J	4.8J	<7.6
Pentachlorophenol, mg/kg dw	<39	<38	<38	<37	<38
Fluoranthene, mg/kg dw	65	71	29	9.5	24
% R Surrogate-2FP (CL 21-100)	*	*	*	*	*

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	SAMPLED BY
12822-36	LF2DM (# 9108B) 10-10-90	Client
12822-37	LF1DL (# 9103C) 10-10-90	
12822-38	LF1DU (# 9103A) 10-10-90	
12822-39	LF1DM (# 9103B) 10-10-90	
12822-40	LF1DS (# 9103D) 10-10-90	

PARAMETER	12822-36	12822-37	12822-38	12822-39	12822-40
% R Surrogate-PHL (CL 10-94)	*	*	*	*	*
% R Surrogate-NBZ (CL 35-114)	*	*	*	*	*
% R Surrogate-2FBP (CL 43-116)	*	*	*	*	*
% R Surrogate-TBP (CL 10-123)	*	*	*	*	*
% R Surrogate-TPH (CL 33-141)	*	*	*	*	*
Date Extracted	10.23.90	10.23.90	10.23.90	10.23.90	10.23.90
Date Analyzed	11.01.90	11.01.90	11.01.90	11.01.90	11.01.90
pH, units	5.9	6.6	6.3	6.3	6.9
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	1400	330	1600	1000	1500
Nitrate + Nitrite-N, mg/kg dw	<2.0	<2.0	7.0	6.9	<2.0
Total Nitrogen, mg/kg dw	1400	330	1600	1000	1500
Total Phosphorus, mg/kg dw	250	240	630	530	340
Total Organic Carbon, mg/kg dw	49000	26000	34000	17000	25000
Chloride, mg/kg dw	99	<20	<20	<20	<20
Percent Solids, %	85 %	86 %	86 %	90 %	87 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
12822-41	RB-1	Client
12822-42	FB-1	

PARAMETER	12822-41	12822-42
Semi Volatiles		
Naphthalene, mg/l	<0.010	<0.010
2-Methylnaphthalene, mg/l	<0.010	<0.010
1-Methylnaphthalene, mg/l	<0.010	<0.010
1,1-Biphenyl, mg/l	<0.010	<0.010
Acenaphthylene, mg/l	<0.010	<0.010
Acenaphthene, mg/l	<0.010	<0.010
Dibenzofuran, mg/l	<0.010	<0.010
Fluorene, mg/l	<0.010	<0.010
Phenanthrene, mg/l	<0.010	<0.010
Anthracene, mg/l	<0.010	<0.010
Carbazole, mg/l	<0.010	<0.010
Pyrene, mg/l	<0.010	<0.010
Benzo(a)Anthracene, mg/l	<0.010	<0.010
Chrysene, mg/l	<0.010	<0.010
Benzo(a)pyrene, mg/l	<0.010	<0.010
Benzo(g,h,i)perylene, mg/l	<0.010	<0.010
Pentachlorophenol, mg/l	<0.050	<0.050
Fluoranthene, mg/l	<0.010	<0.010
% R Surrogate-2FP (CL 21-100)	45 %	40 %
% R Surrogate-PHL (CL 10-94)	53 %	51 %
% R Surrogate-NBZ (CL 35-114)	87 %	91 %
% R Surrogate-2FBP (CL 43-116)	92 %	83 %
% R Surrogate-TBP (CL 10-123)	62 %	71 %
% R Surrogate-TPH (CL 33-141)	83 %	81 %
Date Extracted	10.23.90	10.23.90
Date Analyzed	11.01.90	11.01.90

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LOG NO: S0-12822

Received: 11 OCT 90

Ms. Sandra Watson
Southern Wood Piedmont (SP)
P. O. Box 5447
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
12822-41	RB-1	Client
12822-42	FB-1	

PARAMETER	12822-41	12822-42
Suspended Solids, mg/l	<5.0	<5.0
Total Organic Carbon, mg/l	<1.0	2.4
Chloride, mg/l	<1.0	<1.0

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Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
12822-43	TB-2 10-10-90	Client

PARAMETER	12822-43
Semi Volatiles	
Naphthalene, mg/l	<0.010
2-Methylnaphthalene, mg/l	<0.010
1-Methylnaphthalene, mg/l	<0.010
1,1-Biphenyl, mg/l	<0.010
Acenaphthylene, mg/l	<0.010
Acenaphthene, mg/l	<0.010
Dibenzofuran, mg/l	<0.010
Fluorene, mg/l	<0.010
Phenanthrene, mg/l	<0.010
Anthracene, mg/l	<0.010
Carbazole, mg/l	<0.010
Pyrene, mg/l	<0.010
Benzo(a)Anthracene, mg/l	<0.010
Chrysene, mg/l	<0.010
Benzo(a)pyrene, mg/l	<0.010
Benzo(g,h,i)perylene, mg/l	<0.010
Pentachlorophenol, mg/l	<0.050
Fluoranthene, mg/l	<0.010
% R Surrogate-2FP (CL 21-100)	52 %
% R Surrogate-PHL (CL 10-94)	61 %
% R Surrogate-NBZ (CL 35-114)	92 %
% R Surrogate-2FBP (CL 43-116)	87 %
% R Surrogate-TBP (CL 10-123)	41 %
% R Surrogate-TPH (CL 33-141)	87 %
Date Extracted	10.23.90
Date Analyzed	11.01.90

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	SAMPLED BY
12822-43	TB-2 10-10-90	Client

PARAMETER	12822-43
Nitrogen Series	
Total Kjeldahl Nitrogen-N, mg/l	<0.10
Nitrate + Nitrite-N, mg/l	<0.050
Total Nitrogen, mg/l	<0.10
Total Phosphorus, mg/l	<0.10
Suspended Solids, mg/l	<5.0
Total Organic Carbon, mg/l	<1.0
Chloride, mg/l	<1.0

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
12822-44	Method Blank (MB) Result (Soil)	Client
12822-45	Lab Control Standard (LCS) Result (Soil)	
12822-46	LCS Expected Value (Soil)	
12822-47	LCS % Recovery (Soil)	
12822-48	LCS % Recovery Limits (Soil)	

PARAMETER	12822-44	12822-45	12822-46	12822-47	12822-48
Semi Volatiles					
Naphthalene, mg/kg dw	<0.33	2.6	3.3	79 %	39-127 %
2-Methylnaphthalene, mg/kg dw	<0.33	---	---	---	---
1-Methylnaphthalene, mg/kg dw	<0.33	---	---	---	---
1,1-Biphenyl, mg/kg dw	<0.33	---	---	---	---
Acenaphthylene, mg/kg dw	<0.33	---	---	---	---
Acenaphthene, mg/kg dw	<0.33	3.0	3.3	91 %	31-137 %
Dibenzofuran, mg/kg dw	<0.33	---	---	---	---
Fluorene, mg/kg dw	<0.33	3.3	3.3	100 %	25-150 %
Phenanthrene, mg/kg dw	<0.33	2.7	3.3	82 %	54-120 %
Anthracene, mg/kg dw	<0.33	2.6	3.3	79 %	40-125 %
Carbazole, mg/kg dw	<0.33	---	---	---	---
Pyrene, mg/kg dw	<0.33	2.6	3.3	79 %	20-150 %
Benzo(a)Anthracene, mg/kg dw	<0.33	3.5	3.3	106 %	29-112 %
Chrysene, mg/kg dw	<0.33	3.5	3.3	106 %	17-168 %
Benzo(a)pyrene, mg/kg dw	<0.33	3.8	3.3	115 %	25-160 %
Benzo(g,h,i)perylene, mg/kg dw	<0.33	4.1	3.3	124 %	10-130 %
Pentachlorophenol, mg/kg dw	<1.7	12.6	17	74 %	17-109 %
Fluoranthene, mg/kg dw	<0.33	2.6	3.3	79 %	26-137 %
% R Surrogate-2FP (CL 21-100)	93 %	---	---	96 %	25-121 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
12822-44	Method Blank (MB) Result (Soil)	Client
12822-45	Lab Control Standard (LCS) Result (Soil)	
12822-46	LCS Expected Value (Soil)	
12822-47	LCS % Recovery (Soil)	
12822-48	LCS % Recovery Limits (Soil)	

PARAMETER	12822-44	12822-45	12822-46	12822-47	12822-48
% R Surrogate-PHL (CL 10-94)	91 %	---	---	90 %	24-113 %
% R Surrogate-NBZ (CL 35-114)	101 %	---	---	101 %	23-120 %
% R Surrogate-2FBP (CL 43-116)	104 %	---	---	120 %	30-115 %
% R Surrogate-TBP (CL 10-123)	99 %	---	---	106 %	19-122 %
% R Surrogate-TPH (CL 33-141)	97 %	---	---	71 %	18-137 %
Date Extracted	10.23.90	---	---	---	---
Date Analyzed	11.01.90	---	---	---	---
pH, units	---	6.1	6.1	100 %	90-110 %
Chloride, mg/kg dw	<20	4600	4440	105 %	90-110 %
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	<15	4.79	5.0	96 %	90-110 %
Nitrate + Nitrite-N, mg/kg dw	<2.0	18.7	20	94 %	75-125 %
Total Nitrogen, mg/kg dw	<15	---	---	---	---
Total Phosphorus, mg/kg dw	<25	389	375	104 %	90-110 %
Total Organic Carbon, mg/kg dw	<0.50	270000	230000	117 %	52-134 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
12822-49	Matrix Spike (MS) Result/Dup (Soil)	Client
12822-50	MS Expected Value (Soil)	
12822-51	MS % Recovery/Duplicate (Soil)	
12822-52	MS % Recovery Limit (Soil)	
12822-53	MS % RPD (Soil)	

PARAMETER	12822-49	12822-50	12822-51	12822-52	12822-53
Semi Volatiles					
Naphthalene, mg/kg dw	2.8/2.7	3.3	85/82 %	39-127 %	3.6(<32)%
Acenaphthene, mg/kg dw	2.9/3.0	3.3	88/91 %	31-137 %	3.4(<19)%
Fluorene, mg/kg dw	3.1/2.9	3.3	94/88 %	25-150 %	6.6(<33)%
Phenanthrene, mg/kg dw	3.1/2.9	3.3	94/88 %	54-120 %	6.6(<21)%
Anthracene, mg/kg dw	2.7/2.8	3.3	82/85 %	40-125 %	3.6(<25)%
Pyrene, mg/kg dw	3.4/3.2	3.3	103/97 %	20-150 %	6.0(<36)%
Benzo(a)Anthracene, mg/kg dw	3.3/3.1	3.3	100/94 %	29-112 %	6.2(<32)%
Chrysene, mg/kg dw	3.1/2.9	3.3	94/88 %	17-168 %	6.6(<48)%
Benzo(a)pyrene, mg/kg dw	3.1/3.2	3.3	94/97 %	25-160 %	3.1(<38)%
Benzo(g,h,i)perylene, mg/kg dw	3.1/3.1	3.3	94/94 %	10-130 %	0(<56)%
Pentachlorophenol, mg/kg dw	18/18	17	105/105 %	17-109 %	0(<47)%
Fluoranthene, mg/kg dw	3.4/3.2	3.3	103/97 %	26-137 %	6.0(<33)%
% R Surrogate-2FP (CL 21-100)	---	---	95/93 %	25-121 %	---
% R Surrogate-PHL (CL 10-94)	---	---	85/86 %	24-113 %	---
% R Surrogate-NBZ (CL 35-114)	---	---	98/99 %	23-120 %	---
% R Surrogate-2FBP (CL 43-116)	---	---	97/103 %	30-115 %	---
% R Surrogate-TBP (CL 10-123)	---	---	103/103 %	19-122 %	---
% R Surrogate-TPH (CL 33-141)	---	---	106/105 %	18-137 %	---
pH, units	---	---	---	---	---
Chloride, mg/kg dw	108/109	100	108/109 %	75-125 %	0.92(<30)%

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P. O. Box 5447
Spartanburg, SC 29304

CC: Mark Radecke

Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
12822-49	Matrix Spike (MS) Result/Dup (Soil)	Client
12822-50	MS Expected Value (Soil)	
12822-51	MS % Recovery/Duplicate (Soil)	
12822-52	MS % Recovery Limit (Soil)	
12822-53	MS % RPD (Soil)	

PARAMETER	12822-49	12822-50	12822-51	12822-52	12822-53
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/kg dw	5.04/4.9	5.0	101/98 %	99 %	3.0(<30)%
Nitrate + Nitrite-N, mg/kg dw	22.7/22.7	20	114/114 %	75-125 %	0(<30)%
Total Phosphorus, mg/kg dw	103/108	125	82/86 %	75-125 %	4.8(<40)%
Total Organic Carbon, mg/kg dw	---	---	---	---	---

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
12822-54	Method Blank (MB) Result (Liquid)	Client
12822-55	Lab Control Standard (LCS) Result	
12822-56	LCS Expected Value (Liquid)	
12822-57	LCS % Recovery (Liquid)	
12822-58	LCS % Recovery Limits (Liquid)	

PARAMETER	12822-54	12822-55	12822-56	12822-57	12822-58
Semi Volatiles					
Naphthalene, mg/l	<0.010	---	---	---	---
2-Methylnaphthalene, mg/l	<0.010	---	---	---	---
1-Methylnaphthalene, mg/l	<0.010	---	---	---	---
1,1-Biphenyl, mg/l	<0.010	---	---	---	---
Acenaphthylene, mg/l	<0.010	---	---	---	---
Acenaphthene, mg/l	<0.010	0.050	0.050	100 %	46-118 %
Dibenzofuran, mg/l	<0.010	---	---	---	---
Fluorene, mg/l	<0.010	---	---	---	---
Phenanthrene, mg/l	<0.010	---	---	---	---
Anthracene, mg/l	<0.010	---	---	---	---
Carbazole, mg/l	<0.010	---	---	---	---
Pyrene, mg/l	<0.010	0.060	0.050	120 %	26-127 %
Benzo(a)Anthracene, mg/l	<0.010	---	---	---	---
Chrysene, mg/l	<0.010	---	---	---	---
Benzo(a)pyrene, mg/l	<0.010	---	---	---	---
Benzo(g,h,i)perylene, mg/l	<0.010	---	---	---	---
Pentachlorophenol, mg/l	<0.050	0.090	0.10	90 %	9-103 %
Fluoranthene, mg/l	<0.010	---	---	---	---
% R Surrogate-2FP (CL 21-100)	56 %	---	---	42 %	25-121 %
% R Surrogate-PHL (CL 10-94)	47 %	---	---	27 %	24-113 %
% R Surrogate-NBZ (CL 35-114)	82 %	---	---	103 %	23-120 %
% R Surrogate-2FBP (CL 43-116)	83 %	---	---	101 %	30-115 %
% R Surrogate-TBP (CL 10-123)	59 %	---	---	105 %	19-122 %
% R Surrogate-TPH (CL 33-141)	83 %	---	---	118 %	18-137 %

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CC: Mark Radecke

Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
12822-54	Method Blank (MB) Result (Liquid)	Client
12822-55	Lab Control Standard (LCS) Result	
12822-56	LCS Expected Value (Liquid)	
12822-57	LCS % Recovery (Liquid)	
12822-58	LCS % Recovery Limits (Liquid)	

PARAMETER	12822-54	12822-55	12822-56	12822-57	12822-58
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/l	<0.10	5.45	5.00	109 %	90-110 %
Nitrate + Nitrite-N, mg/l	<0.050	0.191	0.20	96 %	75-125 %
Total Nitrogen, mg/l	<0.10	---	---	---	---
Total Phosphorus, mg/l	<0.10	1.58	1.50	105 %	90-110 %
Suspended Solids, mg/l	<5.0	380	399	95 %	60-140 %
Total Organic Carbon, mg/l	<1.0	6.5	6.12	106 %	60-140 %
Chloride, mg/l	<1.0	230	222	104 %	90-110 %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
12822-59	Matrix Spike (MS) Result/Dup (Liquid)	Client
12822-60	MS Expected Value (Liquid)	
12822-61	MS % Recovery/Duplicate (Liquid)	
12822-62	MS % Recovery Limit (Liquid)	
12822-63	MS % RPD (Limit) (Liquid)	

PARAMETER	12822-59	12822-60	12822-61	12822-62	12822-63
Semi Volatiles					
Acenaphthene, mg/l	0.05/0.05	0.050	100/100 %	46-118 %	0(<31)%
Pyrene, mg/l	0.06/0.06	0.050	120/120 %	26-127 %	0(<31)%
Pentachlorophenol, mg/l	0.09/0.10	0.10	90/100 %	9-103 %	11(<50)%
% R Surrogate-2FP (CL 21-100)	---	---	42/47 %	25-121 %	---
% R Surrogate-PHL (CL 10-94)	---	---	27/30 %	24-113 %	---
% R Surrogate-NBZ (CL 35-114)	---	---	103/112 %	103/112 %	---
% R Surrogate-2FBP (CL 43-116)	---	---	101/99 %	30-115 %	---
% R Surrogate-TBP (CL 10-123)	---	---	105/108 %	19-122 %	---
% R Surrogate-TPH (CL 33-141)	---	---	118/134 %	18-137 %	---
Nitrogen Series					
Total Kjeldahl Nitrogen-N, mg/l	3.95/4.34	4.00	99/109 %	75-125 %	9.6(<30)%
Nitrate + Nitrite-N, mg/l	0.19/0.19	0.20	95/95 %	75-125 %	0(<25)%
Total Phosphorus, mg/l	0.43/0.42	0.50	86/84 %	75-125 %	2.4(<25) %
Suspended Solids, mg/l	---	---	---	---	---
Total Organic Carbon, mg/l	100/99	102.5	98/97 %	60-140 %	1.0(<40) %
Chloride, mg/l	4.74/4.63	5.0	95/93 %	75-125 %	2.3(<25) %

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , REPORT FOR LIQUID SAMPLES	SAMPLED BY
12822-64	Report Completion Date	Client

PARAMETER	12822-64
Date Reported	11.13.90

Methods: EPA SW-846
* Because of high levels of components, these samples had to be diluted. Thus, surrogates were not recovered.

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Project: NC09001 Wilmington, NC

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
12822-65	Methods	Client

PARAMETER	12822-65
Semi Volatiles	
Naphthalene	8270
2-Methylnaphthalene	8270
1-Methylnaphthalene	8270
1,1-Biphenyl	8270
Acenaphthylene	8270
Acenaphthene	8270
Dibenzofuran	8270
Fluorene	8270
Phenanthrene	8270
Anthracene	8270
Carbazole	8270
Pyrene	8270
Benzo(a)Anthracene	8270
Chrysene	8270
Benzo(a)pyrene	8270
Benzo(g,h,i)perylene	8270
Pentachlorophenol	8270
Fluoranthene	8270
pH	150.1
Nitrogen Series	
Total Kjeldahl Nitrogen-N	351.2
Nitrate + Nitrite-N	353.1
Total Phosphorus	365.1
Total Organic Carbon	415.1
Chloride	325.2

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REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	SAMPLED BY
12822-65	Methods	Client

PARAMETER	12822-65
Suspended Solids	160.2

Methods: EPA SW-846
ND = Not Detected

J. W. Andrews

J. W. Andrews, Ph. D.

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. N/A

CHAIN-OF-CUSTODY RECORD

Project Number NC09001

Project Location ~~NC09001~~ Wilmington, NC

Laboratory Savannah Laboratories

Sampler(s)/Affiliation M. RADECKE G&M
D. RUMFORD III G&M

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	1 Liter amber glass + ~~TOC~~ PAH's 4°C	250 ml plastic Total N Total P 4°C H_2SO_4	160 ml plastic TSS 4°C	250 ml amber glass TOC 4°C H_2SO_4	250 ml plastic Cl^- 4°C	500 ml glass KOOI + pH Cl^- TN TP TOC 4°C				TOTAL
RB-1	L	10/10/90 16:20	12822	1		1	1	1					4
FB-1	L	10/10/90 16:25		1		1	1	1					4
TB-2	L	10/10/90		1	1	1	1	1					5
LF1BL/9101C	S	10/10/90 16:45							1				1
LF1BU/9101A	S	10/10/90 16:15							1				1
LF1BM/9101B	S	10/10/90 16:40							1				1
LF1BS/9101D	S	10/10/90 17:00							1				1
LF1ES/9104D	S	10/10/90 14:00							1				1
LF1EM/9104B	S	10/10/90 13:45							1				1
LF1EL/9104C	S	10/10/90 13:50							1				1
LF1EU/9104A	S	10/10/90 13:40							1				1

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 23

Relinquished by: Mark Radecke Organization: Geraghty & Miller, Inc 10/10/90 19:00
Received by: Carla Longworth Organization: Savannah LAB Date 10/11/90 Time 10:00
Seal Intact? Yes No N/A

Relinquished by: Organization:
Received by: Organization: Date / / Time
Seal Intact? Yes No N/A

Special Instructions/Remarks: * ~~TOC~~ PAH's site specific constituents
* Analyze for GS per Mark Radecke 10/15/90 - GF
KOOI changed to PAH's per Mark Radecke 10/24/90. GF

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. N/A

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number NC09001

Project Location Wilmington, NC

Laboratory Savannah laboratories,

Sampler(s)/Affiliation M. RADECKE G&M
D. RUMFORD III G&M

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	500 ml Glass PAH's KOOT TP TOC Cl-42									TOTAL
LF2CM/9107B	S	10/10/90 11:20	12822	1									1
LF2CU/9107A	S	10/10/90 11:15		1									1
LF2CL/9107C	S	10/10/90 11:25		1									1
LF2CS/9107D	S	10/10/90 11:41		1									1
LF2DS/9108D	S	10/10/90 12:35		1									1
LF2DU/9108A	S	10/10/90 12:15	12822	1									1
LF2DL/9108C	S	10/10/90 12:30		1									1
LF2DM/9108B	S	10/10/90 12:20		1									1
LF1DL/9103C	S	10/10/10 13:15		1									1
LF1DU/9103A	S	10/10/90 13:05		1									1
LF1DM/9103B	S	10/10/90 13:10		1									1
LF1DS/9103D	S	10/10/90 13:20		1									1

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 12

Relinquished by: Mark E Radecke Organization: Geraghty & Miller, Inc. 10/10/90 19:00
Received by: Carla Longworth Organization: Savannah LAB Date 10/11/90 Time 10:00
Seal Intact? Yes No N/A

Relinquished by: Organization:
Received by: Organization: Date / / Time
Seal Intact? Yes No N/A

Special Instructions/Remarks: ~~KOOT~~ PAH's Site specific list KOOI changed to PAH's per Mark Radecke 10/24/90, GF
& Analyze for Grain Size per Mark Radecke 10/15/90, GF

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

Southdot 90-0138

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. N/A

CHAIN-OF-CUSTODY RECORD

Project Number NC09001

Project Location Wilmington, NC

Laboratory Savannah Laboratories

Sampler(s)/Affiliation M. RADECKE G&M
D. RUMFORD III G&M

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	500 ml Glass PAH's PH Cl- TN TP TOC 4°C									TOTAL
* LF2BU/9106A	S	10/10/90	12822	1									1
LF2BM/9106B	S	10/10/90		1									1
LF2BL/9106C	S	10/10/90		1									1
LF2BS/9106D	S	10/10/90		1									1
LF2EU/9109A	S	10/10/90		1									1
LF2EM/9109B	S	10/10/90		1									1
LF2EL/9109C	S	10/10/90		1									1
LF2ES/9109D	S	10/10/90		1									1
LF2AU/9105A	S	10/10/90		1									1
LF2AM/9105B	S	10/10/90		1									1
LF2AL/9105C	S	10/10/90		1									1
LF2AS/9105D	S	10/10/90		1									1

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 12

Relinquished by: [signature] Organization: Geraghty & Miller Inc 10/10/90 19:00
Received by: Carla Longworth Organization: Savannah LAB Date 10/11/90 Time 10:00
Seal Intact? (Yes) No N/A

Relinquished by: Organization:
Received by: Organization: Date / / Time
Seal Intact? Yes No N/A

Special Instructions/Remarks: PAH's ~~KOOL~~ Silt Specifier List
* Analyze for Grain Size per Mark Radecke 10/15/90. GF
KOOL changed to PAH's per Mark Radecke 10/24/90. GF

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. N/A

CHAIN-OF-CUSTODY RECORD

Project Number NC090001

Project Location Wilmington, NC

Laboratory Savannah Laboratories

Sampler(s)/Affiliation D. RUMFORD III G&M
M. RADECKE G&M

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	SAMPLE BOTTLE / CONTAINER DESCRIPTION: 500 ml PAH + Cd, Pb, Cr, Zn, TP, TN, Cl-, TOC, pH, 4°C									TOTAL
LF1CU/9102A	S	10/10/90 14:30	12822	1									1
LF1CM/9102B	S	10/10/90 14:30		1									1
LF1CL/9102C	S	10/10/90 14:35		1									1
LF1CS/9102D	S	10/10/90 14:50		1									1
LF1AU/9100A	S	10/10/90 15:20		1									1
LF1AM/9100B	S	10/10/90 15:28		1									1
LF1AL/9100C	S	10/10/90 15:34		1									1
LF1AS/9100D	S	10/10/90 15:42		1									1

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 8

Relinquished by: Mark E. Radecke — Organization: Geraghty & Miller, Inc. — 10/10/90 19:00
Received by: Carla Longworth — Organization: Savannah Lab — Date 10/11/90 Time 10:00
Seal Intact? (Yes) No N/A

Relinquished by: _____ Organization: _____
Received by: _____ Organization: _____ Date / / Time _____
Seal Intact? Yes No N/A

Special Instructions/Remarks: * ~~TCLP~~ Site specific List
Kool chaged PAH's per Mark Radecke 10/24/90. GF

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

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12822	-1	-2	-3	-4	-5
	9101C	9101A	9101B	9101D	9104D
2-Chlorophenol	<7.3	<7.4	<7.8	<0.35	
Phenol	↓	↓	↓	↓	
2,4-Dimethylphenol					
Trichlorophenols					
p-chloro-m-cresol					
Tetrachlorophenols	↓	↓	↓	↓	
2,4-Dinitrophenol	<37	<7	<39	<1.8	
Benzo(b,k)Fluoranthene	27J	43J	19J	<0.35	
Indeno(1,2,3-cd)pyrene	5.2J	10J	4.9J	↓	
Dibenzo(a,h)anthracene	2.3J	4.3J	2.7J		
o-cresol	<7.3	<7.4	<7.8		
m+p-cresol	↓	↓	↓	↓	

12822	-6	-7	-8	-9	-10
	9104B	9104C	9104A	9102A	9102B
2-Chlorophenol	<7.4	<7.2	<7.5	<9.4	<7.4
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol					
Trichlorophenols					
p-Chloro-m-cresol					
Tetrachlorophenols					
2,4-Dinitrophenol	<37	<36	<38	<47	<37
Benzo(b,k)Fluoranthene	120J	9.1J	29J	49J	14J
Indeno(1,2,3-cd)pyrene	14J	2.0J	8.1J	11J	3.3J
Dibenzo(a,h)anthracene	4.2J	0.76J	3.0J	5.0J	1.6J
o-cresol	<7.4	<7.4	<7.5	<9.4	<7.4
m+p-cresol	↓	↓	↓	↓	↓

12822	-11	-12	-13	-14	-15
	9102C	9102D	9100A	9100B	9100C
2-Chlorophenol	<7.5	<0.36	<8.0	<7.3	<7.3
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<38	<1.8	<40	<37	<37
Benzo(b,k)Fluoranthene	68 J	<0.36	35 J	19 J	100 J
Indeno(1,2,3-cd)pyrene	9.3 J	↓	10 J	5.2 J	17 J
Dibenzo(a,h)anthracene	4.7 J	↓	4.2 J	2.2 J	7.5 J
o-cresol	<7.5	↓	<8.0	<7.3	<7.3
m+p-cresol	↓	↓	↓	↓	↓

12822	-16	-17	-18	-19	-20
	9100D	9106A	9106B	9106C	9106D
2-Chlorophenol	<0.35	<7.7	<7.8	<7.6	<0.37
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<1.8	<39	<39	<38	<1.9
Benzo(b,k)fluoranthene	<0.35	43 J	24 J	17 J	0.78 J
Indeno(1,2,3-cd)pyrene	↓	11 J	<7.8	<7.6	0.18 J
Dibenzo(a,h)anthracene	↓	<7.7	↓	↓	<0.37
o-cresol	↓	↓	↓	↓	↓
m+p-cresol	↓	↓	↓	↓	↓

12822	-26	-27	-28 *	-29	-30
	9105B	9105C	9105D	9107B	9107A
2-Chlorophenol	<8.3	<7.1		<7.3	<7.6
Phenol	↓	↓		↓	↓
2,4-Dimethylphenol					
Trichlorophenols					
p-chloro-m-cresol					
Tetrachlorophenols	↓	↓		↓	↓
2,4-Dinitrophenol	<42	<36		<37	<38
Benzo(b,k)Fluoranthene	89J	6.2J		5.7J	43J
Indeno(1,2,3-cd)pyrene	18J	1.1J		14J	11J
Dibenzo(a,h)anthracene	<8.3	<7.1		6.2J	5.3J
o-cresol	↓	↓		<7.3	<7.6
m+p cresol	↓	↓		↓	↓

	-31	-32	-33	* -34	-35
	9107C	9107D	9108D		9108C
2-Chlorophenol	<7.5	<0.39	<0.42		<8.5
Phenol	↓	↓	↓		↓
2,4-Dimethylphenol	↓	↓	↓		↓
Trichlorophenols	↓	↓	↓		↓
p-chloro-m-cresol	↓	↓	↓		↓
Tetrachlorophenols	↓	↓	↓		1.2 J
2,4-Dinitrophenol	<38	<2.0	<2.1		<43
Benzo(b,k)Fluoranthene	38 J	<0.39	2.3 J		99 J
Indeno(1,2,3-cd)pyrene	23 J	↓	0.53 J		19 J
Dibenzo(a,h)anthracene	15 J	↓	0.23 J		9.4 J
o-cresol	<7.5	↓	<0.42		<8.5
m+p-cresol	↓	↓	↓		↓

12822	-36	-37	-38	-39	-40
	9108B	9108C	9103A	9103B	9103D
2-Chlorophenol	<7.8	<7.6	<7.6	<7.3	<7.6
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol					
Trichlorophenols					
p-chloro-m-cresol					
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<39	<38	<38	<37	<38
Benzo(b,k)Fluoranthene	82J	52J	31J	14J	18J
Indeno(1,2,3-cd)pyrene	19J	8.7J	8.0J	4.9J	4.1J
Dibenzo(a,h)anthracene	8.0J	3.9J	4.3J	1.6J	1.8J
o-cresol	<7.8	<7.6	<7.6	<7.3	<7.6
m+p-cresol	↓	↓	↓	↓	↓

	-41	-42	-43		
	RB1	FB-1	TB-2		
2-Chlorophenol	<0.010	<0.010	<0.010		
Phenol	↓	↓	↓		
2,4-Dimethylphenol	↓	↓	↓		
Trichlorophenols	↓	↓	↓		
p-Chloro-m-cresol	↓	↓	↓		
Tetrachlorophenols	↓	↓	↓		
2,4-Dinitrophenol	<0.050	<0.050	<0.050		
Benzo(b,k)Fluoranthene	<0.010	<0.010	<0.010		
Indeno(1,2,3-cd)pyrene	↓	↓	↓		
Dibenzo(a,h)anthracene	↓	↓	↓		
o-cresol	↓	↓	↓		
m+p-cresol	↓	↓	↓		

12822	-21	-22	-23	-24	-25
	9109A	9109B	9109C	9109D	9105A
2-Chlorophenol	<7.4	<7.5	<4.1	<0.36	<7.8
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol					
Trichlorophenols					
p-chloro-m-cresol					
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<37	<38	<21	<1.8	<39
Benzo(b,k)fluoranthene	35J	32J	31J	<0.36	33J
Indeno(1,2,3-cd)pyrene	9.6J	8.3J	9.4J	↓	8.6J
Dibenzo(a,h)anthracene	4.4J	3.2J	3.9J		3.9J
o-cresol	<7.4	<7.5	<4.1		<7.8
m+p-cresol	↓	↓	↓	↓	↓

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

Mark,

Additional compound results for

12822 # 5 # 28 # 34.

Thanks,

Gloria

THE ENCLOSURE IS BEING SENT TO YOU WITHOUT A PERSONAL LETTER SO THAT IT MAY REACH YOU EXPEDITIOUSLY.

RECEIVED
DEC 16 1991

12822	-1	-2	-3	-4	-5
	9101C	9101A	9101B	9101D	9104D
2-Chlorophenol	<7.3	<7.4	<7.8	<0.35	<0.34
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<37	<7	<39	<1.8	<1.7
Benzo(b,k)fluoranthene	27J	43J	19J	<0.35	1.1J
Indeno(1,2,3-cd)pyrene	5.2J	10J	4.9J	↓	<0.34
Dibenzo(a,h)anthracene	2.3J	4.3J	2.7J	↓	↓
o-cresol	<7.3	<7.4	<7.8	↓	↓
m+p-cresol	↓	↓	↓	↓	↓

12822	-26	-27	-28 *	-29	-30
	9105B	9105C	9105D	9107B	9107A
2-Chlorophenol	<8.3	<7.1	<0.45	<7.3	<7.6
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	↓
2,4-Dinitrophenol	<42	<36	<2.3	<37	<38
Benzo(b,k)Fluoranthene	89J	6.2J	2.6J	5.7J	43J
Indeno(1,2,3-cd)pyrene	18J	1.1J	<0.45	14J	11J
Dibenzo(a,h)anthracene	<8.3	<7.1	↓	6.2J	5.3J
o-cresol	↓	↓	↓	<7.3	<7.6
m+p-cresol	↓	↓	↓	↓	↓

	-31	-32	-33	-34	-35
	9107C	9107D	9108D	9108A	9108C
2-Chlorophenol (128)	<7.5	<0.39	<0.42	<0.39	<8.5
Phenol	↓	↓	↓	↓	↓
2,4-Dimethylphenol	↓	↓	↓	↓	↓
Trichlorophenols	↓	↓	↓	↓	↓
p-chloro-m-cresol	↓	↓	↓	↓	↓
Tetrachlorophenols	↓	↓	↓	↓	1.2 J
2,4-Dinitrophenol	<38	<2.0	<2.1	<2.0	<43
Benzo(b,k)fluoranthene	38 J	<0.39	2.3 J	1.4 J	99 J
Indeno(1,2,3-cd)pyrene	23 J	↓	0.53 J	<0.39	19 J
Dibenzo(a,h)anthracene	15 J	↓	0.23 J	↓	9.4 J
o-cresol	<7.5	↓	<0.42	↓	<8.5
m+p-cresol	↓	↓	↓	↓	↓

SL *SAVANNAH LABORATORIES*
& ENVIRONMENTAL SERVICES, INC.

5102 LaRoche Avenue • Savannah, GA 31404 • (912) 354-7858 • Fax (912) 352-0165

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MAR 16 1992
G & M RALEIGH

March 12, 1992

Mr. Mark Radecke
GERAGHTY & MILLER, INC.
3724 National Drive
Suite 228
Raleigh, NC 27612

Dear Mark:

Benzo(b,k)fluoranthene cannot be separated for orders SO-12822 and SO-12806.

Sincerely,

Gloria Fulwood

Gloria Fulwood

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NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

TRIANGLE LABORATORIES, INC.
801-10 CAPITOLA DRIVE
RESEARCH TRIANGLE PARK, NC 27713

Phone: (919) 544-5729
Fax: (919) 544-5491

NOV 20 1990

DATE :	* 16 NOVEMBER 1990
CLIENT ID :	* SOUTHERN WOOD PIEDMONT
P.O. NUMBER :	* 5145
TLI PROJECT No. :	* 16661

CASE NARRATIVE
MODEL 8290X

ANALYSIS OF SAMPLES FOR THE PRESENCE OF

POLYCHLORINATED DIBENZO-p-DIOXINS

AND

DIBENZOFURANS

BY

HIGH-RESOLUTION GAS CHROMATOGRAPHY /
HIGH-RESOLUTION MASS SPECTROMETRY

NOV 1 9 1990

Environmental ...

Two soil samples were received from SOUTHERN WOOD PIEDMONT in good condition October 10, 1990 and stored in a refrigerator at 4°C. The samples were extracted and analyzed according to procedures described in the Triangle Labs User Manual provided with this data package. Any particular difficulties encountered during the sample handling by Triangle Labs will be discussed in the QA/QC remark section below.

Quality Assurance/Quality Control Samples

A laboratory method blank -- identified as the TLI Blank -- is prepared along with the batch of samples.

QA/QC Remarks

The release of this particular set of SOUTHERN WOOD PIEDMONT analytical data by Triangle Labs was authorized by the Quality Assurance Officer who has reviewed each sample data package individually following a series of inspections/reviews conducted at two other levels of the data production line. When applicable, general deviations from acceptable QA/QC requirements are identified below. Comments on the effect of these deviations upon the validity and reliability of the results can be obtained from the User Manual (Data Quality Objectives; Section 5). Specific QA/QC Problems Associated with this Particular Project are:

Sample Preparation Laboratory: None

Mass Spectrometry: None

Data Review:

The 234678-HxCDF and OCDD isomers were found in the TLI Blank at levels less than one-third the calculated theoretical method quantitation limit (TMQL) for the associated samples. Blank contamination levels of one-third TMQL or less are acceptable under TLI guidelines, as discussed in section 5.1.3.2 of the Data User's Manual.

TLI Blank, Samples LF1/9110 (TLI # 37-26-1) and LF2/9111 (TLI # 37-26-2) present QC ion instabilities as a result of quantitative interferences (on DB-5 and DB-225 analyses). The affected isomers are flagged "Q" on the report. Affected analytes may be overestimated or underestimated due to this interference. Quantitative interference is described in section 5.1.2.4.1 of the Data User's Manual.

These samples have been diluted and reanalyzed on DB-5 column due to saturation in the original analysis.

Sample LF2/9111 (DIL) (TLI # 37-26-2) has been reanalyzed on DB-5 column due to arcing, present in the HpCDF mass channel.

NOV 19 1990

ENVIRONMENTAL ...

Addendum to Section 4.6 of the Data User's Manual

Effective December 15, 1989, Triangle Laboratories has adopted a new procedure for calculating the analyte specific detection limits. Under this new policy two representative noise height determinations are summed and multiplied by an empirically determined factor before the detection limit equation given in Section 4.6 of the Data User's Manual is applied. The effect of this procedure is to increase DB-225 analyses detection limits by a factor of 3.5, and DB-5 analyses detection limits by a factor of 5. This procedure will result in a more accurate estimate of detection limits.

The revised formula for DB-225 analyses is:

$$DL_{ai}^{DB-225} = \frac{2.5 * (3.5 * H_{ai}) * Q_{Bj}}{A_{Bj} * \overline{RRF} * W}$$

$$3.5 * H_{ai} = A_{noise}$$

The revised formula for DB-5 analyses is:

$$DL_{ai}^{DB-5} = \frac{2.5 * (5 * H_{ai}) * Q_{Bj}}{A_{Bj} * \overline{RRF} * W}$$

$$5 * H_{ai} = A_{noise}$$

The symbols are defined in Section 4.6 of the Data User's Manual.

As an example, consider a DB-225 confirmation analysis of a 10 g sample. The internal standard spike is 2000 pg, the 13C12-2,3,7,8-TCDF internal standard area is 12000 area units, the RRF is 1.215 and the noise height is 11 units. The 2,3,7,8-TCDF detection limit is:

$$DL_{TCDF}^{DB-225} = \frac{2.5 * (3.5 * 11) * 2000}{12000 * 1.215 * 10.0} = 1.3 \text{ ppt}$$

Should SOUTHERN WOOD PIEDMONT have any questions or comments to formulate regarding this data package please feel free to contact us.

For Triangle Laboratories,

Analyst	QA Project Officer	Laboratory Manager

SWP

TRIANGLE LABORATORIES, INC.

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DOCUMENT
CONTROL

NOV 19 1990

TRIANGLE LABORATORIES, INC.

[PSTMF 1]

PCDD/PCDF/PBDD/PBDF SAMPLE TRACKING & MANAGEMENT FORM

GENERAL INFORMATION

TLI PROJECT NUMBER: 1 66661

OTHER TLI PROJECTS: 1_____, 1_____ Client Code: DX-H

Detection limits req. 1-10ppt

CUSTOMER Name: Southern Wood Piedmont P.O. No.: 5145

RECEIVING DATE: 10 / 10 / 90 Client's Project No: NC09001

Collection Date: 10-9-90

TURN-AROUND TIME: Hardcopy 30 Days Sample Orgin: Wilmington, NC

Circle one: TSCA/FIFRA/FDA/other GLP/non GLP

DUE DATE: 11 / 09 / 90

10/10/90

SAMPLE PREPARATION LABORATORY INSTRUCTIONS

2 soil

NUMBER/TYPE of SAMPLES: ___ A ___ AA 2 B ___ C

MATRIX TYPE [No Samples]:

Soil	[2]	Water	[ ]	Ash	[ ]
Sludge	[ ]	Pulp	[ ]	Paper	[ ]
Wipes	[ ]	Oil	[ ]	Chemical	[ ]
Fish	[ ]	Blood	[ ]	Adipose	[ ]
Milk	[ ]	MMS	[ ]	Other:	____

NA% of original extract sent to GC/MS

Portion (unspiked) given to Organics (amount/initial/date) NA

ORGANICS TLI PROJECT NUMBER: 1 NA

SAMPLE FORTIFICATION

Solution ID:	USB-I	USB-S	USB-C	USB-A
Before Extraction:	[✓]	[ ]	[ ]	[ ]
Before Cleanup:	[ ]	[✓]	[✓]	[✓]

13C-DBF BS-1 Other: _____

Concentration: 0.1 ng/µL Volume: 100 µL

The XAD-2 resins or the PUF cartridges were prespiked with 1 ng of the surrogate carbon-labeled standards (USB-S & USB-C; TLI 1 tt/4).

ISOLATION PULP LOW (HIGH) (DB-5) DB-225 Others _____

(Tetra-Octa) Mono-Octa Tetra only Unchlorinated Others _____

INFORMATION ENTERED BY: PROJECT COORDINATOR INITIALS/DATE: KKC 10-10-90

REV 104 8/27/90

NOV 19 1990

[PSTMF 10]

TRIANGLE LABORATORIES, INC.

166661

PROJECT COMMUNICATION TRACKING SHEET

Use this form to record all exchanges of information between production units as well as personnel handling this project. Decisions, corrective actions and recommendations must also appear on this tracking document.

Date	Name	Comment / Decision / Resolution / Action / Observation
10/23/90	Gm	Run dilutions on 2 samples
		Extra charge @ $515 per sample
		FAX original analysis to Sandra Walton
		803-599-1087. Ship whole
		package when dilutions complete.
15Nov90	B	Data Review:
		① 123478 HxCDF should have been
		detected (S903791)
		② 123789 HxCDD - AC or flag
		PR (S904212)
		- Remarks free. -
16Nov	B	Data to SWP per Ed Marki

REV 102 4/15/90

NOV 1 9 1990

TRIANGLE LABORATORIES, INC. [PSTMF 3]

PCDD/PCDF/PBDD/PBDF SAMPLE TRACKING & MANAGEMENT FORM

SAMPLE PREPARATION LABORATORY INSTRUCTIONS

(continued)

TLI PROJECT NUMBER: 16661

Sample Size(To be extracted): 10 g ___ L Other: ___

Sample Extraction: Soxhlet Toluene EtOH Tol/EtOH
Sep. Fun. Jar SDS Lyoph/Soxhlet Fish

ASME Front/Back Halves Combined yes no

Filter Sample after Fortification yes no

Extract Solid and Filtrate Separately yes no

Combine both Extracts before Cleanup yes no

Other: _____ (see Special Instructions)

GS 10/15/90

Sample Fractionation: Acid/Base Large Acid
BioSil A Impregnated: yes no
Piggy Back
A540: 12g 50g A950
AX-21 Celite Silica Gel
Other: _____

Percent Moisture: yes no Percent Lipids: yes no

Quality Assurance / Quality Control Samples

Laboratory Method Blank (TLI Blank): yes no L

Duplicate (DUP): ID _____ yes no ___
ID _____

Matrix Spike (MS): ID _____ yes no ___

Matrix Spike Duplicate (MSD): ID _____ yes no ___

MS Solution ID: USB-MX BS-MX Other: ___

MS Solution Conc.: ___ ng/uL

MS Solution Vol.: ___ uL

INFORMATION ENTERED BY: PROJECT COORDINATOR INITIALS/DATE KKC 10-10-90

NOV 1 9 1990

[PSTMF 4]

TRIANGLE LABORATORIES, INC.

PCDD/PCDF/PBDD/PBDF SAMPLE TRACKING & MANAGEMENT FORM

HIGH-RESOLUTION MASS SPECTROMETRY LABORATORY INSTRUCTIONS

TLI PROJECT NUMBER: 16661

Recovery Standards

Solution ID: (USB-RS) 13C-DBD Others: _____

Concentration: 100 pg/uL Volume: 100 uL

Volume of Pure Solvent : NA uL

HRGC/HRMS Method

(2378X) 551 1613 BROMO DD/DF Other: _____

System Definition

Mono-Octa Tri-Octa (Tetra-Octa) Tetra Other: _____

Confirmation Analyses Required (yes) no

Duplicate Injection required on : NA

INFORMATION ENTERED BY: PROJECT COORDINATOR INITIALS/DATE: KKC 10-10-90

RUN TYPE	FULL-SCREEN ANALYSES	CONFIRMATION ANALYSES
1-CAL date	10 / 13 / 90	__ / __ / __
CON-CAL File	8903783	
RETCHECK File	8903784	
For GC/MS Files	8903789 to 8903791	to
CON-CAL File		
RETCHECK File		
For GC/MS Files	to	to
CON-CAL File		
RETCHECK File		
For GC/MS Files	to	to

INFORMATION ENTERED BY: GC/MS CLERK INITIALS / DATE: M. Smith 10/19/90

REV 105 8/27/90

NOV 1 9 1990

TRIANGLE LABORATORIES, INC.

ENVIRONMENTAL [illegible] IPSTMF 51

PCDD/PCDF/PBDD/PBDF SAMPLE TRACKING & MANAGEMENT FORM

REPORT GENERATION AND DATA REVIEW INSTRUCTIONS

TLI PROJECT NUMBER: 16661

Report Results on Dry-Weight Basis: (yes) no Type: A AA (B) C

Analyte Concentration Units: ppt pg (ppb) ng ppq

Toxic Equivalent Factors: yes (no)

NCASI Report Format: yes (no)

QUALITY ASSURANCE / QUALITY CONTROL REQUIREMENTS

INFORMATION ENTERED BY: PROJECT COORDINATOR INITIALS / DATE: KKC 10-10-96

REV 104 8/27/90

NOV 19 1990

TRIANGLE LABORATORIES, INC.

[PSTMF 7]

SWP

PCDD/PCDF/PBDD/PBDF SAMPLE PREPARATION TRACKING & MANAGEMENT FORM

- 166661

EXTRACTION DATE: 10/10/90 Spiking Dates: 10/10/90 _/_/_ _/_/_ CB 10/15/90 _/_/_

SAMPLE INFORMATION

WET LAB No:	TLI Sample ID	Gross Weight	Sample Size g / mL	USB-I Vol. µL	USB-I Ex/Cl Init.	USB-S Vol. µL	USB-S Ex/Cl Init.	USB-C Vol. µL	USB-C Ex/Cl Init.	USB-AC Vol. µL	USB-AC Ex/Cl Init.	USB-MX Volume µL	USB-MX Extr. Init.	Sple left y/n	Dry Wght g	Msr Lipd %
0	TLI Blank			QS 100µl	WK					100µl	MH					
1	37-26-1	531.0	11.02	QS 100µl	WK					100µl	MH			Y	9.46	14.18
2	37-26-2	450.1	11.10g	QS 100µl	WK					100µl	MH			Y	9.40	15.28

*Gross weight of sample container plus sample before a liquot removal.

LABORATORY ID: High Level Lab

(B)- Blank Thimbles

(1)- Dark brown Sandy Soil, ~~some~~ rocks

(2) " " " " "

INITIALS OF BOTH THE SPIKER AND OBSERVER MUST BE ENTERED.

Indicate Below the TLI Identification Number of the Sample Fortification Solutions:

USB-I : $11-7-1A WK 0.1ng/µl Exp 3/11/91

USB-AC S $11-13-1B 0.1ng/µl Exp 11 Mar 91 MH

USB-S : _____

USB-MX : _____

USB-C : _____

Other : _____

LOT # (solvents): Toluene Lot # 904956

for extraction _____

fractionation: _____

REV 104 8/27/90

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NOV 19 1990

SWP ENVIRONMENTAL AFFAIRS

TRIANGLE LABORATORIES, INC.

[PSTMF 8]

PCDD/PCDF/PBDD/PBDF SAMPLE TRACKING & MANAGEMENT FORM

1 66661

SAMPLE INFORMATION

WET LAB No:	TLI Sample ID	Client Sample ID	GC/MS File Name Column: DB5	S	Confirm yes/no	Confirm File Name Column: DB225	S	USB-RS volume soln ID	USB-RS Initial date	ANALYSIS COMMENTS
0	TLI Blank		$903789	✓	NO			100 ml $12-14-3C	C.P. 11/18/90	
1	37-26-1	LF1/9110	* S904212 $903790	✓	YES	U902306		↓	↓	
2	37-26-2	LF1/9111	* T904958 $903791	✓	YES	U902307		↓	↓	
		ec NOV 15 '90 TP								

S = DATA ARCHIVED/SHIPPED *Reshoot, saturation, process these, DC 10/23/90.

Reason for Reextraction:

REV 104 8/27/90

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SWP ENVIRONMENTAL [illegible]

TRIANGLE LABORATORIES, INC.

PCDD/PCDF/PBDD/PBDF SAMPLE TRACKING & MANAGEMENT FORM

[PSTMF 9]

1 Cololol

SAMPLE EXTRACT INFORMATION

WET LAB No:	TLI Sample ID	EXTRACT CHAIN OF CUSTODY						
		FROM WET LAB		TO MASS SPEC LAB		TO ARCHIVE		
		DATE AND TIME SAMPLE RELEASED	INITIAL	DATE AND TIME SAMPLE ACCEPTED	INITIAL	DATE AND TIME SAMPLE ARCHIVED	INITIAL	COMMENTS
0	TLI Blank	10/17/90 22:00	JS	10/17/90 2330	SB			
1	37-26-1	↓	↓	↓	↓			
2	↓ 2	↓	↓	↓	↓			

REV 104 8/27/90

TRIANGLE LABORATORIES, INC

MASS SPECTROMETER RUN SHEET

FULL SCREEN ANALYSES

CASE ID: Southern Wood Piedmont	TLI PROJECT ID: 166661	
DATE :	SPECTROSCOPIST:	MS # 707

SAMPLE ID:	FILE NAME:	OPERATOR:	DATE	TIME	COMMENTS
RICHK	$903784	CP	10/18/90	712	
C.Cal	$903783	VC		430	
TLI Blank	$903789	CP		1224	
LFI/9110	90			1328	
LFI/9111	91	HSK		1434	

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NOV 19 1990

ENVIRONMENTAL AFFAIRS

REV 2 12/1/88

TRIANGLE LABORATORIES, INC

MASS SPECTROMETER RUN SHEET

CONFIRMATION ANALYSES

CASE ID: JWP			TLI PROJECT ID: 16661		
DATE : 10/21/90			SPECTROSCOPIST:		MS # 70W
SAMPLE ID:	FILE NAME:	OPERATOR:	DATE	TIME	COMMENTS
RTCHK	U902297	JA	10/21/90	921	
C-Cal	98	↓	↓	1013	
LF1/9110	U902306	JA	10-21-90	1642	
LF1/9111	07	JA	↓	1732	

RECEIVED
NOV 19 1990
ENVIRONMENTAL AFFAIRS

REV 2 12/1/88

NOV 19 1990
ENVIRONMENTAL

% Moisture Calculation
Project Number: 6661

Sample Number	Client ID	Vial + Moisture Sample Weight	Empty Vial Weight	Dry Vial + Moisture Sample Weight	% Moisture	Actual Sample Weight	Dry Actual Sample Weight
1	LF1/9110	27.4108	13.2100	25.3972	14.18	11.0200	9.46
2	LF1/9111	27.2169	13.6488	25.1431	15.28	11.1000	9.40

SWP

PERCENT MOISTURE FORM

NOV 19 1990

PROJECT ENVIRONMENTAL AFFAIRS

66661

SAMPLE I.D.	A VIAL+SAMPLE	B MT VIAL	C WET WT.	<-- D --> FIRST DRY	SECOND	THIRD	(A-D) H2O LOST	(A-D)/CX100 %H2O
	10/10/90 gs	10/10/90 gs		10/11/90 wk	10/12/90 wk	10/13/90 wk		
1	27.4108	13.2100		25.4200	25.4021	25.3972		
2	27.2169	13.6488		25.1633	25.1484	25.1431		

GERAGHTY & MILLER, INC.
Environmental Services

Laboratory Task Order No. N/A

CHAIN-OF-CUSTODY RECORD

Project Number NC09001

Project Location WILMINGTON, NC

Laboratory TRIANGLE LABORATORIES INC

Sampler(s)/Affiliation M. RADECKE G&M
D. RUMFORD III G&M

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Code	Date/Time Sampled	Lab ID	250ml amber PCBD/PCDF glass Cl4-Cl8 with 2,3,7,8 confirmation									TOTAL
LF1 / 9110	S	10/9/90		1									1
LF2 / 9111	S	10/9/90		1									1

Sample Code: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 2

Relinquished by: Mark E Radecke	Organization: Geraghty & Miller, Inc	10/9/90 19:00	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	
Relinquished by:	Organization:		Seal Intact?
Received by: Brad Hunt	Organization: TRIANGLE LABS Inc	Date 10/10/90 Time 12:45PM	(Yes) No N/A

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Federal Express (Specify) ☐ Lab Courier ☐ Other _____ (Specify)

OCT 1 9 1990

Custody Seal: Present / Absent // Intact / Not Intact	TLI Project Number	16661	Book 37
Chain of Custody: Present / Absent	Client	Geraghty & Miller Inc	
Sample Tags: Present / Absent	Date Received at TLI	10/10/90 By Bill Hunt	Page 24
Sample Tag Numbers: Listed / Not listed on Chain of Custody			
SMO Forms: Present / Absent			
Packaging: Styro foam Cooler — Ice Present Yes / No	Carrier and Number	Fed X 8061811516	

TLI	Sample ID Client	Matrix	Storage Location	To Lab Date/ Initial	To Storage Date/ Initial	To Lab Date/ Initial	To Storage Date/ Initial	To Lab Date/ Initial	To Storage Date/ Initial	To Archive Date/ Initial
37-26.1	LF1/9110	Soil	Cooler #1							
37-26.2	LF2/9111	↓	↓							

Receiving Remarks: (2) Samples Received In good Condition.

Archive Remarks:

NOV 19 1990

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

10/31/90

FILE NAME....: S903789 CLIENT ID....: SWP TLI NUMBER....: n/a
CONCAL (VER).: S903783 SAMPLE ID....: TLI BLANK
PROJECT NUMBER: 16661 ICAL DATE....: 10/13/90
ANALYST.....: CP ANALYSIS DATE: 10/18/90
SAMPLE SIZE..: 9.000 g SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE...: SPX23710 SHIPMENT NO...: n/a

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		0.008				—
12378-PeCDD	ND		0.005				—
123478-HxCDD	ND		0.005				—
123678-HxCDD	ND		0.003				—
123789-HxCDD	ND		0.005				—
1234678-HpCDD	ND		0.005				—
OCDD	0.01				0.94	51:49	—
2378-TCDF	ND		0.005				—
12378-PeCDF	ND		0.005				—
23478-PeCDF	ND		0.005				—
123478-HxCDF	ND		0.003				—
123678-HxCDF	ND		0.003				—
234678-HxCDF	0.002				1.15	41:15	Q
123789-HxCDF	ND		0.005				—
1234678-HpCDF	ND		0.003				—
1234789-HpCDF	ND		0.005				—
OCDF	ND		0.01				—
TOTAL TCDD	ND		0.008				—
TOTAL PeCDD	EMPC			0.002			—
TOTAL HxCDD	ND		0.005				—
TOTAL HpCDD	EMPC			0.002			—
TOTAL TCDF	ND		0.005				—
TOTAL PeCDF	ND		0.005				—
TOTAL HxCDF	0.002	1			1.15		Q
TOTAL HpCDF	ND		0.003				—

KU 10/31/90

X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

10/31/90

FILE NAME....: S903789 CLIENT ID....: SWP TLI NUMBER....: n/a
CONCAL (VER).: S903783 SAMPLE ID....: TLI BLANK
PROJECT NUMBER: 16661 ICAL DATE....: 10/13/90
ANALYST.....: CP ANALYSIS DATE: 10/18/90
SAMPLE SIZE..: 9.000 g SAMPLE MATRIX: n/a SAMPLE ORIGIN: n/a
DATE RECEIVED.: / / DATE COLLECTED: / /
SPIKE FILE...: SPX23710 SHIPMENT NO...: n/a

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37Cl-TCDD	0.57	50.9		31:13	—
13C12-PeCDF 234	0.96	86.2	1.54	36:09	—
13C12-HxCDF 478	0.84	75.3	0.53	40:17	—
13C12-HxCDD 478	1.0	90.8	1.20	41:26	—
13C12-HpCDF 789	0.90	80.8	0.44	47:07	—

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	0.92	82.8	0.53	42:24	—
13C12-HxCDF 234	1.2	110	0.51	41:14	Q

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	0.57	51.1	0.80	30:24	—
13C12-2378-TCDD	0.58	52.6	0.84	31:12	—
13C12-PeCDF 123	0.84	75.6	1.57	35:11	—
13C12-PeCDD 123	1.1	98.5	1.55	36:38	—
13C12-HxCDF 678	0.81	73.3	0.52	40:26	—
13C12-HxCDD 678	1.1	102	1.18	41:34	Q
13C12-HpCDF 678	0.83	75.1	0.46	44:53	—
13C12-HpCDD 678	0.87	78.0	1.05	46:26	—
13C12-OCDD	1.4	63.1	0.90	51:49	—

KC 10/31/90

X237_RPT rev:3.03

2

	Initial	Date
B-File/Header Changes	G.A.	10/31/90
Manual Integrations	KU	10/31/90
Transcription	KU	10/31/90
Dbase Corrections	KU	10/31/90

N.plot

RECEIVED NOV 19 1990 ENVIRONMENTAL AFFAIRS

Page No. 1 Listing of S903789B.dbf
10/26/90

Matched GC Peaks / Ratio / Ret. Time

noise=1697 (320)

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
304		0.49	27:22	104.87	F	F	0.900	
		0.50	27:44	49.36	F	F	0.912	
		1.54	29:02	41.47	F	F	0.955	
	D	1.29	29:42	75.01	F	F	0.977	S:N
		0.95	30:16	53.55	F	F	0.996	
		0.80	30:26	113.20	T	T	1.001	
		1.57	30:43	73.37	F	F	1.010	
		0.37	31:01	47.10	F	F	1.020	
		1.27	31:25	40.22	F	F	1.033	
	D	2.24	33:48	78.17	F	F	1.112	Rw
		3.87	34:22	33.52	F	F	1.130	
304		*** Total ***		709.84	# of Peaks:		11	
316		0.70	29:58	566.91	T	F	0.986	
		0.80	30:24	103609.61	T	T	1.000	
		0.76	30:54	823.99	T	F	1.016	
316		*** Total ***		105000.51	# of Peaks:		3	
320		2.73	28:54	63.49	F	F	0.926	
	D	0.52	29:46	26.44	F	F	0.954	S:N
		0.53	30:22	44.28	F	F	0.973	
		1.16	31:56	100.13	F	F	1.024	
		0.48	33:02	33.84	F	F	1.059	
	D	1.88	33:49	36.08	F	F	1.084	Rw
		0.73	34:54	53.29	T	F	1.119	
		0.71	35:11	447.37	T	F	1.128	
320		*** Total ***		804.92	# of Peaks:		8	
328		0.00	31:13	62641.29	T	T	1.001	
328		*** Total ***		62641.29	# of Peaks:		1	
332		0.83	31:00	112842.11	T	T	0.994	
		0.84	31:12	61556.12	T	T	1.000	
332		*** Total ***		174398.23	# of Peaks:		2	
340	D →	0.43	31:37	52.33	F	F	0.899	← Rw
		0.97	33:54	15.50	F	F	0.964	
	D	3.37	34:05	69.16	F	F	0.969	S:N
		0.66	36:29	25.08	F	F	1.037	
340		*** Total ***		162.07	# of Peaks:		4	
352		1.48	34:03	934.43	T	F	0.968	
		1.63	34:41	590.58	T	F	0.986	
		1.57	35:11	61925.59	T	T	1.000	
		1.73	35:34	2445.00	T	F	1.011	
		1.54	36:09	82596.86	T	T	1.027	
		1.66	37:30	1228.90	T	F	1.066	
352		*** Total ***		149721.36	# of Peaks:		6	

3

NOV 1 8 1990

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
356	D	3.02	35:10	34.55	F	F	0.960	S:N
		0.77	35:22	148.33	F	F	0.965	
356	keep	*** Total ***		182.88	# of Peaks:		2	
368		0.71	35:22	129.01	F	F	0.965	
		1.55	36:38	42342.85	T	T	1.000	
		1.87	37:18	294.25	F	F	1.018	
368		*** Total ***		42766.11	# of Peaks:		3	
374	D	0.93	39:42	22.82	F	F	0.982	S:N
	ck	~~1.00~~ 1.15	41:15	~~293.86~~ 286.4	~~F~~	T	1.020	
	D	1.47	41:22	23.87	F	T	1.023	S:N
		0.54	41:35	17.62	F	F	1.028	
374		*** Total ***		358.17	# of Peaks:		4	
384		0.58	38:47	229.31	T	F	0.959	
		0.59	38:59	453.68	T	F	0.964	
		0.53	40:17	105800.51	T	T	0.996	
		0.52	40:26	116899.36	T	T	1.000	
		0.51	41:14	154126.85	T	T	1.020	Q
		0.53	42:24	97789.58	T	T	1.049	
384		*** Total ***		475299.29	# of Peaks:		6	
390	D	2.94	41:15	50.22	F	F	0.992	S:N
		0.66	41:36	35.04	F	T	1.001	
		2.35	42:00	32.82	F	T	1.010	
	D	1.02	42:24	15.38	F	F	1.020	Rw
390		*** Total ***		133.46	# of Peaks:		4	
402		1.20	41:26	70009.15	T	T	0.997	
		1.18	41:34	102028.43	T	T	1.000	Q
		1.21	42:03	101557.82	T	T	1.012	
402		*** Total ***		273595.40	# of Peaks:		3	
408	D	0.78	44:53	80.45	F	T	1.000	S:N
		2.06	45:32	53.58	F	F	1.014	
408		*** Total ***		134.03	# of Peaks:		2	
418		0.46	44:53	88238.21	T	T	1.000	
		0.56	46:26	70.58	F	F	1.035	
		0.44	47:07	72427.26	T	T	1.050	
		1.26	48:45	186.40	F	F	1.086	
418		*** Total ***		160922.45	# of Peaks:		4	
424	D	4.39	44:54	69.46	F	F	0.967	not Repta
		1.38	45:21	165.17	F	F	0.977	
	D	1.94	46:27	85.06	F	T	1.000	S:N
	D	3.31	47:07	61.93	F	F	1.015	not Repta
		1.11	49:24	29.33	T	F	1.064	
424		*** Total ***		410.95	# of Peaks:		5	4
436		1.05	46:26	66155.25	T	T	1.000	

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
436		*** Total ***		66155.25	# of Peaks:		1	
458		2.31	49:51	32.99	F	F	0.962	
		1.40	50:43	25.26	F	F	0.979	
		0.94	51:49	480.25	T	T	1.000	
458		*** Total ***		538.50	# of Peaks:		3	
470		0.90	51:49	50926.01	T	T	1.000	
470		*** Total ***		50926.01	# of Peaks:		1	

*** End of Report ***

5

NOV 1 9 1990

10/26/90

Listing of S9037891.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
202	10:28	9.41	13:31	22.40	16:50	15.03	18:41	9.94
	10:49	12.81	14:14	22.83	16:57	20.48	18:49	7.06
	10:57	48.91	14:31	16.09	17:12	17.65	19:02	32.32
	11:13	21.12	14:52	60.14	17:22	20.66	19:15	39.76
	11:24	19.79	15:25	16.31	17:30	71.13	19:23	44.53
	12:04	27.31	15:50	32.55	17:55	38.35	19:32	7.08
	12:18	9.59	16:22	25.01	18:12	33.06	20:12	24.94
	12:27	11.00	16:34	10.54	18:18	46.88	20:20	137.88
	12:50	18.83	16:42	7.65	18:33	36.56	20:35	18.29
204	10:28	49.50	13:26	33.30	16:40	18.83	18:56	29.08
	10:50	46.07	13:42	22.08	16:47	13.99	19:24	30.28
	11:12	38.39	14:09	39.59	17:11	68.68	19:33	17.73
	11:25	7.14	14:21	14.25	17:22	48.70	19:42	9.42
	11:37	23.78	14:31	30.17	17:31	42.07	19:51	11.73
	12:12	44.31	14:55	25.02	17:41	11.02	20:08	13.36
	12:24	14.93	15:25	46.20	17:59	48.67	20:56	38.37
	12:35	16.20	15:49	9.38	18:08	17.22	21:16	16.96
	12:52	38.83	16:04	10.33	18:27	12.89		
	13:08	26.96	16:14	12.66	18:50	22.51		
238	17:29	75.80	18:34	64.87	20:33	19.63	21:50	29.21
	17:43	10.87	18:44	63.15	20:59	73.96	22:03	39.31
	17:59	7.24	18:58	7.76	21:09	27.95	22:23	45.48
	18:11	21.31	19:11	19.27	21:27	28.37		
	18:19	11.73	19:21	32.88	21:38	51.02		
240	17:28	67.42	18:45	101.78	20:57	167.79	21:59	93.14
	17:41	110.04	19:03	69.86	21:05	266.25	22:08	131.06
	18:13	16.66	19:19	37.13	21:19	36.65		
	18:29	118.87	19:33	83.37	21:36	111.88		
	18:38	30.60	20:35	200.87	21:43	86.80		
252	18:34	125.08	20:35	102.27	21:28	46.29	22:08	65.57
	18:47	46.04	20:55	38.16	21:37	57.01	22:53	69.23
	19:03	104.30	21:03	164.91	21:46	9.40	23:01	31.37
	19:32	98.17	21:20	41.21	22:00	100.20	23:11	57.27
254	18:32	14.11	19:31	13.82	20:49	13.63	22:53	8.22
	18:42	8.85	19:39	21.62	21:16	16.47	23:12	13.91
	18:54	19.83	20:14	15.39	22:09	28.82		
	19:10	12.07	20:41	13.89	22:40	17.53		
270	22:01	7.67	23:18	12.44	24:51	14.23		
	22:10	9.07	23:31	15.54	24:58	19.65		
	22:53	10.52	24:25	11.82	25:08	17.68		
272	21:50	11.38	22:36	9.05	25:04	17.13	25:41	16.93
	22:16	11.36	23:28	18.40	25:16	32.48	26:08	10.21
286	23:32	23.90	24:44	12.92	25:14	35.56	26:20	8.21
	23:56	14.16	24:57	11.86	25:44	20.19	26:38	21.84
	24:10	18.27	25:07	7.60	26:04	13.71	26:44	19.85

Listing of S903789I.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
288	25:30	9.74						
218	11:14	12.15	13:34	40.55	15:14	34.80	18:32	42.91
	11:29	13.73	14:04	21.86	15:45	42.37	18:39	76.79
	11:59	34.45	14:15	17.58	17:22	55.35	19:26	69.66
	12:10	19.35	14:36	34.95	17:32	22.26	19:45	8.83
	12:30	43.21	14:47	31.82	18:00	45.59	20:12	63.24
	12:47	63.18	15:06	48.19	18:14	55.68		
220	11:19	18.05	14:26	45.09	16:31	27.67	18:35	19.76
	12:22	13.06	14:36	51.73	16:57	44.23	19:55	39.34
	13:03	45.24	14:52	47.91	17:25	60.46	20:15	38.00
	13:49	49.74	15:26	46.40	17:29	26.59	21:23	16.23
	14:00	19.12	15:47	20.92	17:44	54.39		
	14:11	51.44	16:14	16.36	18:11	69.46		
304	27:22	34.33	29:17	38.36	31:13	35.71	33:08	9.44
	27:35	11.90	29:42	42.29	31:18	11.81	33:38	12.46
	27:44	16.55	30:00	26.86	31:25	22.53	33:48	54.08
	28:09	10.26	30:16	26.10	31:59	8.67	34:07	12.54
	28:19	15.15	30:26	50.28	32:25	7.37	34:22	26.63
	28:34	10.18	30:43	44.80	32:36	17.36		
	29:02	25.17	31:01	12.61	32:57	9.25		
306	27:22	70.54	29:09	51.87	30:56	27.12	32:40	24.49
	27:39	9.92	29:30	13.03	31:03	34.49	33:05	21.94
	27:46	32.81	29:36	25.49	31:26	17.69	33:20	37.33
	28:05	22.86	29:41	32.72	31:36	48.70	33:30	79.28
	28:15	12.08	29:47	32.17	31:49	20.41	33:50	24.09
	28:37	24.61	30:17	27.45	32:02	9.27	34:12	114.28
	28:56	17.29	30:27	62.92	32:16	71.52	34:22	6.89
	29:02	16.30	30:45	28.57	32:22	32.17		
320	27:23	14.89	29:39	22.86	31:56	53.74	33:49	23.56
	27:31	15.56	29:46	9.10	32:07	46.43	34:03	34.43
	27:41	26.72	30:22	15.32	32:42	9.03	34:24	8.33
	28:17	19.12	30:45	54.36	33:02	11.05	34:34	18.46
	28:38	6.80	31:00	19.15	33:20	10.98	34:45	32.59
	28:54	46.48	31:27	37.43	33:28	7.04	34:54	22.57
	29:14	6.05	31:47	20.08	33:37	10.24	35:11	185.79
322	27:16	46.49	29:11	25.77	31:19	75.42	33:32	47.65
	27:47	29.01	29:32	10.29	31:33	23.87	33:44	17.92
	28:22	26.18	29:47	17.34	31:54	46.39	33:51	12.52
	28:30	11.59	29:57	30.24	32:02	26.84	34:13	22.57
	28:42	27.74	30:08	9.48	32:51	9.61	34:37	33.18
	28:46	15.25	30:23	28.96	33:01	22.79	34:56	30.72
	28:54	17.01	30:35	46.68	33:08	37.35	35:11	261.58
	29:03	17.58	30:41	23.33	33:25	47.09		
340	31:24	8.72	33:36	19.25	35:04	20.61	37:36	7.41
	31:37	15.69	33:54	7.62	35:26	31.15		
	32:04	8.46	34:05	53.32	36:29	9.97		
	32:33	7.60	34:16	12.15	36:38	8.32		

Listing of S903789I.dbf File
Raw Mass, Retention Time and Data Area

NOV 1 8 1990

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
342	31:38	36.64	33:53	7.88	35:21	7.68	36:29	15.11
	31:58	7.82	34:05	15.84	35:38	19.93		
	32:07	10.05	34:45	10.14	36:08	10.38		
356	33:26	7.58	35:10	25.95	36:09	7.55	36:38	13.43
	34:14	26.41	35:22	64.46	36:19	8.78	37:39	9.47
	34:37	6.83	35:46	10.30	36:29	6.85		
358	34:26	13.07	35:11	8.60	35:38	6.62	37:16	6.03
	34:42	6.38	35:22	83.87	36:00	11.26		
316	29:36	76.64	29:58	234.05	30:24	46044.15	30:54	356.98
318	29:58	332.86	30:24	57565.46	30:54	467.01		
328	31:13	62641.29						
332	31:00	51051.07	31:12	28029.69				
334	31:00	61791.04	31:12	33526.43				
352	34:03	557.41	35:11	37873.31	36:09	50114.24	37:30	766.68
	34:41	365.95	35:34	1550.25	36:38	203.45		
354	34:03	377.02	35:11	24052.28	35:49	28.85	37:13	62.36
	34:42	224.63	35:34	894.75	36:09	32482.62	37:30	462.22
368	35:22	53.38	36:38	25738.52	37:18	191.69		
370	34:05	30.60	35:22	75.63	36:38	16604.33	37:18	102.56
374	38:54	11.32	39:42	11.02	41:00	8.51	41:41	6.83
	39:05	8.64	39:50	11.86	41:05	6.07	42:04	19.60
	39:12	17.39	39:57	10.94	41:15	146.92	42:25	9.68
	39:26	11.06	40:19	8.75	41:22	14.21		
	39:31	7.81	40:25	21.89	41:35	6.18		
376	39:00	16.82	41:15	146.94	41:31	6.55	42:40	6.47
	39:43	11.80	41:24	9.66	41:34	11.44		
390	39:07	6.50	40:25	23.40	41:15	37.47	42:00	23.03
	40:17	28.02	40:48	6.34	41:36	13.87	42:24	7.76
392	38:15	6.16	40:35	7.81	41:34	21.17	42:22	7.62
	39:51	6.93	41:15	12.75	41:55	9.30	42:49	10.53
	40:28	17.57	41:20	10.79	42:00	9.79		
384	38:47	84.38	40:17	36559.46	40:52	309.08	42:24	33751.59
	38:59	168.29	40:26	39837.25	41:14	52311.55		
386	38:48	144.93	40:17	69241.05	41:14	101815.30		
	38:59	285.39	40:26	77062.11	42:24	64037.99		

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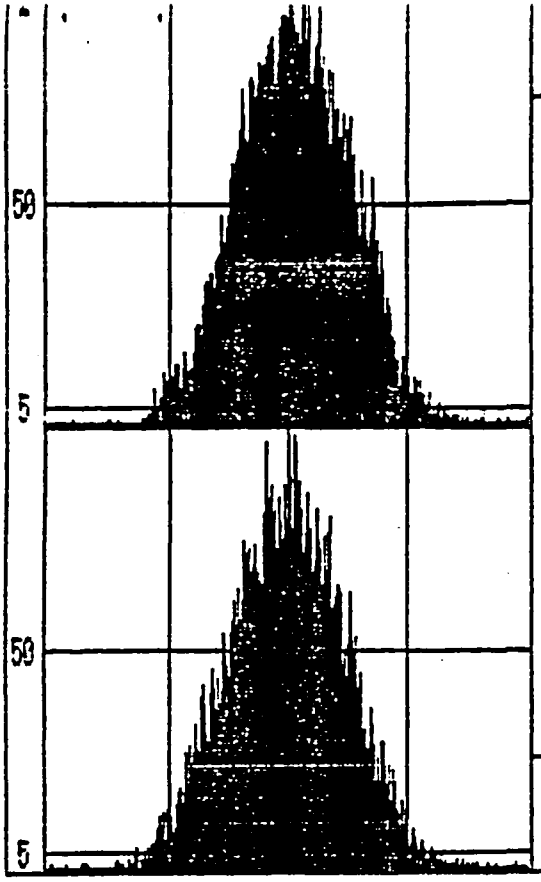
Listing of S903789I.dbf File
Raw Mass, Retention Time and Data Area

NOV 1 8 1990

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
402	41:26	38239.94	41:34	55327.00	42:03	55527.58		
404	40:35	34.33	41:26	31769.21	41:34	46701.43	42:02	46030.24
408	43:42	13.51	45:32	36.08	47:33	15.26		
	44:53	35.16	45:52	14.99	48:09	10.72		
410	43:17	22.72	44:26	23.41	45:30	17.50	47:48	10.94
	43:46	16.12	44:54	45.29	46:42	21.75	48:01	9.25
	44:00	12.83	45:13	9.59	47:25	12.48		
418	43:26	13.82	45:54	62.87	46:44	9.77	47:50	221.01
	44:53	27789.44	46:26	25.39	47:07	22050.70	48:45	104.08
420	43:35	11.00	46:02	47.93	47:07	50376.56		
	44:53	60448.77	46:17	50.70	48:31	63.05		
	45:31	804.60	46:26	45.19	48:46	82.32		
424	44:01	14.93	45:21	95.79	47:07	47.57		
	44:54	56.58	46:27	56.12	49:24	15.45		
426	44:54	12.88	45:33	20.44	47:07	14.36	49:25	13.88
	45:21	69.38	46:27	28.94	48:40	15.07		
436	46:26	33871.35						
438	46:02	13.57	46:26	32283.90	47:07	272.23		
442	50:12	9.29	52:03	18.63	53:58	11.66		
	51:45	11.91	53:17	9.19				
444	49:07	23.92	50:41	10.48	54:09	11.03		
	49:48	26.22	52:08	19.67				
458	49:51	23.01	51:49	232.14	54:57	15.50		
	50:43	14.73	53:42	19.65				
460	49:52	9.98	50:43	10.53	51:50	248.11		
470	51:49	24087.58	52:33	390.41	53:15	60.16		
472	49:53	12.48	50:54	12.43	53:06	146.68	53:37	21.88
	50:35	11.64	51:49	26838.43	53:19	34.83		

*** End of Report ***

9



Ref. mass 292.9825 Peak top
Height 6.34 volts Span 200 ppm

System file name	D85US
Data file name	D:S903789
Resolution	10000
Group number	2
Ionization mode	EI+
Switching	VOLTAGE
Ref. masses	292.9825, 416.9760

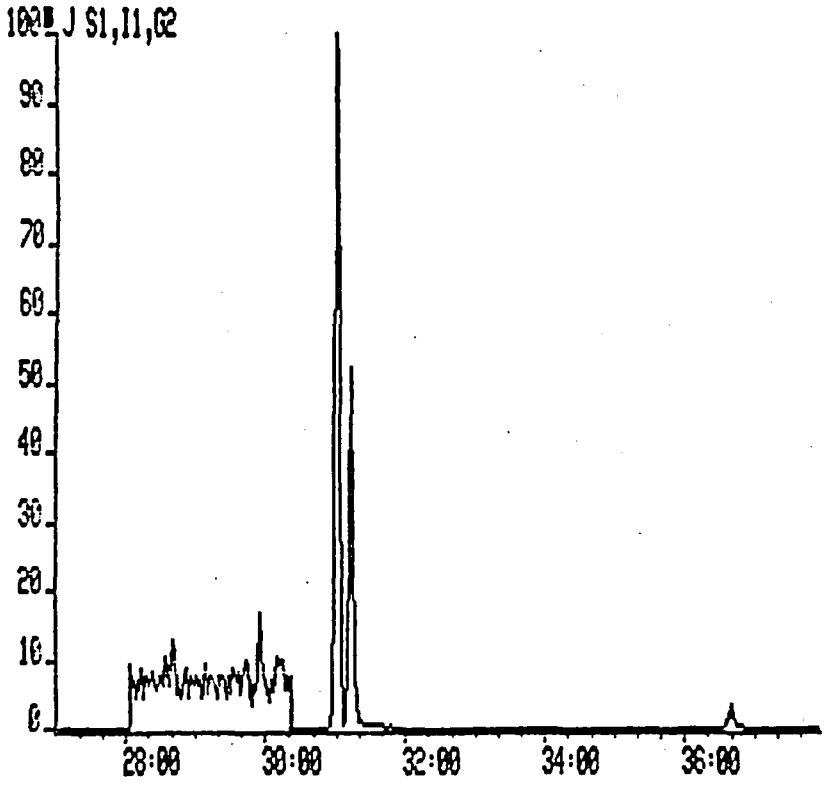
A	293	J	332	S	368
B	304	K	334	T	370
C	306	L	338	U	376
D	316	M	340	V	410
E	318	N	342		
F	320	O	352		
G	322	P	354		
H	328	Q	356		
I	331	R	358		

Channel I 330.9792 Peak top
Height 3.97 volts Span 200 ppm

RECEIVED
NOV 19 1990
ENVIRONMENTAL ANALYS

12

GR: 2' A: 252.9825 B: 303.9016 C: 305.8387 D: 315.9419 E: 317.9389
Text: TLI BLANK TLI#16661

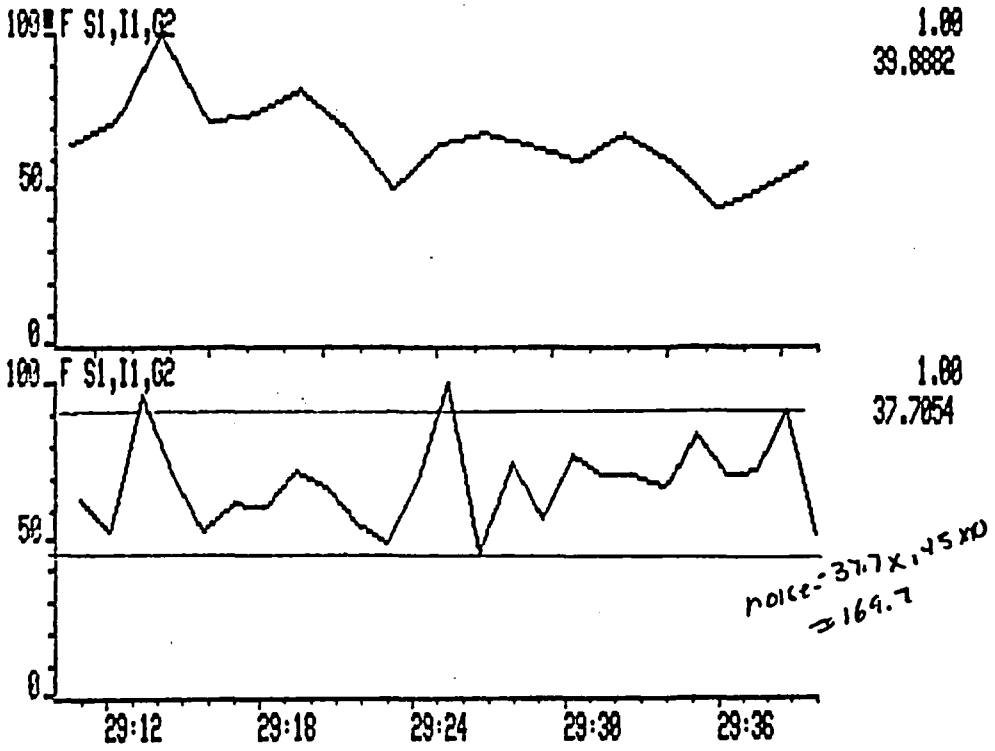


50.00
12228

RECEIVED
NOV 19 1990
ENVIRONMENTAL ANALYSIS

11

GR 2' F: 319.8965 G: 321.8936 H: 327.8947 I: 330.9732 J: 331.9368
Text: TLI BLANK TLI#16661



RECEIVED
NOV 19 1990
ENVIRONMENTAL AFFAIRS

Verified by (GC/MS) : MTB 10-18-92

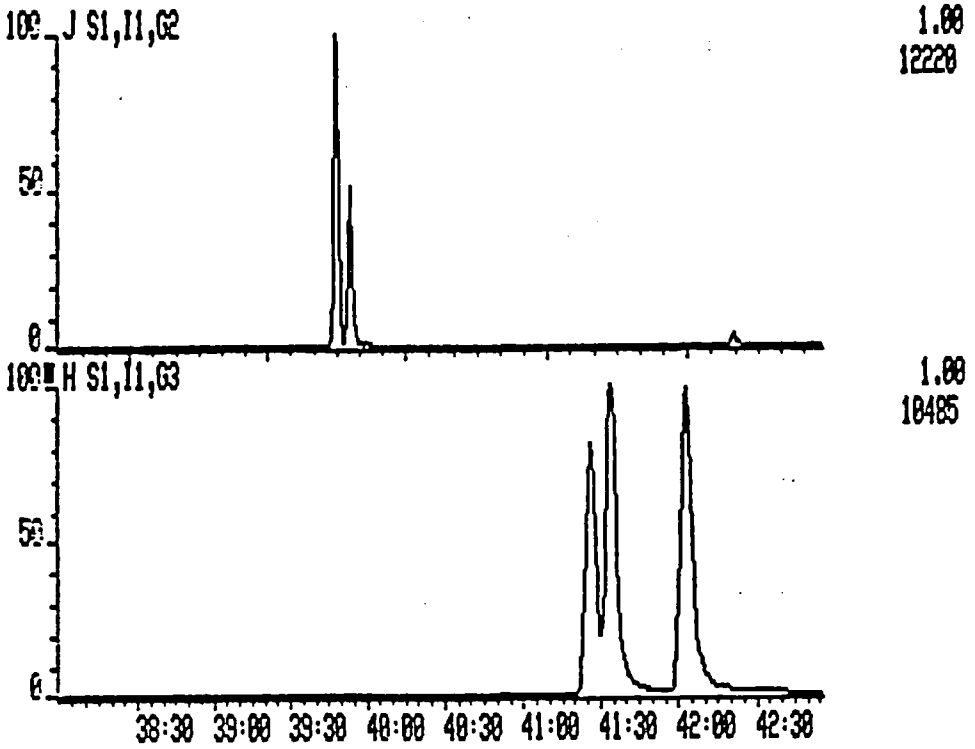
Verified by (Int. QC) : DR 10/20/

HxCDF contamination
< 1/3 TMQL
DR 10/20/90

noise = 37.7 x 1.45 x 10
= 164.7

1c

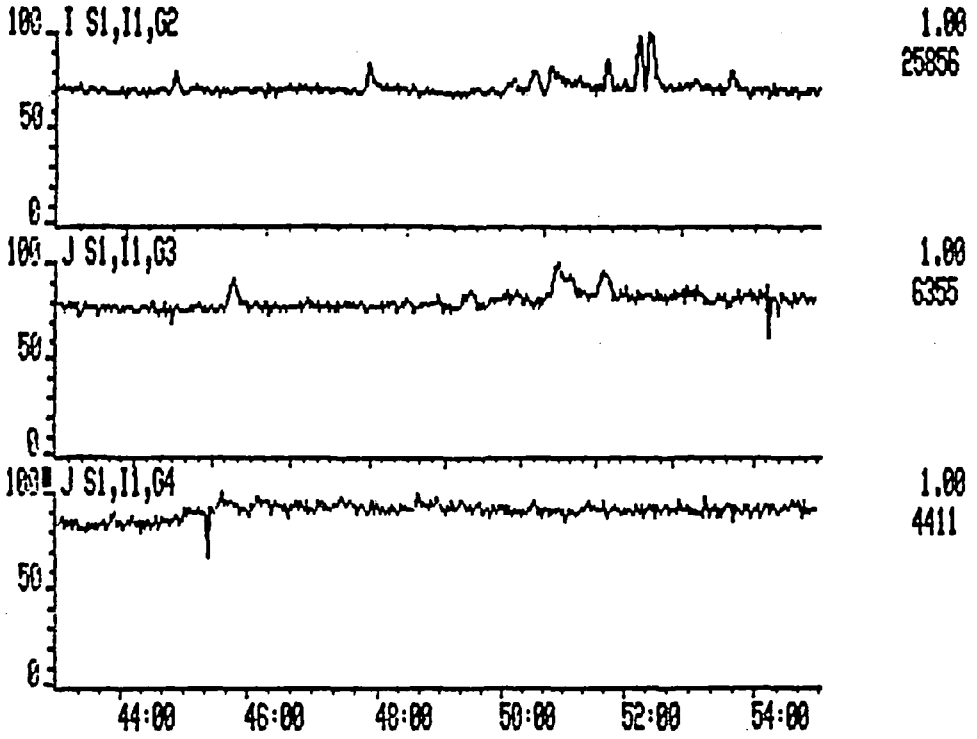
GF 3 F: 391.8127 G: 392.9760 H: 401.8558 I: 403.8529 J: 430.9729
Text:TLI BLANK TLI#16661



RECEIVED
NOV 19 1990
ENVIRONMENTAL AFFAIRS

13

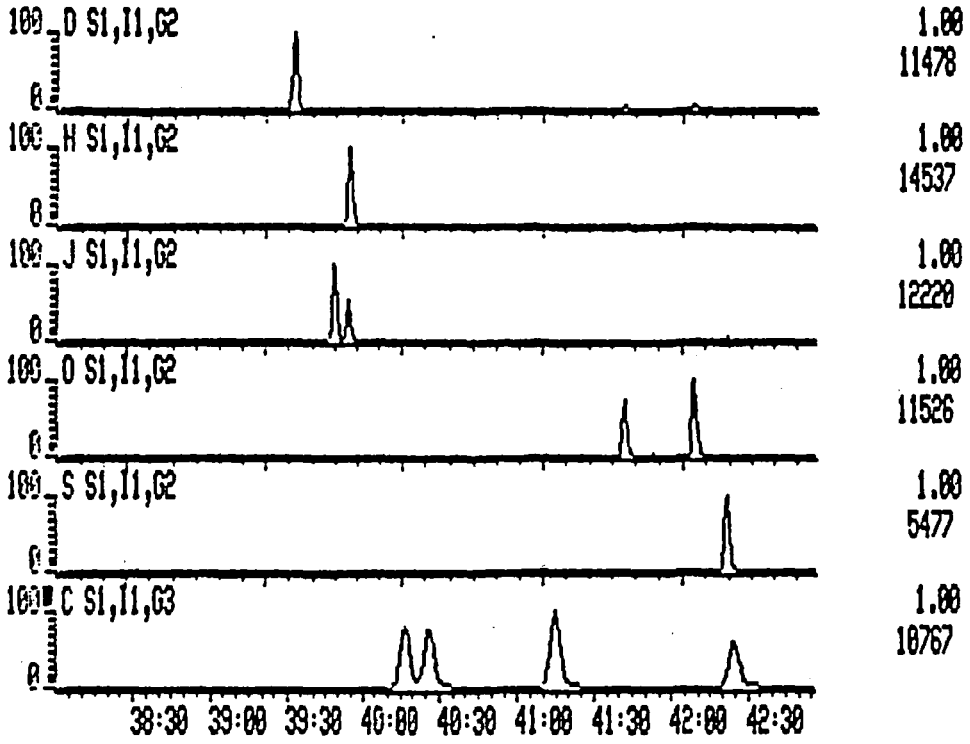
GR 4' D: 419.6220 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8163
Text: TLI BLANK TLI#16661



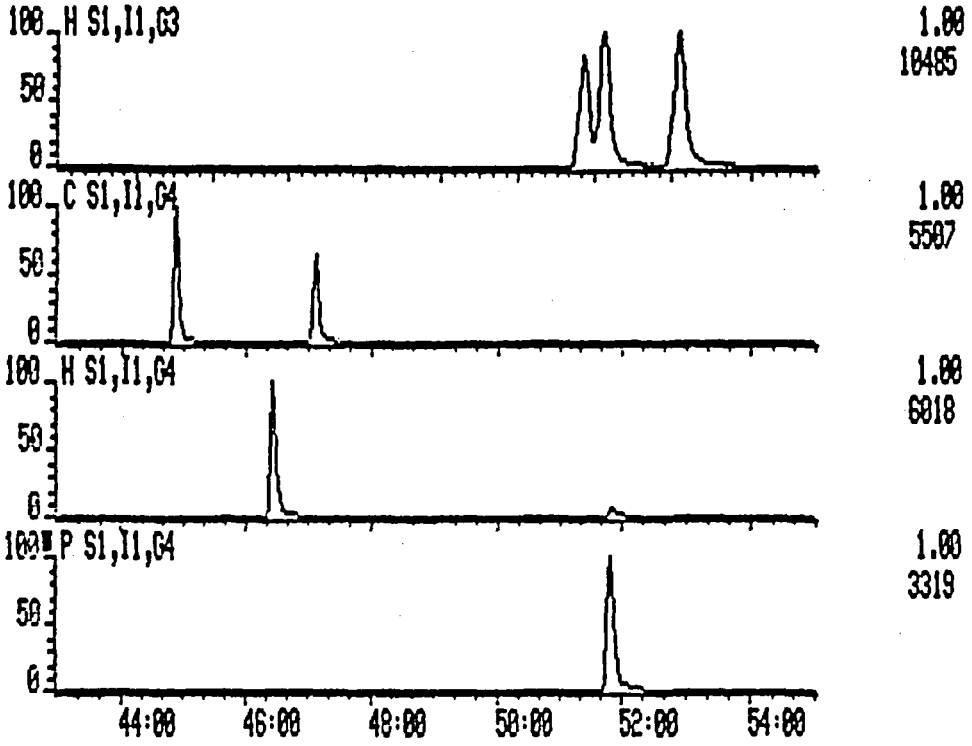
RECEIVED
NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

5905/65 16-OCT-90 12:24 705 (EI+) 505-05505
GR 3' D: 395.8610 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558
Text:TLI BLANK TLI#16661

RECEIVED
NOV 19 1990



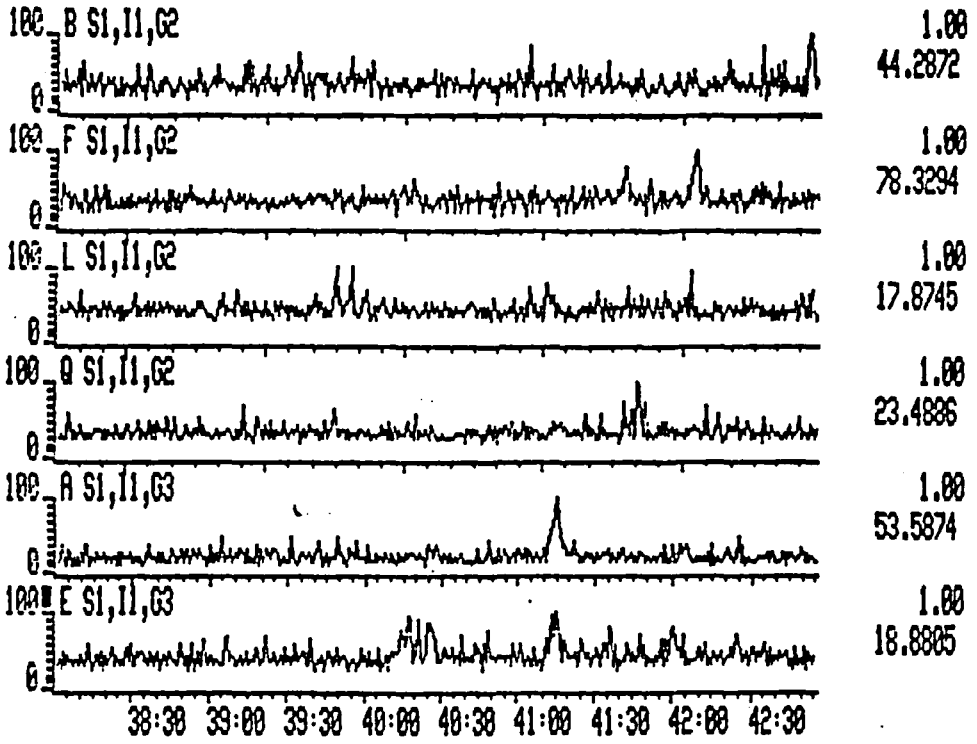
GF: 4' D: 419.8220 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text:TLI BLANK TLI#16561



RECEIVED
NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

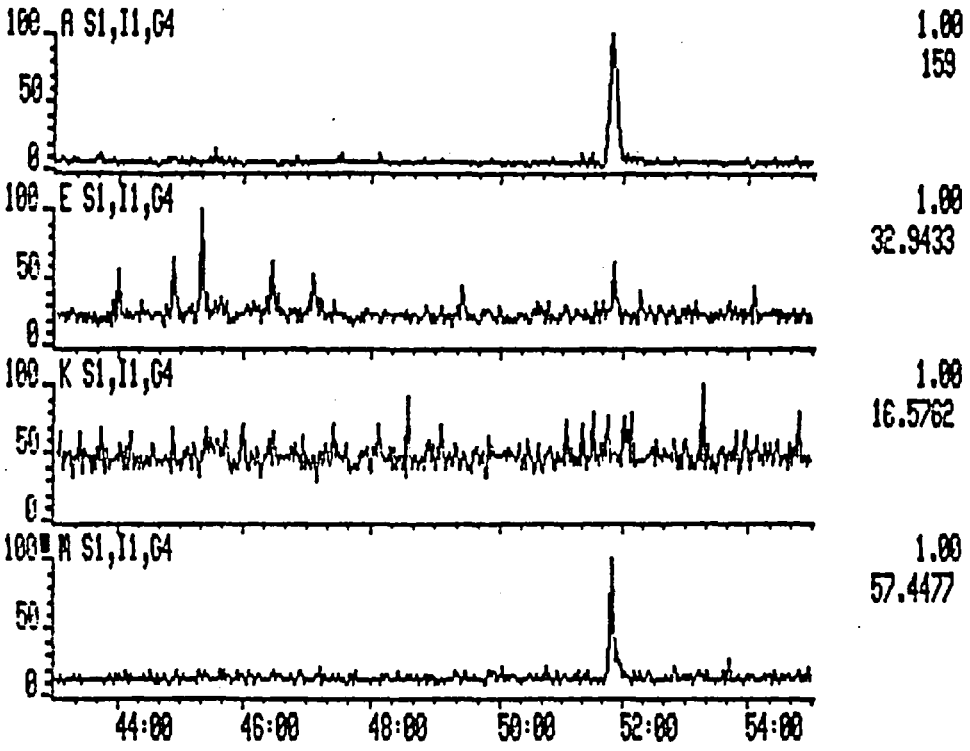
16

G: 3' D: 385.8610 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558
Text: TLI BLANK TLI#16661



RECEIVED
NOV 19 1990
ENVIRONMENTAL ANALS

5503/63 16-OCT-90 12:24 /05 (EI+) SQ5:U6005
GF 4' D: 419.8220 E: 423.7766 F: 425.7737 G: 430.9723 H: 435.8169
Text: TLI BLANK TLI#16661

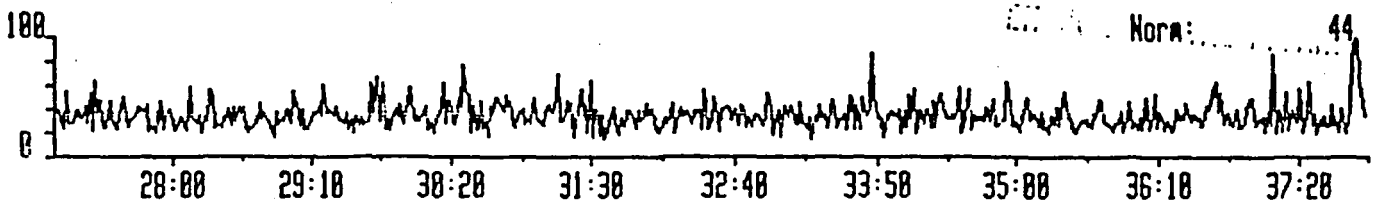


RECEIVED
NOV 19 1990
ENVIRONMENTAL AFFAIRS

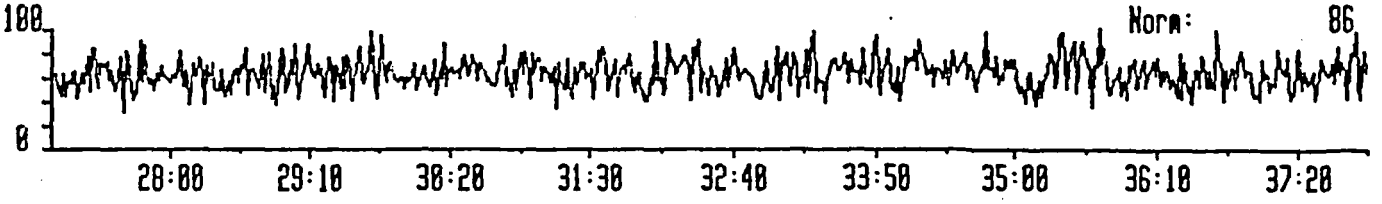
18

S903789 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 303.9016
Text:TLI BLANK TLI#16661

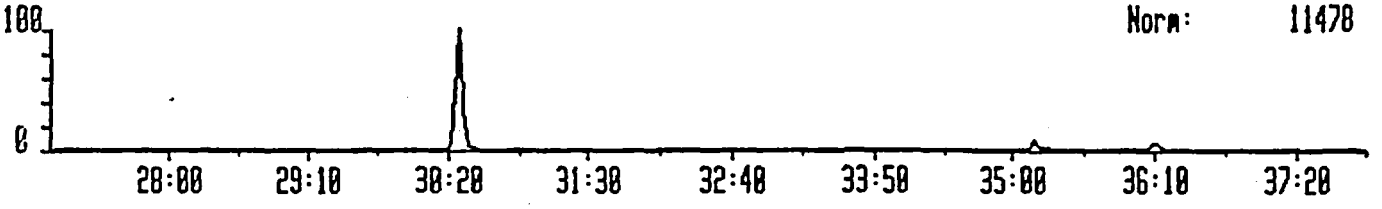
NOV 1 9 1990



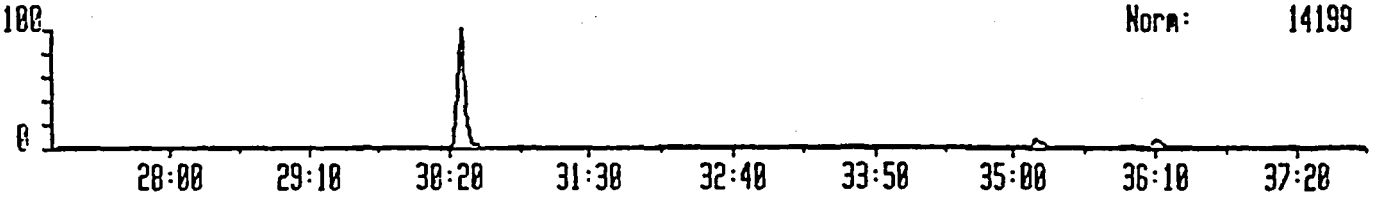
S903789 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 305.8987
Text:TLI BLANK TLI#16661



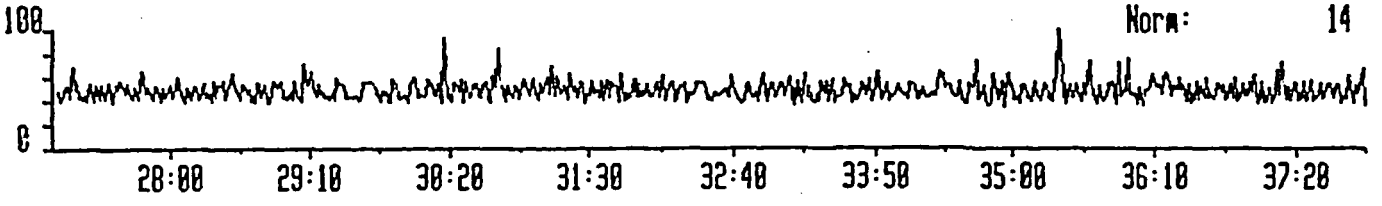
S903789 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 315.9419
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 317.9389
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 375.8364
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 319.8965
Text:TLI BLANK TLI#16661

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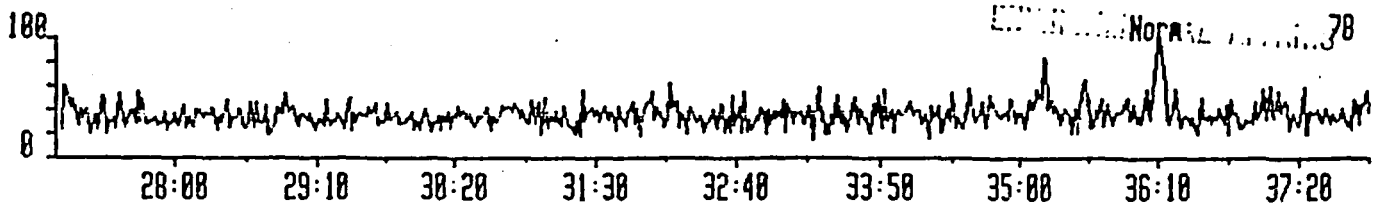
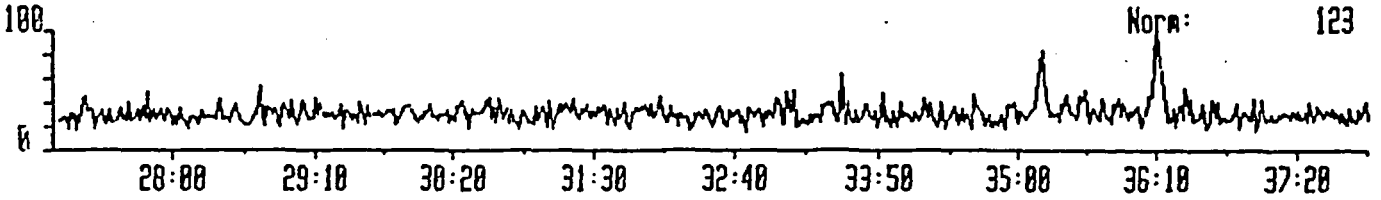
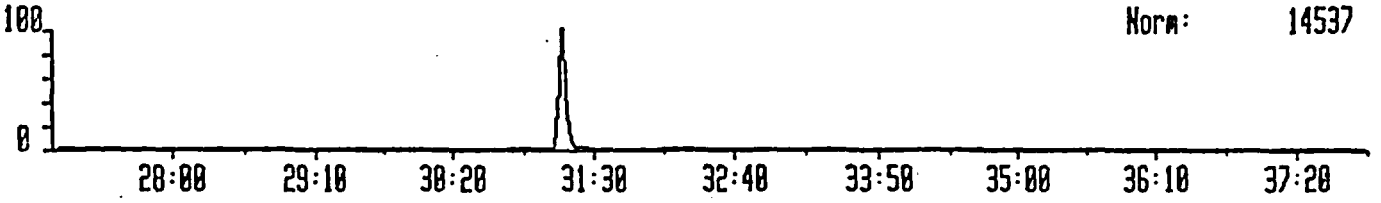


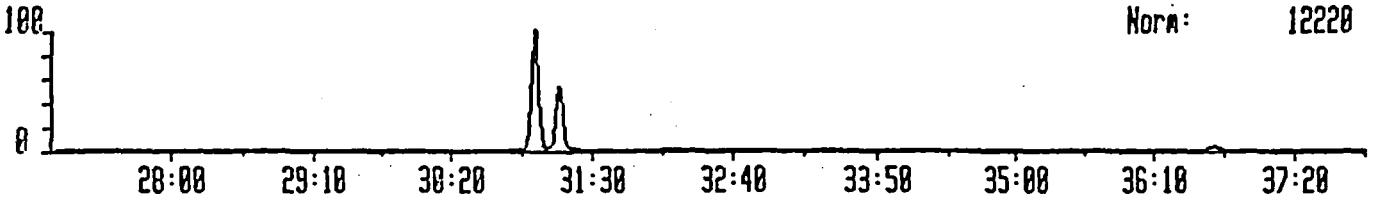
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 321.8936
Text:TLI BLANK TLI#16661



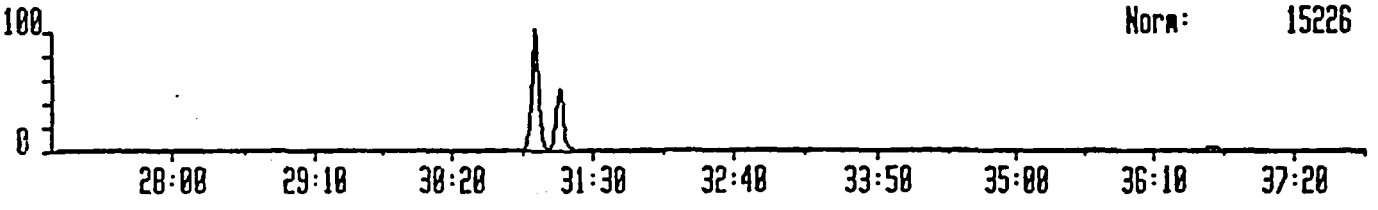
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 327.8847
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 331.9368
Text:TLI BLANK TLI#16661

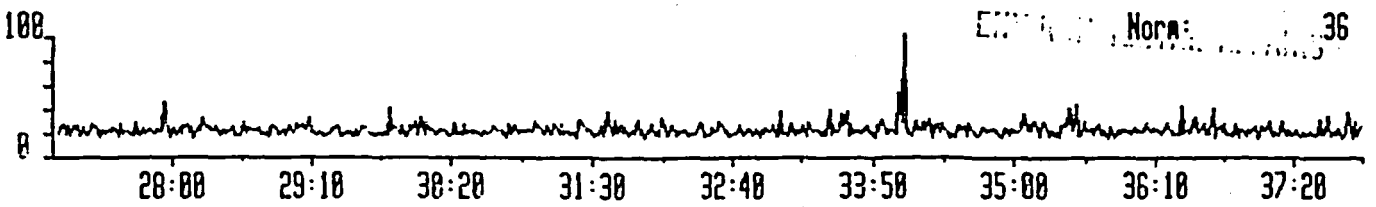


S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 333.9338
Text:TLI BLANK TLI#16661

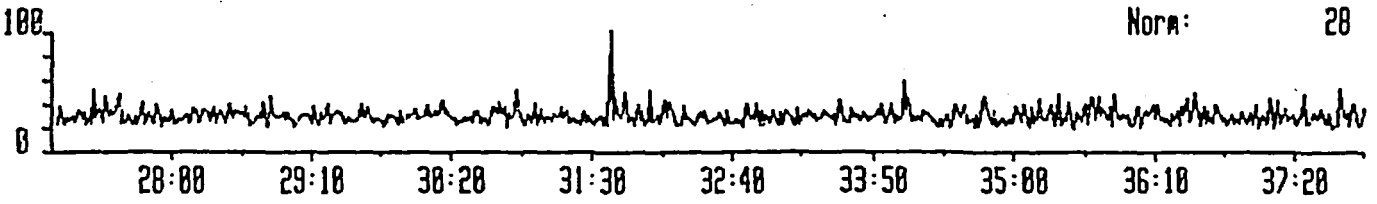


S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 339.8597
Text:TLI BLANK TLI#16661

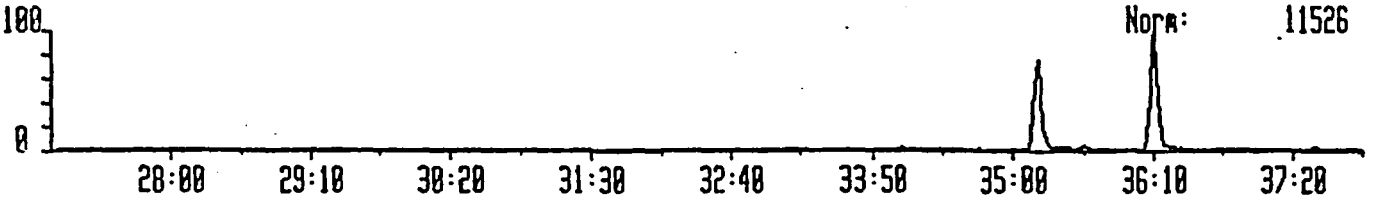
NOV 19 1990



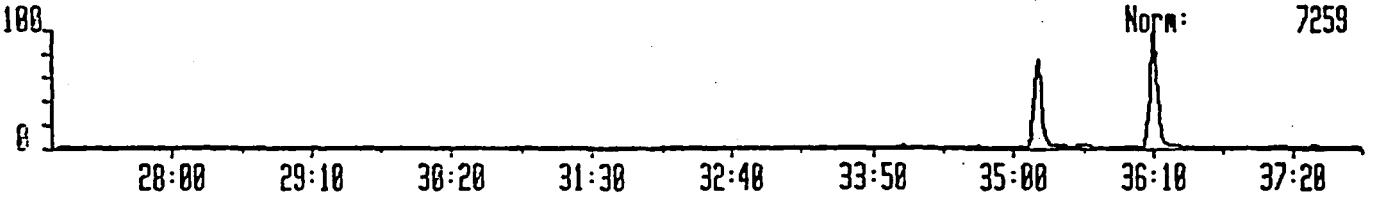
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 341.8567
Text:TLI BLANK TLI#16661



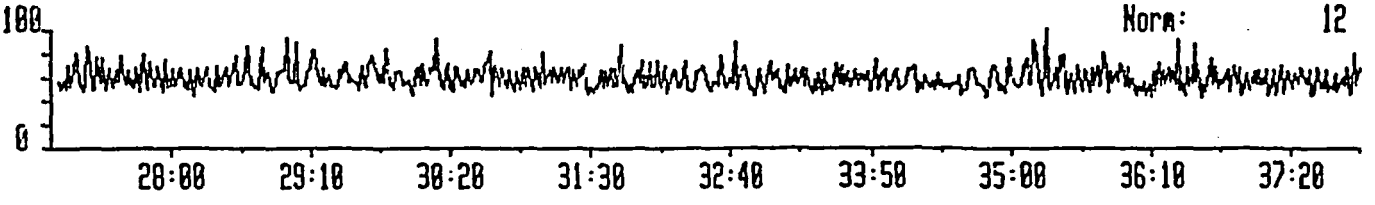
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 351.9000
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 353.8970
Text:TLI BLANK TLI#16661

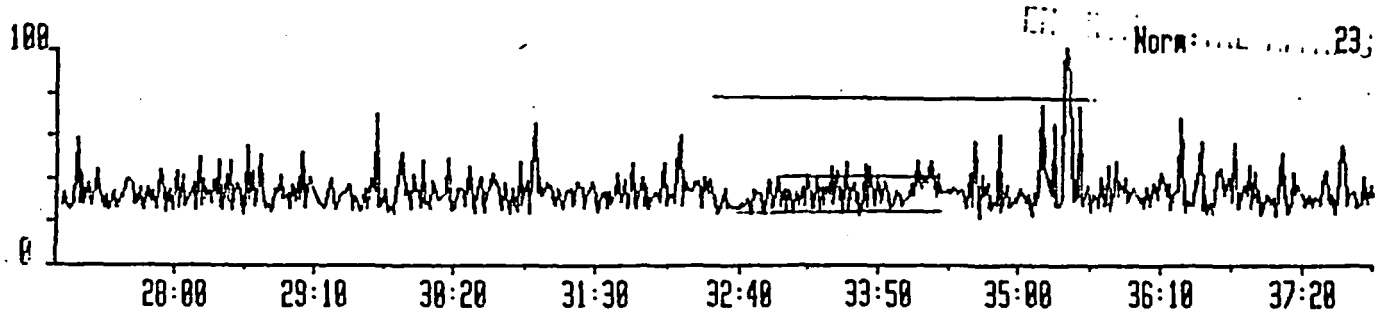


S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 409.7974
Text:TLI BLANK TLI#16661

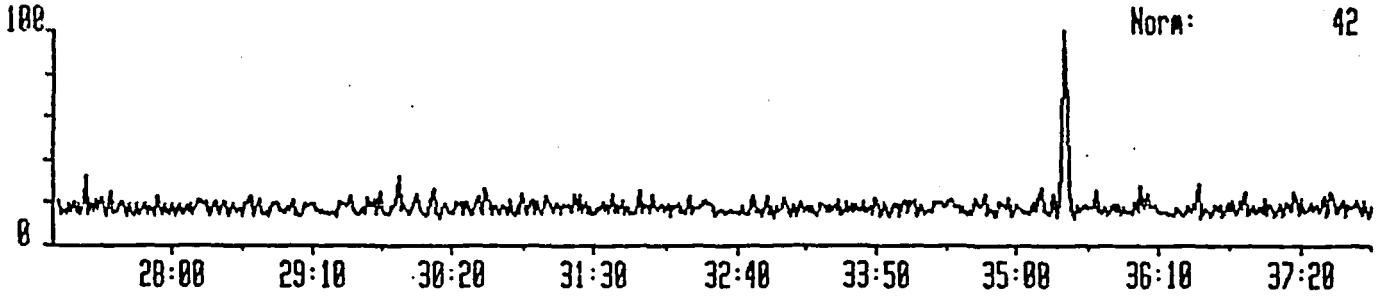


S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 355.8546
Text:TLI BLANK TLI#16661

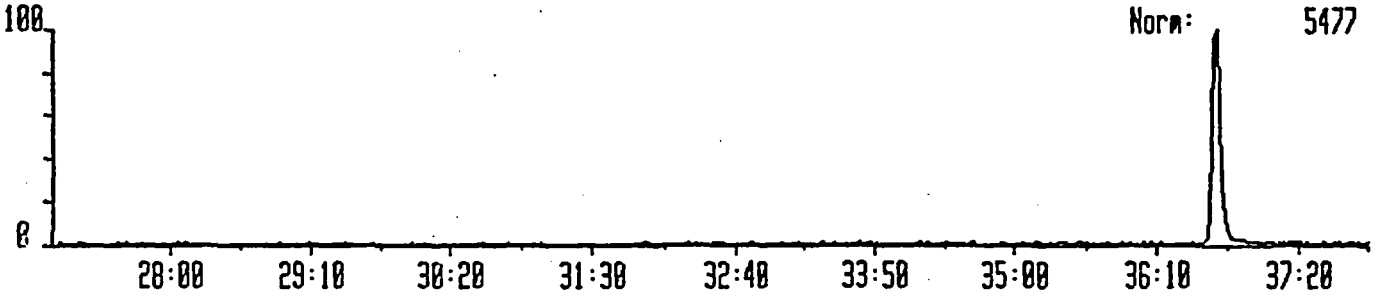
NOV 19 1990



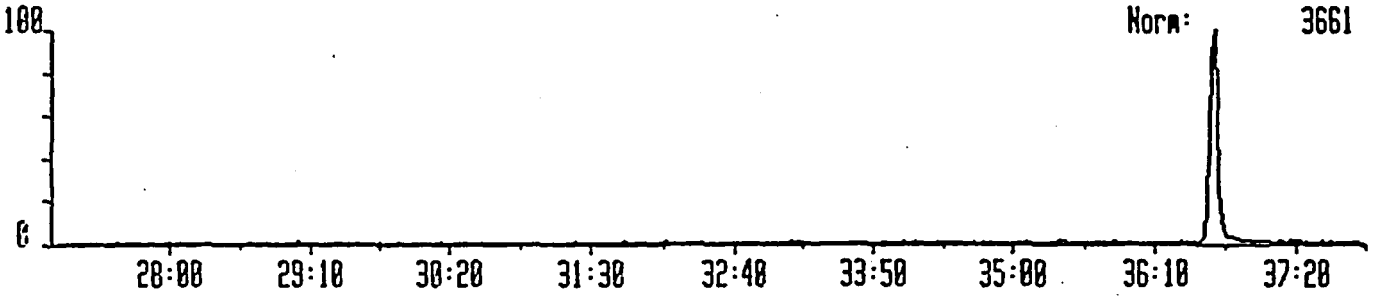
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 357.8516
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 367.8949
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 369.8919
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 373.8208
Text:TLI BLANK TLI#16661

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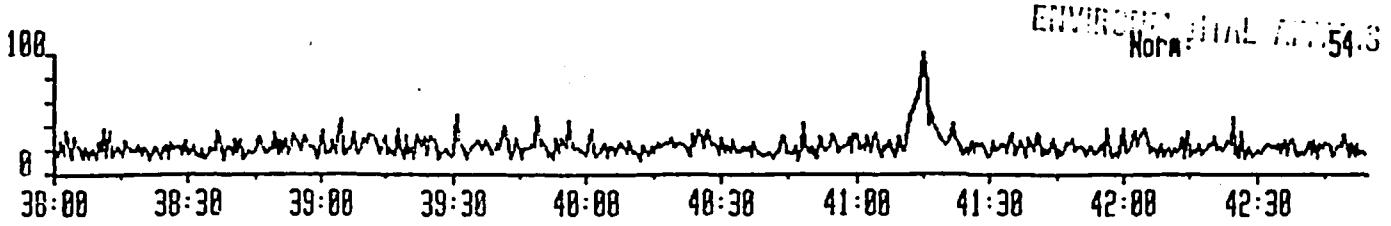
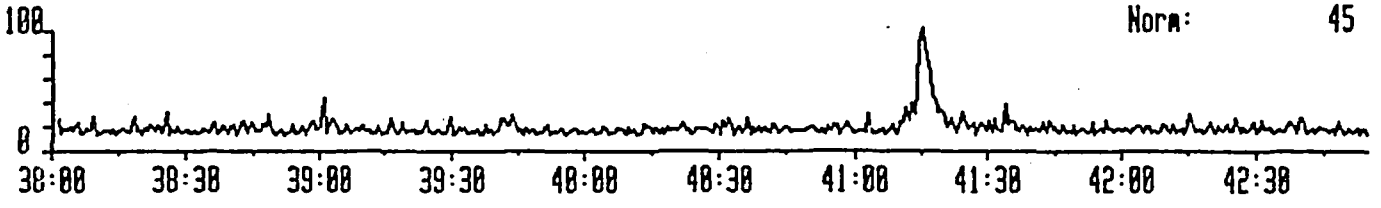
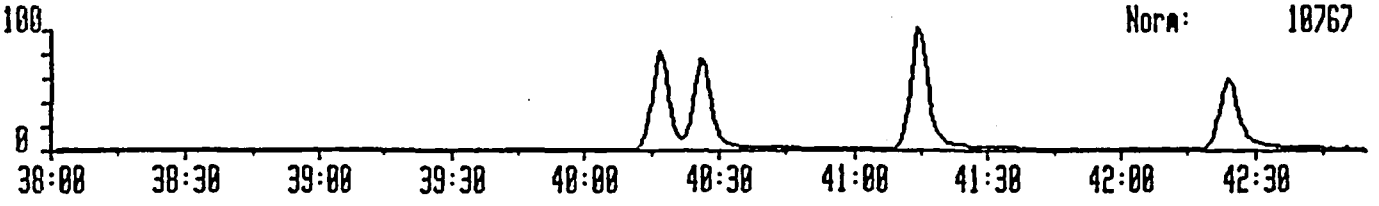
ENVIRONMENTAL



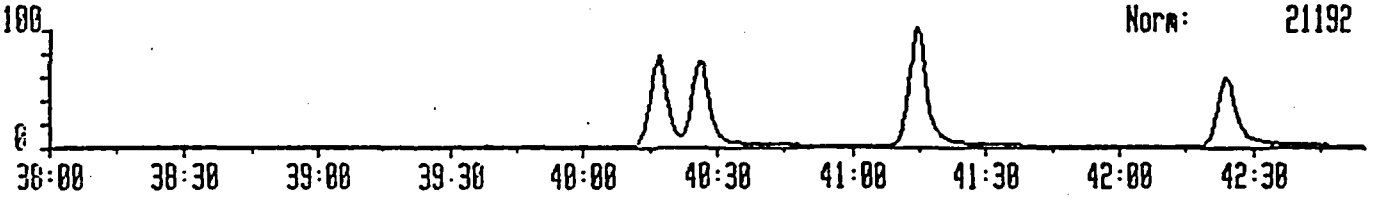
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 375.8178
Text:TLI BLANK TLI#16661



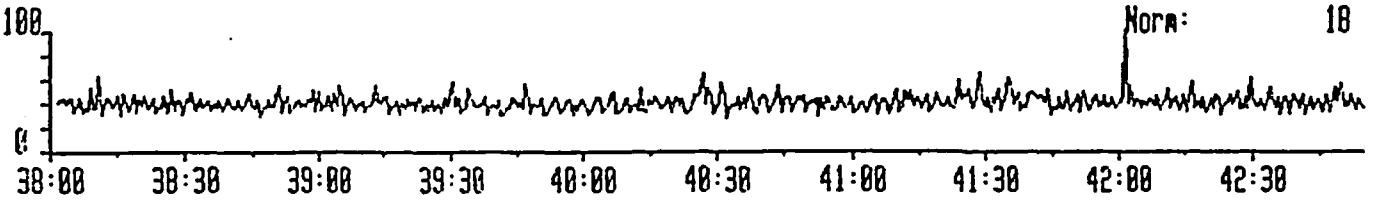
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 383.8639
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 385.8610
Text:TLI BLANK TLI#16661

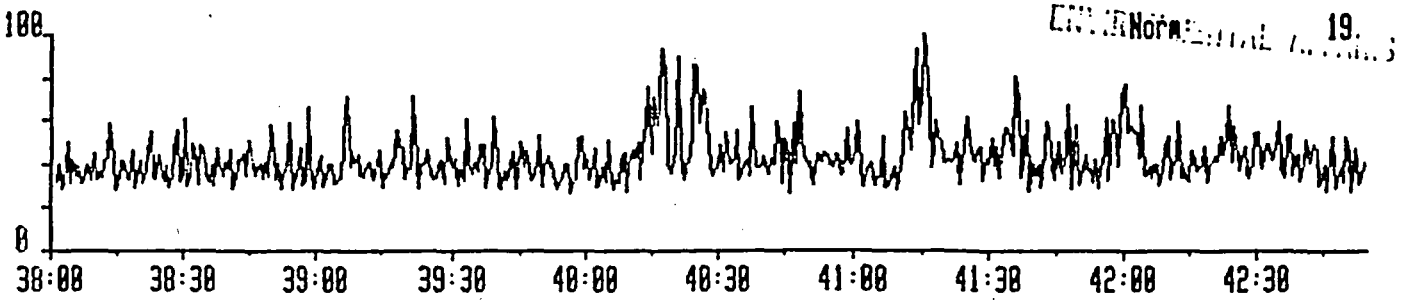


S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 445.7555
Text:TLI BLANK TLI#16661

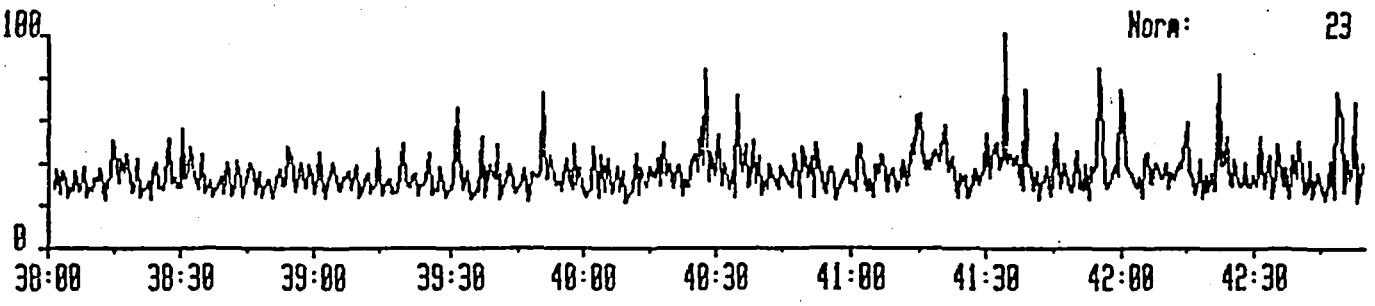


S983789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 389.8156
Text:TLI BLANK TLI#16661

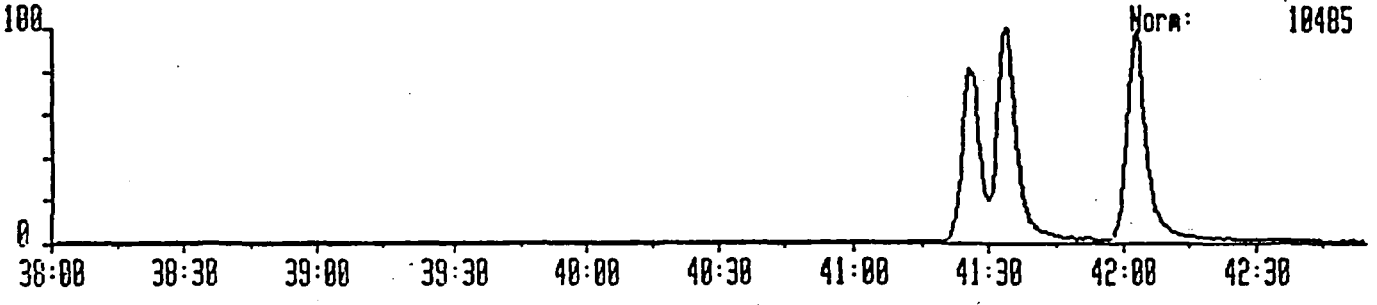
NOV 19 1990



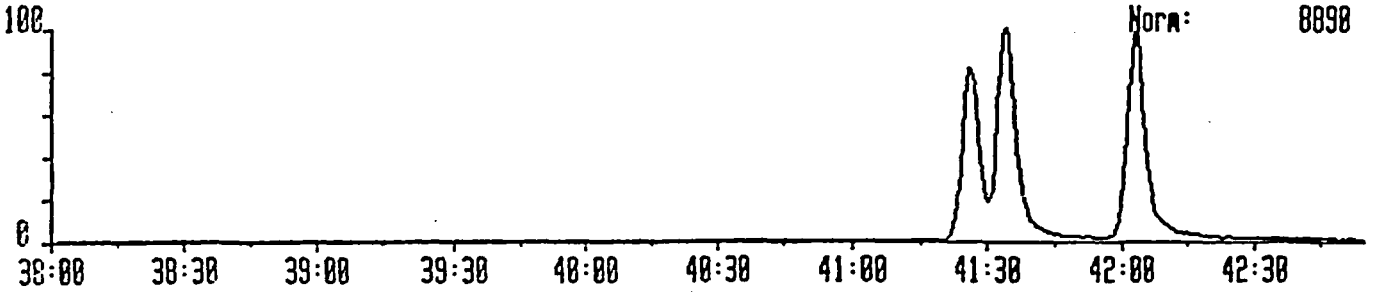
S983789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 391.8127
Text:TLI BLANK TLI#16661



S983789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 401.8558
Text:TLI BLANK TLI#16661

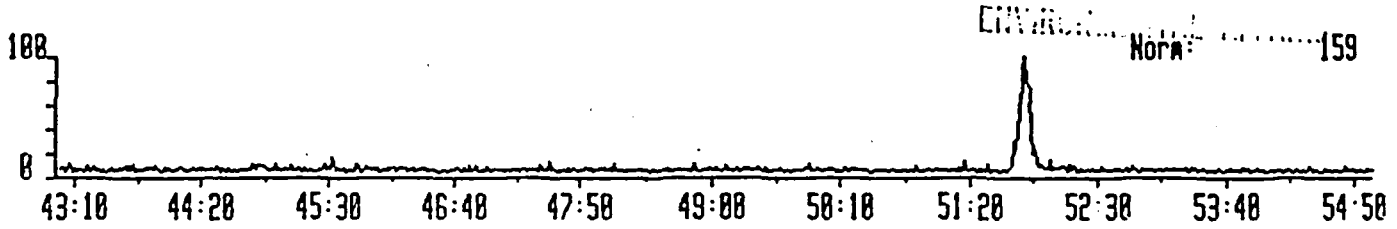


S983789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 403.8529
Text:TLI BLANK TLI#16661

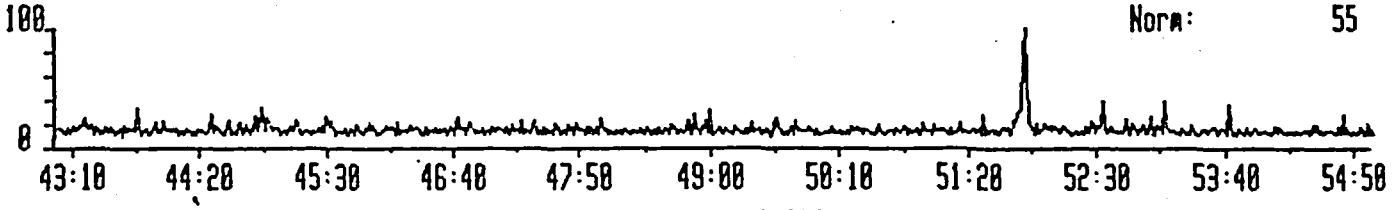


S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 407.7818
Text:TLI BLANK TLI#16661

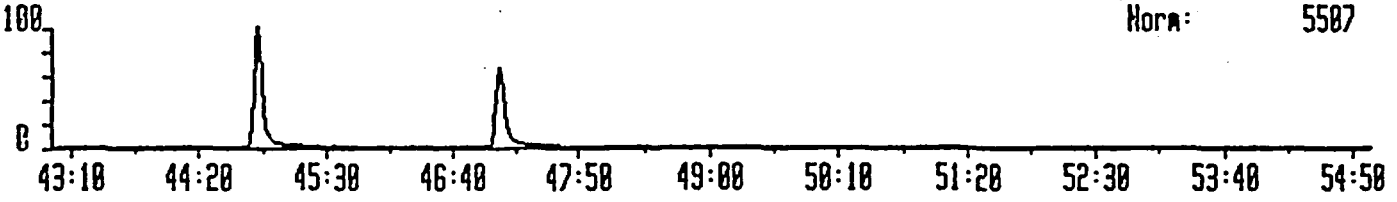
NOV 1 9 1990



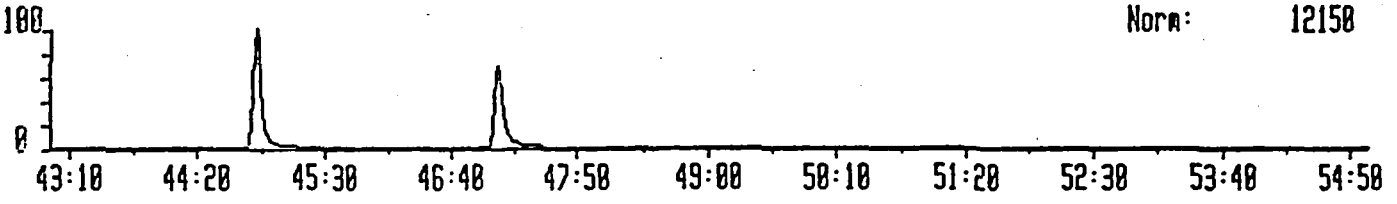
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 409.7789
Text:TLI BLANK TLI#16661



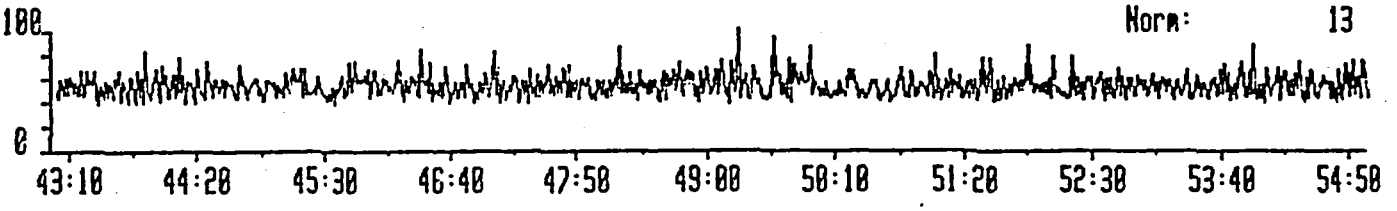
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 417.8253
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 419.8220
Text:TLI BLANK TLI#16661

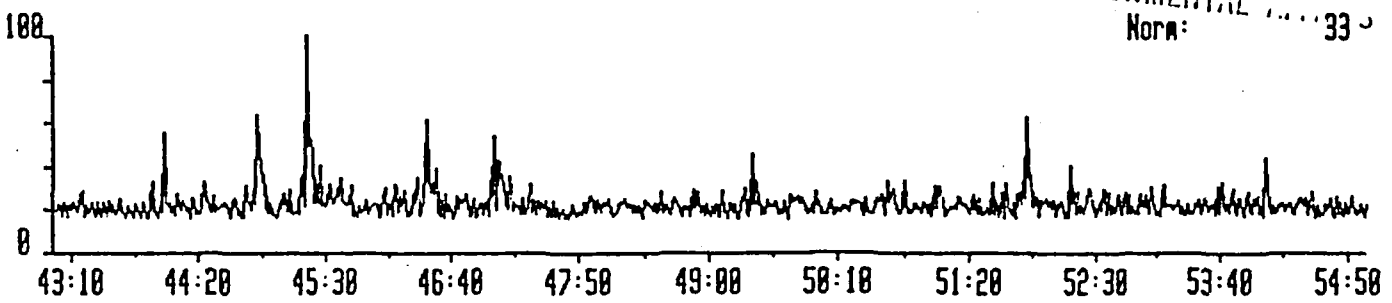


S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 479.7165
Text:TLI BLANK TLI#16661

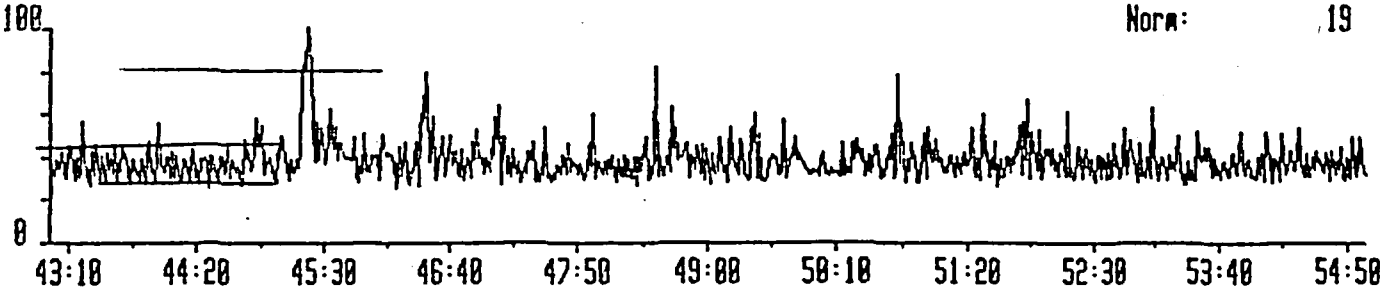


Sample 1 Injection 1 Group 4 Mass 423.7766
Text:TLI BLANK TLI#16661

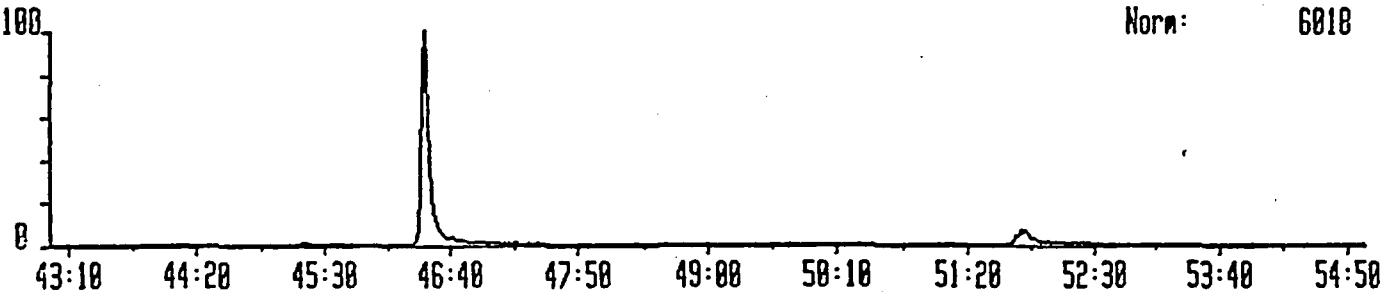
NOV 1 9 1990
ENVIRONMENTAL



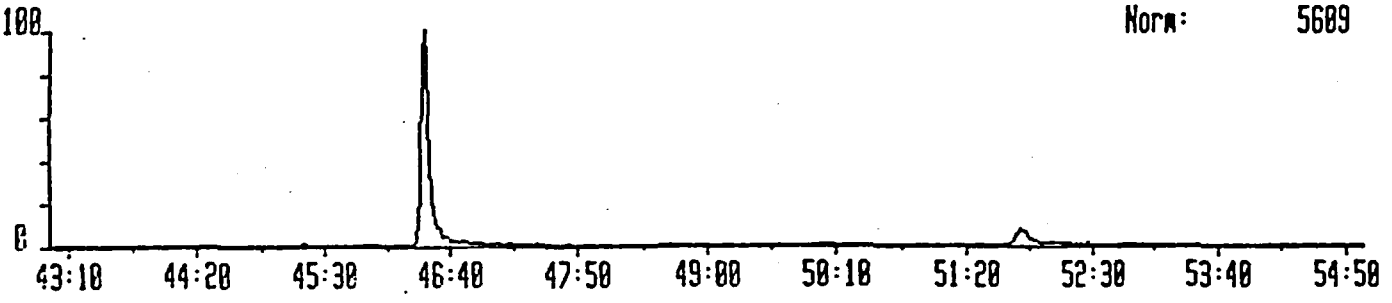
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 425.7737
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 435.8169
Text:TLI BLANK TLI#16661



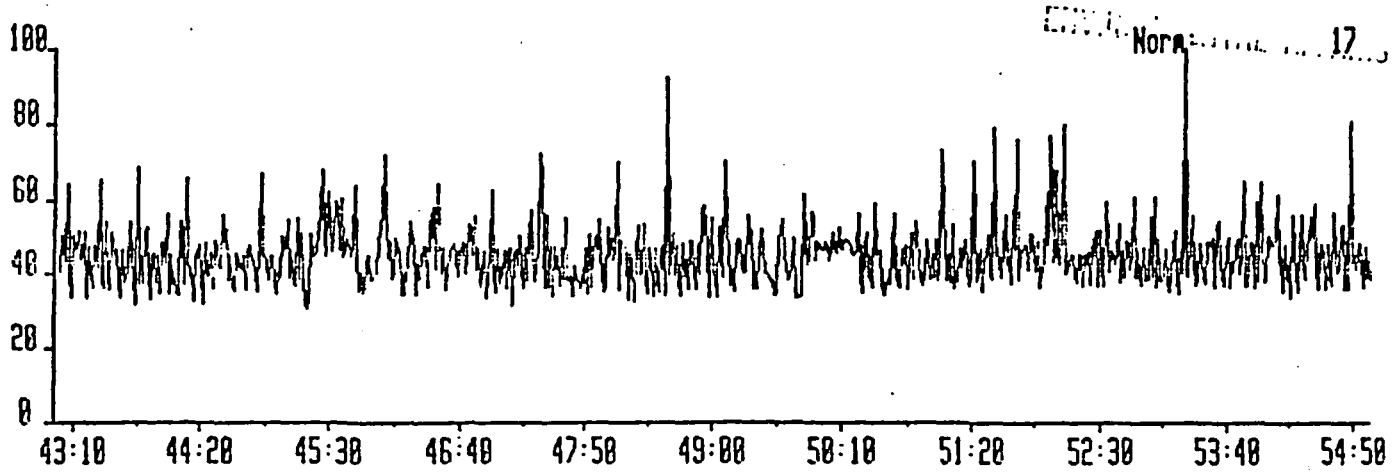
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 437.8140
Text:TLI BLANK TLI#16661



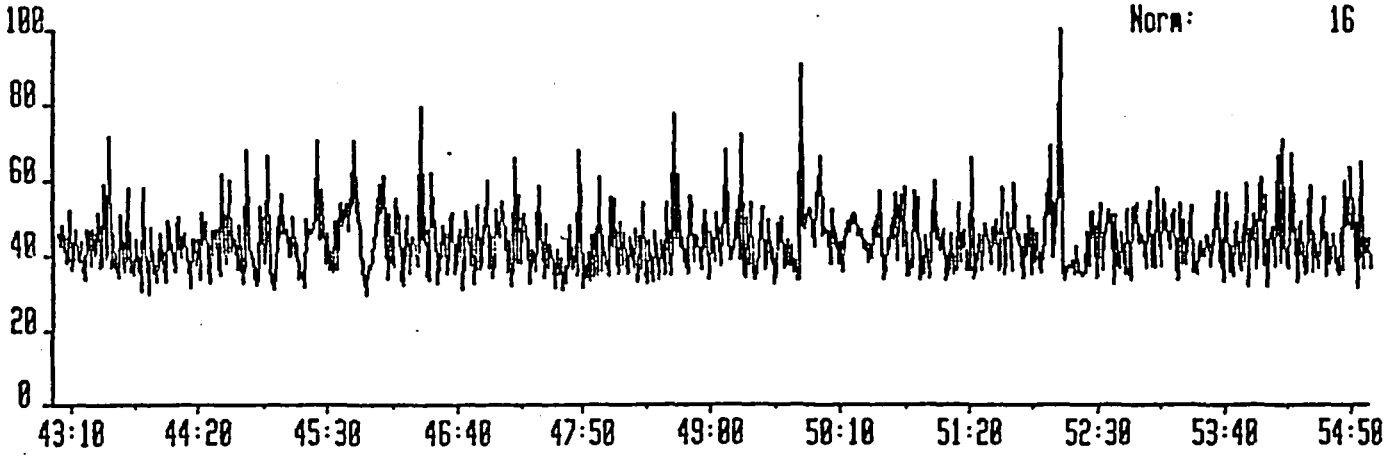
24

S903789 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 441.7428
Text:TLI BLANK TLI#16661

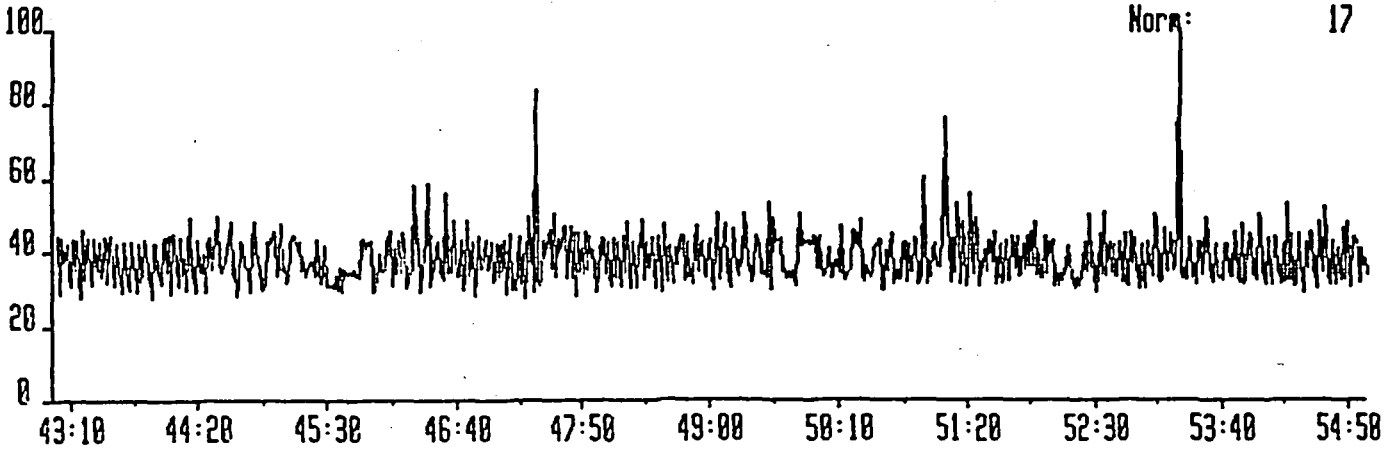
NOV 19 1990



S903789 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 443.7399
Text:TLI BLANK TLI#16661

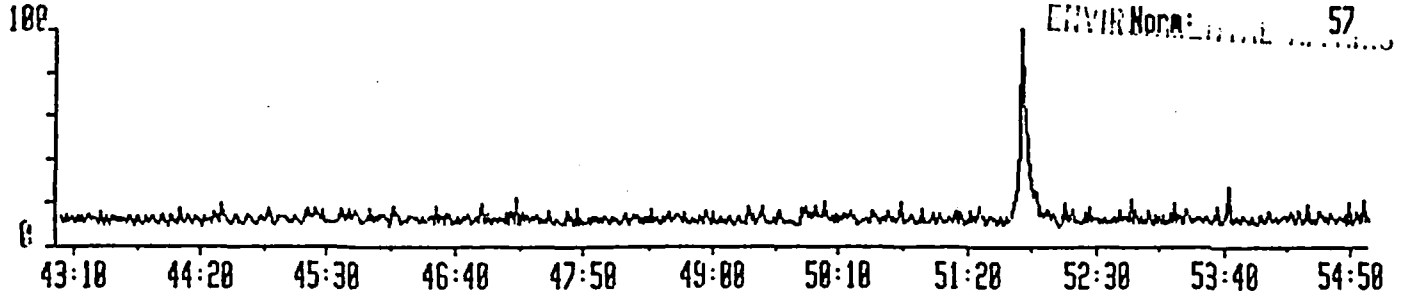


S903789 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 513.6775
Text:TLI BLANK TLI#16661

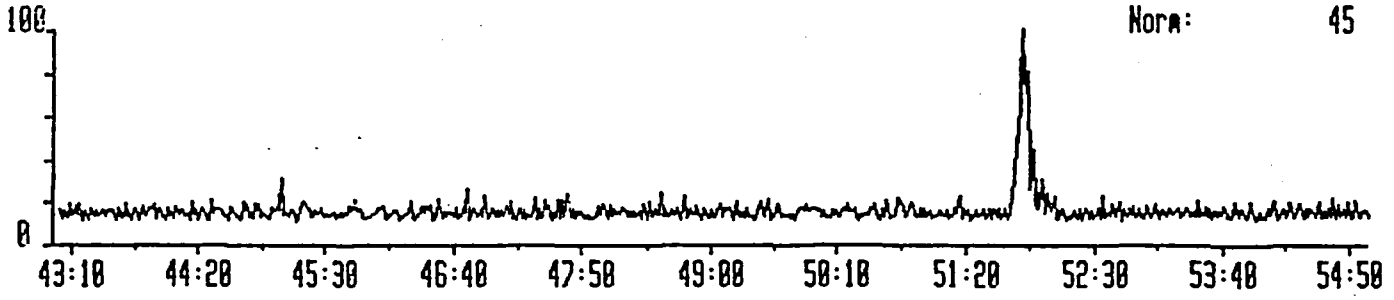


S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 457.7377
Text:TLI BLANK TLI#16661

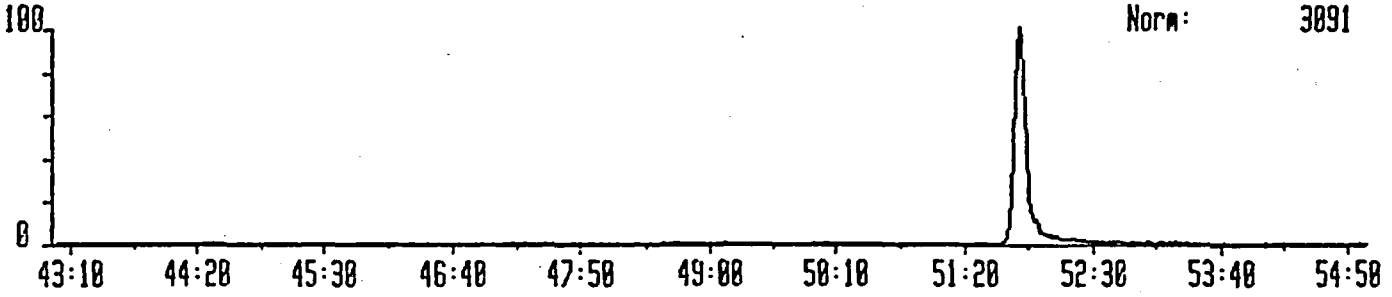
NOV 1 9 1990



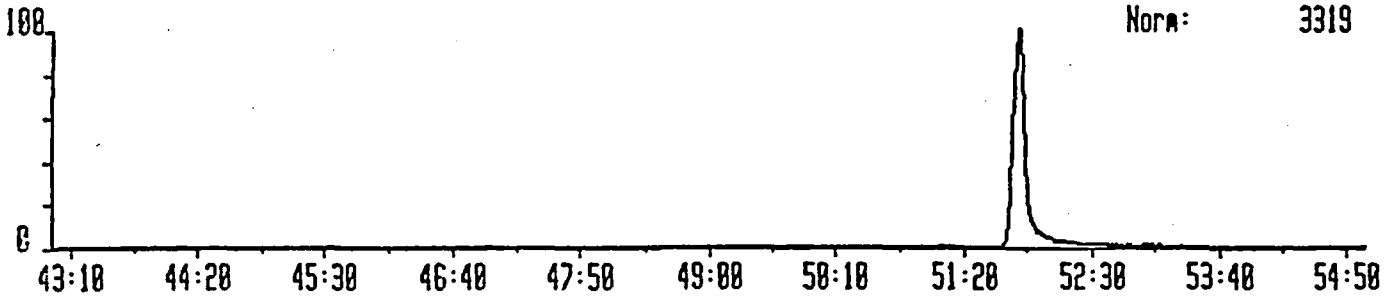
S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 459.7348
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 469.7779
Text:TLI BLANK TLI#16661



S903789 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 471.7750
Text:TLI BLANK TLI#16661



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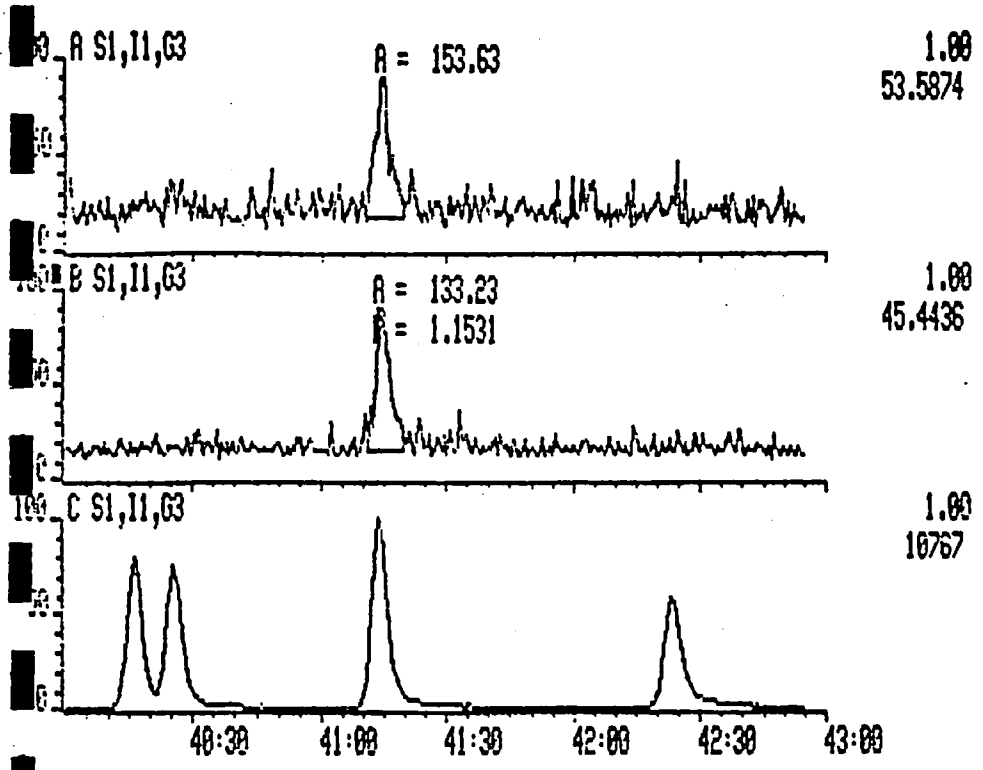
: A: 373.8200 B: 375.8178 C: 383.8639 D: 385.8610 E: 389.8156
Text:TLI BLANK TLI#16661



RECEIVED
NOV 19 1990
ENVIRONMENTAL ANALYSIS

RECEIVED
NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

TRIANGLE LABORATORIES, INC.

SAMPLE DATA

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

11/16/90

FILE NAME....: S903791
CONCAL (VER).: S903783
PROJECT NUMBER: 16661
ANALYST.....: HSK
SAMPLE SIZE..: 9.400 g
DATE RECEIVED.: 10/10/90
SPIKE FILE...: SPX23710

CLIENT ID....: SWP
SAMPLE ID....: LF2/9111
ICAL DATE....: 10/13/90
ANALYSIS DATE: 10/18/90
SAMPLE MATRIX: SOIL
DATE COLLECTED: 10/09/90

TLI NUMBER....: 37-26-2
SAMPLE ORIGIN: WILMINGTO
SHIPMENT NO...: NC09001

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.008				0.75	31:31	—
12378-PeCDD	0.05				1.53	36:49	—
123478-HxCDD	0.18				1.29	41:35	—
123678-HxCDD	1.8				1.21	41:43	—
123789-HxCDD	0.89				1.22	42:10	PK
1234678-HpCDD	48.7				1.01	46:31	S
OCDD	137				0.93	51:57	S,B
2378-TCDF	0.02				0.80	30:40	—
12378-PeCDF	0.06				1.54	35:23	—
23478-PeCDF	0.06				1.53	36:20	—
123478-HxCDF	0.76				1.12	40:26	—
123678-HxCDF	0.21				1.12	40:36	—
234678-HxCDF	0.14				1.22	41:24	B
123789-HxCDF	EMPC			0.05			—
1234678-HpCDF	21.3				0.93	45:00	S
1234789-HpCDF	0.96				0.93	47:11	—
OCDF	52.1				0.97	52:10	S
TOTAL TCDD	0.17	9		0.21	0.77		—
TOTAL PeCDD	0.65	10		0.76	1.55		Q
TOTAL HxCDD	22.5	7		22.5	1.24		—
TOTAL HpCDD	118	2			1.01		S
TOTAL TCDF	0.10	8		0.12	0.78		Q
TOTAL PeCDF	0.87	9			1.58		—
TOTAL HxCDF	11.1	9		24.1	1.16		S
TOTAL HpCDF	56.4	4			0.92		S

MSB 11/16/90

X237_RPT rev:3.03

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TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY 11/16/90

FILE NAME....: S903791	CLIENT ID....: SWP	TLI NUMBER....: 37-26-2
CONCAL (VER).: S903783	SAMPLE ID....: LF2/9111	
PROJECT NUMBER: 16661	ICAL DATE....: 10/13/90	
ANALYST.....: HSK	ANALYSIS DATE: 10/18/90	
SAMPLE SIZE..: 9.400 g	SAMPLE MATRIX: SOIL	SAMPLE ORIGIN: WILMINGTO
DATE RECEIVED.: 10/10/90	DATE COLLECTED: 10/09/90	
SPIKE FILE...: SPX23710		SHIPMENT NO...: NC09001

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37Cl-TCDD	0.57	53.1		31:30	___
13C12-PeCDF 234	0.67	62.7	1.53	36:19	___
13C12-HxCDF 478	0.62	58.4	0.53	40:25	___
13C12-HxCDD 478	0.72	67.9	1.19	41:34	___
13C12-HpCDF 789	0.41	38.3	0.46	47:10	___

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	0.58	54.1	0.52	42:32	___
13C12-HxCDF 234	0.65	61.0	0.51	41:24	___

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	0.54	51.0	0.78	30:39	___
13C12-2378-TCDD	0.60	56.5	0.84	31:29	Q
13C12-PeCDF 123	0.69	64.4	1.56	35:22	___
13C12-PeCDD 123	0.75	70.9	1.58	36:49	___
13C12-HxCDF 678	0.62	57.9	0.51	40:35	___
13C12-HxCDD 678	0.68	63.9	1.17	41:42	___
13C12-HpCDF 678	0.48	44.7	0.47	44:59	___
13C12-HpCDD 678	0.50	46.7	1.03	46:30	___
13C12-OCDD	1.3	59.5	1.02	51:57	___

MJS 11/16/90

X237_RPT rev:3.03

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	Initial	Date
B-File/Header Changes	KU	10/31/90
Manual Integrations	KU	10/31/90
Transcription	KU	10/31/90
Dbase Corrections	KU	10/31/90

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10/26/90

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
304		0.87	27:54	884.08	T	F	0.910	-Q
		0.75	28:11	1615.07	T	F	0.920	
		0.91	28:30	1955.42	F	F	0.930	
		0.72	28:49	2229.67	T	F	0.940	
		0.81	29:07	1766.73	T	F	0.950	-Q
		0.86	29:31	1021.37	T	F	0.963	
		0.77	29:53	2071.00	T	F	0.975	
		0.69	30:09	757.60	T	F	0.984	
		0.80	30:40	2146.10	T	T	1.001	
		1.00	31:10	220.73	F	F	1.017	
		1.17	31:24	160.75	F	F	1.024	SW
	D	1.88	32:04	96.06	F	F	1.046	
		0.10	32:50	75.83	F	F	1.071	
	D	0.71	33:05	2168.23	T	F	1.079	RW
304		*** Total ***		17168.64	# of Peaks:		14	
316		0.40	29:46	204.05	F	F	0.971	
		0.77	30:06	601.07	T	F	0.982	
		0.78	30:39	119376.82	T	T	1.000	-Q
		0.73	31:08	1085.25	T	F	1.016	
316		*** Total ***		121267.19	# of Peaks:		4	
320		0.41	27:45	146.99	F	F	0.881	-Q
	D	0.33	28:04	117.92	F	F	0.891	-Q RW
		1.83	28:15	50.69	F	F	0.897	
		1.31	28:42	636.31	F	F	0.912	
		0.63	29:05	505.60	F	F	0.924	
		0.76	29:24	686.90	T	F	0.934	
		0.77	30:06	4811.74	T	F	0.956	
		0.77	30:20	3032.84	T	F	0.963	
		0.82	30:51	519.05	T	F	0.980	
		0.88	31:13	1704.44	T	F	0.992	
		0.78	31:21	2130.59	T	F	0.996	
		CK ~~1.30~~ .75	31:31	~~435.11~~ 668	~~F~~ T		1.001	
		0.99	31:40	607.66	F	F	1.006	
		0.69	31:53	815.04	T	F	1.013	
		0.14	32:06	249.67	F	F	1.020	SW
	D	0.35	32:15	166.16	F	F	1.024	
		2.26	32:35	90.67	F	F	1.035	
		2.07	34:00	158.02	F	F	1.080	
	D	2.16	34:33	98.00	F	F	1.097	RW
		0.85	35:02	296.38	T	F	1.113	
320		*** Total ***		17259.78	# of Peaks:		20	
320		.72	31:40	9304	T	F	1.0304	KU 10/31/90
328		0.00	31:30	75491.82	T	T	1.001	-Q
		0.00	32:18	116.44	T	F	1.026	
328		*** Total ***		75608.26	# of Peaks:		2	

not noise

noise = 166 (304)

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Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
332		0.81	31:13	130087.96	T	T	0.992	
		0.84	31:29	76227.81	T	T	1.000	-Q
332		*** Total ***		206315.77	# of Peaks:		2	
340		1.09	35:15	1534.9	F	F	.996	
340	P	3.56	32:50	55.22	F	F	0.928	SN
		1.59	33:04	42107.40	T	F	0.935	
		1.56	34:30	5979.54	T	F	0.975	-Q
	Q	~~1.59~~ 1.54	35:23	~~8884.19~~ 5614.5	T	T	1.000	
		1.71	35:35	285.55	T	F	1.006	
		1.55	35:45	4407.19	T	F	1.011	
		1.53	36:20	5244.03	T	T	1.027	
		1.60	36:36	7716.21	T	F	1.035	
	D	3.20	36:58	92.42	F	F	1.045	SN
		1.60	37:40	463.45	T	F	1.065	
340		*** Total ***		74355.20	# of Peaks:		10	
340		1.54	35:00	40811.9	T	F	.989	
352		1.12	34:52	379.62	F	F	0.986	
		1.56	35:22	60807.82	T	T	1.000	
		1.39	35:44	1181.89	T	F	1.010	
		1.53	36:19	69208.41	T	T	1.027	
		1.58	37:40	1251.33	T	F	1.065	
352		*** Total ***		132829.07	# of Peaks:		5	
356		1.45	34:31	3808.63	T	F	0.938	-Q
		1.61	35:02	6198.99	T	F	0.952	-Q
		1.31	35:21	5384.48	F	F	0.960	
		1.44	35:32	4902.36	T	F	0.965	
		1.44	35:46	3409.65	T	F	0.971	
		1.67	36:00	2567.99	T	F	0.978	
		1.53	36:08	8812.14	T	F	0.981	-Q
		1.28	36:23	1243.89	F	F	0.988	
		1.54	36:34	653.86	T	F	0.993	
		1.53	36:49	3078.92	T	T	1.000	
		1.63	37:01	3266.94	T	F	1.005	
		1.63	37:29	1928.61	T	F	1.018	
356		*** Total ***		45256.46	# of Peaks:		12	
368		0.24	35:26	987.79	F	F	0.962	
		1.58	36:49	35149.19	T	T	1.000	
		0.57	37:28	397.58	F	F	1.018	
368		*** Total ***		36534.56	# of Peaks:		3	
374		1.27	38:05	481.50	T	F	0.938	
		1.14	38:56	146350.10	T	F	0.959	
		1.16	39:08	478782.90	T	F	0.964	
		1.03	39:36	4672.70	F	F	0.976	
		0.99	39:50	863106.69	F	F	0.982	-S
		1.12	40:26	60412.52	T	T	0.996	
	CK	~~0.99~~ 1.12	40:36	~~22009.06~~ 17485.0	~~F~~ T	T	1.000	
		1.10	41:01	2005.59	T	F	1.011	
plot		~~1.12~~ 1.16	41:20	~~15385.60~~ 14989.5	T	~~F~~ T	1.018	7
		~~1.16~~ 1.22	41:24	~~11062.92~~ 8453.4	T	T	1.020	
	D	0.27	41:52	53.59	F	F	1.032	SN
~~374~~		~~1.16~~		~~14989.5~~	T	Not needed		

KU 10/31/92

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Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
374	AD CT	~~1.03~~ .97	42:32	2367.22	F	T	1.048	
		1.13	42:40	14228.76	T	T	1.052	
374		*** Total ***		1620939.15	# of Peaks:		13	
384		0.63	38:56	90.79	F	F	0.959	
		0.49	39:07	174.47	T	F	0.964	
		2.01	39:51	226.17	F	F	0.982	
		2.13	40:11	85.26	F	F	0.990	
		0.53	40:25	49546.74	T	T	0.996	
		0.51	40:35	55874.32	T	T	1.000	
		0.51	41:24	51622.85	T	T	1.020	
		0.52	42:32	38633.03	T	T	1.048	
384		*** Total ***		196253.63	# of Peaks:		8	
390		1.23	39:42	417629.96	T	F	0.952	
		2.59	40:11	579.02	F	F	0.964	
		1.26	40:25	39139.85	T	F	0.969	
		1.24	40:45	290338.51	T	F	0.977	
		1.21	41:00	89612.28	T	F	0.983	
		1.29	41:35	7940.94	T	T	0.997	
		1.21	41:43	82202.74	T	T	1.000	
		1.22	42:10	35164.71	T	T	1.011	AR
		3.84	42:30	75.64	F	F	1.019	
		1.75	42:36	27.29	F	F	1.022	
	D	1.40	42:50	42.44	T	F	1.027	RV
390		*** Total ***		962753.38	# of Peaks:		11	
402		2.06	39:17	175.50	F	F	0.942	
		1.19	41:34	31650.90	T	T	0.997	
		1.17	41:42	38490.56	T	T	1.000	
		1.20	42:10	61378.22	T	T	1.011	
		3.05	42:35	321.89	F	F	1.021	
402		*** Total ***		132017.07	# of Peaks:		5	
408		0.93	45:00	1249245.57	T	T	1.000	-S
		0.92	45:34	1354849.00	T	F	1.013	-S
		0.88	46:31	11938.44	T	F	1.034	
		0.93	47:11	33932.54	T	T	1.049	
408		*** Total ***		2649965.55	# of Peaks:		4	
418		0.47	44:59	31730.63	T	T	1.000	
		1.34	45:34	1806.47	F	F	1.013	
		0.59	45:54	2729.12	F	F	1.020	
		0.46	47:10	20718.06	T	T	1.049	
		3.96	48:06	188.94	F	F	1.069	
418		*** Total ***		57173.22	# of Peaks:		5	
424		1.00	45:25	1853232.19	T	F	0.977	S
		1.01	46:31	1302374.31	T	T	1.000	S
	D	2.29	50:18	274.10	F	F	1.082	NH
424		*** Total ***		3155880.60	# of Peaks:		3	
436		1.34	45:26	1269.40	F	F	0.977	

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Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
436		1.03	46:30	23947.27	T	T	1.000	
		0.91	47:06	86.19	T	F	1.013	
436		*** Total ***		25302.86	# of Peaks:		3	
442		0.97	52:10	1407661.81	T	T	1.004	-S
442		*** Total ***		1407661.81	# of Peaks:		1	
458		0.93	51:57	3130535.76	T	T	1.000	-S
458		*** Total ***		3130535.76	# of Peaks:		1	
470		0.45	50:24	46.46	F	F	0.970	
		1.02	51:57	28978.41	T	T	1.000	
		0.64	53:37	70.91	F	F	1.032	
470		*** Total ***		29095.78	# of Peaks:		3	

*** End of Report ***

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Listing of S9037911.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
202	10:44	106.60	15:31	336.48	18:19	153.84	19:51	366.33
	11:25	48.95	15:39	171.72	18:30	280.04	20:03	233.47
	13:32	227.80	16:21	271.83	18:38	499.25	20:23	32719.90
	14:03	32.60	17:14	1382.78	19:15	3721.38		
	14:45	41.33	18:07	94.01	19:27	920.52		
204	11:41	12.41	13:40	22.06	17:34	36.62	20:12	104.39
	11:53	13.61	13:56	13.95	17:44	14.10	20:23	1048.53
	12:31	22.85	16:18	62.06	18:36	8.72	20:32	19.14
	13:19	24.36	17:15	25.55	19:15	85.94		
	13:31	36.64	17:26	8.38	19:28	234.16		
238	17:30	23.00	18:28	123.73	19:21	33.54	20:20	24.39
	17:48	14.77	18:42	175.[illegible]	19:30	70.17	21:27	32.49
	17:56	19.39	18:59	89.83	19:46	59.39		
	18:05	28.15	19:11	39.20	20:00	90.11		
240	17:25	87.86	18:19	98.34	19:21	100.08	20:00	97.30
	17:31	124.19	18:29	85.87	19:29	56.65	20:07	36.18
	17:43	23.19	18:39	193.22	19:37	78.03	20:20	55.59
	18:03	106.65	19:11	42.02	19:44	80.80		
252	18:17	22.68	19:30	132.77	20:48	27.65	22:37	146.51
	18:40	91.23	19:39	550.87	21:19	21.94	22:53	568.62
	18:47	168.79	19:57	52.76	21:30	119.05		
	19:00	41.38	20:05	58.41	21:57	84.82		
	19:21	96.86	20:25	134.41	22:03	72.60		
254	18:16	7.37	19:47	52.11	20:57	9.20	22:34	11.35
	18:40	22.25	20:01	30.05	21:13	8.34	22:53	37.73
	18:59	20.86	20:22	39.55	21:37	28.83		
	19:26	45.14	20:33	65.33	21:52	22.07		
	19:39	59.85	20:44	8.19	22:25	29.15		
270	22:47	11.02	24:01	276.35	24:53	105.45	25:31	11.60
	23:33	4548.43	24:23	210.26	25:05	220.17	25:48	11.49
	23:51	195.87	24:38	153.94	25:22	30.99	26:17	17.80
272	22:43	40.75	24:09	79.26	24:52	100.91	25:42	47.27
	23:35	4216.58	24:23	167.68	25:04	217.26	26:00	7.41
	23:59	203.21	24:36	221.08	25:26	22.36		
286	23:33	3328.22	24:26	260.57	25:06	63.18	25:49	42.24
	23:56	109.65	24:45	107.88	25:14	19.83	26:01	133.24
	24:04	74.47	24:51	115.53	25:34	181.73	26:28	30.66
288	23:34	3003.92	24:26	223.85	25:18	63.34	26:27	26.83
	23:57	161.49	24:44	125.82	25:34	152.84		
	24:07	64.77	24:51	136.91	25:44	58.25		
	24:17	46.55	25:06	83.41	26:02	146.02		
218	11:40	49.96	16:10	8.70	18:40	60.19	20:24	72.04
	14:27	36.03	16:24	44.20	18:58	42.79	20:42	63.83
	15:41	97.70	17:44	8.82	19:47	35.55		

Listing of S903791I.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
220	11:41	17.51	15:36	37.90	17:18	48.51	19:25	136.00
	12:33	85.33	15:45	41.01	18:07	34.80	20:31	92.59
	14:23	29.92	16:10	28.23	18:27	9.56	21:04	33.01
	14:58	24.38	16:23	29.08	18:50	63.93	21:28	79.61
304	27:44	7.13	29:07	788.31	30:40	956.95	32:36	31.16
	27:54	410.98	29:31	472.08	31:10	110.52	32:50	7.04
	28:11	690.98	29:53	901.09	31:24	86.53	33:05	901.85
	28:30	933.83	30:09	308.80	32:04	62.65	33:27	28.62
	28:49	933.83	30:26	142.84	32:12	68.36		
306	27:07	27.42	29:30	549.29	31:12	110.21	32:51	68.79
	27:56	473.10	29:53	1169.91	31:24	74.22	33:05	1266.38
	28:10	924.09	30:08	448.80	31:52	37.47	33:54	15.59
	28:30	1021.59	30:22	178.56	32:02	33.41	34:11	24.07
	28:49	1295.84	30:40	1189.15	32:18	12.17		
	29:07	978.42	30:58	18.13	32:44	11.96		
320	27:38	22.93	29:05	195.48	30:51	234.19	32:06	30.64
	27:45	42.59	29:24	295.73	31:13	797.12	32:15	42.72
	28:04	29.51	29:48	9.99	31:21	935.67	32:35	62.88
	28:15	32.79	30:06	2094.84	31:31	246.22	34:00	106.49
	28:27	23.13	30:20	1319.13	31:40	301.91	34:33	66.98
	28:42	361.42	30:38	37.33	31:53	332.40	35:02	135.96
322	27:46	104.40	29:24	391.17	31:31	188.89	34:01	51.53
	28:05	88.41	30:06	2716.90	31:40	305.75	34:34	31.02
	28:14	17.90	30:20	1713.71	31:53	482.64	34:53	10.78
	28:32	14.31	30:51	284.86	32:06	219.03	35:02	160.42
	28:43	274.89	31:13	907.32	32:16	123.44		
	29:06	310.12	31:21	1194.92	32:36	27.79		
340	31:42	15.13	34:30	3640.26	35:45	2680.46	37:40	284.86
	32:50	43.11	34:59	3733.56	36:20	3169.65		
	33:04	25871.13	35:23	4909.01	36:36	4753.99		
	33:38	6.92	35:35	180.10	36:58	70.40		
342	31:50	11.81	33:42	14.71	34:53	2195.79	36:36	2962.22
	32:07	10.81	33:53	6.82	35:22	3095.18	37:00	22.02
	32:23	9.36	34:01	12.59	35:35	105.45	37:10	20.85
	32:48	12.11	34:10	6.77	35:45	1726.73	37:40	178.59
	33:04	16236.27	34:30	2339.28	36:20	2074.38		
356	32:40	17.90	35:21	3055.09	36:08	5330.94	37:01	2024.86
	34:08	16.90	35:32	2890.55	36:23	697.73	37:12	31.32
	34:31	2251.98	35:46	2011.36	36:34	396.27	37:29	1193.91
	35:02	3826.34	36:00	1605.57	36:49	1862.24	37:46	7.17
358	32:44	63.00	35:02	2372.65	36:00	962.42	36:49	1216.68
	33:20	9.63	35:21	2329.39	36:08	3481.20	37:01	1242.08
	34:31	1556.65	35:32	2011.81	36:23	546.16	37:28	734.70
	34:49	29.98	35:46	1398.29	36:34	257.59		

Listing of S9037911.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
316	29:46	57.88	30:06	262.33	30:39	52319.58	31:08	459.29
318	29:46	146.17	30:08	338.74	30:39	67057.24	31:09	625.96
328	31:30	75491.82	32:18	116.44				
332	31:13	58204.81	31:29	34714.20				
334	31:13	71883.15	31:29	41513.61				
352	34:52	200.94	35:44	686.63	37:40	767.25		
	35:22	37093.67	36:19	41902.18				
354	34:53	178.68	35:44	495.26	37:03	51.49		
	35:22	23714.15	36:19	27306.23	37:39	484.08		
368	35:26	194.38	35:52	37.92	36:49	21535.06	37:28	144.45
370	35:26	793.41	36:15	46.31	37:28	253.13		
	35:40	28.63	36:49	13614.13				
374	38:05	268.92	39:36	2368.67	41:01	1049.60	42:02	15.22
	38:15	6.83	39:50	428708.56	41:10	50.31	42:10	33.63
	38:22	15.86	40:26	31880.60	41:20	8124.92	42:32	1199.76
	38:56	78110.41	40:36	10972.46	41:24	5953.82	42:40	7549.41
	39:08	257426.84	40:46	1117.89	41:52	11.37		
376	38:07	212.58	40:16	857.97	41:20	7260.68	42:32	1167.46
	38:56	68239.69	40:26	28531.92	41:25	5129.10	42:39	6679.35
	39:08	221356.06	40:36	11036.60	41:39	152.09		
	39:36	2304.03	40:54	176.03	41:43	66.98		
	39:51	434398.13	41:01	955.99	41:52	42.22		
390	38:11	10.88	40:11	417.76	41:35	4471.75	42:30	60.00
	38:17	13.41	40:25	21857.85	41:43	45073.86	42:36	17.38
	38:42	9.55	40:45	160810.16	41:59	229.89	42:41	19.70
	39:42	230509.58	41:00	49001.40	42:10	19337.95	42:46	11.06
	40:06	281.24	41:21	567.16	42:27	66.84	42:50	24.76
392	38:25	10.25	40:11	161.26	41:00	40610.88	42:10	15826.76
	38:28	8.25	40:16	128.72	41:28	110.82	42:31	15.64
	38:46	8.08	40:25	17282.00	41:35	3469.19	42:37	9.91
	39:42	187120.38	40:45	129528.35	41:43	37128.88	42:49	17.68
384	38:56	35.00	40:11	58.01	41:24	17519.22		
	39:07	57.76	40:25	17118.90	41:49	55.27		
	39:51	151.05	40:35	18845.52	42:32	13263.28		
386	38:07	46.46	39:07	116.71	40:25	32427.84	42:00	55.64
	38:33	41.42	39:51	75.12	40:35	37028.80	42:32	25369.75
	38:54	55.79	40:09	27.25	41:24	34103.63		
402	39:17	118.24	41:42	20715.17	42:35	242.32		
	41:34	17224.32	42:10	33416.81				

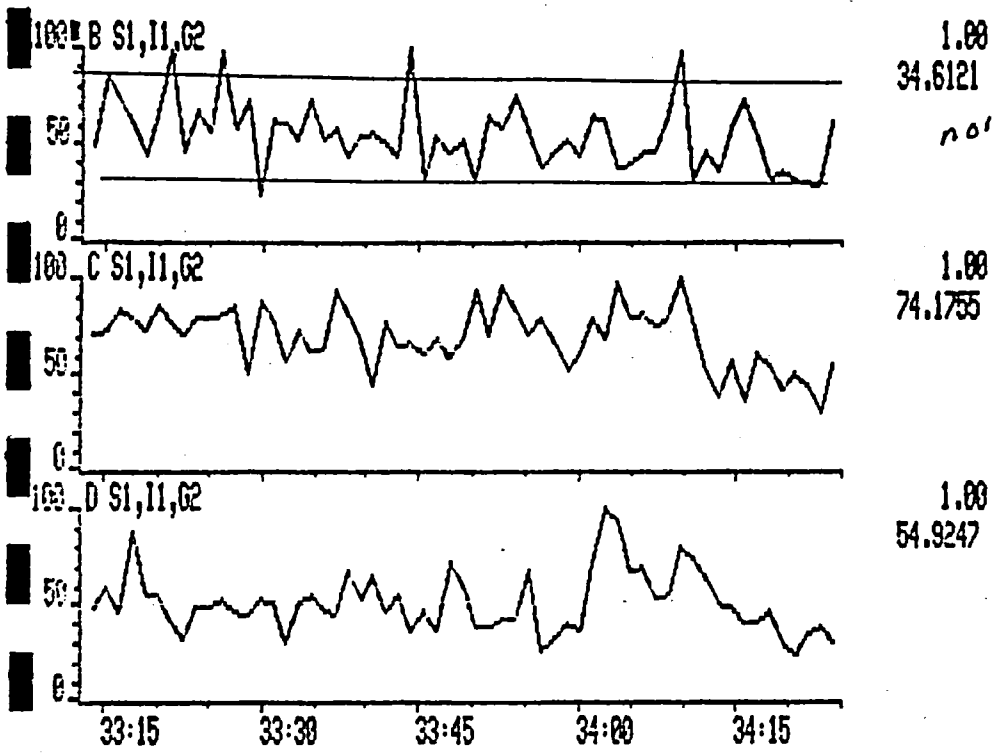
Listing of S903791I.dbf File
Raw Mass, Retention Time and Data Area

NOV 19 1990
ENVIRONMENTAL TRADES

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
404	39:17	57.26	41:42	17775.39	42:35	79.57		
	41:34	14426.58	42:10	27961.41				
408	44:11	31.41	45:34	649227.06	47:11	16359.05		
	45:00	601292.44	46:31	5574.38				
410	45:00	647953.13	45:34	705621.94	46:31	6364.06	47:11	17573.49
418	43:09	13.50	44:59	10182.37	46:38	56.31	48:06	150.88
	43:27	23.54	45:34	1036.11	47:10	6539.16		
	44:32	12.23	45:54	1015.59	47:39	34.16		
420	43:35	21.11	45:54	1713.53	47:56	20.98		
	44:58	21548.26	46:31	74.84	48:05	38.06		
	45:34	770.36	47:10	14178.90	48:27	10.57		
424	45:25	926831.25	46:31	653660.31	49:53	51.29	50:18	190.81
426	43:14	51.48	46:31	648714.00	49:58	150.84		
	45:25	926400.94	47:37	2651.67	50:16	83.29		
436	45:26	726.48	45:56	24.99	46:30	12169.86	47:06	41.15
438	45:26	542.92	46:09	9.00	47:07	45.04		
	45:52	42.75	46:30	11777.41	47:15	37.11		
442	52:10	692202.81	53:35	1087.37	53:53	811.43		
444	52:09	715459.00	54:14	209.86	54:32	220.64		
458	51:57	1504856.38						
460	51:55	1625679.38						
470	50:24	14.33	51:28	16.92	53:00	51.97	53:37	27.59
	51:10	14.11	51:57	14638.56	53:28	23.29		
472	50:22	32.13	52:53	43.01	53:35	43.32		
	51:57	14339.85	53:09	25.84				

*** End of Report ***

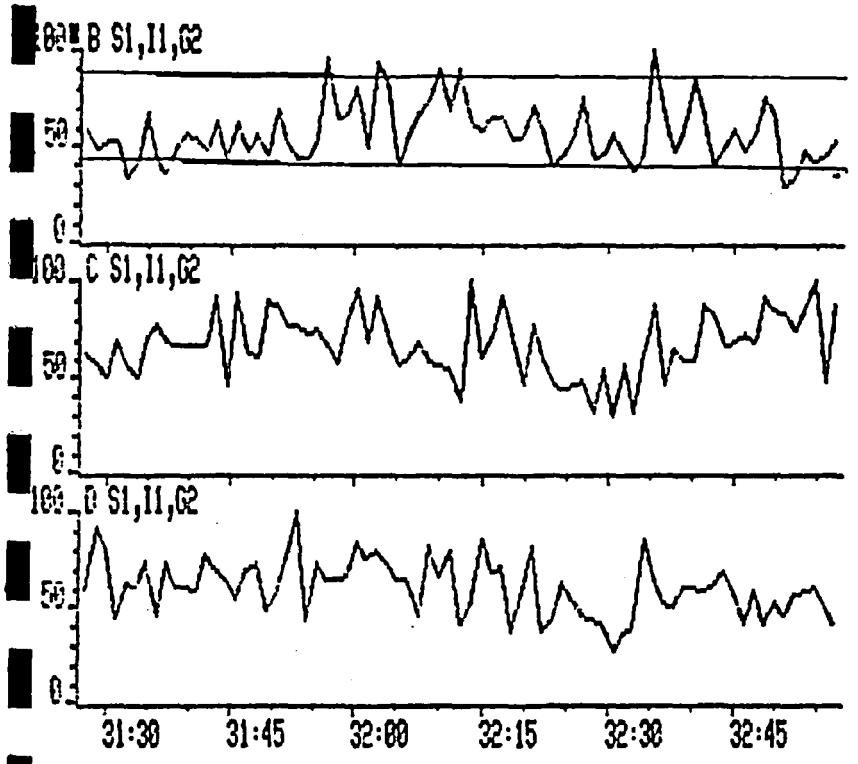
3303791 18-OCT-90 14:34 70S (EI+) Sus:DBSUS
R E B: 303.9816 C: 305.8367 D: 315.9419 E: 317.9389 F: 319.8965
ext:LF2/9111 TLI#16661



noise = 34.6 x 10 x .45
= 155.7
KU 10/31/90

3303731 18-OCT-90 14:34 70S (EI+) SUB:DESUS
[redacted] 2 B: 303.9016 C: 305.8987 D: 315.9419 E: 317.9389 F: 319.8965
Ext:LF2/9111 TLI#16661

NOV 19 1990



1.00
36.9058

1.00
88.0092

1.00
52.7259

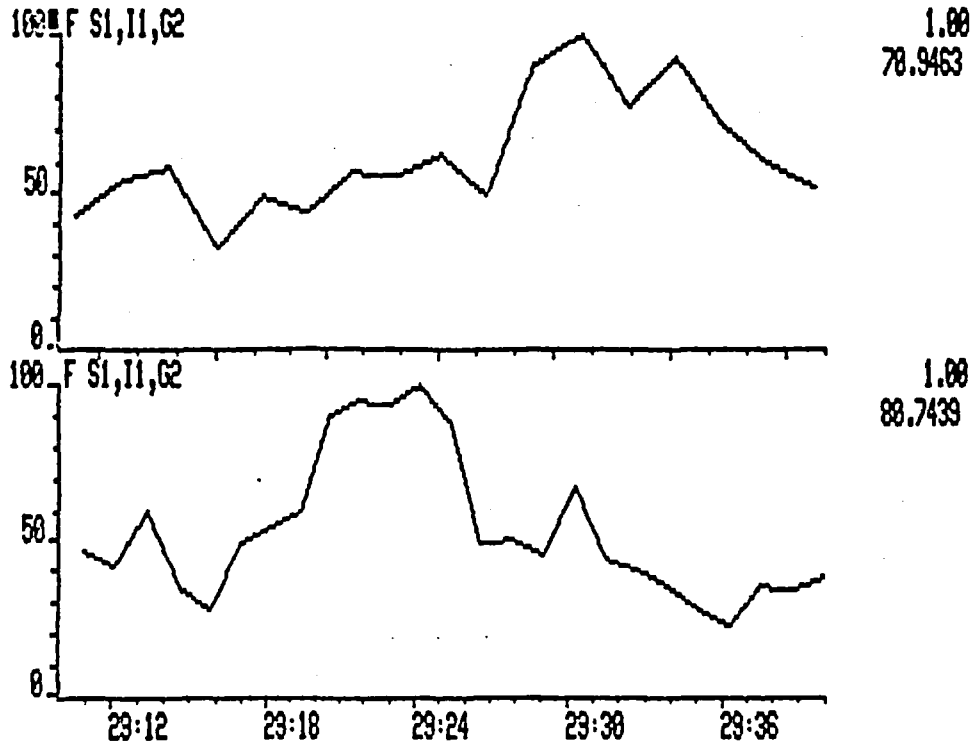
noise=36.9 x .45 = 166.0

KU 10/31/90

12

GF 2 F: 319.8955 G: 321.8936 H: 327.8947 I: 330.9732 J: 331.9368
Text:LF2/9111 TLI#16661

NOV 1 9 1990



Verified by (GC/MS): JP 10-18-9

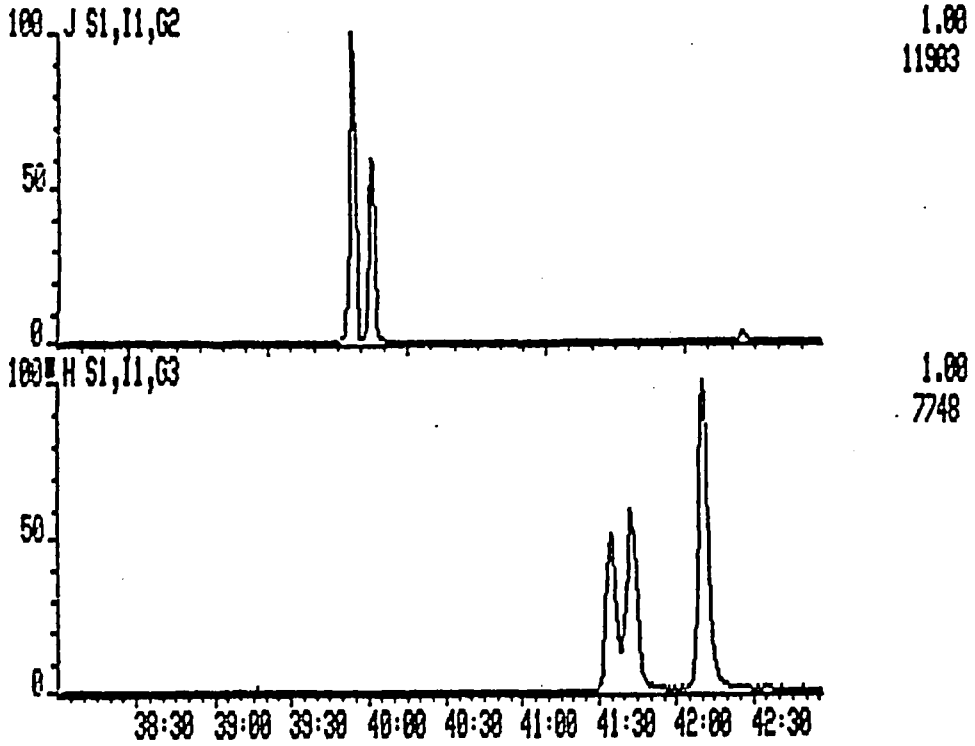
Verified by (Int. QC): TR 10/[redacted]/9

Saturated
- JP

Group 3+4 saturation
except HxCDD,
TR 10/20/90

Process, dilute +
reshoot. TR 10/23/9

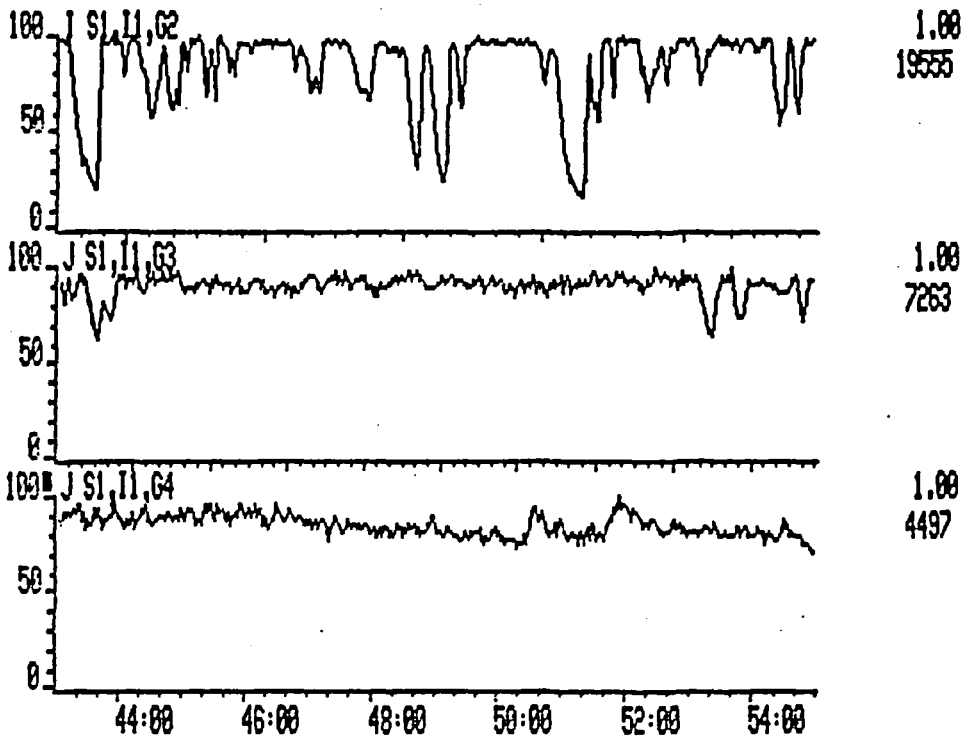
GR 3 F: 391.8127 G: 392.9768 H: 401.8558 I: 403.8529 J: 438.9729
Text:LF2/3111 TLI#16661



RECEIVED
NOV 1 9 1990
ENVIRONMENTAL ...

14

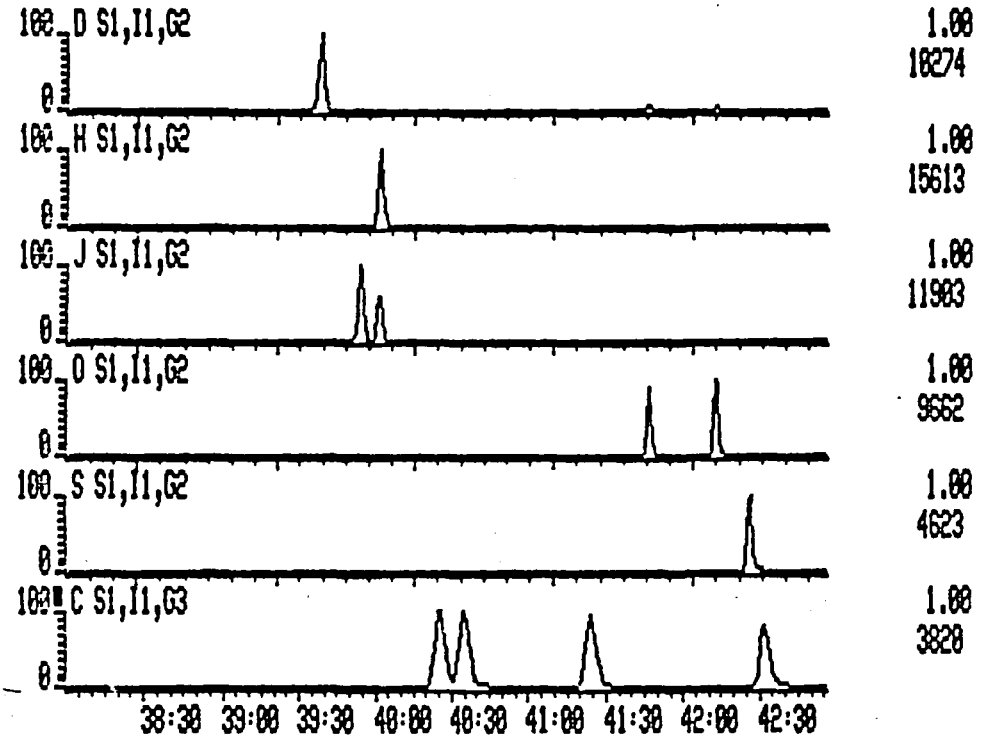
GE 4 D: 419.8220 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Test:LF2/9111 TLI#16661



NOV 1 9 1990
...ENTAL AFFAIRS

15

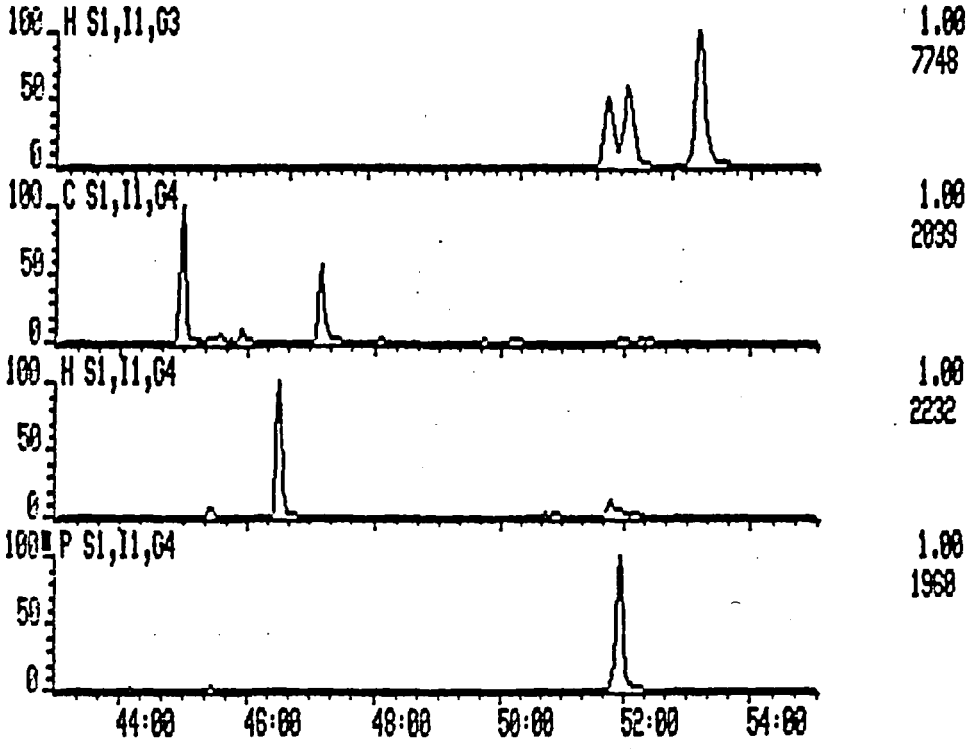
5503/51 10-OCT-90 14:34 /05 (EI+) SQE:06005
GR 3 D: 385.8610 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558
Text:LF2/9111 TLI#16661



NOV 1 9 1990
ENVIRONMENTAL LABS

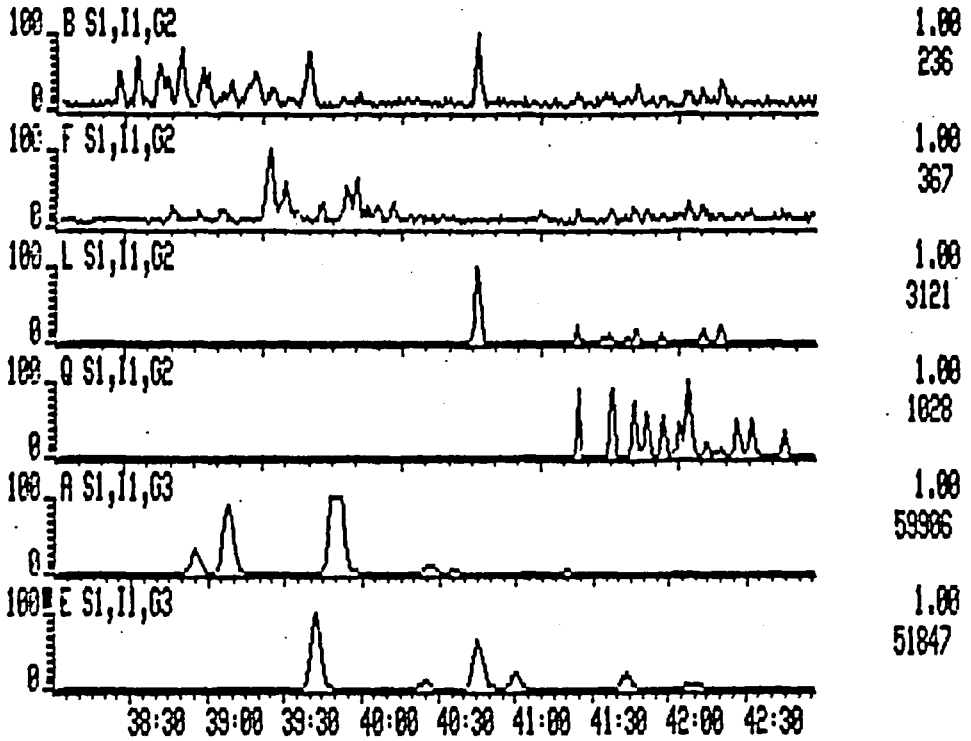
19

GR: 4 D: 419.8226 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text: LF2/9111 TLI#16661



NOV 1 9 1999
ENVIRONMENTAL AFFAIRS

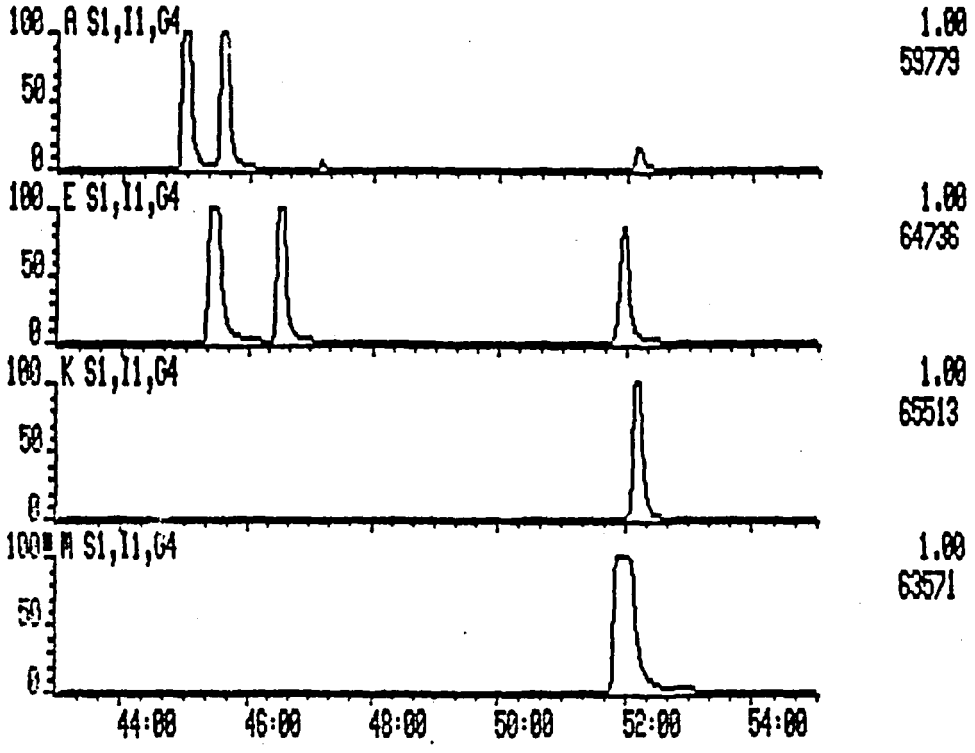
GF: 3 D: 385.8610 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558
Text:LF2/9111 TLI#16661



RECEIVED
NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

17

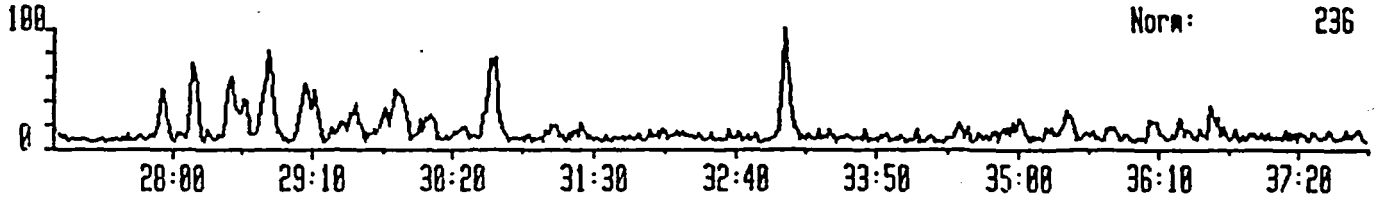
3563/51 18-OCT-90 14:34 783 (EI+) 345-65535
GR 4 D: 419.8228 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text: LF2/9111 TLI#16661



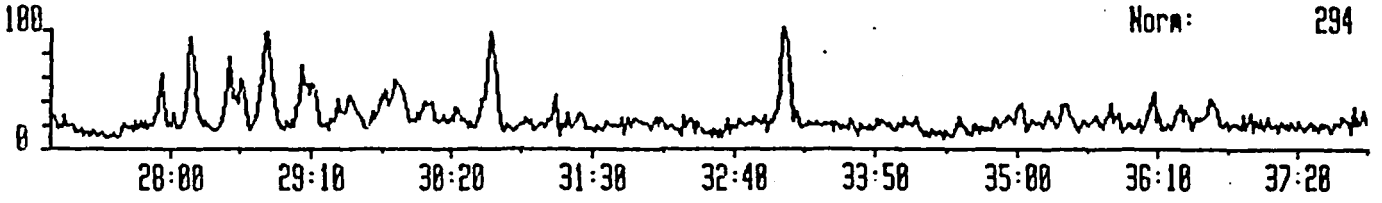
NOV 1 9 1990
ENVIRONMENTAL ANALYS

S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 303.9816
Text:LF2/9111 TLI#16661

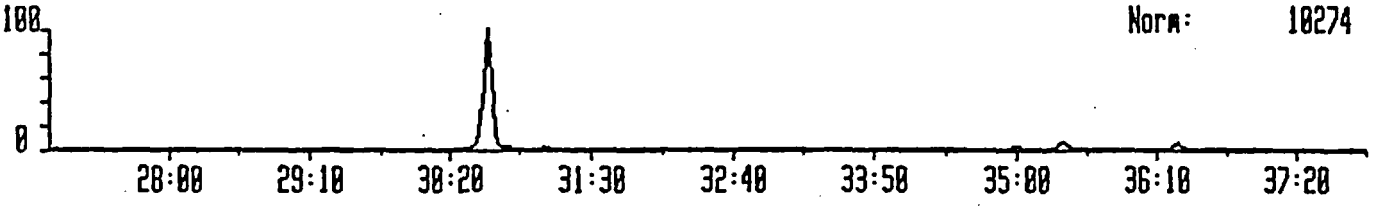
NOV 1 0 1990



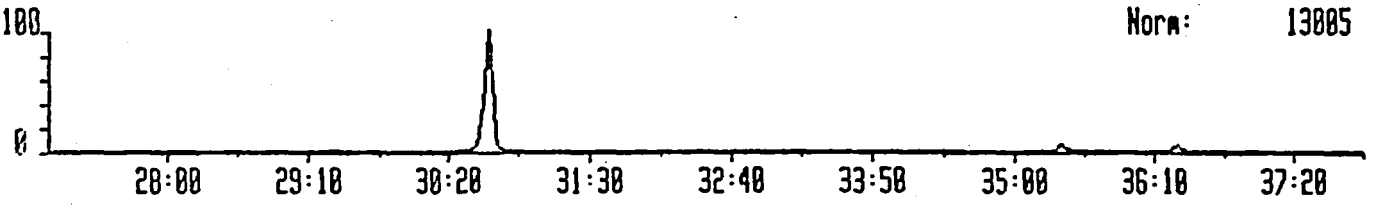
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 305.8987
Text:LF2/9111 TLI#16661



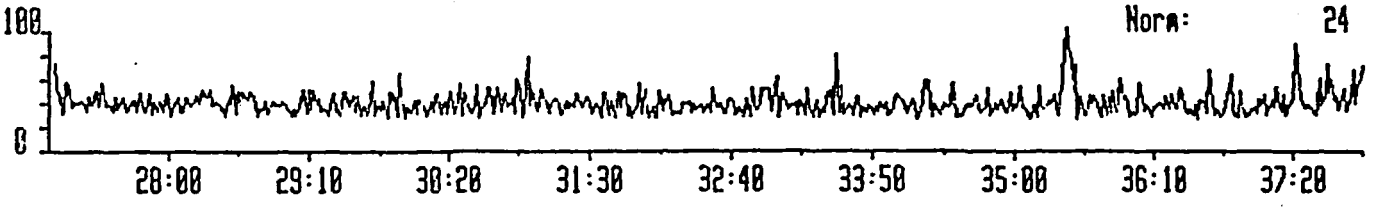
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 315.9419
Text:LF2/9111 TLI#16661



S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 317.9389
Text:LF2/9111 TLI#16661



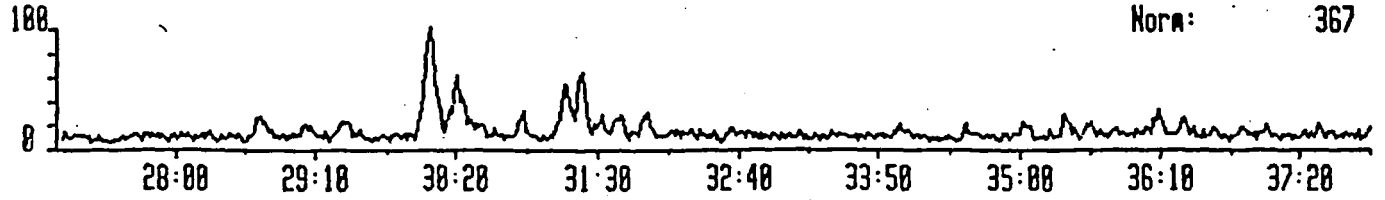
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 375.8364
Text:LF2/9111 TLI#16661



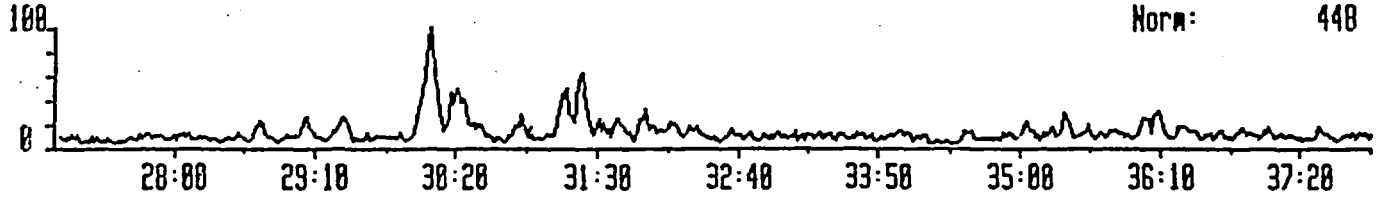
22

S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 319.8965
Text:LF2/9111 TLI#16661

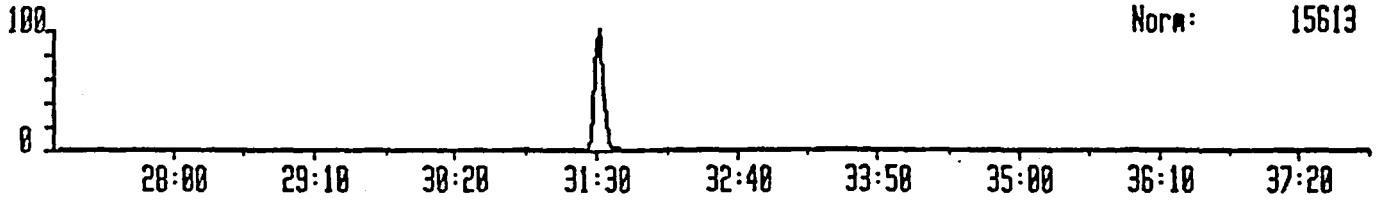
NOV 1 0 1990



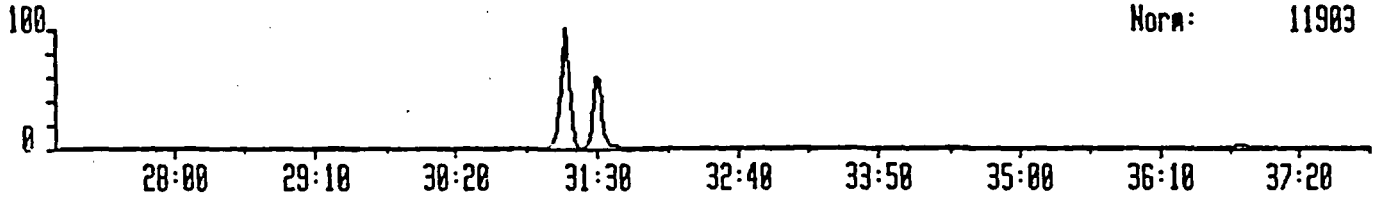
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 321.8936
Text:LF2/9111 TLI#16661



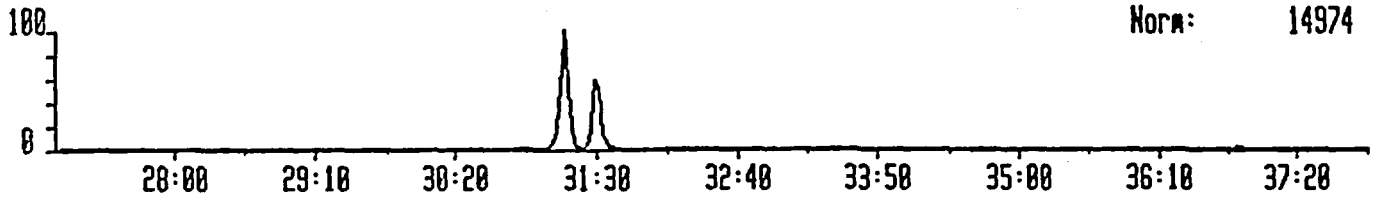
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 327.8847
Text:LF2/9111 TLI#16661



S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 331.9368
Text:LF2/9111 TLI#16661



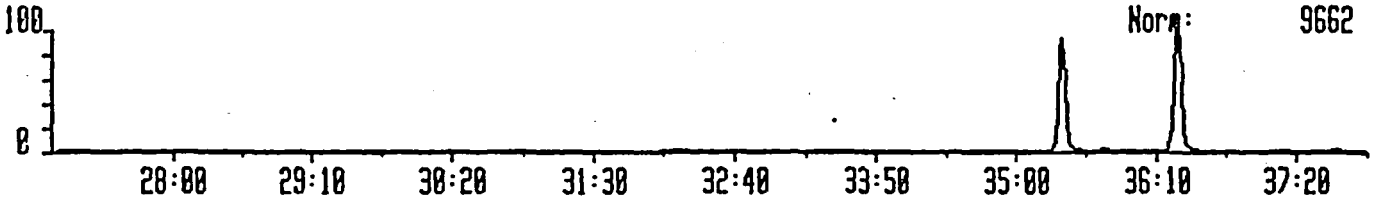
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 333.9338
Text:LF2/9111 TLI#16661



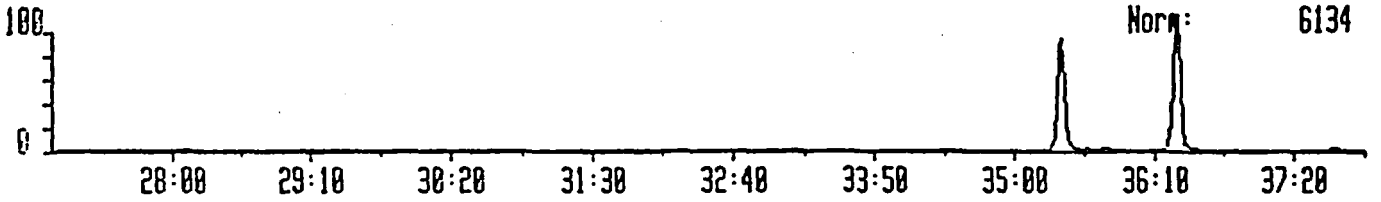
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 339.8597
Text:LF2/9111 TLI#16661

S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 341.8567
Text:LF2/9111 TLI#16661

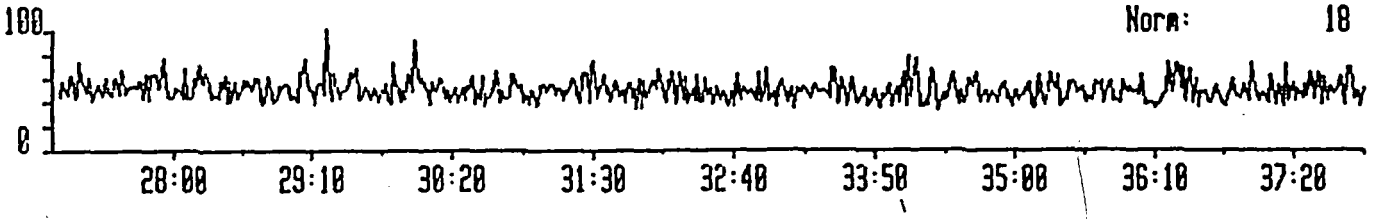
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 351.9000
Text:LF2/9111 TLI#16661



S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 353.8970
Text:LF2/9111 TLI#16661



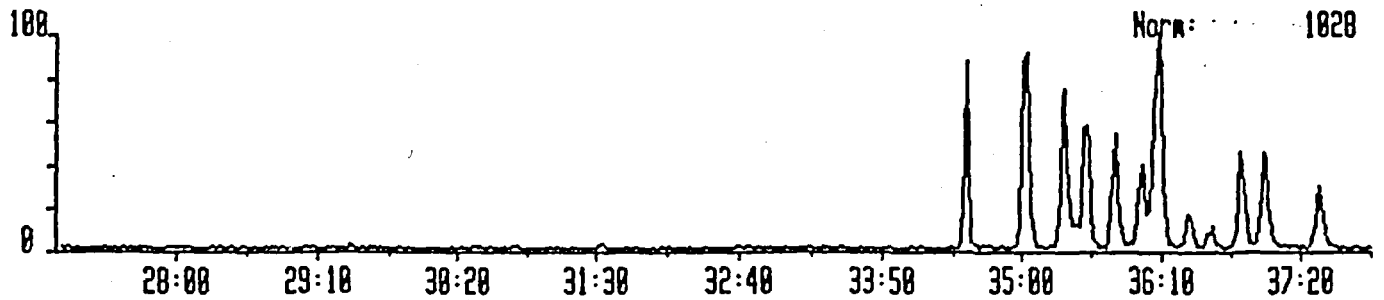
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 409.7974
Text:LF2/9111 TLI#16661



22

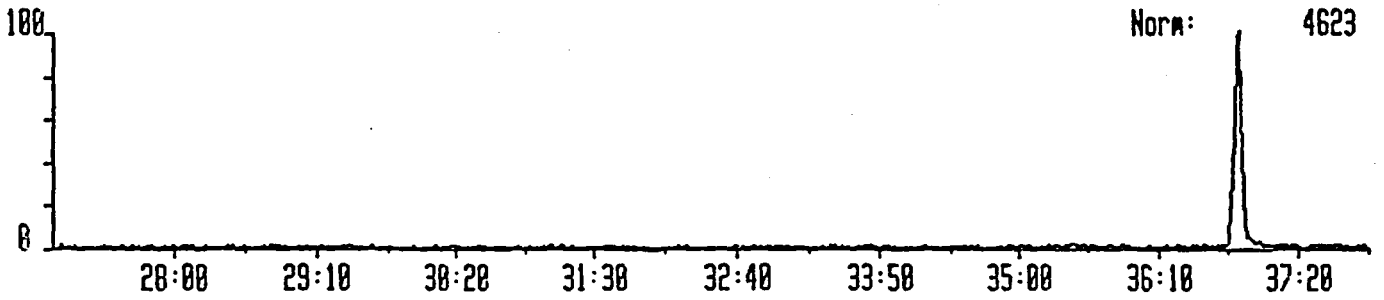
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 355.8546
Text:LF2/9111 TLI#16661

NOV 1 0 1990

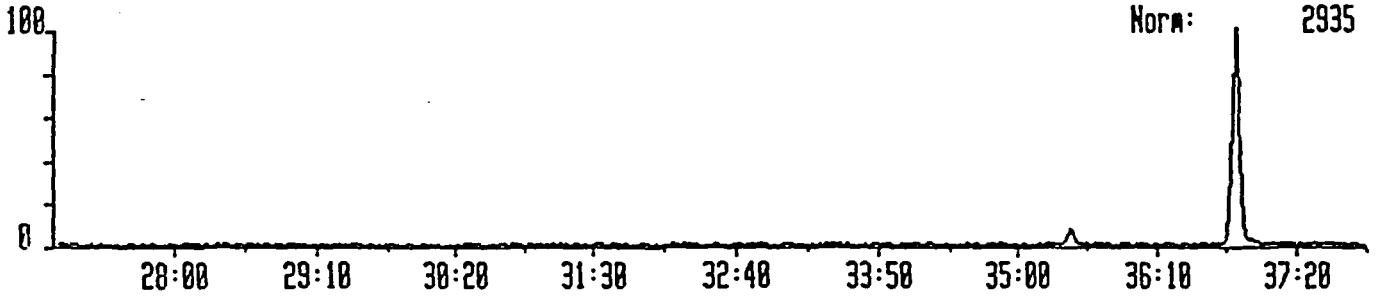


S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 357.8516
Text:LF2/9111 TLI#16661

S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 367.8949
Text:LF2/9111 TLI#16661

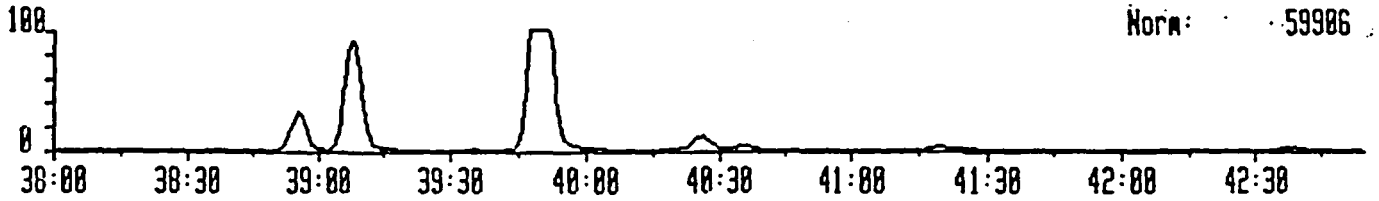


S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 369.8919
Text:LF2/9111 TLI#16661



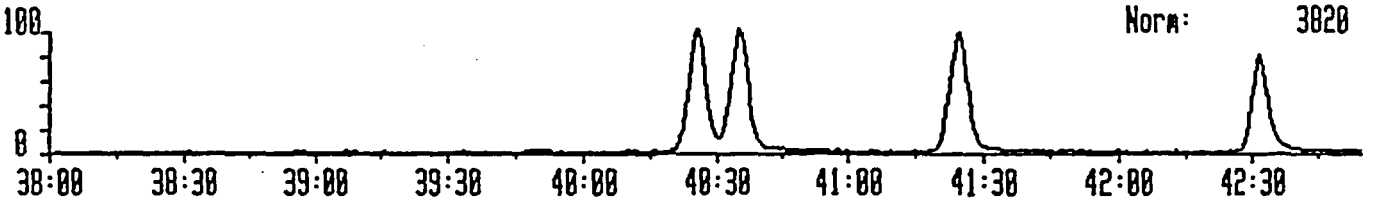
23

S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 373.8208
Text:LF2/9111 TLI#16661

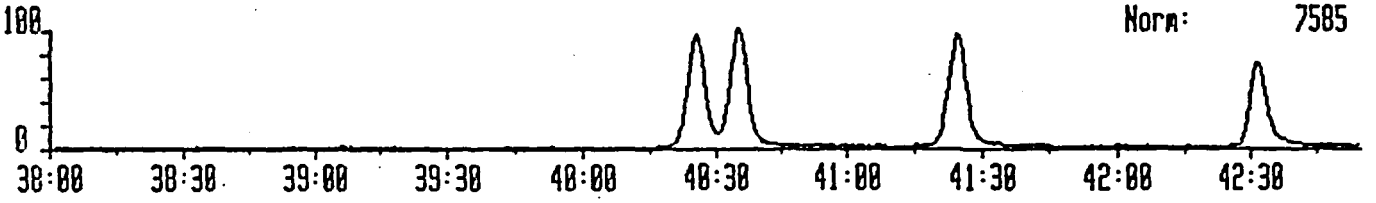


S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 375.8178
Text:LF2/9111 TLI#16661

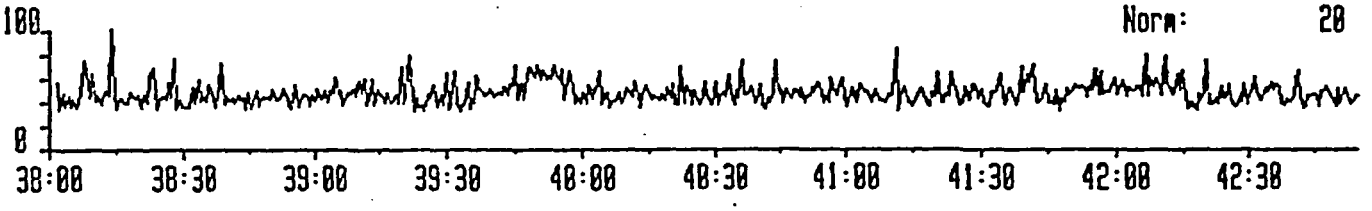
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 383.8639
Text:LF2/9111 TLI#16661



S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 385.8610
Text:LF2/9111 TLI#16661

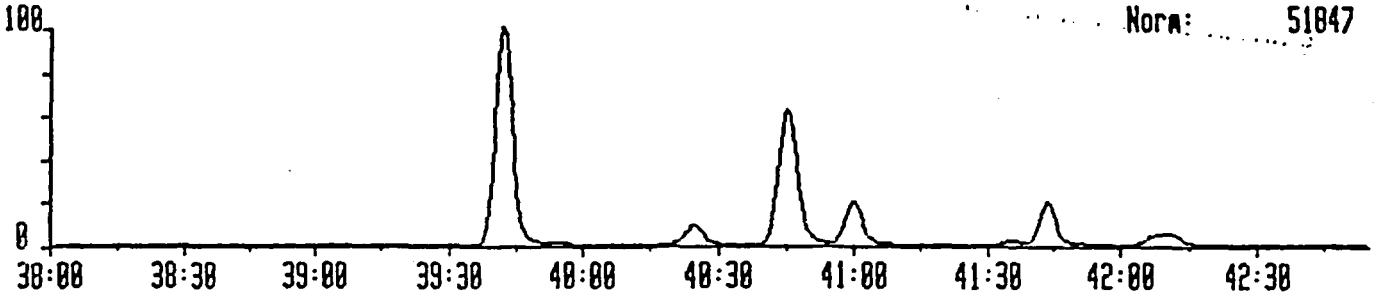


S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 445.7555
Text:LF2/9111 TLI#16661

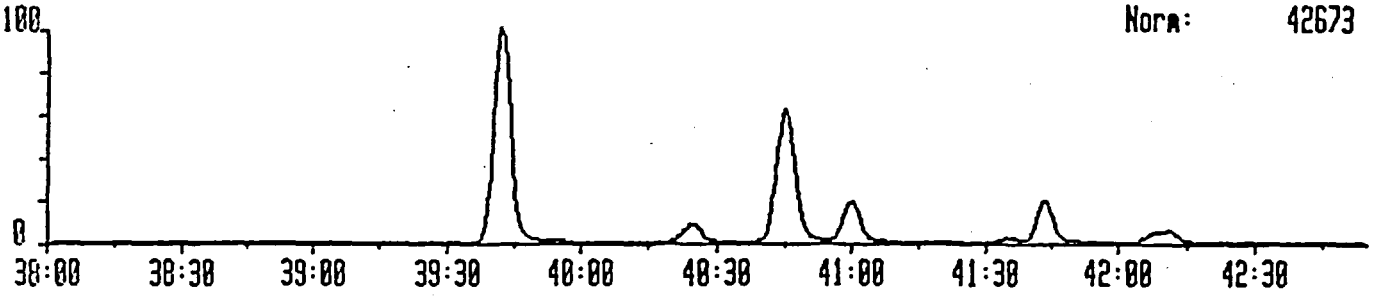


2c

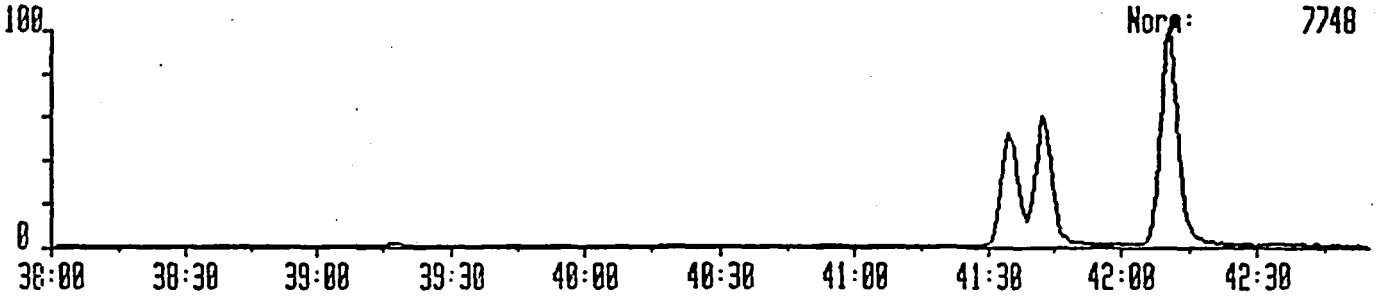
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 389.8156
Text:LF2/9111 TLI#16661



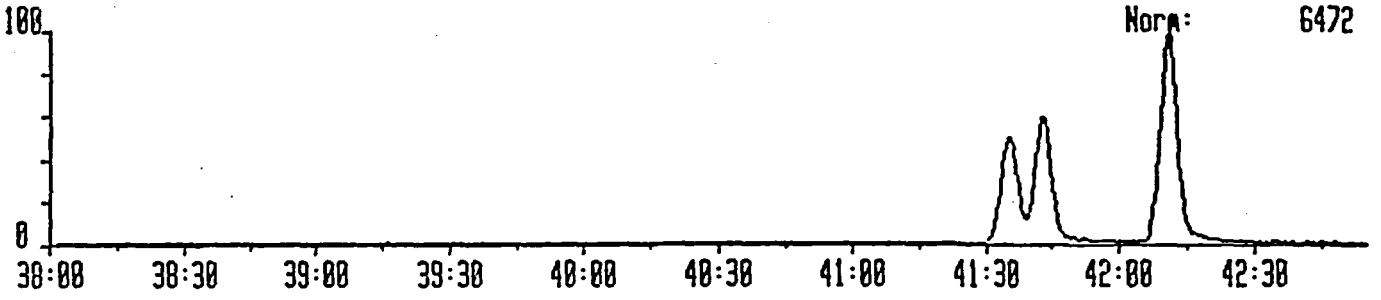
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 391.8127
Text:LF2/9111 TLI#16661



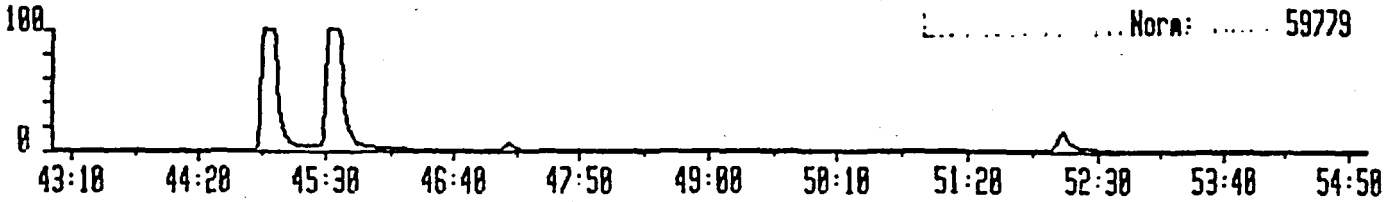
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 401.8558
Text:LF2/9111 TLI#16661



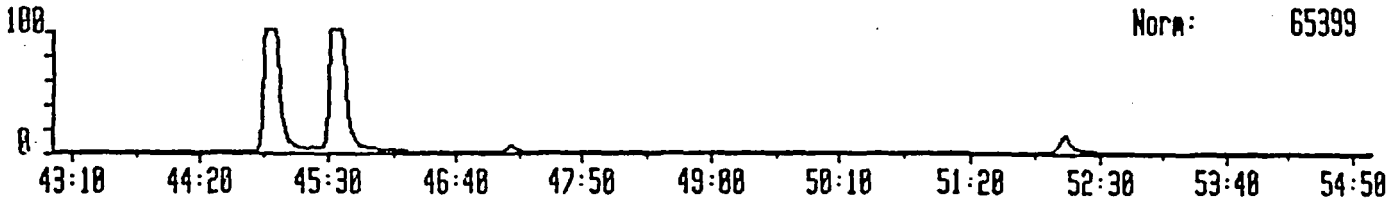
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 403.8529
Text:LF2/9111 TLI#16661



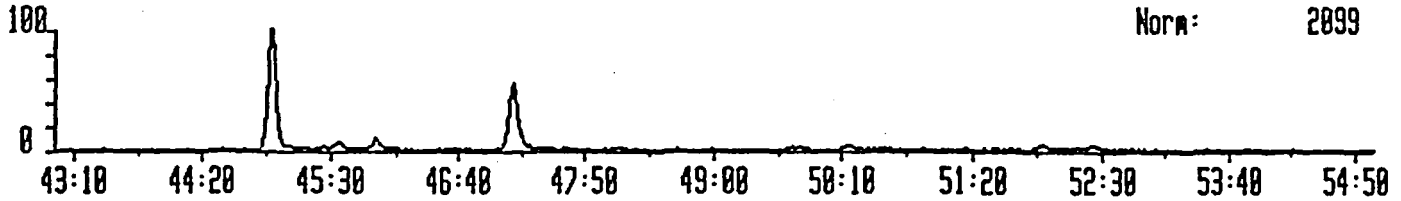
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 407.7818
Text:LF2/9111 TLI#16661



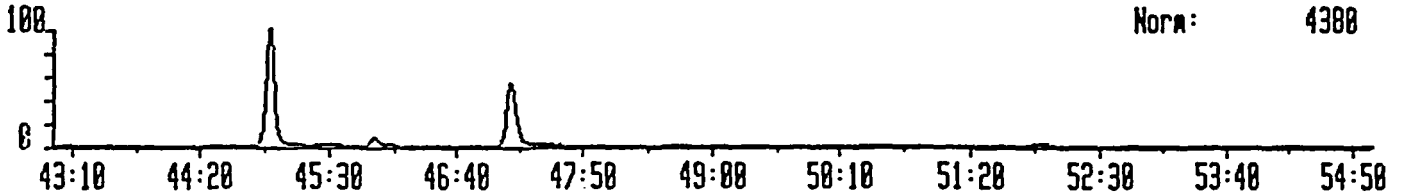
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 409.7789
Text:LF2/9111 TLI#16661



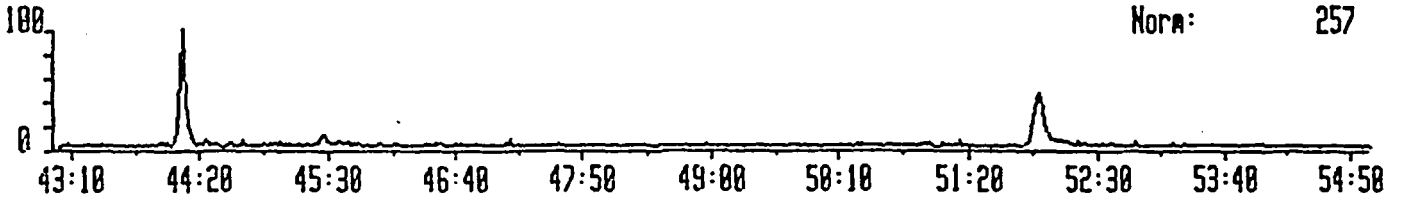
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 417.8253
Text:LF2/9111 TLI#16661



S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 419.8220
Text:LF2/9111 TLI#16661



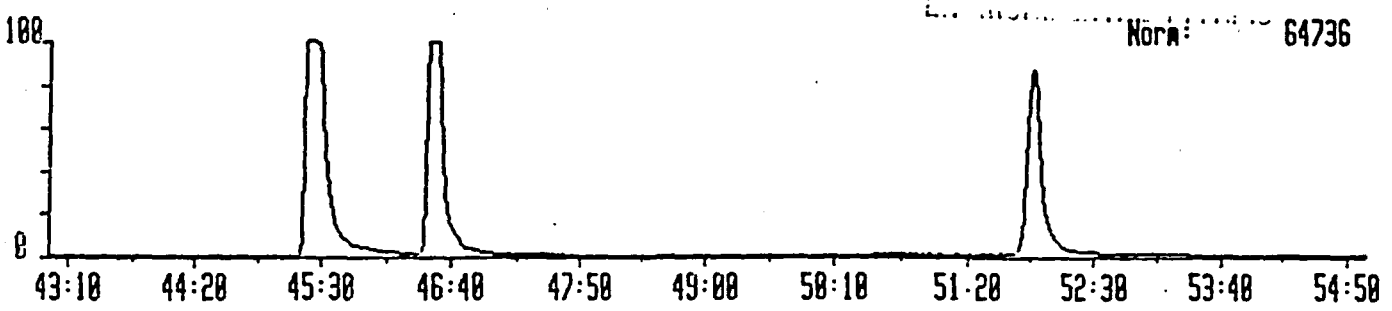
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 479.7165
Text:LF2/9111 TLI#16661



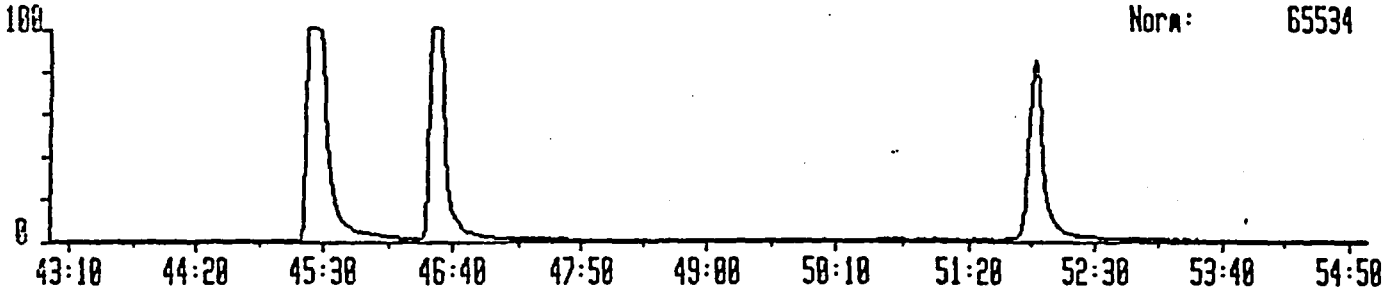
26

S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 423.7766
Text:LF2/9111 TLI#16661

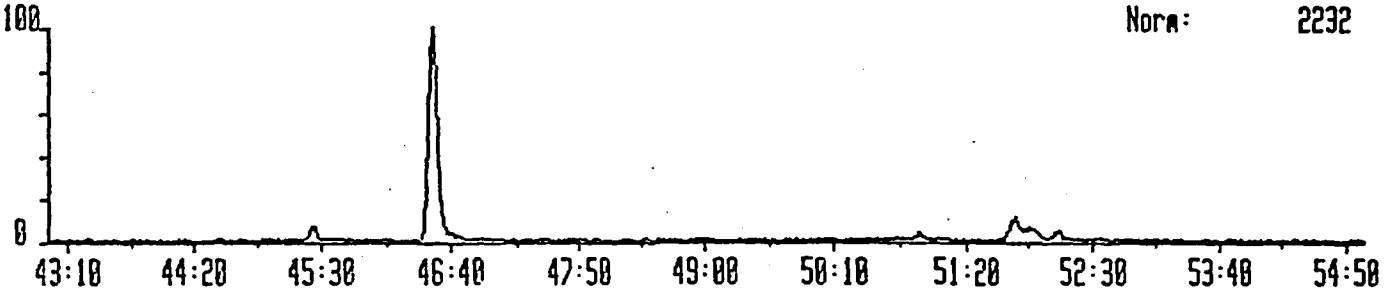
NOV 1 9 1990



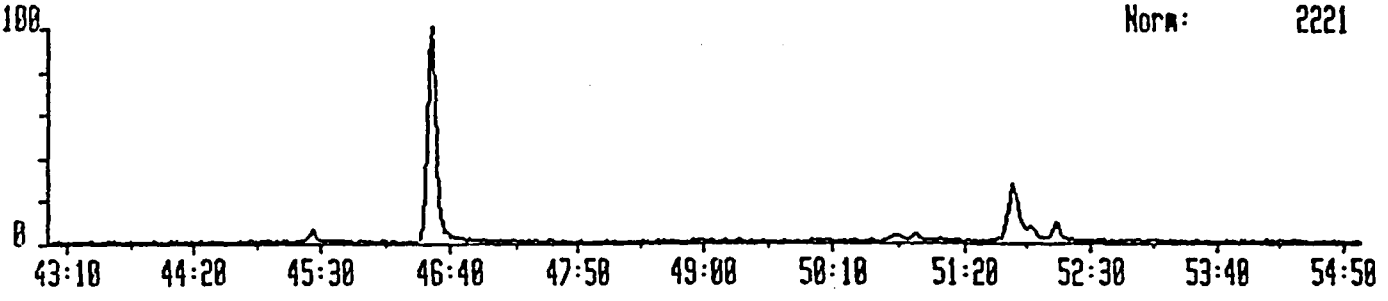
S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 425.7737
Text:LF2/9111 TLI#16661



S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 435.8169
Text:LF2/9111 TLI#16661

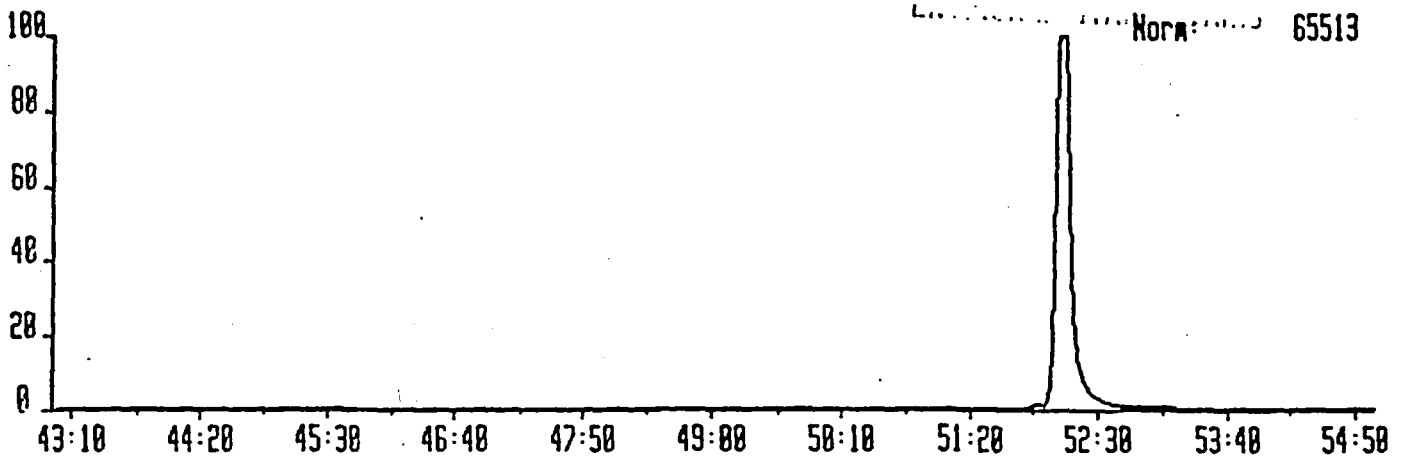


S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 437.8140
Text:LF2/9111 TLI#16661

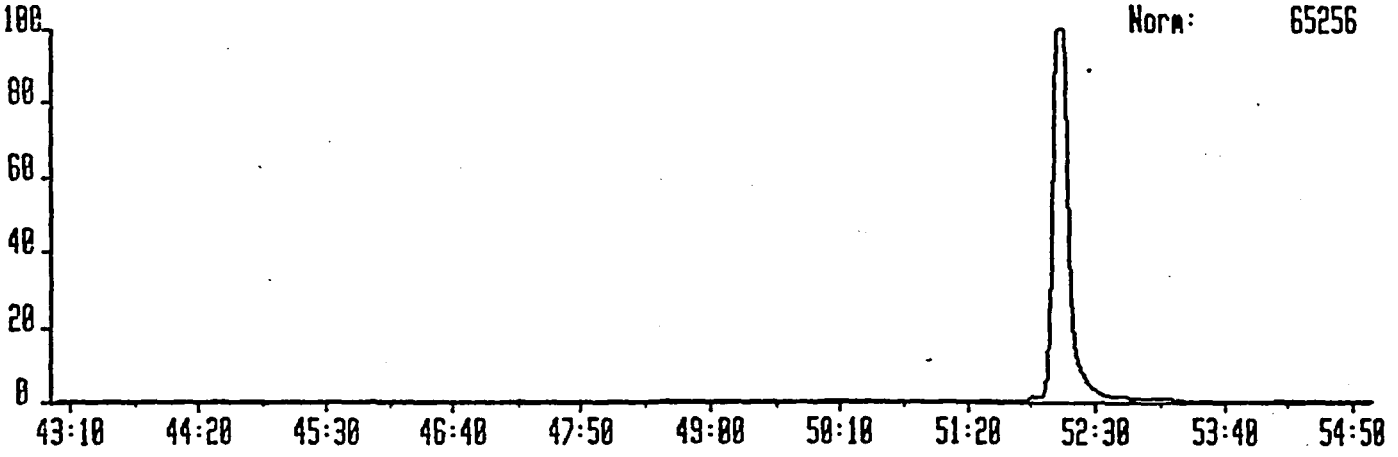


2

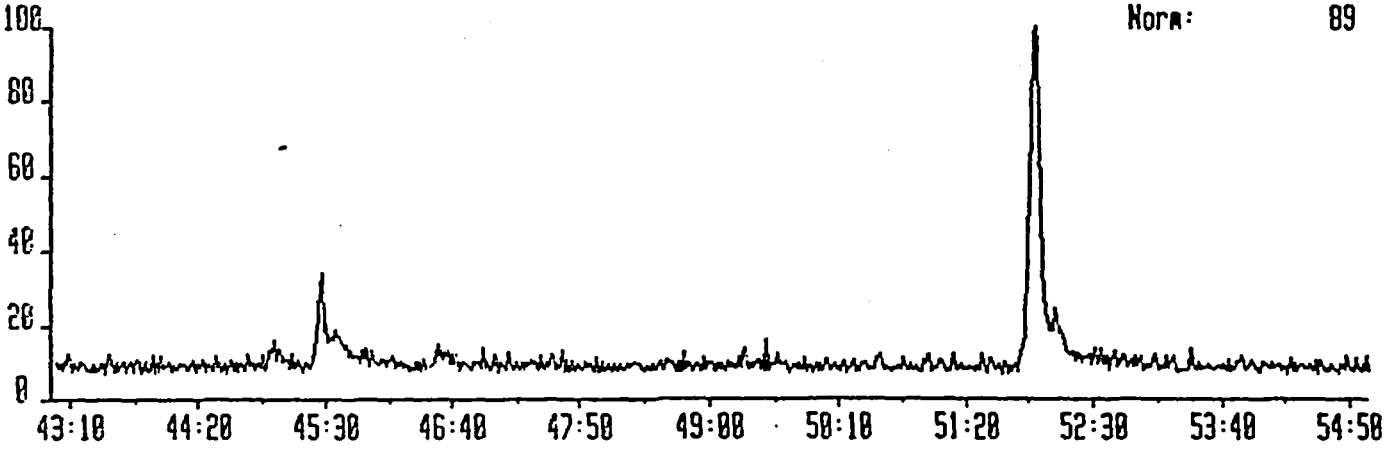
S903791 16-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 441.7428
Text:LF2/9111 TLI#16661



S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 443.7399
Text:LF2/9111 TLI#16661



S903791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 513.6775
Text:LF2/9111 TLI#16661



2.

S983791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 457.7377
Text:LF2/9111 TLI#16661

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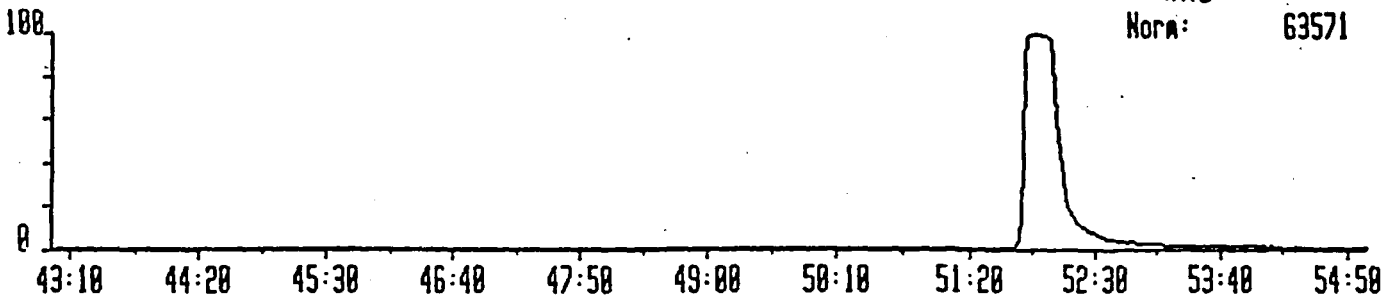
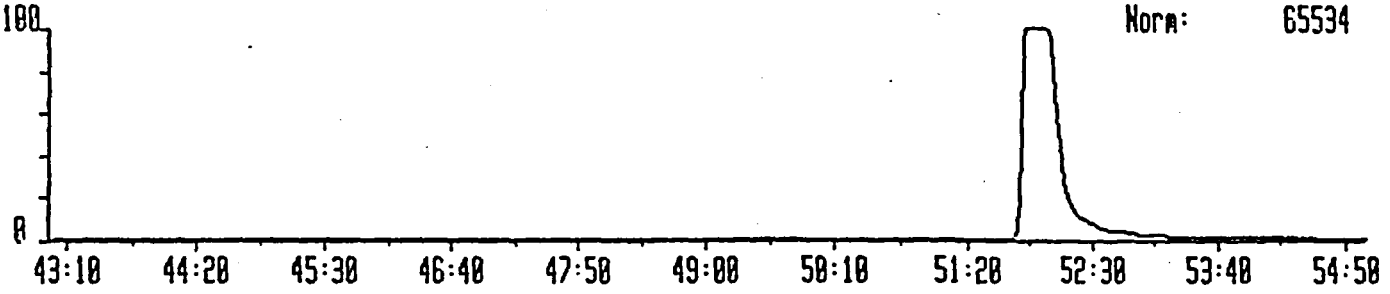
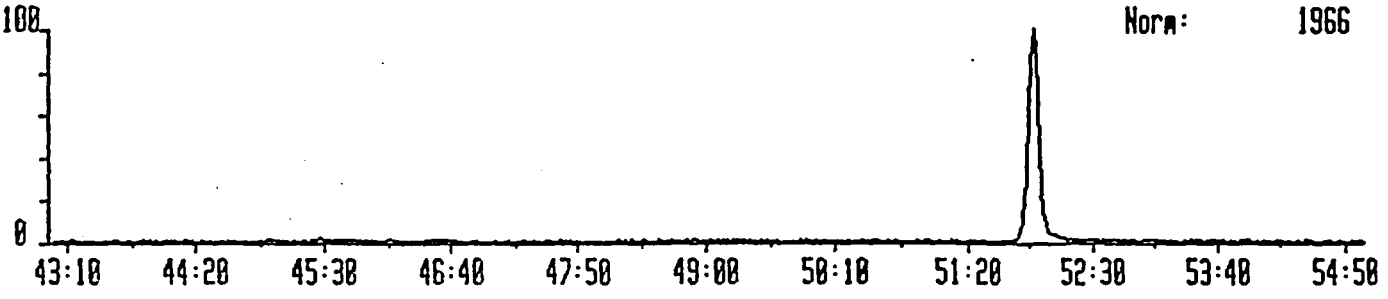
ENVIRONMENTAL ANALYSIS



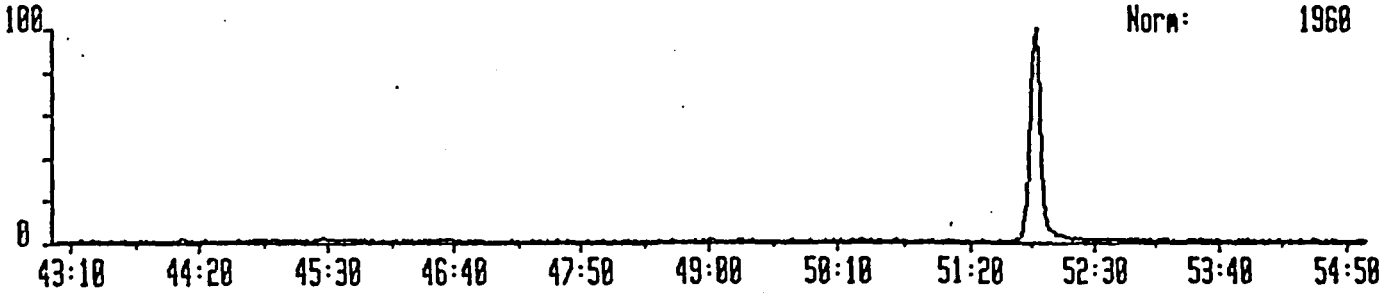
S983791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 459.7348
Text:LF2/9111 TLI#16661



S983791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 469.7779
Text:LF2/9111 TLI#16661

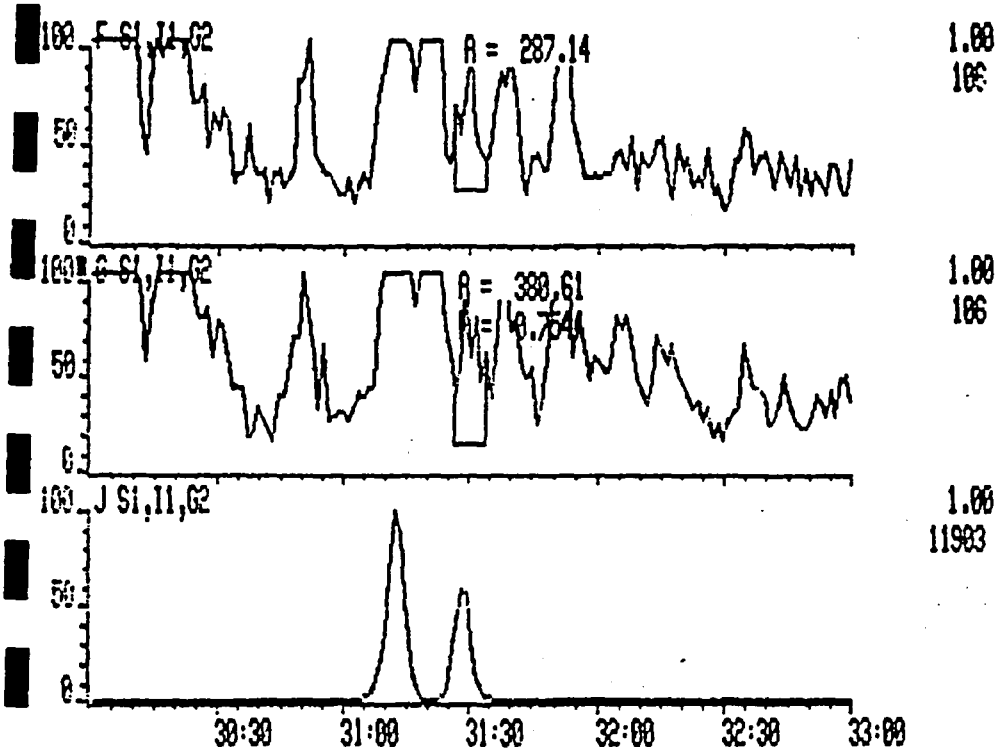


S983791 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 471.7750
Text:LF2/9111 TLI#16661

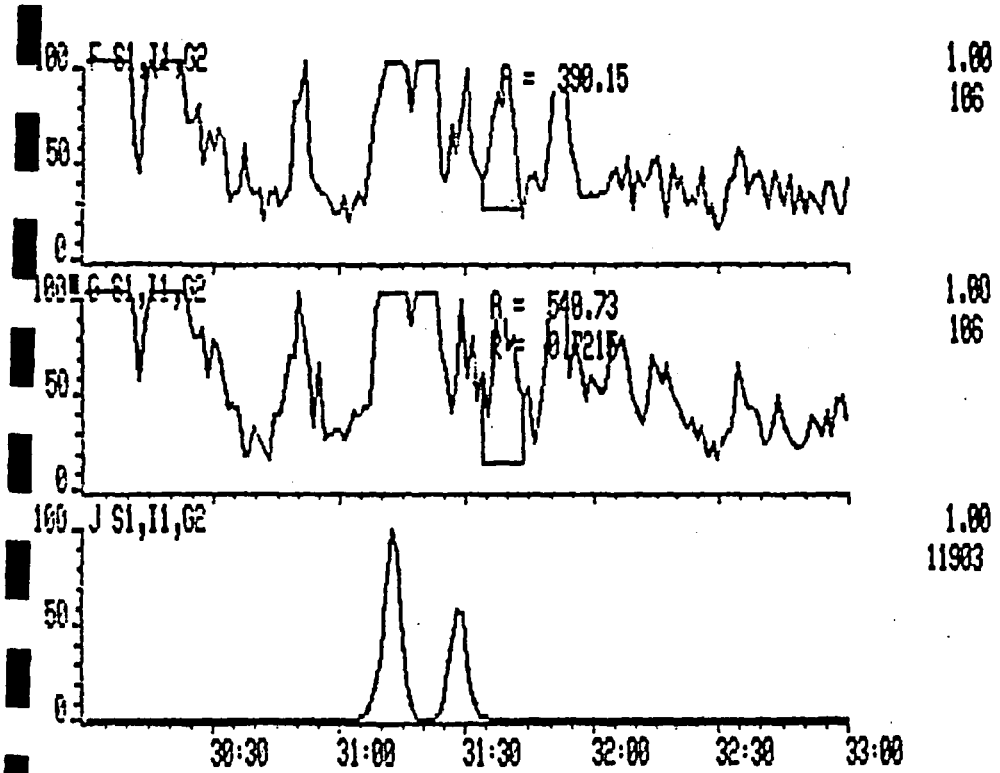


5903731 18-OCT-90 14:34 705 (EI+) Sys:D85US
F 2 F: 319.8365 G: 321.8336 H: 337.8847 I: 338.9732 J: 331.9368
ext:LF2/9111 TLI#16661

NOV 1 9 1990
ENVIRONMENTAL LABS



0303791 18-OCT-90 14:34 703 (EI+) Sus:D05US
2 F: 319.8365 G: 321.8336 H: 327.8847 I: 330.9732 J: 331.9368
Text:LF2/9111 TLI#16661

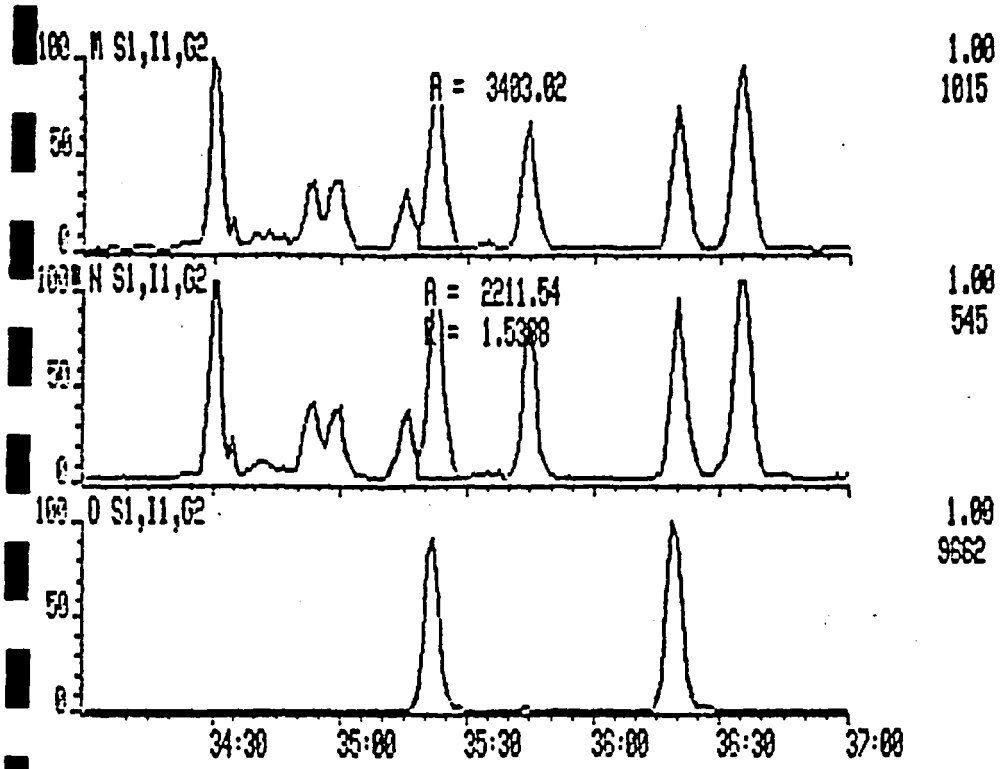


NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

3

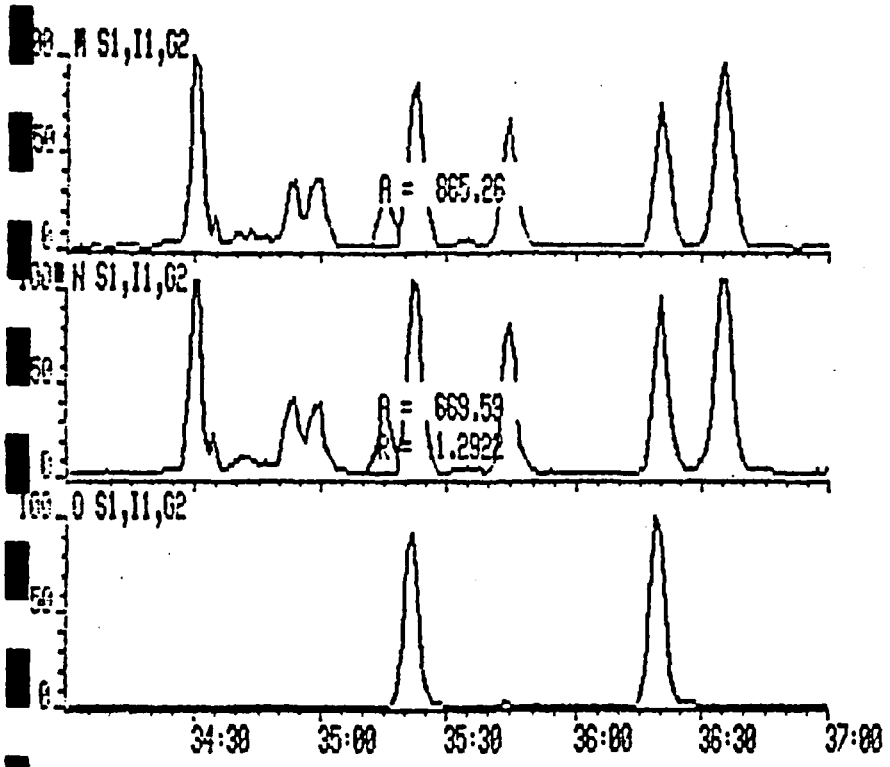
[redacted]791 16-OCT-90 14:34 78S (EI+) Sus:DESUS
[redacted] M: 333.8597 N: 341.8567 O: 351.9000 P: 353.8970 Q: 355.8546
Text:LF2/9111 TLI#16661

NOV 1 9 1990
ENVIRONMENTAL ANALYS



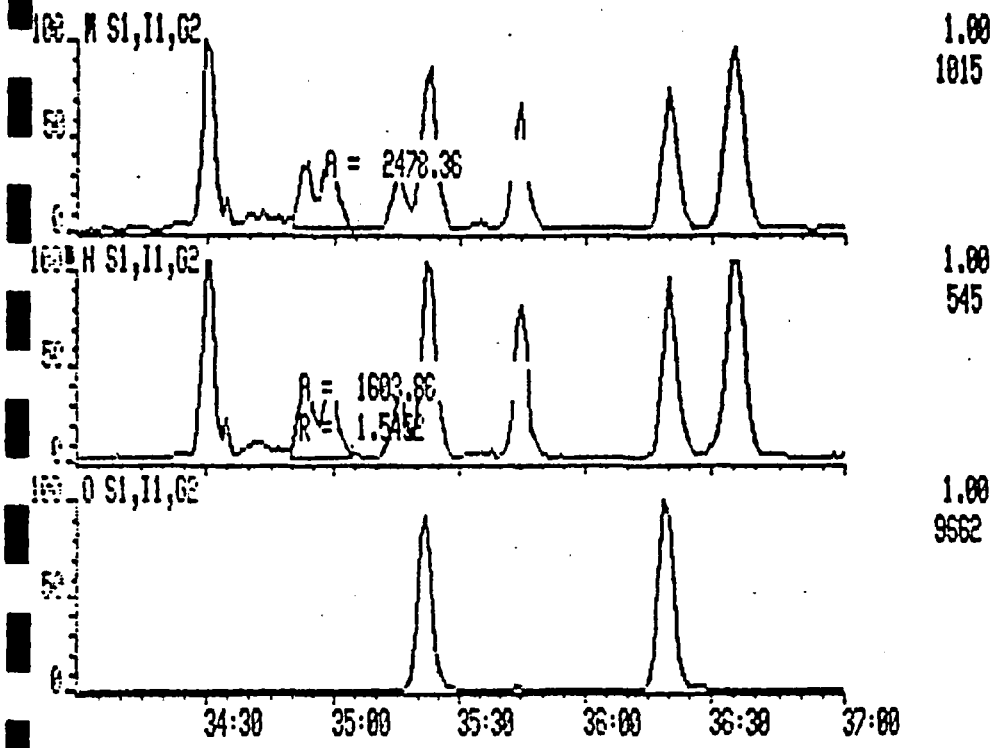
3.

9303731 18-OCT-90 14:34 70S (EI+) Sus:D85US
2 M: 339.8597 N: 341.8567 O: 351.9000 P: 353.8970 Q: 355.8546
Text:LF2/9111 TLI#16661



RECEIVED
NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

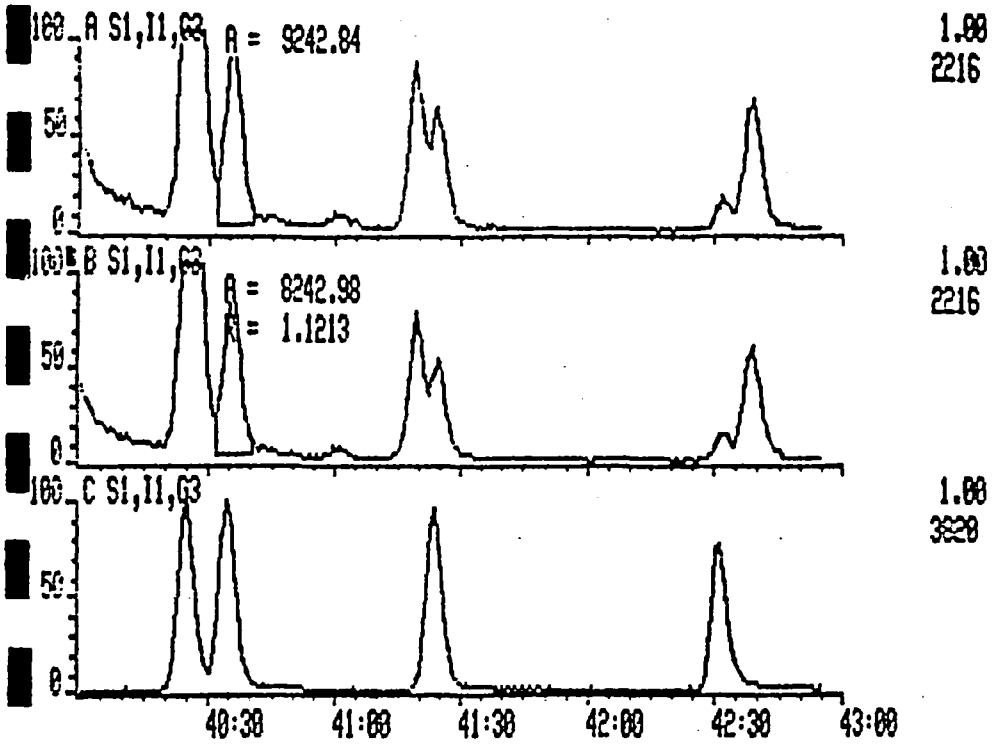
[illegible]1 16-OCT-90 14:34 785 (EI+) Sys:DESUS
F : M: 335.5597 N: 341.8567 O: 351.9090 P: 353.8370 Q: 355.8546
Text:LF2/9111 TLI#16661



NOV 19 1990
ENVIRONMENTAL ANALYS

6903791 18-OCT-90 14:34 705 (EI+) Sus:DESUS
CF 3 A: 373.8288 B: 375.8178 C: 383.8639 D: 385.8610 E: 389.8156
ext:LF2/9111 TLI#16661

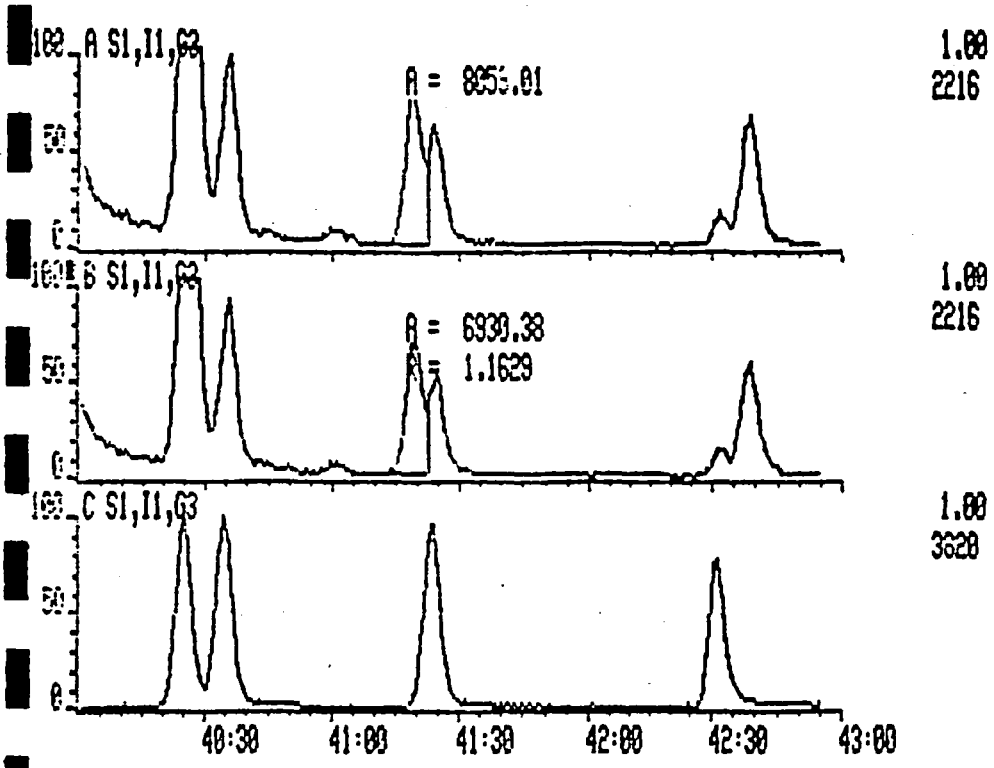
NOV 19 1990
ENVIRONMENTAL ...



35

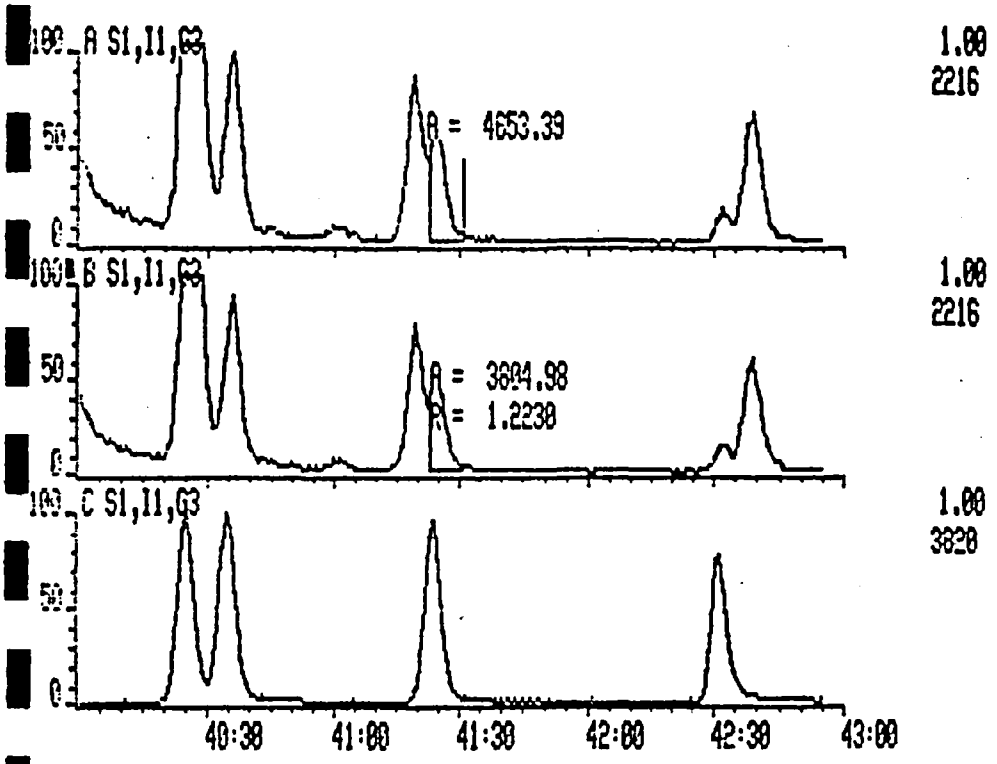
0003791 18-OCT-90 14:34 709 (EI+) Sys:DB5US
: 3 A: 373.6288 B: 375.6178 C: 383.6639 D: 385.8610 E: 389.8156
Text:LF2/9111 TL1#16661

NOV 1 9 1990
ENVIRONMENTAL ANALYS

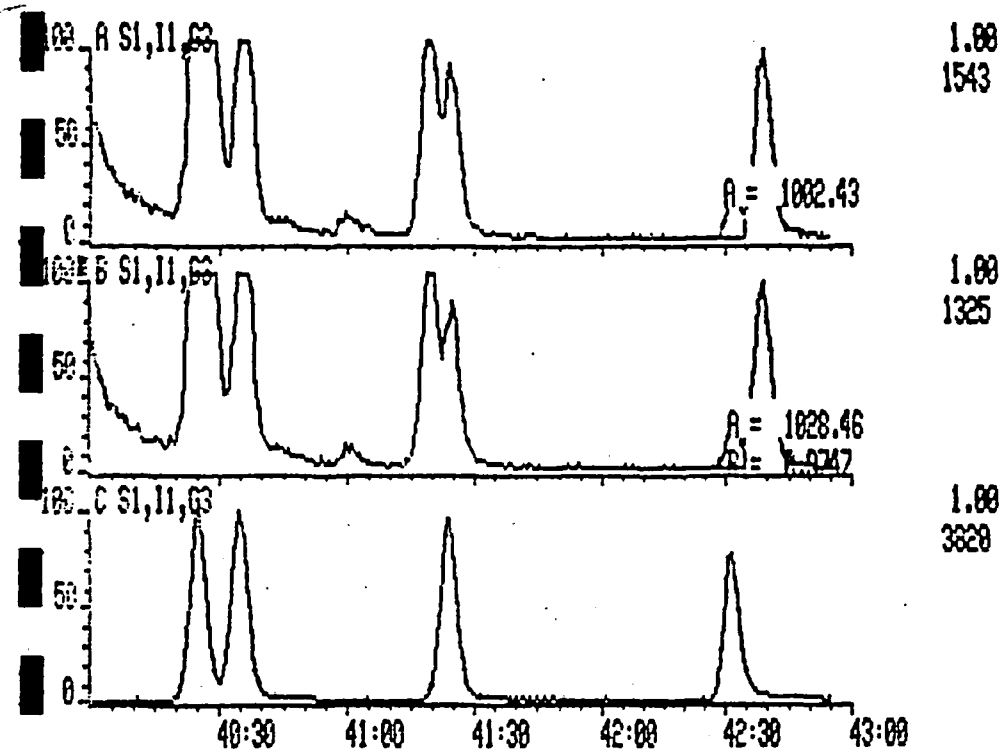


0000291 18-OCT-90 14:34 785 (EI+) Sys:DESUS
F 3 A: 373.8208 B: 375.8178 C: 383.8339 D: 385.8610 E: 389.8156
Text:LF2/9111 TLI#18661

NOV 1 9 1990
ENVIRONMENTAL ANALYSIS



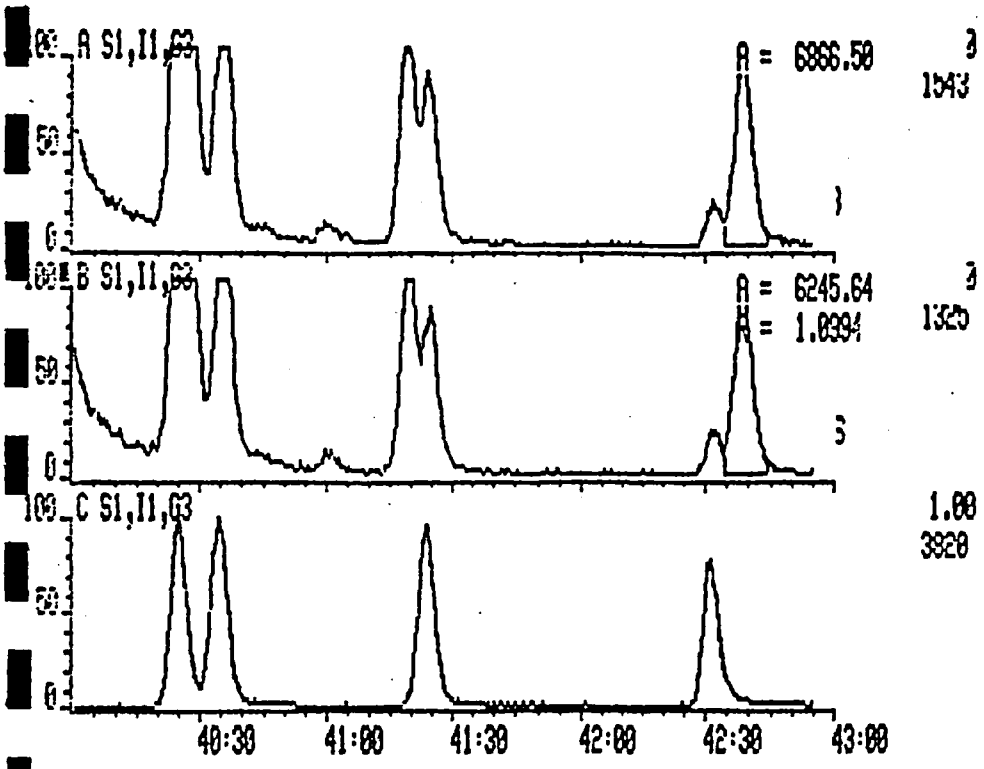
[illegible]1 18-OCT-90 14:34 70S (EI+) Sus:DB5US
[illegible] A: 373.6286 B: 375.8176 C: 380.6639 D: 385.6618 E: 389.8156
[illegible]:LF2/S111 TL1#16661



NOV 1 0 1990
ENVIRONMENTAL ANALYS

32

3503791 18-OCT-90 14:34 70S (EI+) Sys:D85US
.3 A: 373.8206 B: 375.8176 C: 383.8339 D: 385.8310 E: 389.8156
Text:LF2/9111 TL1#16661



NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

11/15/90

FILE NAME....: T904958 CLIENT ID....: SWP TLI NUMBER....: 37-26-2
CONCAL (VER).: T904955 SAMPLE ID....: LF2/9111 (DIL)
PROJECT NUMBER: 16661 ICAL DATE....: 10/16/90
ANALYST.....: SB ANALYSIS DATE: 11/13/90
SAMPLE SIZE..: 9.400 g SAMPLE MATRIX: SOIL SAMPLE ORIGIN: WILMINGTN
DATE RECEIVED.: 10/10/90 DATE COLLECTED: 10/09/90
SPIKE FILE...: SPX23710 SHIPMENT NO...: NC09001

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		0.02				
12378-PeCDD	EMPC			0.06			
123478-HxCDD	0.30				1.29	41:27	
123678-HxCDD	1.9				1.22	41:35	
123789-HxCDD	1.3				1.28	42:04	
1234678-HpCDD	98.7				1.05	46:29	
OCDD	932				0.88	51:57	B
2378-TCDF	ND		0.01				
12378-PeCDF	0.07				1.58	35:11	
23478-PeCDF	ND		0.03				
123478-HxCDF	0.91				1.22	40:18	
123678-HxCDF	0.24				1.35	40:27	
234678-HxCDF	EMPC			0.45			B
123789-HxCDF	ND		0.04				
1234678-HpCDF	66.0				0.97	44:55	
1234789-HpCDF	1.1				1.12	47:10	
OCDF	83.3				0.94	52:12	
TOTAL TCDD	EMPC			0.04			
TOTAL PeCDD	0.67	3		1.2	1.57		
TOTAL HxCDD	14.3	6		14.4	1.26		
TOTAL HpCDD	573	2			1.04		
TOTAL TCDF	ND		0.01				
TOTAL PeCDF	1.2	4		1.3	1.62		
TOTAL HxCDF	34.4	6		34.8	1.20		
TOTAL HpCDF	164	3			1.02		

MSS 11/15/90

X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY 11/15/90

FILE NAME....: T904958 CLIENT ID....: SWP TLI NUMBER....: 37-26-2
CONCAL (VER).: T904955 SAMPLE ID....: LF2/9111 (DIL)
PROJECT NUMBER: 16661 ICAL DATE....: 10/16/90
ANALYST.....: SB ANALYSIS DATE: 11/13/90
SAMPLE SIZE..: 9.400 g SAMPLE MATRIX: SOIL SAMPLE ORIGIN: WILMINGTN
DATE RECEIVED.: 10/10/90 DATE COLLECTED: 10/09/90
SPIKE FILE...: SPX23710 SHIPMENT NO...: NC09001

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37Cl-TCDD	0.77	72.7		31:11	—
13C12-PeCDF 234	0.71	67.1	1.49	36:07	—
13C12-HxCDF 478	0.59	55.4	0.51	40:16	—
13C12-HxCDD 478	0.67	62.9	1.21	41:26	—
13C12-HpCDF 789	0.36	33.5	0.40	47:09	—

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	0.62	58.2	0.52	42:24	—
13C12-HxCDF 234	0.59	55.0	0.51	41:15	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	0.81	76.4	0.85	30:21	—
13C12-2378-TCDD	0.83	78.2	0.77	31:10	—
13C12-PeCDF 123	0.64	60.2	1.50	35:09	—
13C12-PeCDD 123	0.59	55.0	1.47	36:37	—
13C12-HxCDF 678	0.51	48.3	0.51	40:26	—
13C12-HxCDD 678	0.48	44.9	1.40	41:35	— Q RS2
13C12-HpCDF 678	0.42	39.3	0.46	44:54	—
13C12-HpCDD 678	0.39	36.7	1.15	46:28	—
13C12-OCDD	0.99	46.4	1.17	51:56	RD

MBS 11/15/90 X237_RPT rev:3.03

2

N = 13.4
(320)

	Initial	Date
B-File/Header Changes	MBS	11-15-90
Manual Integrations		
Transcription		
Dbase Corrections	MBS	11-15-90

Page No. 1 Listing of T904958B.dbf
11/14/90

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
304		0.71	27:09	48.64	T	F	0.895	
		2.35	27:44	21.14	F	F	0.914	
		0.29	27:56	35.06	F	F	0.920	
	D	0.38	28:20	48.53	F	F	0.934	S.N
		0.39	28:35	41.88	F	F	0.942	
		0.64	29:16	18.57	F	F	0.964	
		0.86	29:41	25.58	T	F	0.978	
		0.76	30:25	55.28	T	T	1.002	
304		*** Total ***		294.68	# of Peaks:		8	
316		0.85	30:21	2344.61	T	T	1.000	
316		*** Total ***		2344.61	# of Peaks:		1	
320		1.24	29:51	67.58	F	F	0.958	
		0.48	30:55	22.86	F	F	0.992	
	D	0.42	31:03	40.21	F	F	0.996	S.N
		0.38	32:20	28.05	F	F	1.037	
320		*** Total ***		158.70	# of Peaks:		4	
328		0.00	31:11	1434.90	T	T	1.001	
328		*** Total ***		1434.90	# of Peaks:		1	
332		0.85	30:57	1715.41	T	T	0.993	
		0.77	31:10	1464.78	T	T	1.000	
332		*** Total ***		3180.19	# of Peaks:		2	
340		1.59	32:41	728.06	T	F	0.930	
		1.69	34:08	549.73	T	F	0.971	
	ck →	~~2.22~~ 1.58	35:11	~~118.72~~ 88	~~T~~ T	T	1.001	
		1.63	35:34	94.65	T	F	1.012	
		3.01	36:23	137.10	F	F	1.035	
340		*** Total ***		1628.26	# of Peaks:		5	
352		1.50	35:09	880.83	T	T	1.000	
		1.49	36:07	1172.33	T	T	1.028	
352		*** Total ***		2053.16	# of Peaks:		2	
356	D	0.60	32:39	23.61	F	F	0.892	- S.N
		1.53	34:13	432.71	T	F	0.934	
		2.73	34:49	106.87	F	F	0.951	
		1.55	35:09	65.63	T	F	0.960	
		1.63	35:20	66.18	T	F	0.965	
		0.80	35:34	79.52	F	F	0.971	
		1.05	35:55	123.91	F	F	0.981	
	D	0.92	36:12	18.72	F	F	0.989	- S.N
		0.58	36:38	46.64	F	T	1.000	
	D	1.10	36:49	46.49	F	F	1.005	- S.N
		0.76	37:19	46.81	F	F	1.019	

R.O. ~~[illegible]~~ →

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NOV 19 1990

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
356		*** Total ***		1057.09	# of Peaks:		11	
368		1.47	36:37	549.82	T	T	1.000	
368		*** Total ***		549.82	# of Peaks:		1	
374		1.09	38:46	2569.86	T	F	0.959	
		1.17	38:58	9195.60	T	F	0.964	
	D	2.16	39:27	42.80	F	F	0.976	S.N
	D	2.46	39:27	41.17	F	F	0.976	S.N
		1.17	39:41	28953.17	T	F	0.981	
		1.22	40:18	1254.38	T	T	0.997	
	ch →	~~1.51~~ 1.35	40:27	~~388.93~~ 361	T ~~F~~	T	1.000	
R.O ch →		1.02	41:11	486.21	F	T	1.019	
Hot D →		1.41	42:26	47.33	T	T	1.049	S.N
		1.21	42:32	260.48	T	~~T~~ F	~~1.052~~ 1.053	
374		*** Total ***		43239.93	# of Peaks:		10	
384		0.51	40:16	992.13	T	T	0.996	
		0.51	40:26	1045.01	T	T	1.000	
		0.51	41:15	1034.41	T	T	1.020	
		0.52	42:24	978.50	T	T	1.049	
384		*** Total ***		4050.05	# of Peaks:		4	
390		1.27	39:34	8128.57	T	F	0.952	
	D	0.31	39:56	33.14	F	F	0.960	S.N
		1.25	40:16	769.60	T	F	0.968	
		1.27	40:37	5540.13	T	F	0.977	
		1.23	40:51	1718.12	T	F	0.982	
		1.29	41:27	213.82	T	T	0.997	
		1.22	41:35	1656.17	T	T	1.000	
		1.28	42:04	820.15	T	T	1.012	
	D	1.74	42:11	26.67	F	T	1.014	S.N
390		*** Total ***		18906.37	# of Peaks:		9	
402		1.21	41:26	666.76	T	T	0.996	
		1.40	41:35	751.00	T	T	1.000	
		1.25	42:03	1496.79	T	T	1.011	Q RS2
402		*** Total ***		2914.55	# of Peaks:		3	
408		0.97	44:55	80306.62	T	T	1.000	
		0.98	45:31	82164.18	T	F	1.014	
	D	1.44	46:28	282.36	F	F	1.035	N/+
		1.12	47:10	889.77	T	T	1.050	
408		*** Total ***		163642.93	# of Peaks:		4	
418		0.46	44:54	665.73	T	T	1.000	
		0.28	45:54	63.62	F	F	1.022	
		0.40	47:09	442.12	T	T	1.050	
		0.46	48:18	28.89	T	F	1.076	
418		*** Total ***		1200.36	# of Peaks:		4	
424		1.03	45:22	252355.41	T	F	0.976	
		1.05	46:29	52514.15	T	T	1.000	

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Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
424		*** Total ***		304869.56	# of Peaks:		2	
436		1.15	46:28	463.06	T	T	1.000	
		0.84	46:44	26.77	F	F	1.006	
436		*** Total ***		489.83	# of Peaks:		2	
442		0.94	52:12	41400.75	T	T	1.005	
		0.67	53:48	57.82	F	F	1.036	
442		*** Total ***		41458.57	# of Peaks:		2	
458		0.88	51:57	438953.61	T	T	1.000	
458		*** Total ***		438953.61	# of Peaks:		1	
470 R.O.E. →		1.17	51:56	598.29	~~F~~T	T	1.000	
470		*** Total ***		598.29	# of Peaks:		1	

*** End of Report ***

Listing of T904958I.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
202	10:38	14.03	14:37	12.41	16:47	15.16	19:37	13.78
	10:59	20.21	14:44	22.06	17:08	33.60	19:49	21.48
	12:10	29.49	14:52	46.66	17:23	45.63	20:06	47.16
	12:31	19.71	15:38	14.81	17:40	29.54	20:54	9.60
	13:27	25.88	15:47	11.77	17:48	35.78	21:03	11.72
	13:45	9.61	16:05	23.19	17:57	17.51		
	14:00	24.86	16:21	30.38	18:30	18.77		
	14:22	11.01	16:35	20.82	18:54	11.76		
204	10:30	25.02	13:20	15.25	16:11	25.92	18:46	23.82
	10:46	16.96	13:52	36.93	16:20	19.24	19:11	23.42
	11:11	25.72	14:03	36.65	16:28	7.28	19:30	32.30
	11:41	10.17	14:20	57.08	16:42	32.36	19:38	20.34
	12:16	16.93	14:28	11.91	17:04	8.03	19:54	51.90
	12:28	12.96	14:37	10.18	17:14	8.96	20:05	8.31
	12:36	13.06	14:47	14.70	17:40	8.07	20:17	37.56
	13:01	19.68	14:55	8.56	18:30	39.28	20:40	14.30
	13:13	37.47	15:24	55.34	18:38	41.00	20:56	17.75
238	17:23	11.59	19:01	19.24	20:35	9.60	21:46	10.57
	17:29	14.57	19:18	23.31	21:15	10.69	22:09	10.68
	17:46	26.76	19:40	10.44	21:25	10.94		
240	17:38	22.79	18:16	8.08	19:38	8.01	20:49	19.38
	17:44	21.87	18:29	22.40	20:24	33.99	22:18	13.29
	18:00	32.27	19:22	18.33	20:36	7.89		
252	18:09	41.13	19:00	13.45	19:51	15.96	22:10	27.48
	18:17	13.89	19:16	34.58	20:46	26.19	22:23	43.75
	18:37	98.43	19:28	45.01	21:42	65.42	22:46	43.55
	18:50	20.95	19:42	79.56	21:51	94.96		
254	18:37	15.95	19:55	19.66	21:04	15.75	21:39	9.61
	19:00	8.20	20:31	9.01	21:11	17.18	21:55	29.90
	19:38	11.97	20:57	23.22	21:22	21.90	22:51	12.12
270	22:06	12.29	23:08	15.01	24:45	10.28		
	23:00	8.41	24:34	11.71				
272	24:06	21.13	24:26	9.29	24:41	19.93		
286	23:13	7.14	24:44	7.02	25:28	12.12	25:57	7.17
218	11:39	55.66	15:06	63.94	17:12	128.42	20:09	32.22
	12:16	34.40	15:33	67.85	17:27	48.24	20:34	112.99
	12:52	67.21	15:48	74.51	17:41	89.94	21:00	61.30
	13:35	44.67	15:58	62.92	18:40	125.86		
	14:22	123.28	16:36	90.68	19:20	169.47		
	14:47	52.63	16:53	27.62	19:56	40.79		
220	11:24	20.91	13:06	43.56	14:40	37.90	16:13	30.05
	11:40	19.53	13:17	11.76	14:57	33.75	16:26	45.07
	12:23	22.23	13:28	17.25	15:03	59.61	17:26	57.60

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Listing of T904958I.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
220	18:15	40.46	20:02	22.97	20:43	40.98	21:15	50.81
	18:38	9.27	20:31	31.99	21:02	15.44	21:39	53.00
304	27:09	20.19	28:35	11.66	31:17	10.12	33:21	10.98
	27:24	7.36	28:53	14.24	31:30	17.10	34:15	7.67
	27:44	14.83	29:16	7.28	32:15	12.54		
	27:56	7.90	29:41	11.84	32:43	8.96		
	28:20	13.27	30:25	23.93	33:02	10.08		
306	27:09	28.45	28:58	41.58	30:36	9.83	33:45	10.18
	27:16	9.75	29:17	11.29	32:02	12.52	33:57	6.80
	27:42	6.31	29:35	11.62	32:21	9.39	34:05	14.98
	27:55	27.16	29:41	13.74	32:39	14.89		
	28:22	35.26	29:52	9.58	32:55	8.80		
	28:35	30.22	30:24	31.35	33:16	7.63		
320	28:29	7.07	30:08	19.70	31:11	6.55	34:14	33.61
	29:06	8.08	30:55	7.44	31:58	7.28	34:21	7.01
	29:51	37.36	31:03	11.90	32:20	7.65	34:43	14.12
322	28:52	7.77	30:04	24.79	31:15	7.78	32:35	10.70
	29:10	10.17	30:57	15.42	32:01	6.64	32:45	7.27
	29:52	30.22	31:04	28.31	32:18	20.40	34:11	49.40
340	31:18	9.53	34:08	345.02	35:11	81.84	36:23	102.91
	32:41	447.42	34:31	8.08	35:24	9.04	36:38	18.50
	33:05	14.85	34:40	24.55	35:34	58.64	37:27	20.01
	33:58	13.38	34:48	28.00	36:09	44.25		
342	32:19	11.15	34:08	204.71	35:52	9.56	38:10	16.10
	32:41	280.64	34:45	45.76	36:06	27.29		
	33:12	6.95	35:11	36.88	36:23	34.19		
	33:22	6.62	35:34	36.01	37:18	9.11		
356	32:39	8.87	34:13	261.64	35:34	35.36	36:38	17.09
	32:56	11.60	34:49	78.19	35:47	28.90	36:49	24.37
	33:11	7.95	35:09	39.91	35:55	63.58	36:57	6.14
	33:33	9.61	35:20	41.04	36:12	8.98	37:19	20.26
358	32:39	14.74	34:49	28.68	36:11	9.74	37:41	10.36
	32:50	6.61	35:07	25.72	36:20	7.70	38:06	7.55
	33:06	7.80	35:20	25.14	36:37	29.55		
	34:11	171.07	35:35	44.16	36:47	22.12		
	34:33	17.48	35:57	60.33	37:18	26.55		
316	30:21	1076.68						
318	30:21	1267.93						
328	31:11	1434.90						
332	30:57	787.02	31:10	637.97				

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Listing of T904958I.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
334	30:57	928.39	31:10	826.81	31:53	25.10		
352	35:09	528.98	35:32	32.16	36:07	701.75		
354	35:09	351.85	36:07	470.58				
368	36:37	327.41						
370	36:37	222.41						
374	38:46	1339.91	39:41	15628.36	40:27	233.88	41:34	10.44
	38:58	4953.80	40:04	14.06	40:53	9.96	42:26	27.69
	39:27	29.27	40:18	688.55	41:11	245.81	42:32	142.87
376	38:46	1229.95	39:29	11.90	40:09	7.04	41:11	240.40
	38:58	4241.80	39:41	13324.81	40:17	565.83	42:24	19.64
	39:26	13.53	40:01	24.00	40:27	155.05	42:33	117.61
390	39:34	4555.03	40:37	3095.13	41:10	13.55	42:04	460.71
	39:56	7.79	40:51	947.54	41:27	120.29	42:11	16.95
	40:16	427.82	41:04	11.32	41:35	909.50	43:00	8.25
392	39:34	3573.54	40:36	2445.00	41:18	6.43	42:04	359.44
	39:45	19.89	40:51	770.58	41:28	93.53	42:11	9.72
	39:55	25.35	41:00	8.76	41:35	746.67	42:33	6.07
	40:16	341.78	41:07	10.81	41:50	12.84		
384	40:16	333.63	40:26	354.57	41:15	351.33	42:24	335.74
386	40:16	658.50	40:26	690.44	41:15	683.08	42:24	642.76
402	41:26	365.21	41:35	438.18	42:03	831.93		
404	41:27	301.55	41:34	312.82	42:03	664.86		
408	44:16	11.01	46:11	114.99	47:33	16.14		
	44:55	39513.21	46:28	166.63	47:51	19.98		
	45:31	40646.72	47:10	470.16	48:44	14.21		
410	44:55	40793.41	46:06	142.29	46:49	13.36	48:11	12.97
	45:31	41517.46	46:29	115.73	47:10	419.61		
418	43:45	10.44	45:10	16.16	45:54	13.97	48:18	9.12
	44:54	209.79	45:35	11.09	47:09	125.39		
420	44:21	9.14	45:23	18.29	47:09	316.73	48:18	19.77
	44:54	455.94	45:53	49.65	47:31	17.36		
424	45:22	128149.73	48:38	10.42	50:26	12.28		
	46:29	26872.76	49:18	23.15				
426	45:22	124205.68	47:07	143.14	47:55	31.35	49:21	10.72
	46:13	188.17	47:20	61.67	48:13	9.49		
	46:29	25641.39	47:34	22.03	48:23	15.58		

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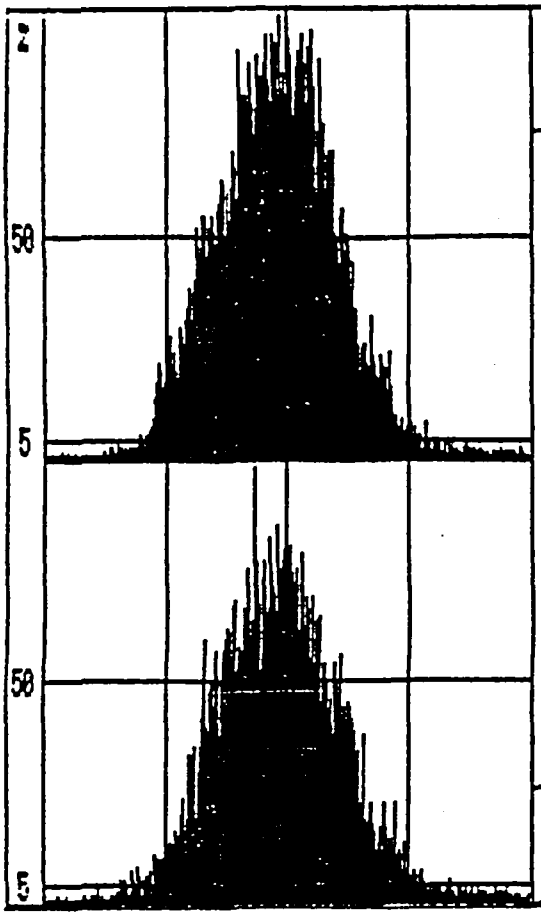
ENVIRONMENTAL AFFAIRS

Listing of T904958I.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
436	46:28	247.36	46:44	12.21	47:02	13.78		
438	46:28	215.70	46:44	14.56				
442	48:12	10.70	51:30	14.03	53:33	51.41		
	48:23	10.63	52:12	20022.12	53:48	23.29		
	49:14	15.86	53:03	74.05	54:11	10.71		
444	49:53	10.84	52:11	21378.63	53:18	53.73	53:37	15.41
	50:33	9.43	53:00	82.01	53:27	26.41	53:50	34.53
458	51:57	205505.03	53:27	213.17	54:15	17.77		
	53:01	247.39	53:36	241.84				
460	51:57	233448.58	53:23	558.43				
470	51:14	9.67	52:11	11.73	52:53	16.40		
	51:56	323.01	52:28	15.98				
472	49:57	17.10	51:56	275.28				

*** End of Report ***

C



Ref. mass 292.9825 Peak top
Height 3.70 volts Span 200 ppm

System file name	DB5US
Data file name	A:T904958
Resolution	10000
Group number	2
Ionization mode	EI+
Switching	VOLTAGE
Ref. masses	292.9825, 416.9768

A	293	J	332	S	368
B	304	K	334	T	370
C	306	L	338	U	376
D	316	M	340	V	410
E	318	N	342		
F	320	O	352		
G	322	P	354		
H	328	Q	356		
I	331	R	358		

Channel I 330.9792 Peak top
Height 2.22 volts Span 200 ppm

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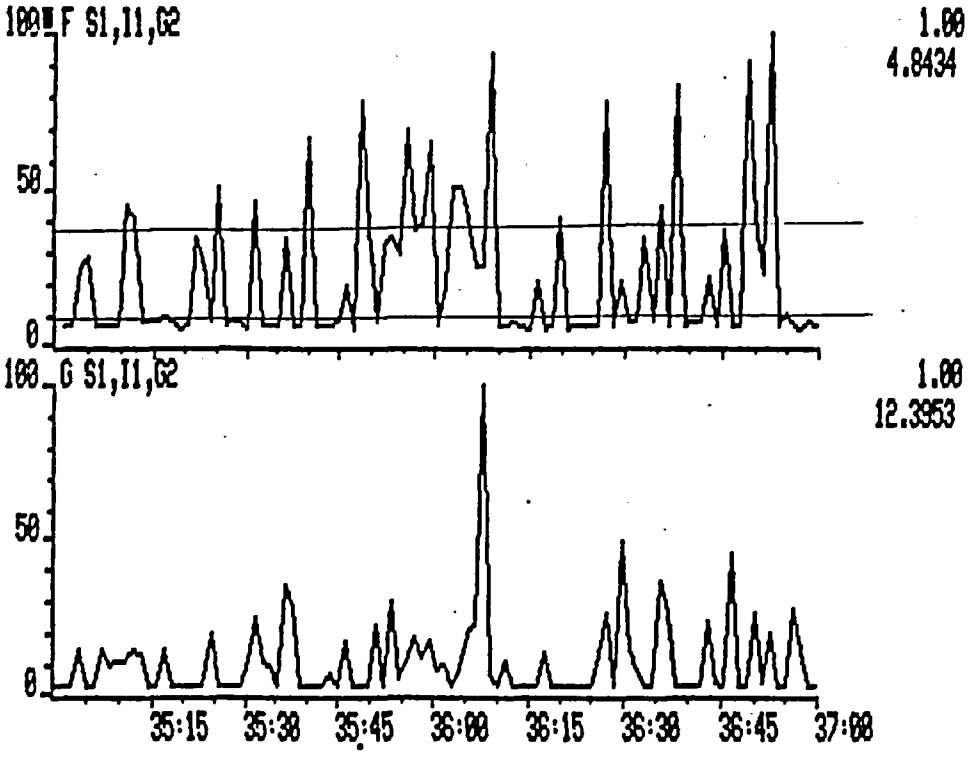
ENVIRONMENTAL ANALYSIS

NOV 1 0 1990

T904958 13-NOV-90 22:44 70-250S (EI+) Sus:DB5US
GR.2 F: 319.8965 G: 321.8936 H: 327.8847 I: 330.9792 J: 331.9368
Text:LFI/9111 TLI#16661

Verified by (GC/MS) : CD 11-1-

Verified by (Int. QC) : DB 11/14



HpCDF OK
DB 11/14/90

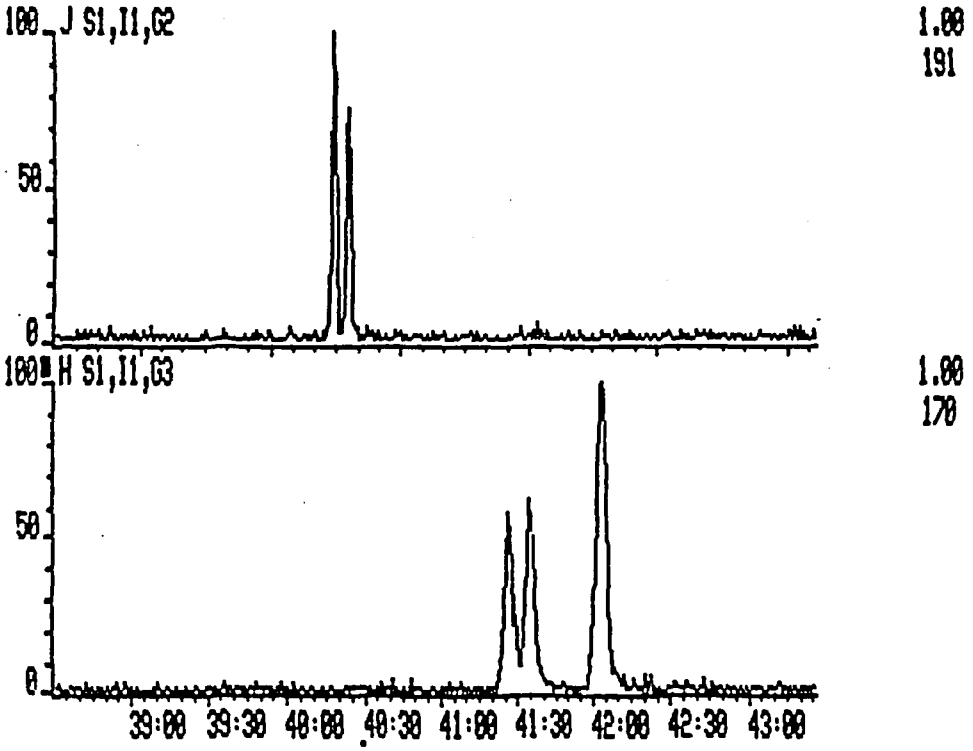
N= -28 22x 5 x 4.8 = 13.4

MRS
11-15-90

11

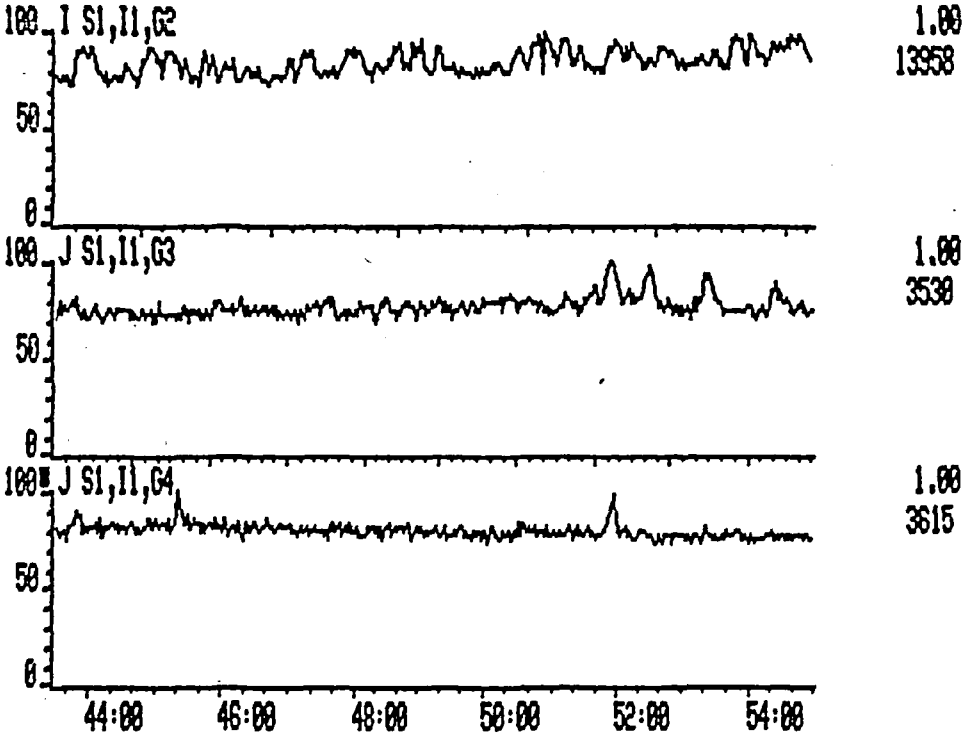
T994958 13-NOV-90 22:44 70-2505 (EI+) Sus:D85US
GR 3 F: 391.8127 G: 392.9760 H: 401.8558 I: 403.8529 J: 430.9729
Text:LFI/9111 TLI#16661

NOV 19 1990
ENVIRONMENTAL ANALYS



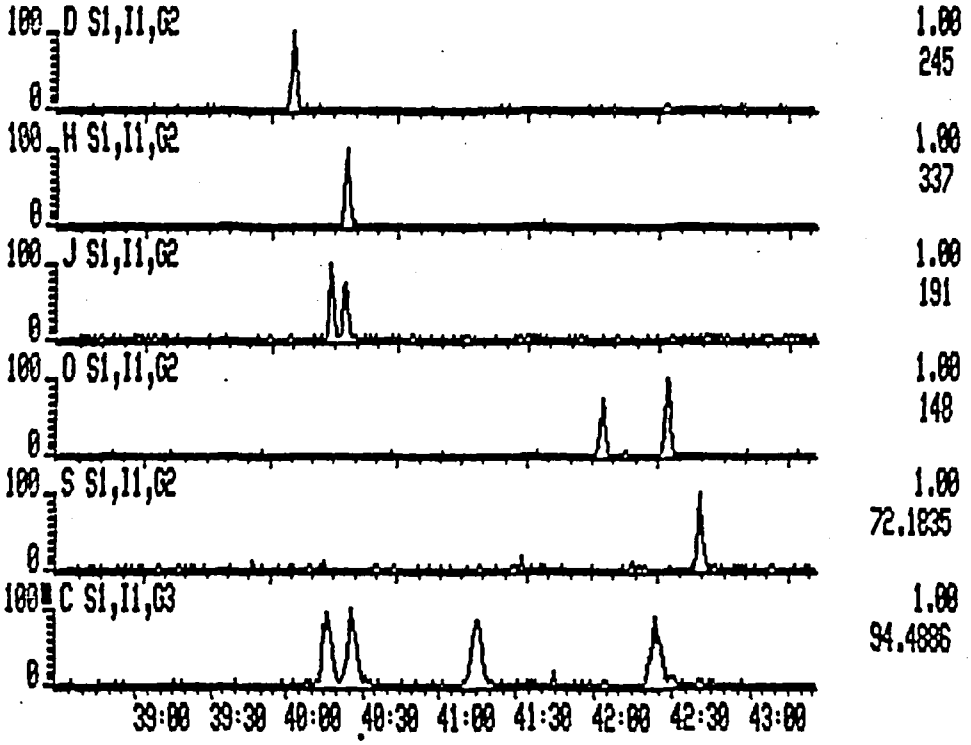
T904958 13-NOV-90 22:44 70-250S (EI+) Sus:D85US
GR 4 D: 419.8228 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text:LFI/9111 TLI#16661

NOV 19 1990
...AL AFFAIRS



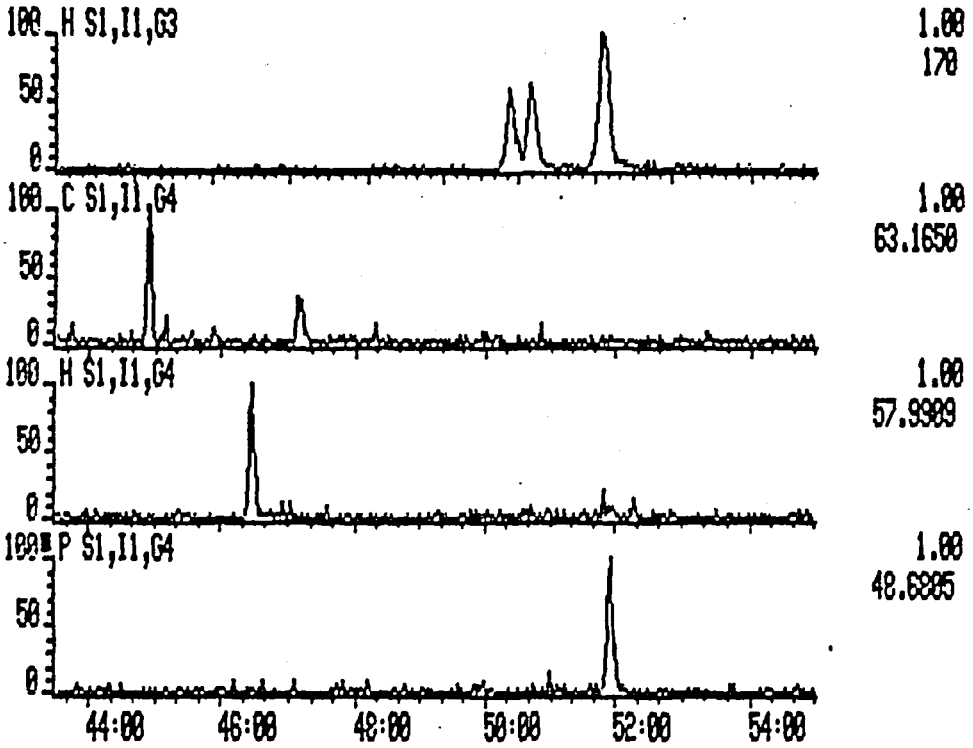
13

T904958 13-NOV-90 22:44 70-250S (EI+) Sus:D85US
GF: 3 D: 385.8610 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558
Text:LFI/9111 TLI#16661



NOV 1 0 1990
ENVIRONMENTAL ANALYSIS

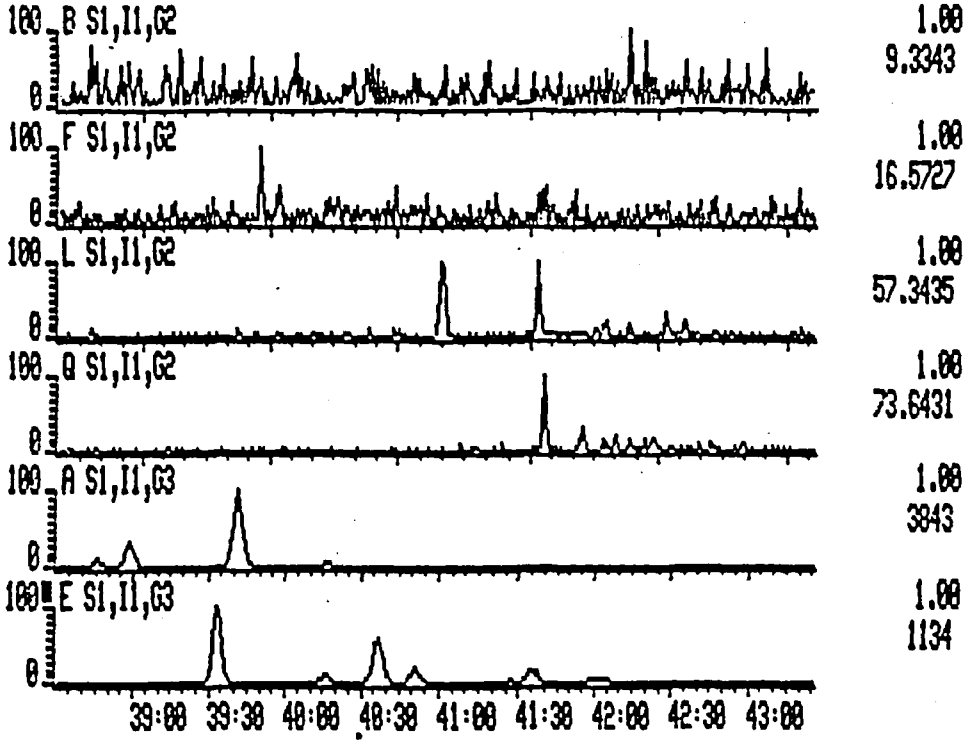
T564958 13-NOV-90 22:44 70-250S (EI+) Sys:DB5US
GR 4 D: 419.8220 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text:LFI/9111 TLI#16661



NOV 19 1990
ENVIRONMENTAL AFFAIRS

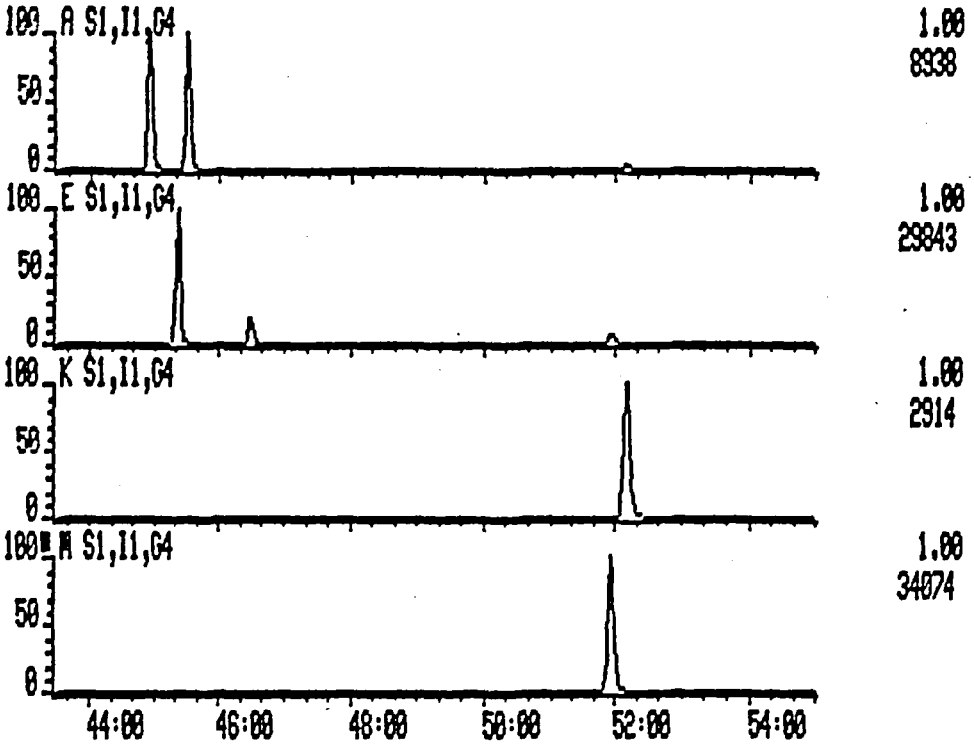
T904358 13-NOV-90 22:44 70-2505 (EI+) Sys:D85US
GR 3 D: 385.8610 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558
Text:LF1/9111 TLI#16661

NOV 19
ENVIRONMENTAL



T984358 13-NOV-98 22:44 70-250S (EI+) Sys:D85US
GR 4 D: 419.8220 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text:LFI/9111 TLI#16661

NOV 19 1998
ENVIRONMENTAL AFFAIRS



1.00
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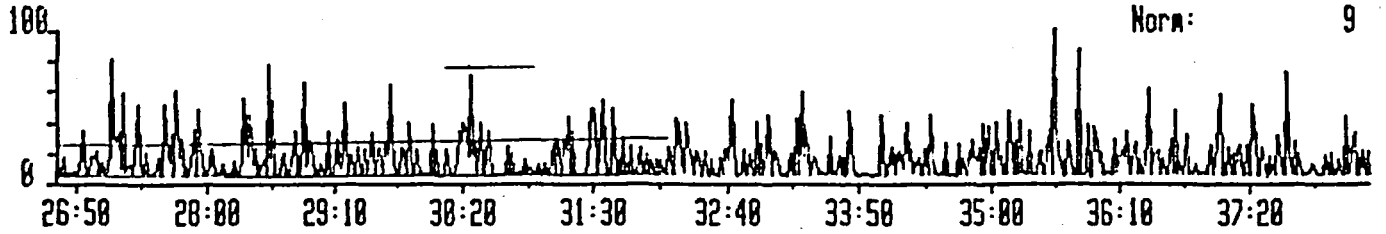
1.00
29843

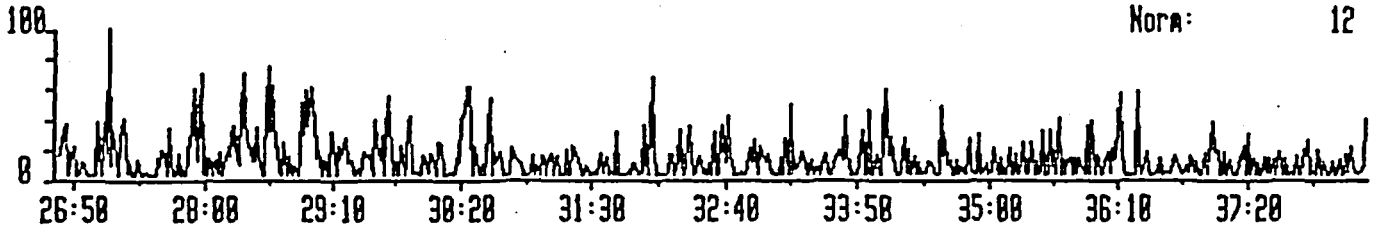
1.00
2914

1.00
34074

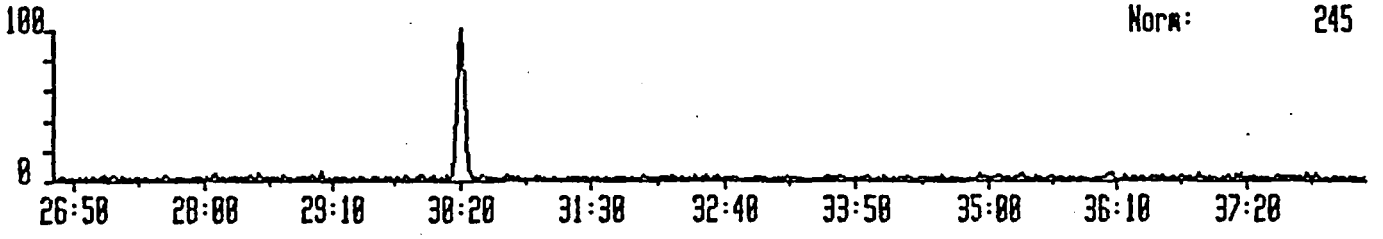
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 303.9816
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 305.8987
Text:LFI/9111 TLI#16661



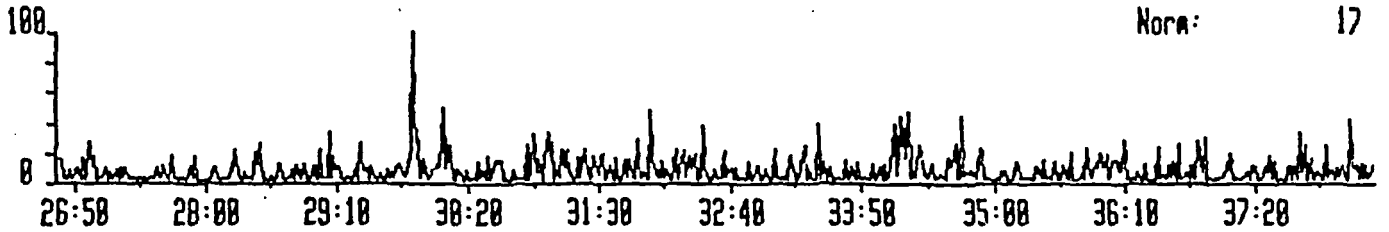
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 315.9419
Text:LFI/9111 TLI#16661



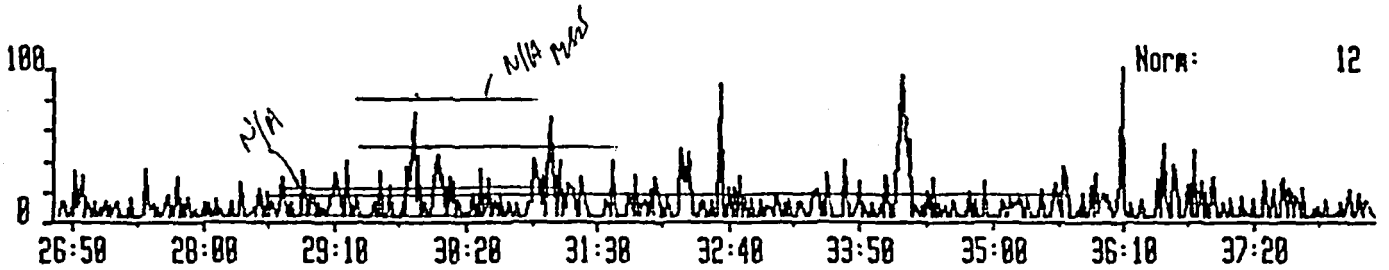
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 317.9389
Text:LFI/9111 TLI#16661

T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 375.8364
Text:LFI/9111 TLI#16661

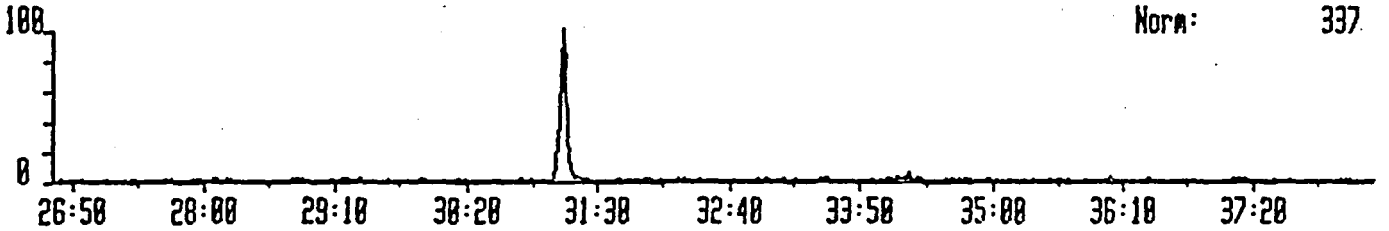
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 319.8965
Text:LFI/9111 TLI#16661



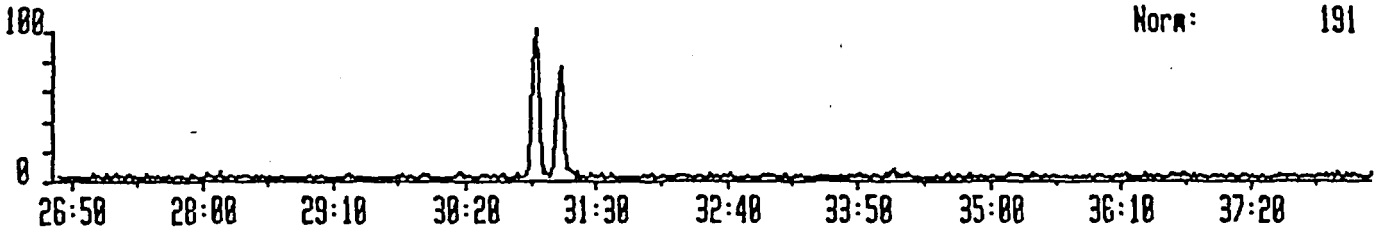
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 321.8936
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 327.8847
Text:LFI/9111 TLI#16661

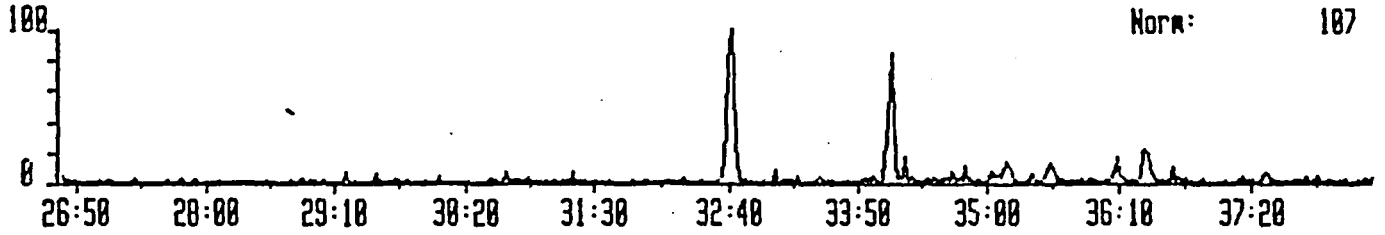


T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 331.9368
Text:LFI/9111 TLI#16661

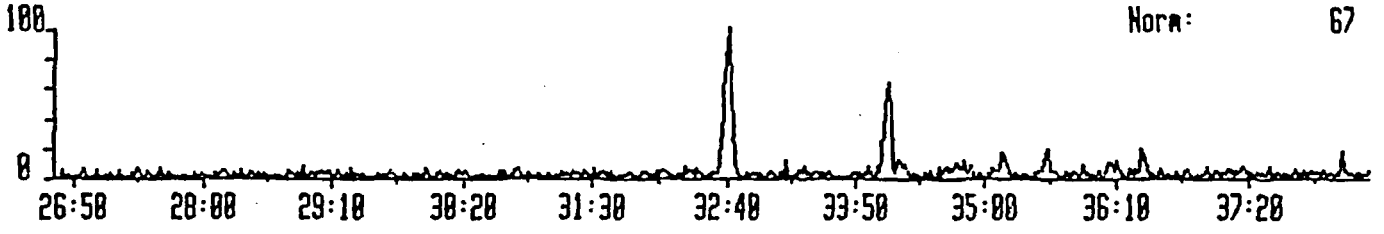


T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 333.9338
Text:LFI/9111 TLI#16661

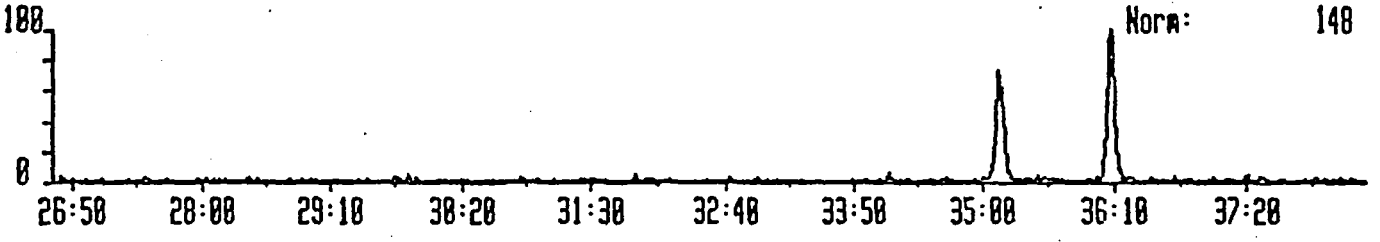
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 339.8597
Text:LFI/9111 TLI#16661



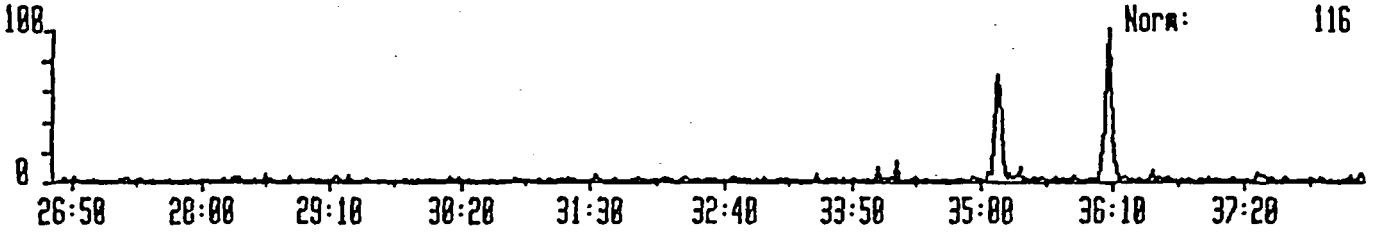
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 341.8567
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 351.9000
Text:LFI/9111 TLI#16661



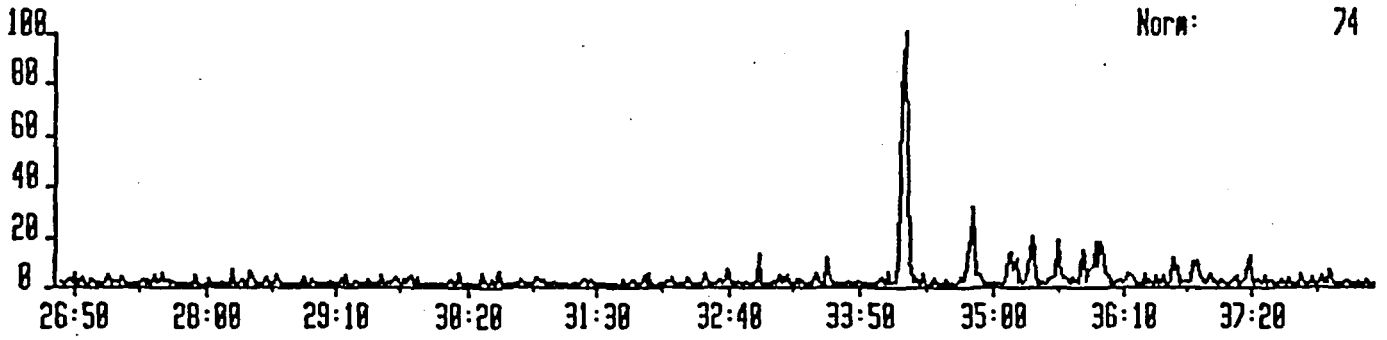
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 353.8970
Text:LFI/9111 TLI#16661



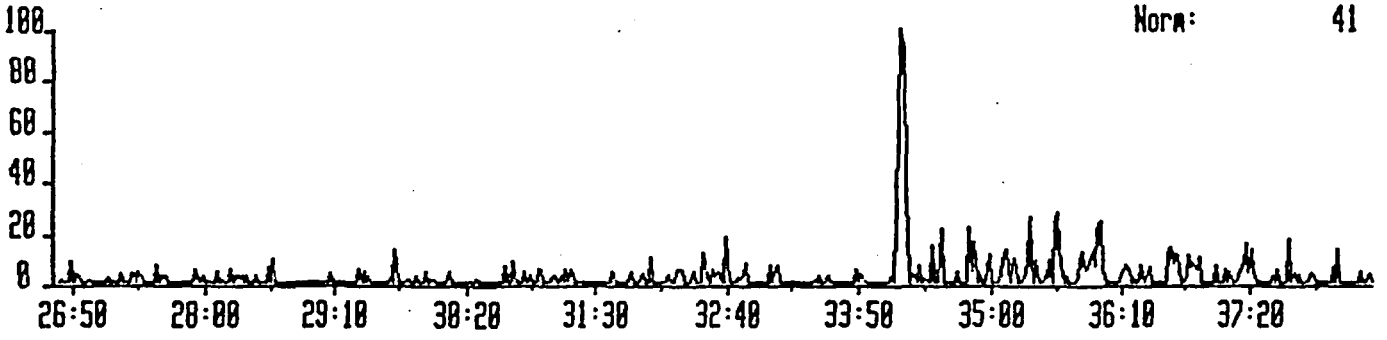
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 409.7974
Text:LFI/9111 TLI#16661

2c

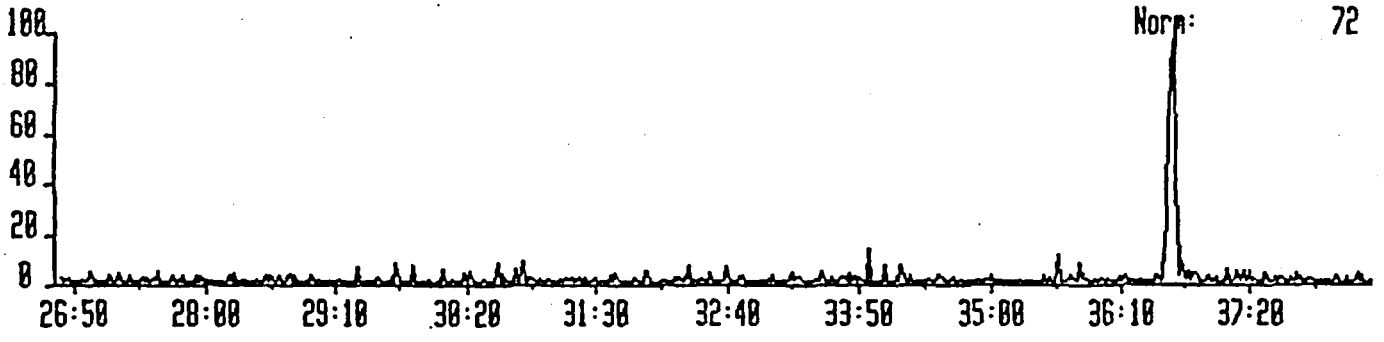
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 355.8546
Text:LFI/9111 TLI#16661



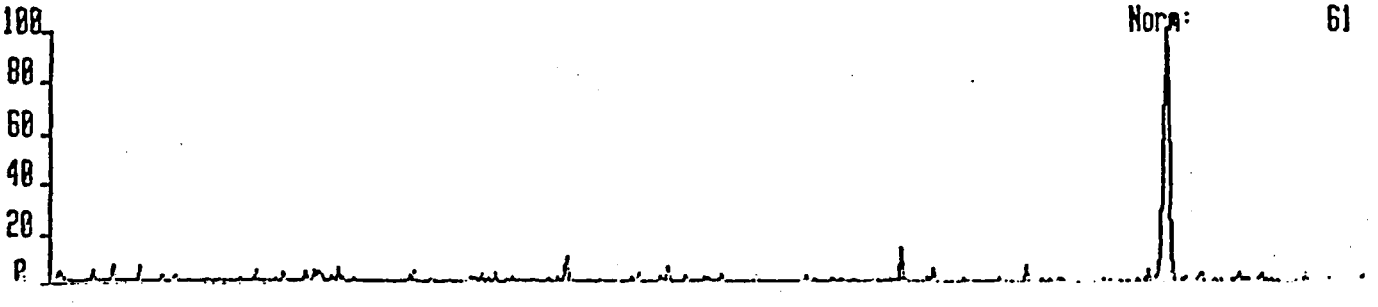
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 357.8516
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 367.8949
Text:LFI/9111 TLI#16661

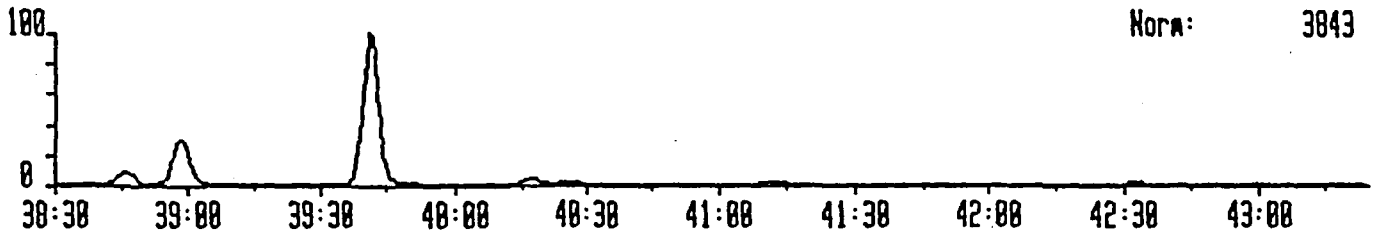


T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 369.8919
Text:LFI/9111 TLI#16661

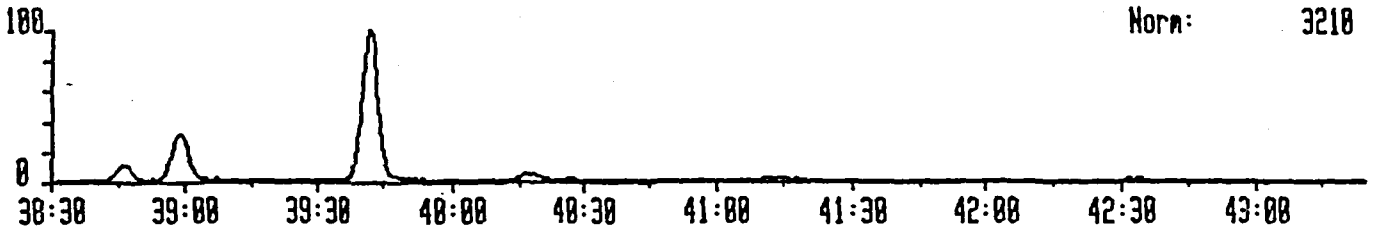


21

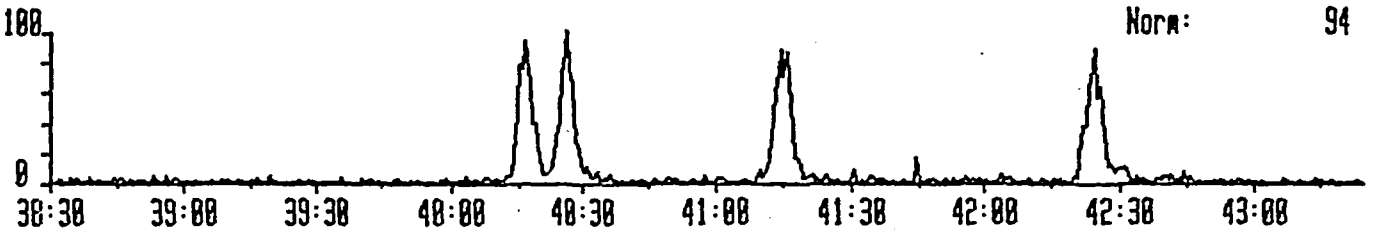
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 373.0208
Text:LFI/9111 TLI#16661



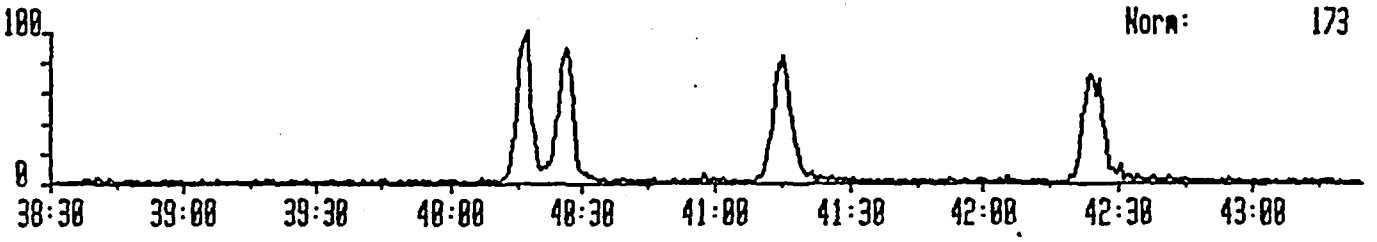
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 375.0170
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 383.0639
Text:LFI/9111 TLI#16661



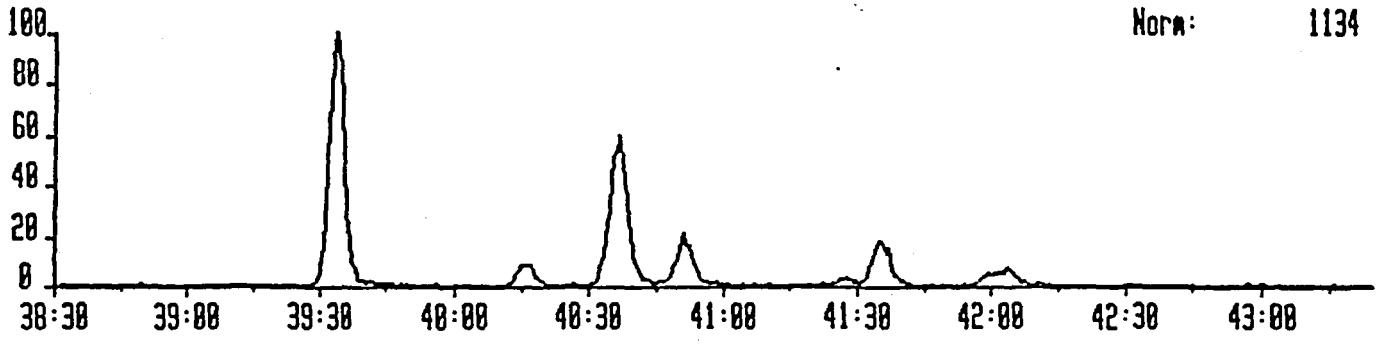
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 385.0610
Text:LFI/9111 TLI#16661



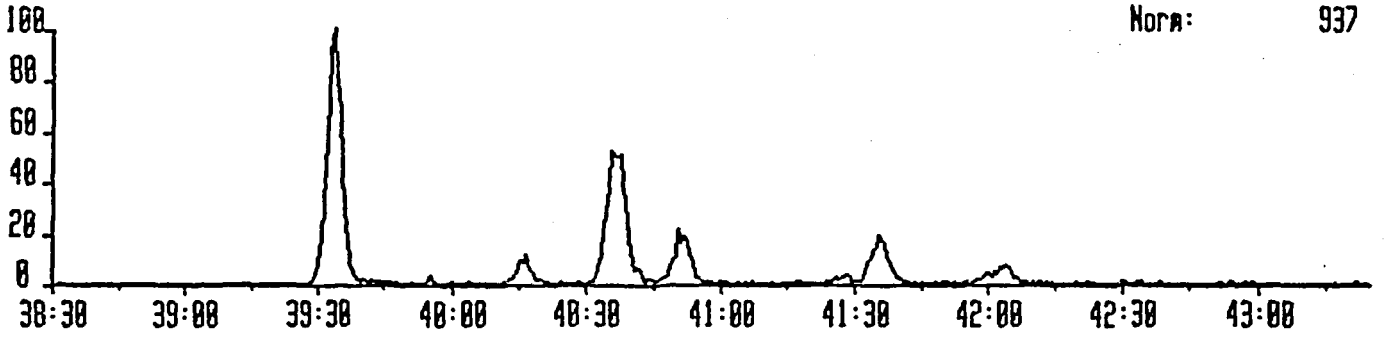
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 445.7555
Text:LFI/9111 TLI#16661

2.

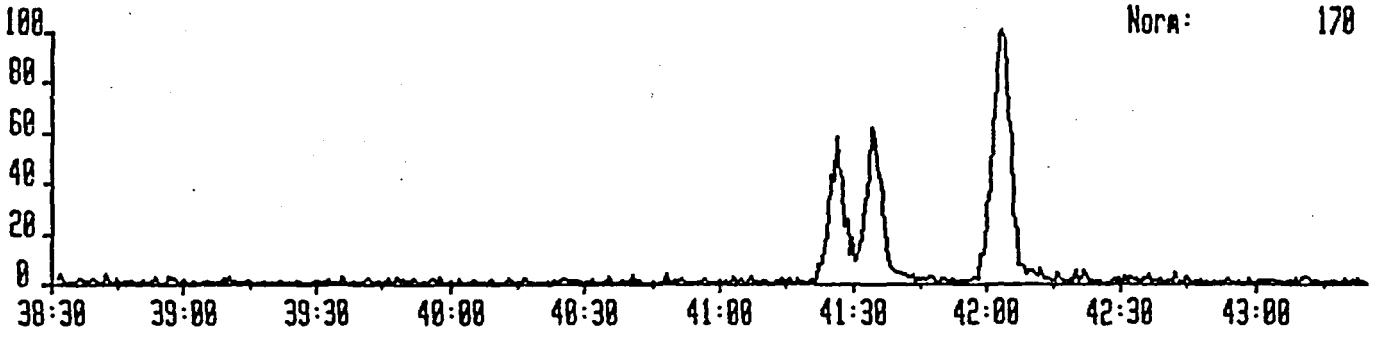
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 389.8156
Text:LFI/9111 TLI#16661



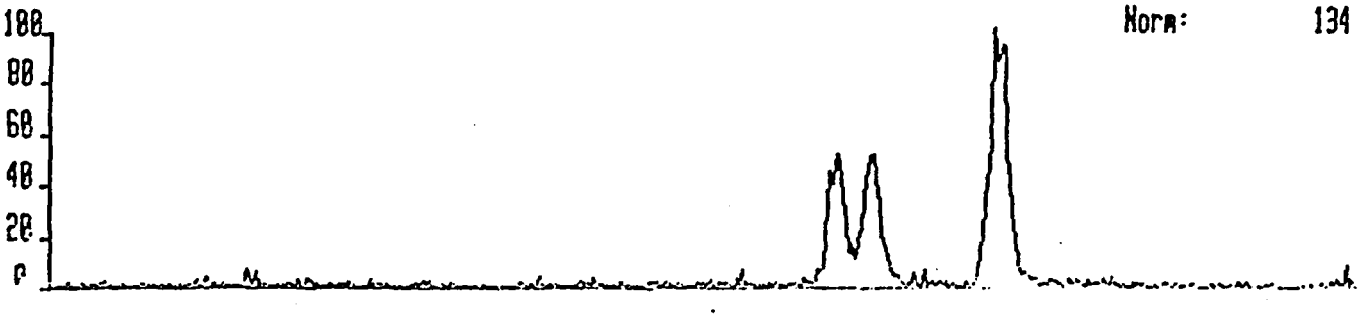
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 391.8127
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 401.8558
Text:LFI/9111 TLI#16661

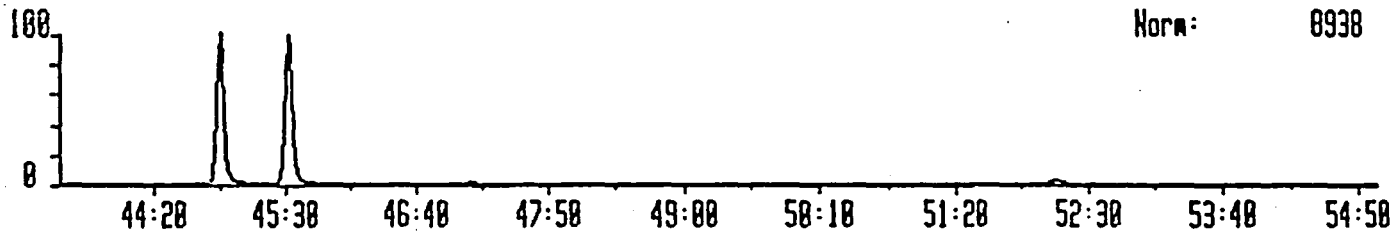


T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 403.8529
Text:LFI/9111 TLI#16661

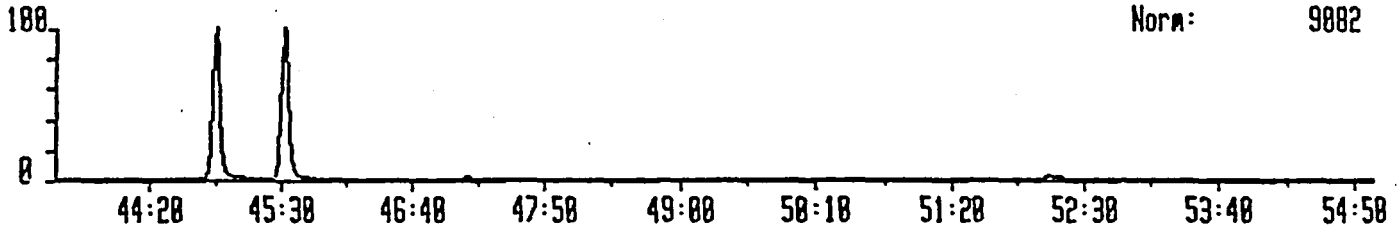


23

T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 407.7818
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 409.7789
Text:LFI/9111 TLI#16661



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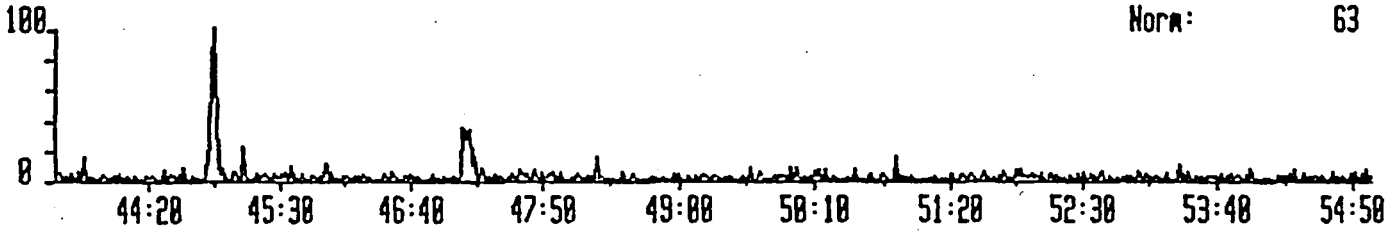
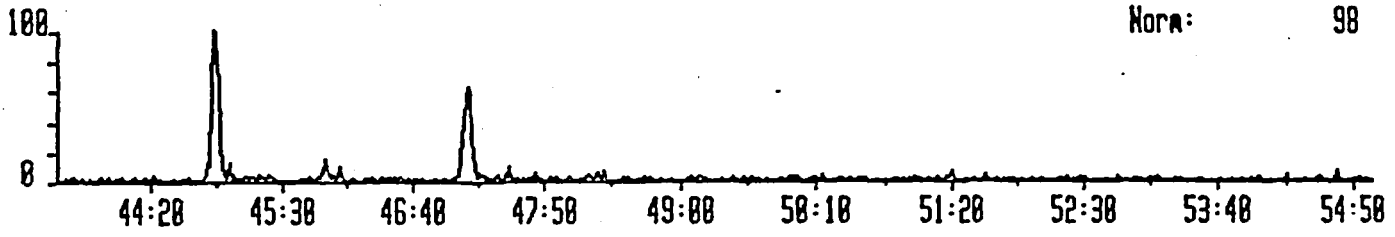
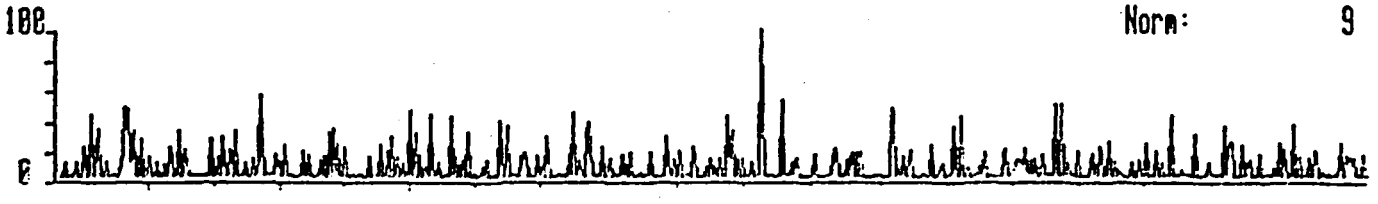
Sample 1 Injection 1 Group 4 Mass 417.8253
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 419.8220
Text:LFI/9111 TLI#16661

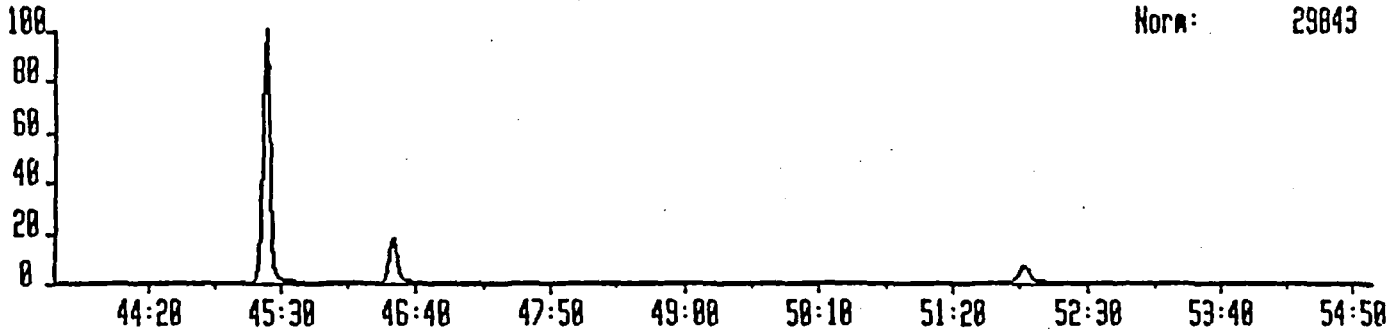


T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 479.7165
Text:LFI/9111 TLI#16661

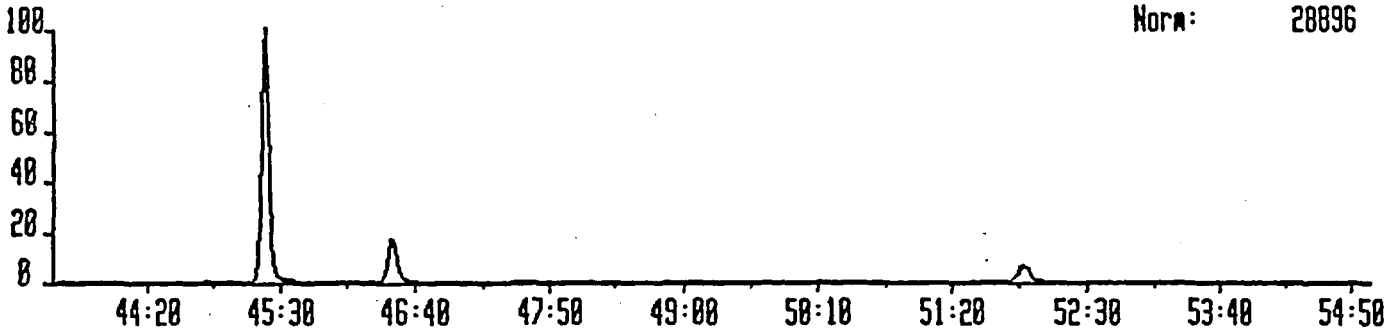


2

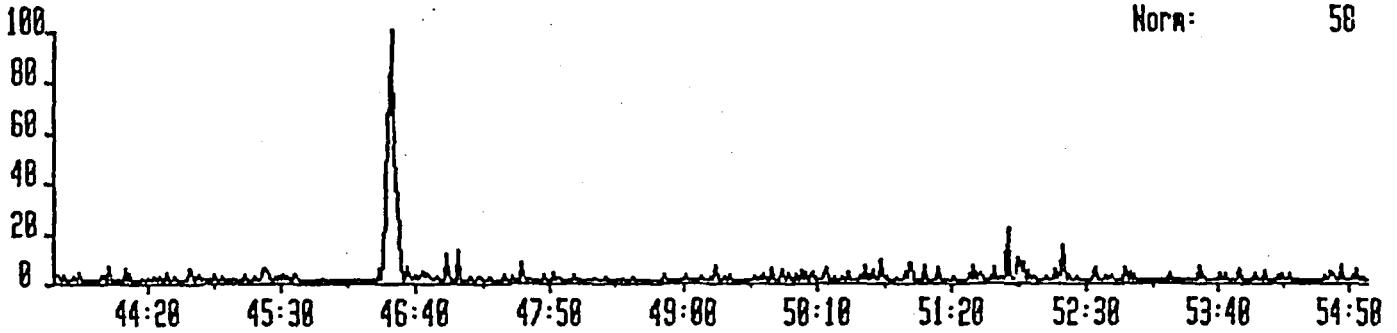
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 423.7766
Text:LFI/9111 TLI#16661



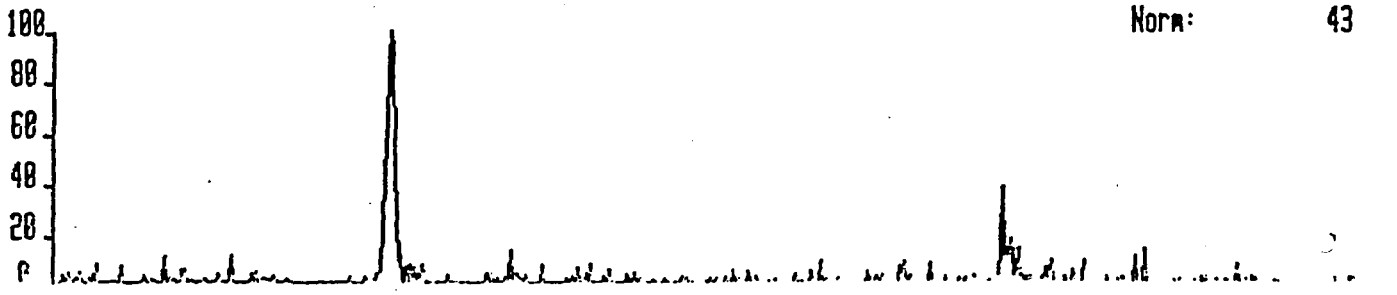
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 425.7737
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 435.8169
Text:LFI/9111 TLI#16661

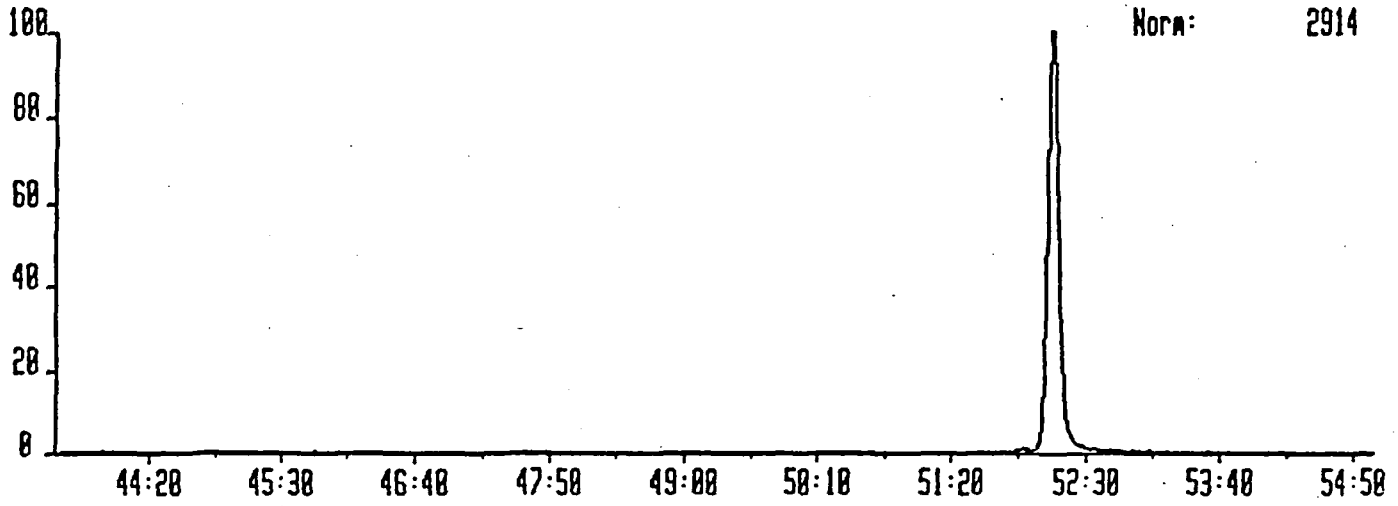


T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 437.8140
Text:LFI/9111 TLI#16661

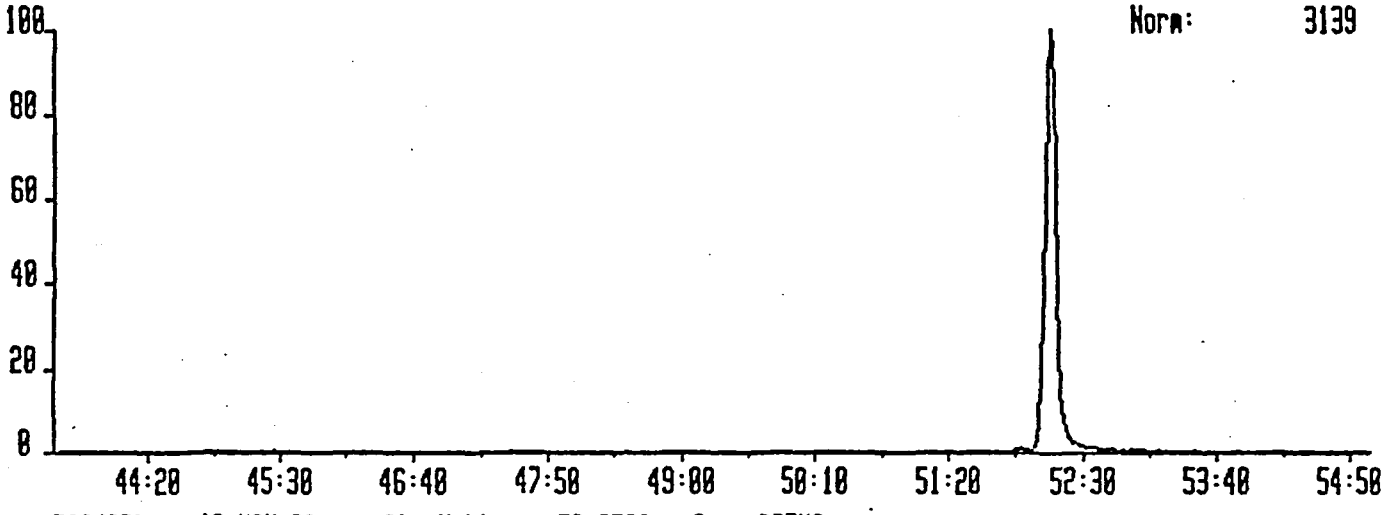


2

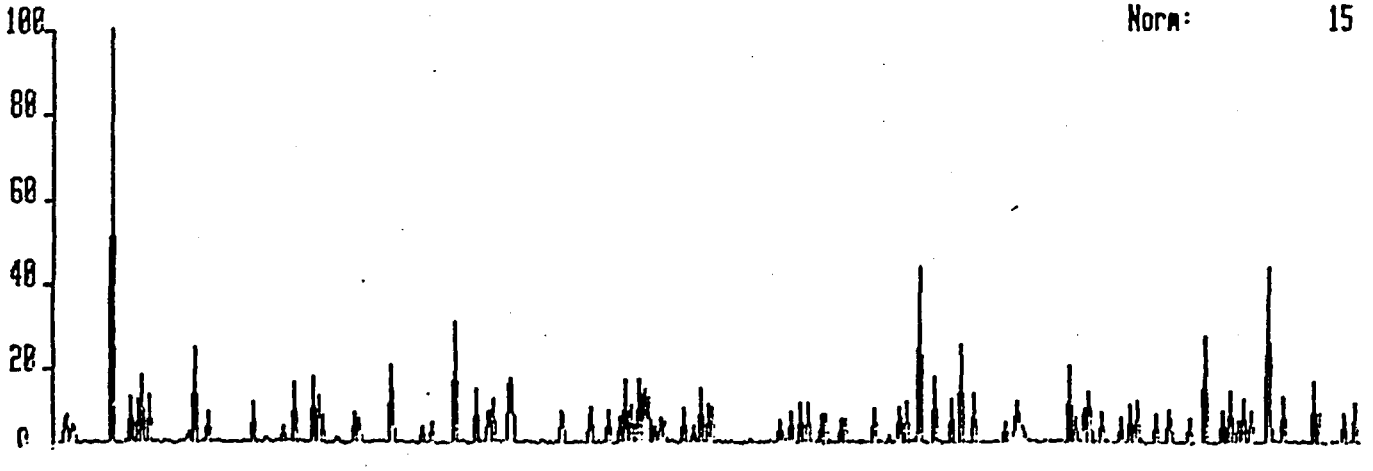
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 441.7428
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 443.7399
Text:LFI/9111 TLI#16661



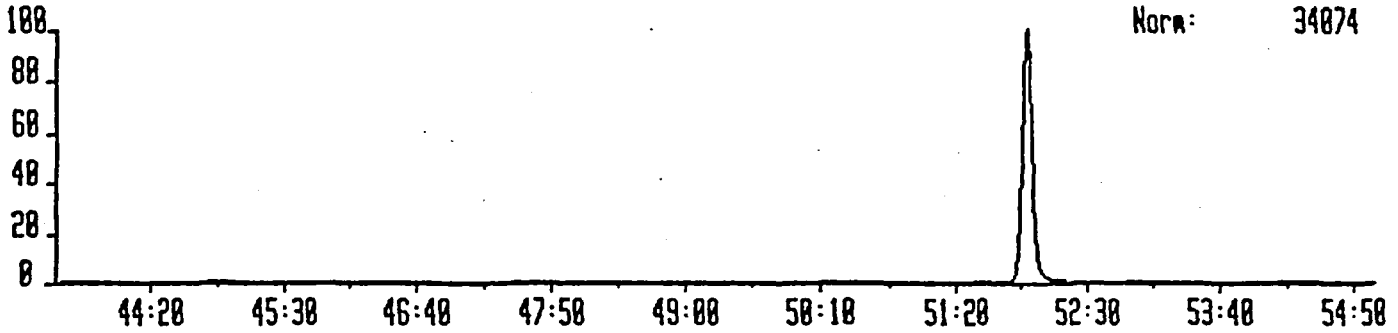
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 513.6775
Text:LFI/9111 TLI#16661



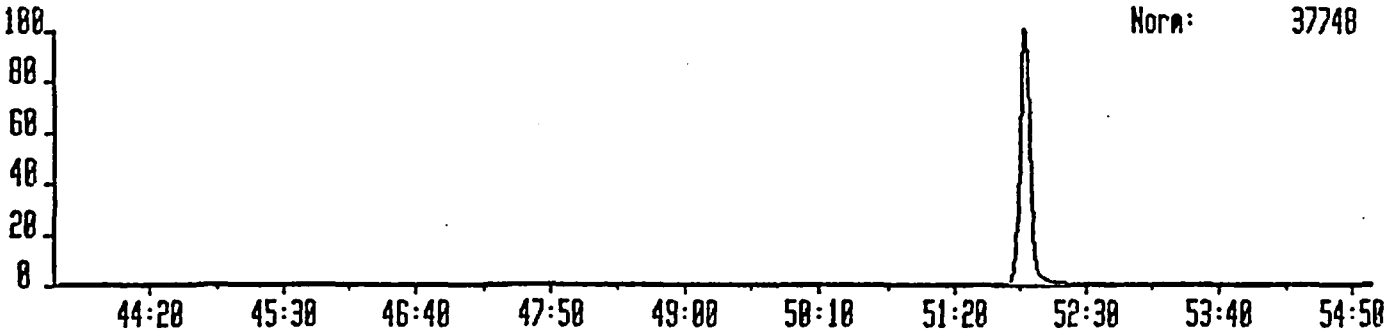
2

NOV 1 0 1993
ENVIRONMENTAL AFFAIRS

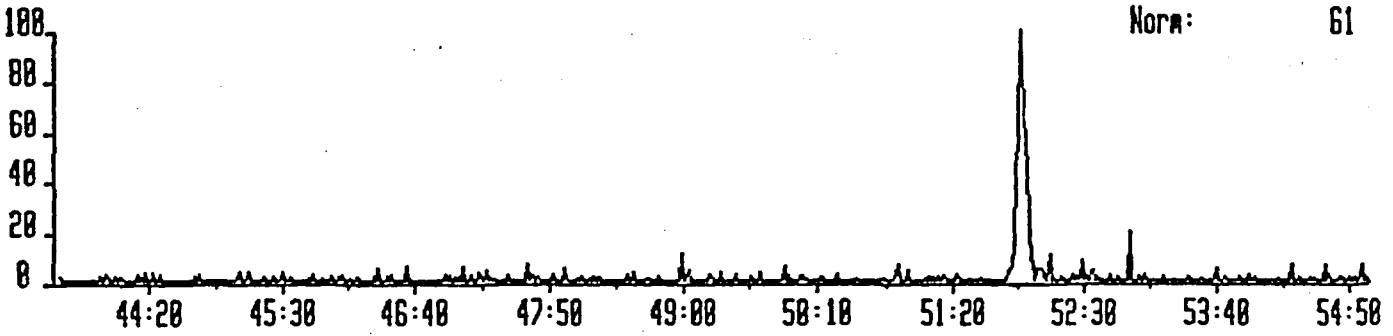
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 457.7377
Text:LFI/9111 TLI#16661



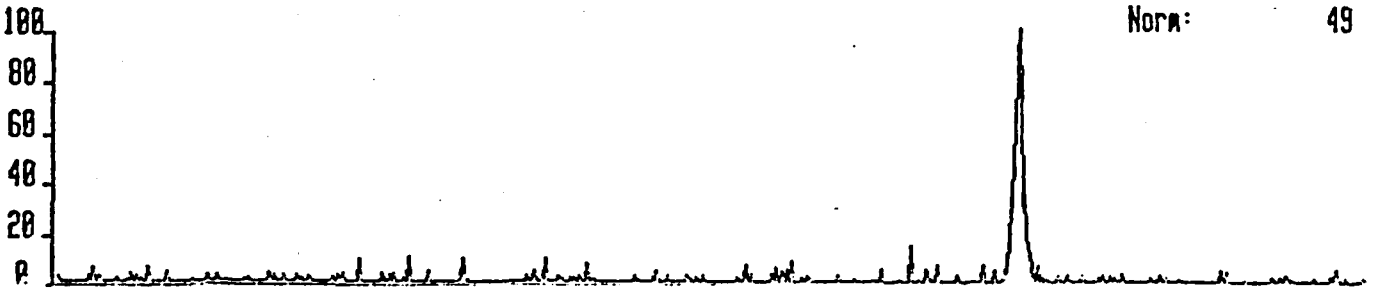
T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 459.7348
Text:LFI/9111 TLI#16661



T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 469.7779
Text:LFI/9111 TLI#16661

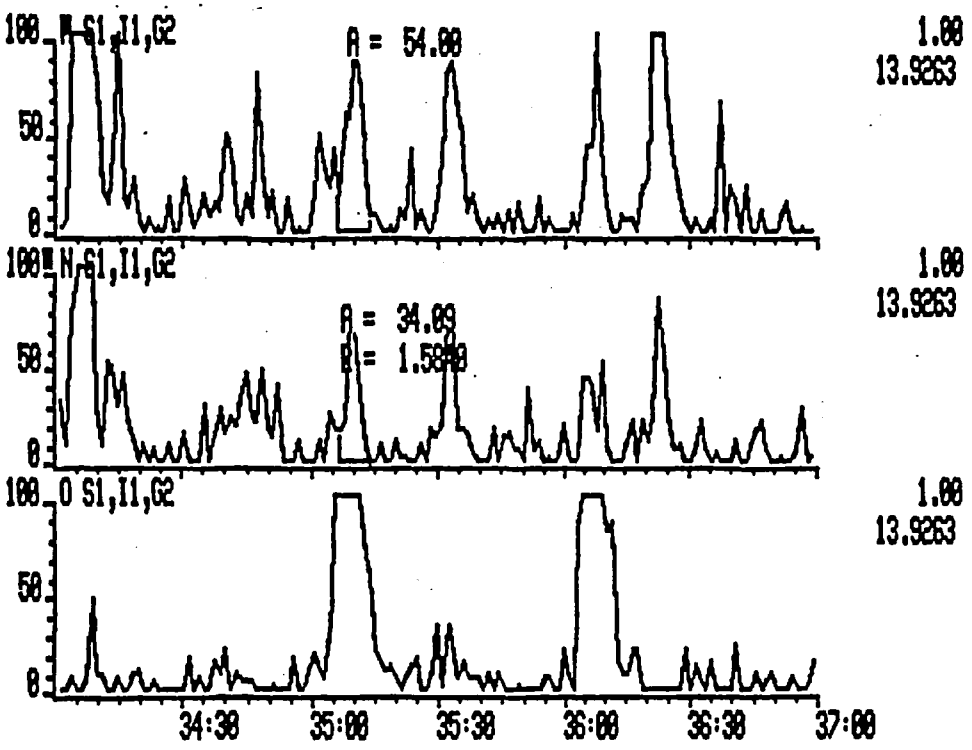


T904958 13-NOV-90 Sir:Voltage 70-250S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 471.7750
Text:LFI/9111 TLI#16661



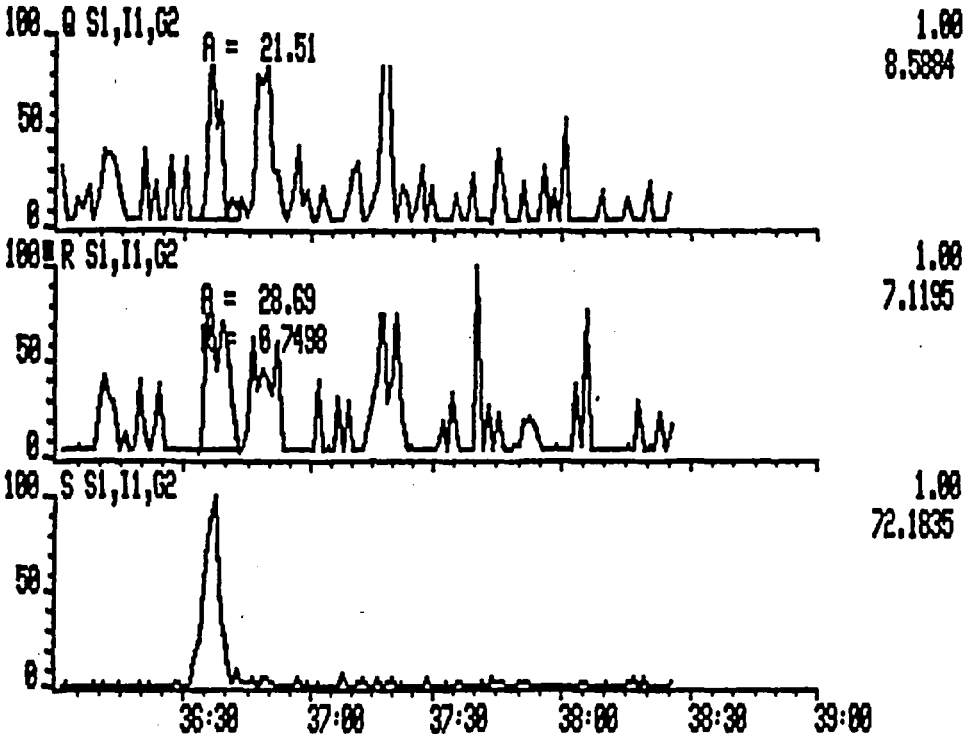
2

T904958 13-NOV-90 22:44 70-2565 (EI+) Sys:DB5US
GR 2 M: 339.8597 N: 341.8567 O: 351.9000 P: 353.8970 Q: 355.8546
Text:LFI/9111 TLI#16661



NOV 1 0
ENVIRONM

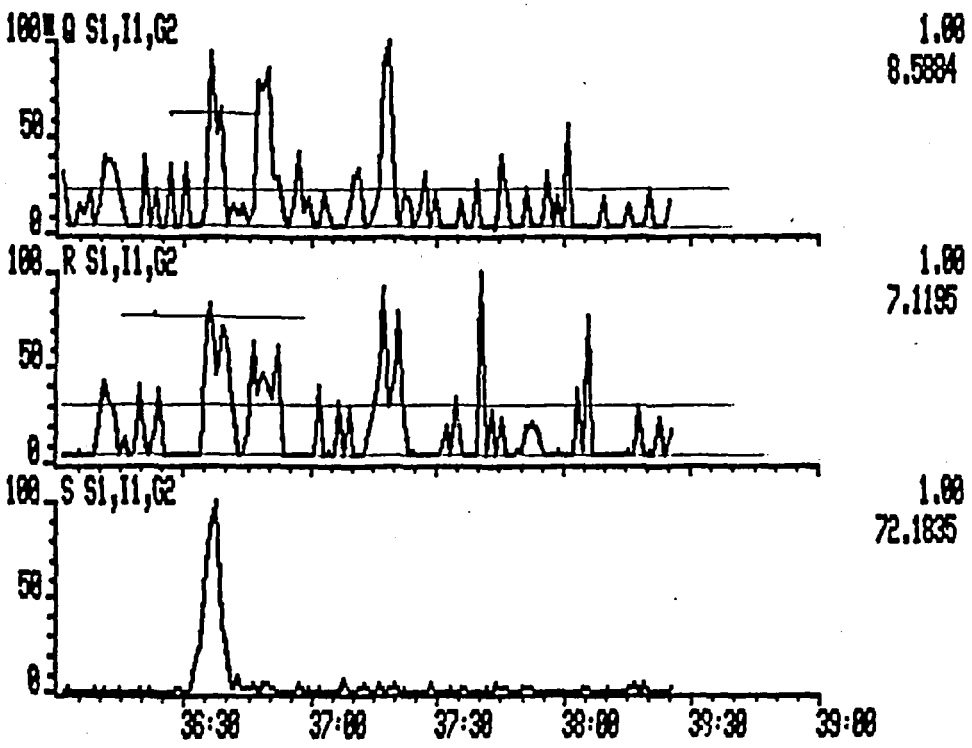
T984958 13-NOV-98 22:44 70-250S (EI+) Sys:DB5US
GR 2 Q: 355.8546 R: 357.8516 S: 367.8949 T: 369.8919 U: 375.8364
Text:LFI/9111 TLI#16661



NOV 20 1998
ENVIRONMENTAL AFFAIRS

MKS
11-15-98

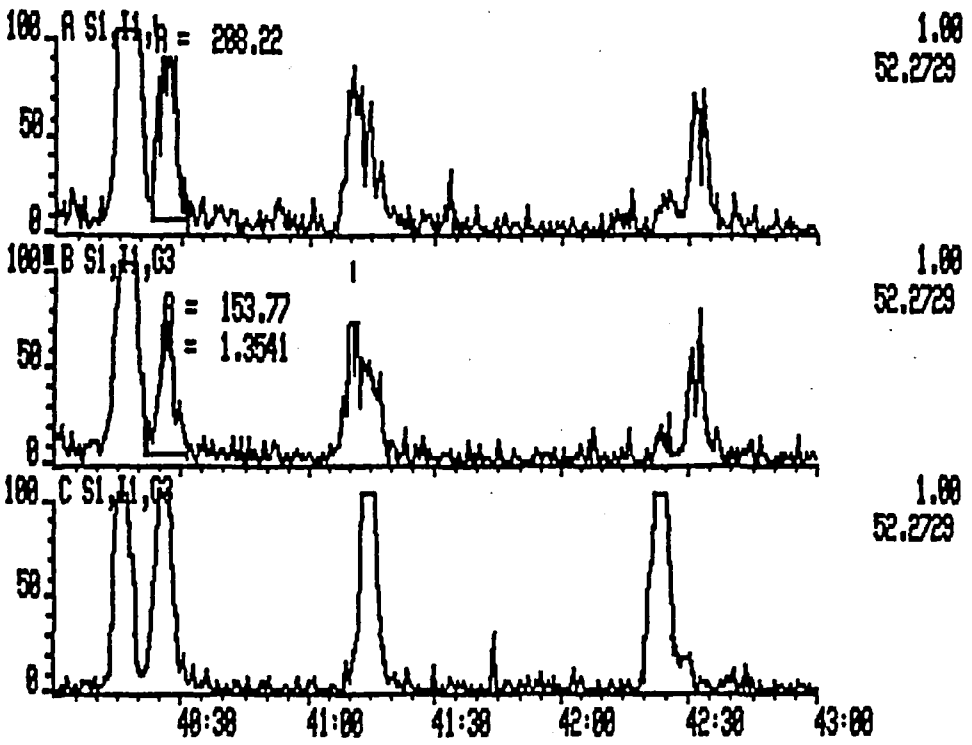
T984958 13-NOV-90 22:44 70-250S (EI+) Sys:D85US
GR 2 Q: 355.8546 R: 357.8516 S: 367.8949 T: 369.8919 U: 375.8364
Text:LFI/9111 TLI#16661



NOV 1 0 1990
ENVIRONMENTAL

MRDS
11-15-90

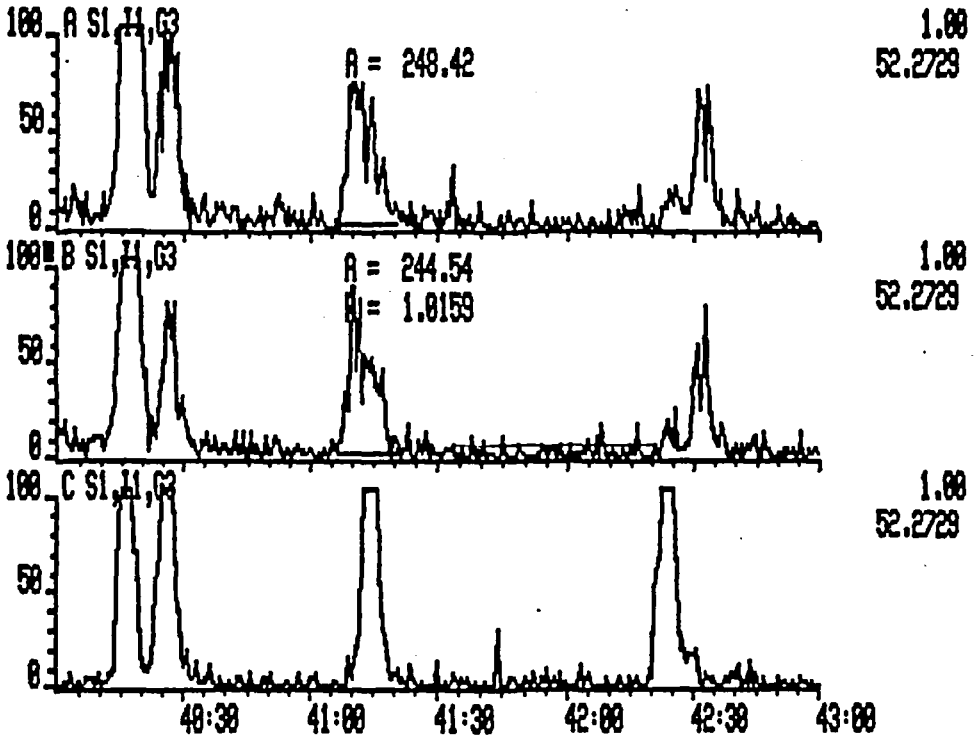
T904958 13-NOV-90 22:44 70-250S (EI+) Sys:DB5US
GR 3 A: 373.8288 B: 375.8178 C: 383.8539 D: 385.8610 E: 389.8156
Text:LFI/9111 TLI#16661



NOV 1 8 1990
ENVIRONMENTAL

MKS
11-15-90

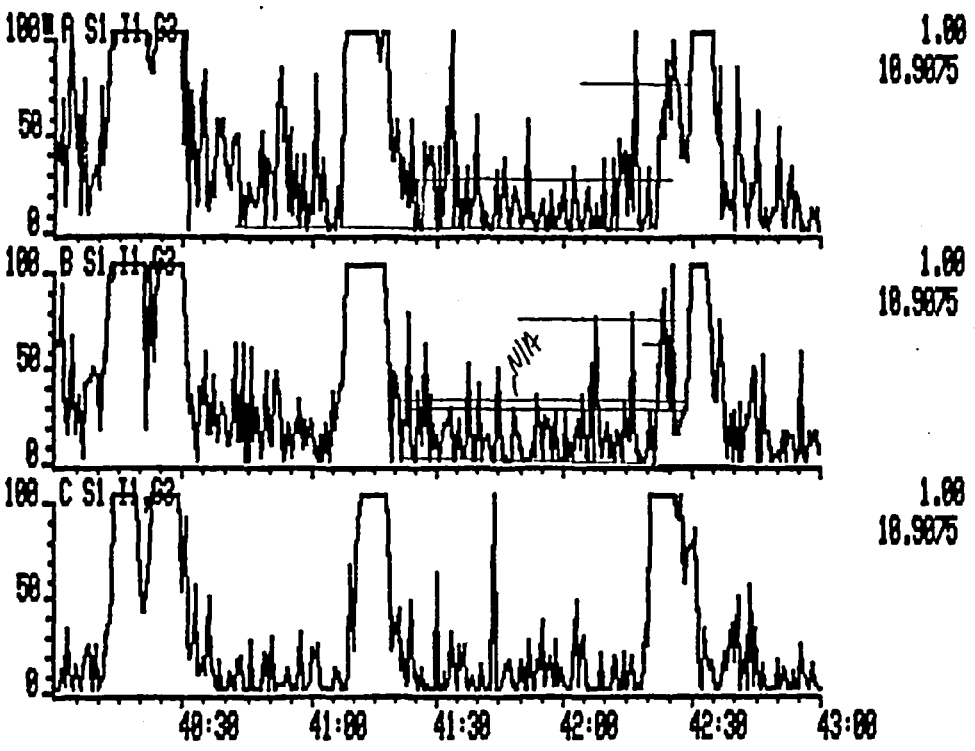
T904958 13-NOV-90 22:44 70-2586 (EI+) Sys:DB5US
GR 3 A: 373.8288 B: 375.8178 C: 383.8639 D: 385.8610 E: 389.8156
Text:LFI/9111 TLI#16661



NOV 1 0 1990
ENVIRONMENTAL ANAL

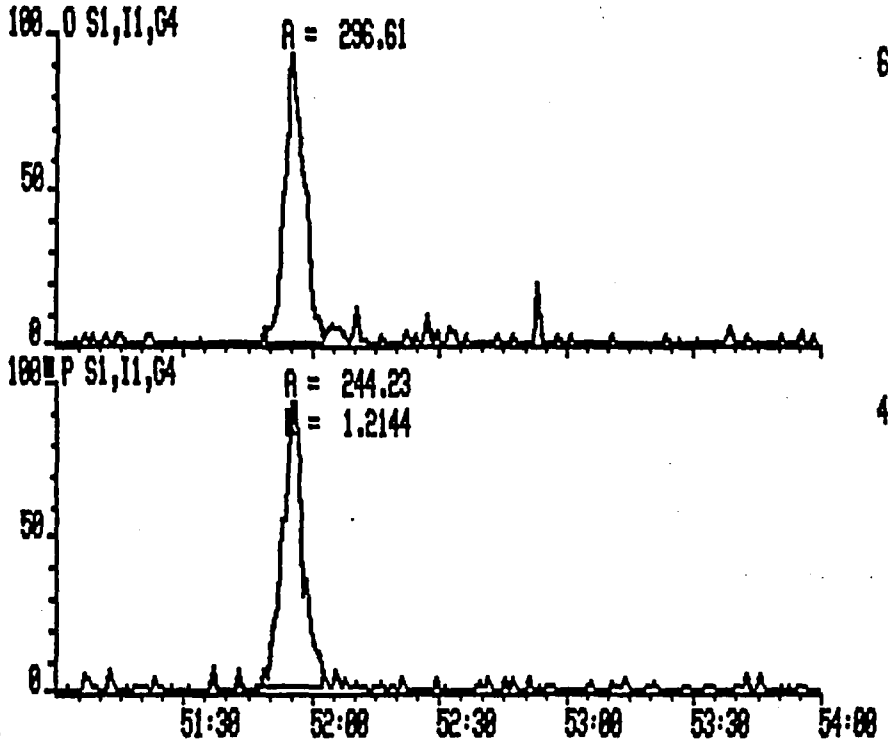
MJS
11-15-90

T984958 13-NOV-90 22:44 70-2505 (EI+) Sys:D85US
GR 3 A: 373.8208 B: 375.8178 C: 383.8639 D: 385.8610 E: 389.8156
Text:LFI/9111 TLI#16661



NOV 1 9 1990
ENVIRONMENTAL AFFAIRS
MRS
11-15-90

T304958 13-NOV-90 22:44 70-250S (EI+) Sys:DB5US
GR 4 O: 469.7779 P: 471.7758 Q: 479.7165 R: 513.6775
Text:LFI/9111 TLI#16661



NOV 19 1990
ENVIRONMENTAL AFFAIRS

MSDS
11-15-90

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

11/15/90

FILE NAME....: S904212 CLIENT ID....: SWP TLI NUMBER....: 37-26-1
CONCAL (VER).: S904209 SAMPLE ID....: LF1/9110 (DIL)
PROJECT NUMBER: 16661 ICAL DATE....: 10/15/90
ANALYST.....: TM ANALYSIS DATE: 11/08/90
SAMPLE SIZE..: 9.460 g SAMPLE MATRIX: SOIL SAMPLE ORIGIN: WILMINGTN
DATE RECEIVED.: 11/10/90 DATE COLLECTED: 10/09/90
SPIKE FILE...: SPX23710 SHIPMENT NO...: NC09001

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	ND		0.03				—
12378-PeCDD	ND		0.04				—
123478-HxCDD	EMPC			0.11			—
123678-HxCDD	1.3				1.30	41:53	—
123789-HxCDD	0.61				1.32	42:20	PC
1234678-HpCDD	65.5				1.07	46:46	—
OCDD	621				0.86	52:16	B
2378-TCDF	ND		0.02				—
12378-PeCDF	EMPC			0.07			—
23478-PeCDF	EMPC			0.08			—
123478-HxCDF	0.77				1.15	40:35	—
123678-HxCDF	0.24				1.25	40:45	—
234678-HxCDF	0.41				1.27	41:28	B
123789-HxCDF	ND		0.04				—
1234678-HpCDF	59.5				0.95	45:12	—
1234789-HpCDF	EMPC			1.0			—
OCDF	63.2				0.90	52:32	—
TOTAL TCDD	EMPC			0.04			—
TOTAL PeCDD	0.72	4		0.91	1.63		—
TOTAL HxCDD	16.4	6		16.5	1.29		—
TOTAL HpCDD	461	2			1.05		—
TOTAL TCDF	ND		0.02				—
TOTAL PeCDF	0.98	3		1.3	1.74		—
TOTAL HxCDF	31.4	8		31.5	1.19		—
TOTAL HpCDF	147	2		148	0.95		—

MSB 11/15/90

X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY

11/15/90

FILE NAME....: S904212 CLIENT ID....: SWP TLI NUMBER....: 37-26-1
CONCAL (VER).: S904209 SAMPLE ID....: LF1/9110 (DIL)
PROJECT NUMBER: 16661 ICAL DATE....: 10/15/90
ANALYST.....: TM ANALYSIS DATE: 11/08/90
SAMPLE SIZE..: 9.460 g SAMPLE MATRIX: SOIL SAMPLE ORIGIN: WILMINGTN
DATE RECEIVED.: 11/10/90 DATE COLLECTED: 10/09/90
SPIKE FILE...: SPX23710 SHIPMENT NO...: NC09001

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37Cl-TCDD	0.91	86.4		31:32	___
13C12-PeCDF 234	1.1	108	1.53	36:27	___
13C12-HxCDF 478	0.63	59.6	0.52	40:34	___
13C12-HxCDD 478	0.73	69.4	1.07	41:43	___
13C12-HpCDF 789	0.55	52.4	0.43	47:26	___

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	0.74	70.0	0.54	42:42	___
13C12-HxCDF 234	0.65	61.7	0.51	41:33	___

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	0.84	79.0	0.83	30:42	___
13C12-2378-TCDD	0.98	92.3	0.84	31:30	___
13C12-PeCDF 123	0.95	89.7	1.43	35:29	___
13C12-PeCDD 123	1.1	105	1.55	36:56	___
13C12-HxCDF 678	0.56	53.2	0.49	40:44	___
13C12-HxCDD 678	0.72	68.3	1.30	41:52	___
13C12-HpCDF 678	0.55	52.4	0.41	45:11	___ Q,RS2
13C12-HpCDD 678	0.53	50.1	1.05	46:45	___
13C12-OCDD	1.5	72.7	0.99	52:16	___

MK 11/15/90

X237_RPT rev:3.03

2

N=28.8
(320)

	Initial	Date
B-File/Header Changes	MJS	11-15-90
Manual Integrations		
Transcription	KSD	11-15-90
Dbase Corrections		

Page No. 1 Listing of S904212B.dbf
11/10/90

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
304		1.60	28:58	58.44	F	F	0.944	
	D	0.83	30:44	54.69	T	T	1.001	S.N
		0.75	32:19	21.59	T	F	1.053	
		0.97	32:59	61.85	F	F	1.074	
	D	-0.41	34:25	73.90	F	F	1.121	R.W
304		*** Total ***		270.47	# of Peaks:		5	
316		0.83	30:42	3806.87	T	T	1.000	
316		*** Total ***		3806.87	# of Peaks:		1	
320	P	-1.95	29:11	50.73	F	F	0.926	S.N
		1.42	30:13	103.97	F	F	0.959	
		0.81	30:26	50.93	T	F	0.966	
		1.30	30:42	21.47	F	F	0.975	
		1.43	31:16	21.07	F	F	0.993	S.N
	D	0.44	31:24	50.57	F	F	0.997	
		1.77	32:38	18.80	F	F	1.036	
		0.60	34:25	16.63	F	F	1.093	
		1.28	34:33	37.82	F	F	1.097	R.W
	D	0.47	35:27	54.66	F	F	1.125	
320		*** Total ***		426.65	# of Peaks:		10	
328		0.00	31:32	2530.44	T	T	1.001	
		0.00	31:53	33.84	T	F	1.012	
328		*** Total ***		2564.28	# of Peaks:		2	
332		0.79	31:17	2682.43	T	T	0.993	
		0.84	31:30	2567.22	T	T	1.000	
332		*** Total ***		5249.65	# of Peaks:		2	
340		1.76	32:59	1395.38	T	F	0.930	
		1.68	34:25	977.18	T	F	0.970	
		1.77	35:08	110.65	T	F	0.990	
	Ck R.O.	0.86	35:30	177.08	F	T	1.000	
		1.00	35:54	201.53	F	F	1.012	
	D	-0.37	36:06	25.67	F	F	1.017	S.N
	Ck R.O.	1.10	36:28	193.52	F	T	1.028	
		2.00	36:44	224.26	F	F	1.035	
		0.86	37:31	27.08	F	F	1.057	
	D	0.61	37:49	29.91	F	F	1.066	S.N
340		*** Total ***		3362.26	# of Peaks:		10	
352		1.43	33:29	1746.13	T	T	1.000	
		1.39	35:50	81.17	T	F	1.010	
		1.53	36:27	2451.18	T	T	1.027	
		1.66	37:50	77.02	T	F	1.066	
352		*** Total ***		4355.50	# of Peaks:		4	

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NOV 19 1990

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
356		1.77	34:31	868.65	T	F	0.935	
		1.67	35:08	156.16	T	F	0.951	
		2.10	35:29	126.60	F	F	0.961	
		2.45	35:40	155.09	F	F	0.966	
		1.50	35:53	125.40	T	F	0.972	
	D	-1.67	36:07	50.15	T	F	0.978	- S.N
		1.57	36:16	153.73	T	F	0.982	
	D	- 0.78	36:57	47.48	F	T	1.000	— S.N
		0.49	37:09	75.31	F	F	1.006	
	D	-1.24	37:38	50.87	F	F	1.019	- S.N
356		*** Total ***		1809.44	# of Peaks:		10	
368		1.55	36:56	1070.13	T	T	1.000	
368		*** Total ***		1070.13	# of Peaks:		1	
374		1.21	39:05	5165.86	T	F	0.959	
		1.17	39:17	17693.23	T	F	0.964	
		1.09	39:44	198.18	T	F	0.975	
		1.17	40:00	51352.02	T	F	0.982	
		0.54	40:27	88.67	F	F	0.993	
		1.15	40:35	2277.01	T	T	0.996	
		1.25	40:45	746.28	T	T	1.000	
	D	-0.94	40:53	93.92	F	F	1.004	—S.N
	Plot D	-1.07	41:00	42.77	T	F	1.007	-S.N
	D	-3.15	41:07	48.51	F	F	1.009	-S.N
	D	-1.31	41:13	73.91	T	F	1.012	-S.N
		1.27	41:28	916.01	T	T	1.018	
	D	-1.32	41:50	25.06	T	F	1.027	-S.N
	~~Diff Plot~~ D →	0.49	42:42	75.11	F	T	1.048	-S.N
		1.20	42:50	574.75	T	~~T~~ F	~~1.052~~ 1.053	
	D	-0.78	43:00	21.02	F	F	1.056	-S.N
374		*** Total ***		79392.31	# of Peaks:		16	
384		0.52	40:34	2049.61	T	T	0.996	
		0.49	40:44	2078.08	T	T	1.000	
		0.51	41:33	2113.35	T	T	1.020	
		0.54	42:42	2023.50	T	T	1.048	
384		*** Total ***		8264.54	# of Peaks:		4	
390		1.28	39:52	13284.29	T	F	0.952	
	D	-1.21	40:13	38.92	T	F	0.961	-S.N
		1.27	40:34	1175.85	T	F	0.969	
		1.24	40:54	9230.06	T	F	0.977	
		1.30	41:09	3359.70	T	F	0.983	
	D	-0.49	41:35	61.13	F	F	0.993	-S.N
R.D ~~ck~~	→	0.88	41:45	205.77	F	T	0.997	
		1.30	41:53	2492.00	T	T	1.000	
	D	-0.41	42:10	28.90	F	F	1.007	-S.N
ck	→	~~5.09~~/-32	42:20	~~956.52~~ 1051	T ~~F~~	T	1.011	
	D	-3.51	42:20	830.13	F	T	1.011	-S.N
	D	-2.46	42:32	47.39	F	F	1.016	-S.N
390		*** Total ***		31710.66	# of Peaks:		12	

4

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
402		1.07	41:43	1311.46	T	T	0.996	
		1.30	41:52	1666.53	T	T	1.000	
		1.27	42:20	2488.08	T	T	1.011	
402		*** Total ***		5466.07	# of Peaks:		3	
408		0.95	45:12	167169.15	T	T	1.000	
		0.94	45:49	163906.52	T	F	1.014	
	D	-0.86	46:47	723.95	F	F	1.035	-NH
	R.O.ratio	0.82	47:28	1721.49	F	T	1.051	
408		*** Total ***		333521.11	# of Peaks:		4	
418		0.41	45:11	1511.03	T	T	1.000	
		0.72	46:10	70.70	F	F	1.022	
		0.43	47:26	1151.35	T	T	1.050	
418		*** Total ***		2733.08	# of Peaks:		3	
424		1.02	45:39	462723.89	T	F	0.976	
		1.07	46:46	76585.72	T	T	1.000	
	D	-2.56	47:39	426.20	F	F	1.019	-NH
424		*** Total ***		539735.81	# of Peaks:		3	
436		1.05	46:45	1041.86	T	T	1.000	
436		*** Total ***		1041.86	# of Peaks:		1	
442		0.90	52:32	85101.39	T	T	1.005	
442		*** Total ***		85101.39	# of Peaks:		1	
458		0.86	52:16	708389.03	T	T	1.000	
458		*** Total ***		708389.03	# of Peaks:		1	
470		0.99	52:16	1435.01	T	T	1.000	
470		*** Total ***		1435.01	# of Peaks:		1	

*** End of Report ***

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NOV 1 0

Listing of S9042121.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
202	10:46	16.96	17:40	29.19	19:25	11.67		
	13:03	21.60	18:10	14.30	20:32	90.58		
	14:45	13.22	19:13	17.86	21:36	45.18		
204	10:50	13.92	14:02	24.65	17:12	14.95	19:28	10.94
	11:24	14.74	14:27	23.05	17:25	7.14	20:09	22.23
	11:56	15.04	14:45	22.98	17:33	34.33	20:22	16.64
	12:05	11.65	15:14	17.34	17:43	30.93	20:33	110.11
	12:13	16.71	15:29	9.32	17:56	14.13	20:55	9.11
	12:23	16.17	15:47	12.28	18:13	58.20	21:09	7.61
	12:42	11.34	16:08	16.49	18:31	7.08	21:35	63.47
	12:51	7.14	16:16	9.63	18:50	9.83		
	12:58	11.92	16:26	19.83	19:03	19.60		
	13:22	32.99	16:45	19.55	19:11	33.16		
238	17:49	10.49	19:01	11.27	19:43	21.48	22:16	20.12
	18:32	16.06	19:23	10.24	21:28	20.76	22:35	17.67
	18:53	12.36	19:31	12.95	21:36	15.65		
240	18:07	44.47	18:57	37.81	19:34	26.44	21:53	17.40
	18:30	15.14	19:05	33.08	20:41	51.65	22:02	12.78
	18:40	16.19	19:16	46.19	21:30	55.63		
252	18:43	34.60	19:23	45.84	21:36	79.93	23:07	31.79
	18:56	26.77	19:37	25.98	21:53	13.53		
	19:13	56.77	20:22	9.96	22:24	26.03		
254	18:33	16.46	19:38	21.94	22:03	11.54	23:21	22.53
	18:53	24.41	20:09	8.57	22:24	9.68		
	19:17	27.01	21:34	24.76	22:55	12.16		
270	22:08	7.91	22:28	12.93	23:20	25.29	25:43	7.83
	22:15	12.85	22:40	9.88	23:26	10.12	26:23	9.73
272	25:12	13.91						
286	24:31	17.86	25:08	7.90	26:51	9.75		
218	11:35	30.56	13:41	12.46	16:11	23.82	18:09	26.14
	11:46	16.23	13:54	17.92	16:23	21.00	18:36	18.32
	12:07	36.06	14:12	16.83	16:46	63.88	18:58	17.26
	12:53	97.94	14:27	11.78	17:15	86.18	19:26	9.08
	13:18	53.24	14:47	33.55	17:44	49.78	22:01	35.39
	13:34	7.86	15:46	11.17	17:54	31.63		
220	12:02	34.81	14:58	40.13	17:06	10.30	19:24	19.57
	13:04	23.07	15:38	25.57	17:22	11.07	20:09	25.61
	13:13	30.49	16:00	20.15	17:57	9.91	20:25	21.04
	13:26	43.63	16:13	54.33	18:14	29.64	20:47	26.77
	14:36	11.71	16:26	31.93	18:52	56.68		
	14:45	33.59	16:50	13.49	19:14	21.16		

Listing of S9042121.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
304	32:19	9.26	32:59	30.45	33:54	7.31		
	32:34	13.06	33:45	10.64	34:25	21.59		
306	28:01	9.74	28:58	22.49	30:46	29.82	33:00	31.40
	28:15	18.48	29:14	15.79	31:41	11.97	34:08	6.96
	28:36	30.87	29:35	23.19	32:19	12.33	34:26	52.31
	28:45	16.40	30:03	7.92	32:45	8.00	34:40	16.19
320	28:52	10.32	30:42	12.12	32:17	7.68	35:21	6.19
	29:11	33.56	31:16	12.39	32:38	12.01	35:27	17.48
	29:32	6.99	31:24	15.48	33:51	13.34		
	30:13	60.96	31:51	19.93	34:25	6.24		
	30:26	22.77	32:03	7.18	34:33	21.25		
322	29:11	17.17	30:52	12.00	32:24	9.01	35:09	10.29
	29:28	16.70	30:58	12.17	32:39	6.79	35:29	37.18
	30:12	43.01	31:16	8.68	34:26	10.39		
	30:26	28.16	31:23	35.09	34:32	16.57		
	30:44	9.35	31:57	16.63	34:43	7.78		
340	32:59	889.25	34:25	611.89	35:30	81.65	36:28	101.47
	33:13	6.87	34:49	18.57	35:42	14.85	36:44	149.58
	34:02	6.68	35:08	70.72	35:54	100.86	37:31	12.52
	34:12	12.62	35:23	33.87	36:06	6.94	37:49	11.37
342	32:15	7.97	35:01	29.68	35:53	100.67	36:53	17.78
	32:40	9.01	35:07	39.93	36:06	18.73	37:18	12.82
	32:59	506.13	35:30	95.43	36:28	92.05	37:32	14.56
	34:25	365.29	35:38	24.14	36:44	74.68	37:51	18.54
356	33:48	13.12	35:29	85.76	36:16	93.98	37:38	28.16
	34:31	555.26	35:40	110.14	36:32	34.45		
	34:45	7.72	35:53	75.19	36:57	20.84		
	35:08	97.61	36:07	31.40	37:09	24.67		
358	32:57	9.61	35:29	40.84	36:16	59.75	37:36	22.71
	34:31	313.39	35:40	44.95	36:24	19.67	38:05	6.32
	34:51	6.45	35:53	50.21	36:57	26.64		
	35:08	58.55	36:07	18.75	37:09	50.64		
316	30:42	1726.00						
318	30:42	2080.87						
328	31:32	2530.44	31:53	33.84				
332	31:17	1186.34	31:30	1168.38				
334	29:39	26.35	31:17	1496.09	31:30	1398.84		
352	35:29	1076.55	35:50	47.27	36:27	1484.11	37:50	48.02
354	32:24	25.63	35:49	33.90	37:50	29.00		
	35:29	719.58	36:27	967.07				

7

Listing of S9042121.dbt File
Raw Mass, Retention Time and Data Area

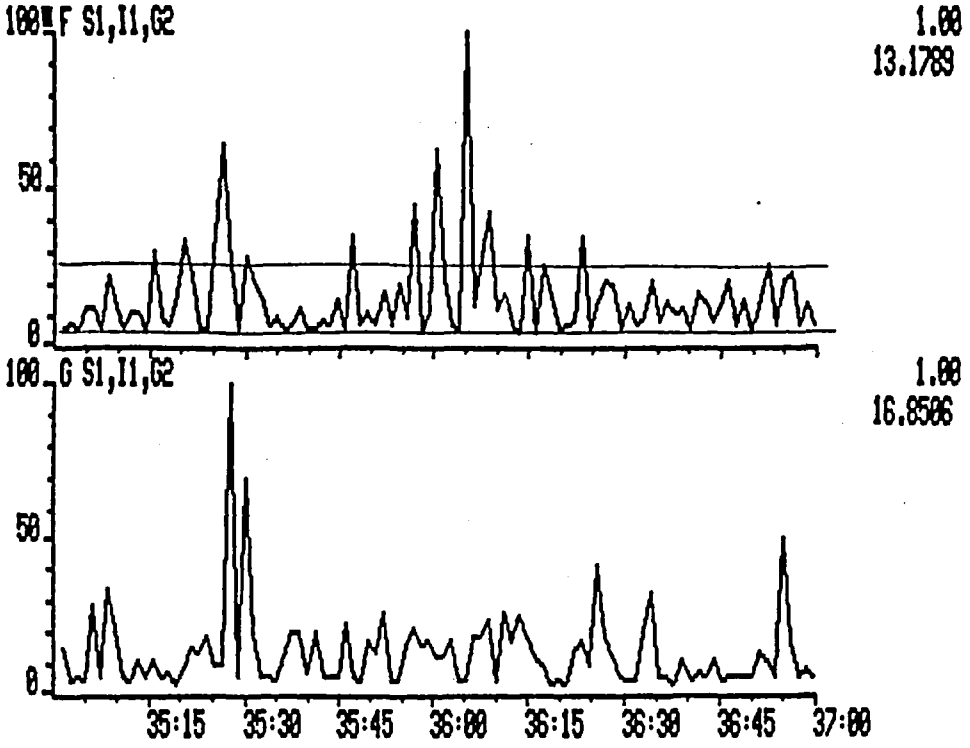
M_7	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area....
368	35:30	31.32	36:56	650.50	37:36	36.56		
370	36:56	419.63						
374	39:05	2826.59	40:35	1216.26	41:17	6.76	42:50	313.83
	39:17	9544.23	40:45	414.20	41:28	512.20	42:57	17.14
	39:30	191.73	40:53	45.51	41:41	8.80	43:00	9.20
	39:44	103.48	40:57	25.93	41:50	14.28	43:22	10.57
	40:00	27666.45	41:00	22.07	42:22	7.08		
	40:19	151.07	41:07	36.81	42:37	6.46		
	40:27	31.05	41:13	41.93	42:42	24.83		
376	39:05	2339.27	40:36	1060.75	41:20	10.03	42:50	260.92
	39:17	8149.00	40:45	332.08	41:29	403.81	43:00	11.82
	39:36	33.67	40:54	48.41	41:44	18.21	43:14	6.01
	39:45	94.70	41:00	20.70	41:49	10.78		
	40:00	23685.57	41:07	11.70	42:25	11.21		
	40:26	57.62	41:11	31.98	42:43	50.28		
390	39:52	7457.78	40:54	5112.75	41:45	96.21	42:32	33.70
	40:10	21.39	41:09	1898.47	41:53	1407.65	42:37	10.04
	40:13	21.30	41:26	26.13	42:10	8.35		
	40:34	656.94	41:35	20.09	42:20	646.21		
392	39:52	5826.51	40:54	4117.31	41:45	109.56	42:18	183.92
	40:13	17.62	41:09	1461.23	41:53	1084.35	42:22	310.31
	40:33	518.91	41:23	35.52	42:01	44.80	42:32	13.69
	40:42	14.12	41:34	41.04	42:08	20.55		
384	40:34	700.53	41:33	712.59	42:42	708.99		
	40:44	685.77	41:47	25.35				
386	40:34	1349.08	40:57	32.57	41:33	1400.76		
	40:44	1392.31	41:13	40.13	42:42	1314.51		
402	41:43	679.38	41:52	940.49	42:20	1392.24		
404	41:43	632.08	41:51	726.04	42:20	1095.84		
408	44:10	12.65	45:49	79537.45	47:28	773.31		
	45:12	81311.31	46:47	334.55				
410	45:12	85857.84	46:48	389.40	47:28	948.18		
	45:49	84369.07	47:02	204.39	48:11	13.10		
418	45:11	436.89	45:44	20.68	47:02	9.79	47:44	22.96
	45:35	10.29	46:10	29.66	47:26	346.59	48:58	9.31
420	45:11	1074.14	45:53	12.79	47:27	804.76		
	45:39	37.05	46:09	41.04	48:01	18.50		
424	45:39	233886.92	46:46	39541.36	47:57	127.56	49:35	15.64
	46:29	531.06	47:39	306.37	48:17	19.10	49:45	18.09

Listing of S9042121.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
426	45:39	228836.97	47:38	119.83	48:13	36.50		
	46:46	37044.36	47:53	141.20	50:05	20.05		
436	46:45	534.51	47:09	13.54	47:34	9.38		
438	46:45	507.35						
442	49:08	13.84	49:46	14.81	50:42	13.42	52:32	40236.93
444	49:20	13.27	49:38	20.18	50:23	12.63	52:32	44864.46
458	49:15	13.13	51:09	14.30	52:16	327642.47	53:49	51.92
460	52:16	380746.56						
470	52:16	713.14	52:37	46.65				
472	52:15	721.87						

*** End of Report ***

GR 2 F: 319.8965 G: 321.8936 H: 327.8847 I: 330.9792 J: 331.9368
Text:LF1/9110 TLI# 16661



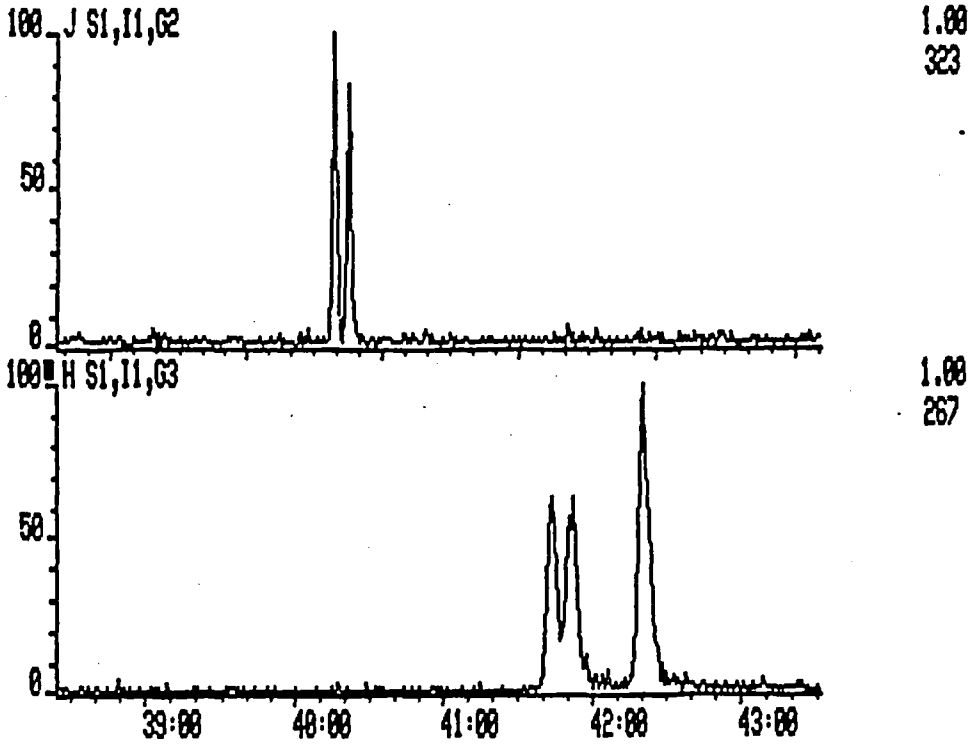
Verified by (GC/MS) : 11/8/90

Verified by (Int. QC) : 11/9/90

N = 0.22 x 2 x 5 x 13.1
= 28.8

MJS 11-15-90

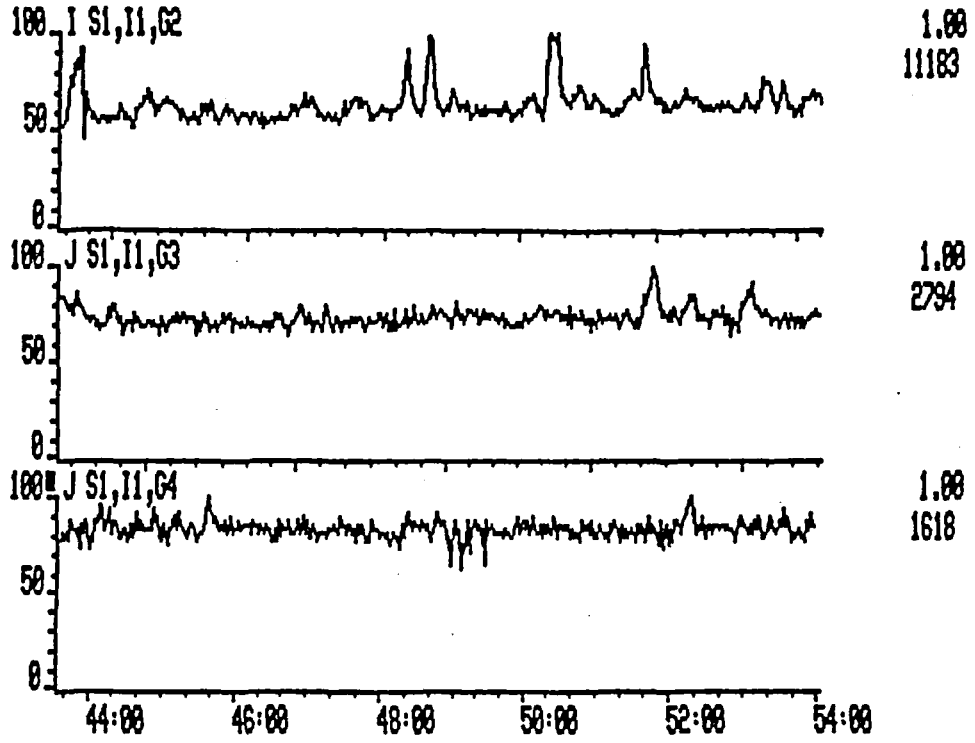
GR 3 F: 391.8127 G: 392.9768 H: 401.8558 I: 403.8529 J: 430.9729
Text:LF1/9110 TLI# 16661



NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

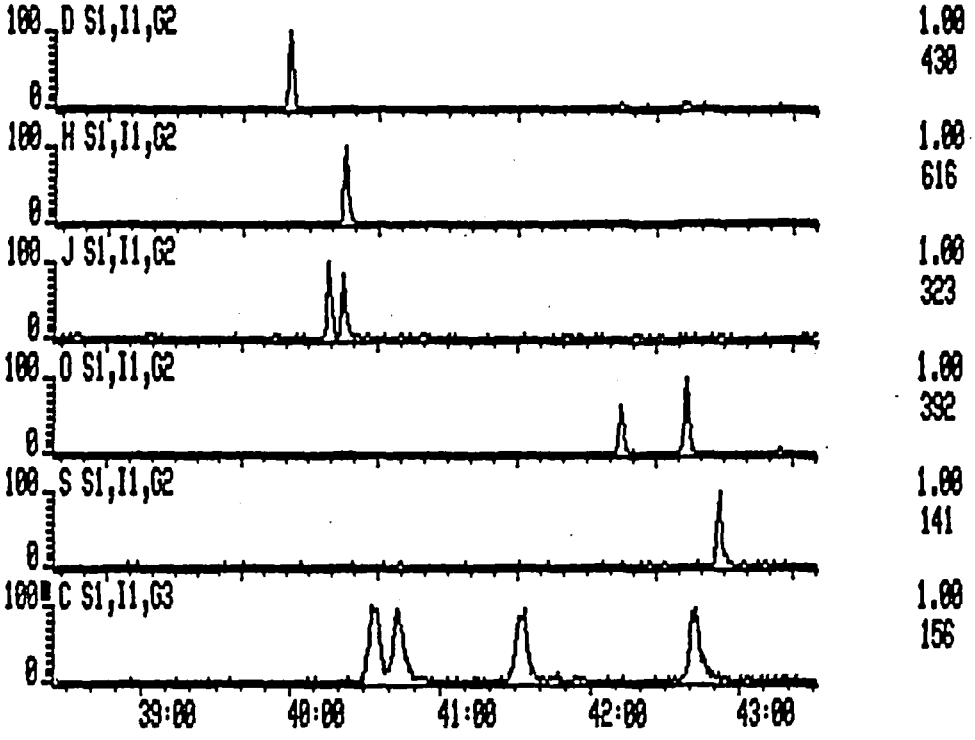
11

5984212 8-NOV-90 17:21 705 (LI*) SQS:06505
GR 4 D: 419.8220 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text:LF1/9110 TLI# 16661



NOV 1 0 1990
ENVIRONMENTAL ANALYS

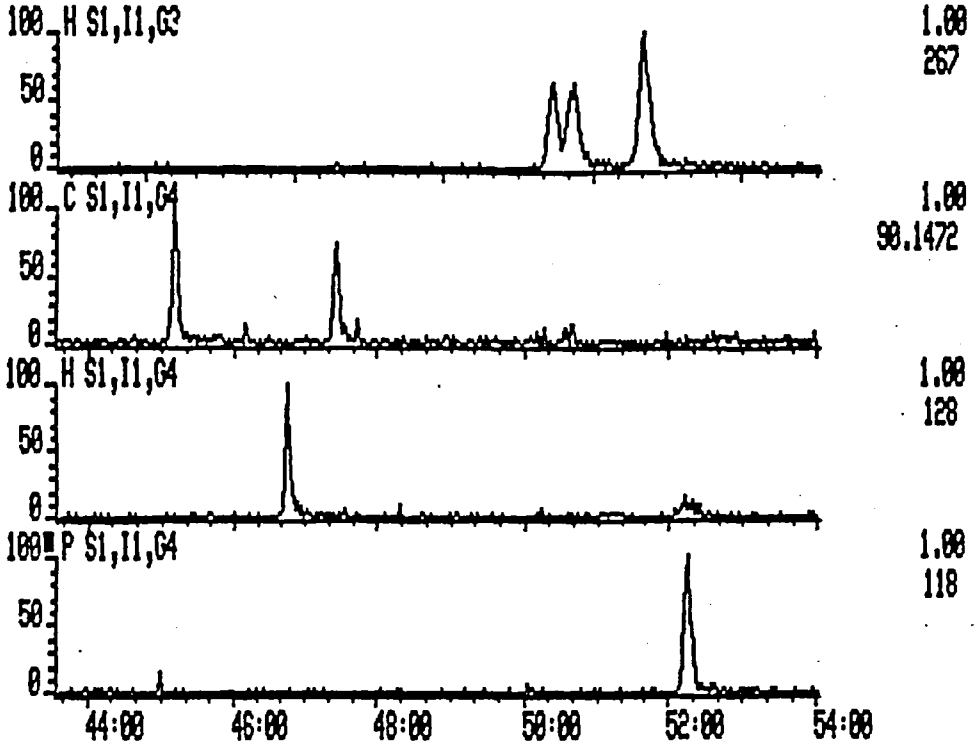
GR 3 D: 385.8610 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558
Text:LF1/9110 TLI# 16661



NOV 1 0 1999
ENVIRONMENTAL AFFAIRS

13

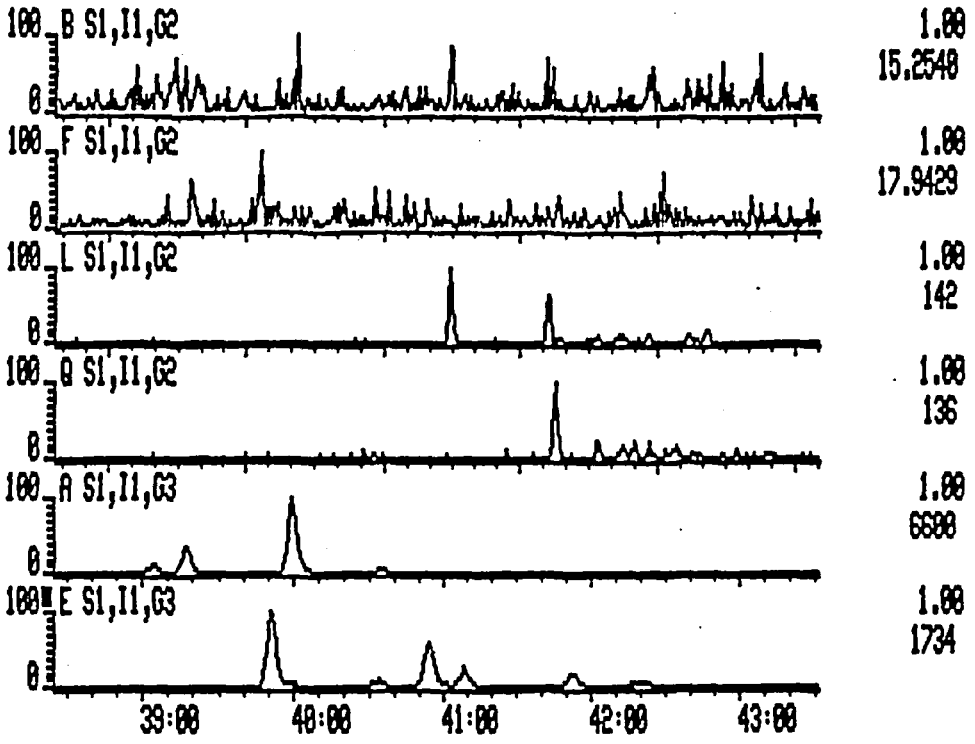
GR 4 D: 419.8220 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text:LF1/9110 TLI# 16661



NOV 1 0 1998
ENVIRONMENTAL ANALYSIS

14

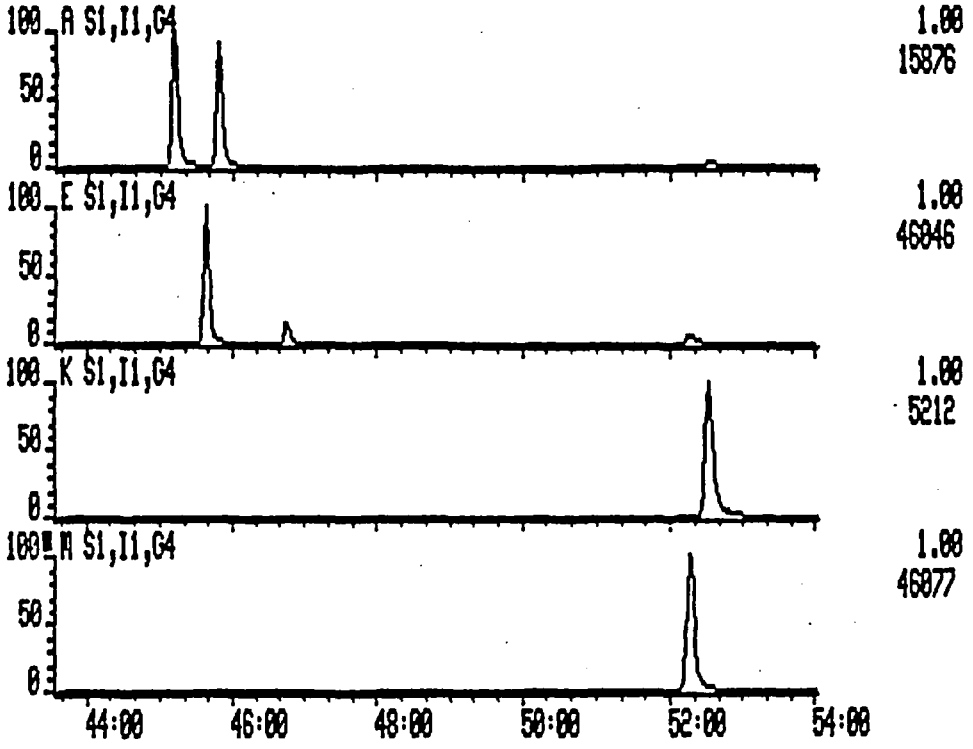
S304212 8-NOV-90 17:21 70S (EI+) Sys:DB5US
GR 3 D: 385.8810 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558
Text:LF1/9110 TLI# 16661



NOV 19 1990
ENVIRONMENTAL ANALYS

15

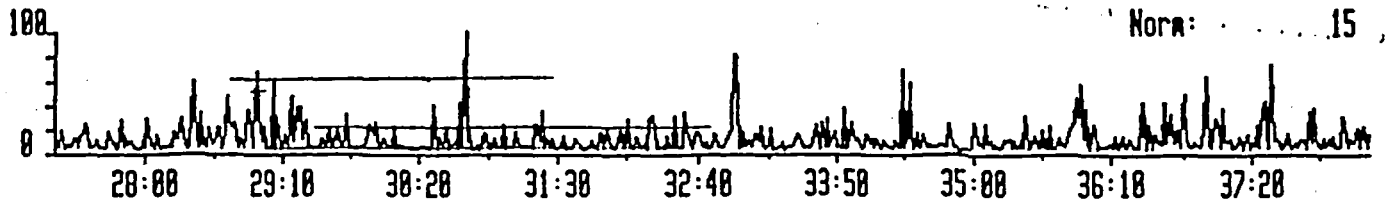
GR 4 D: 419.8220 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text:LF1/9110 TLI# 16661



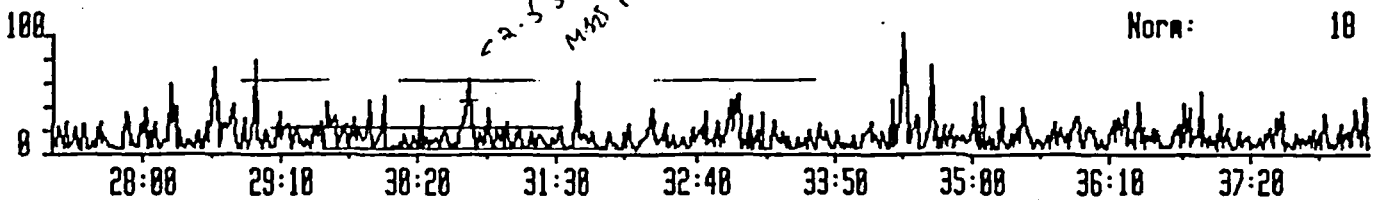
NOV 1 0 1999
ENVIRONMENTAL LABS

16

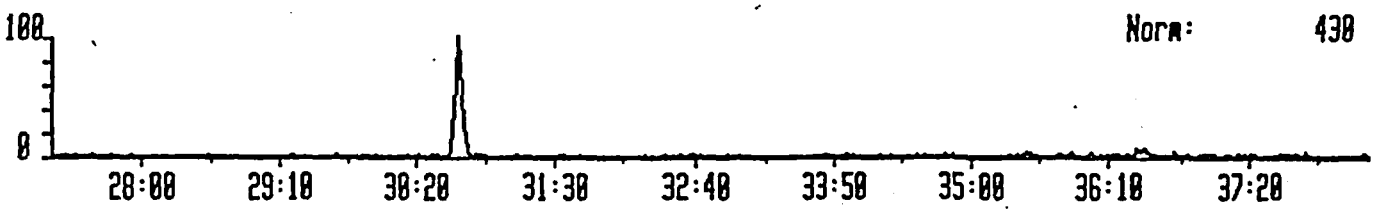
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 303.9016
Text:LF1/9110 TLI# 16661



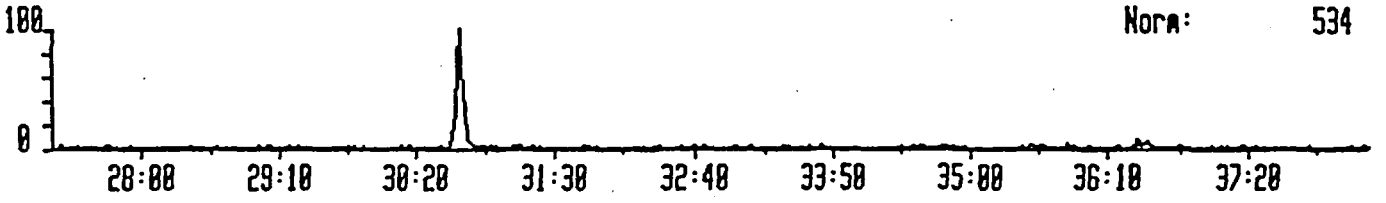
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 305.8987
Text:LF1/9110 TLI# 16661



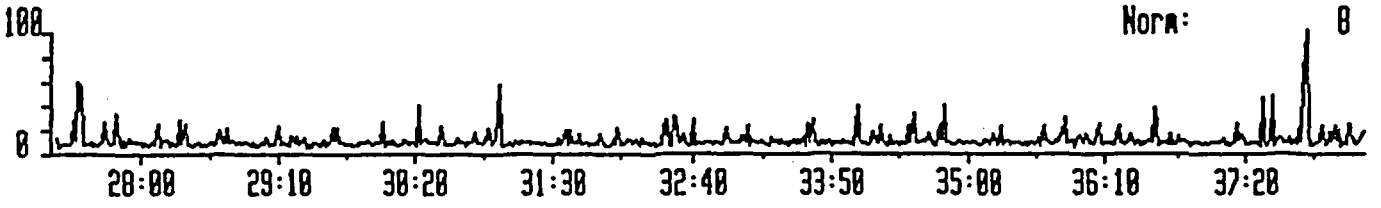
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 315.9419
Text:LF1/9110 TLI# 16661



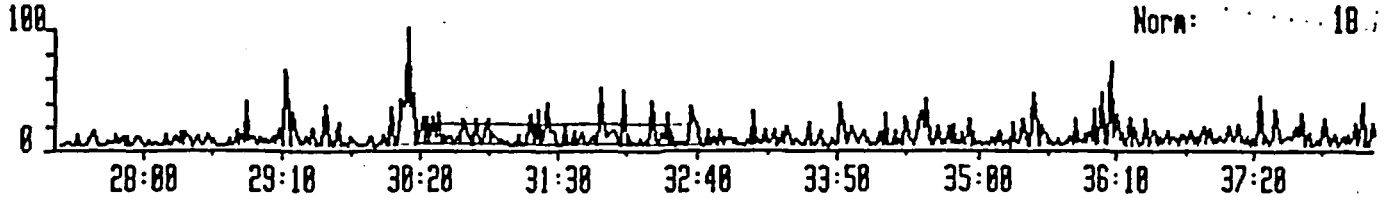
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 317.9389
Text:LF1/9110 TLI# 16661



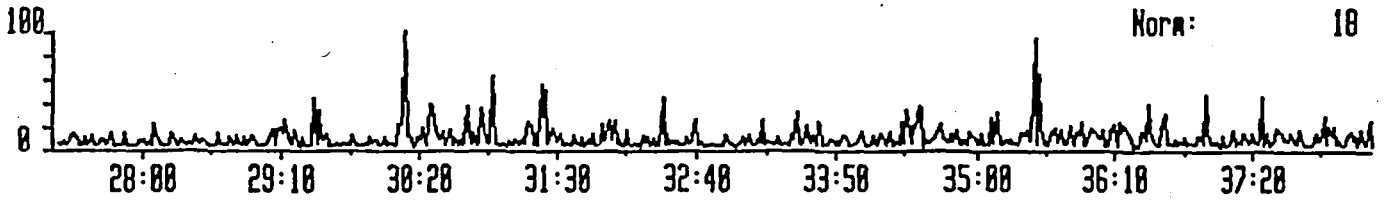
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 375.8364
Text:LF1/9110 TLI# 16661



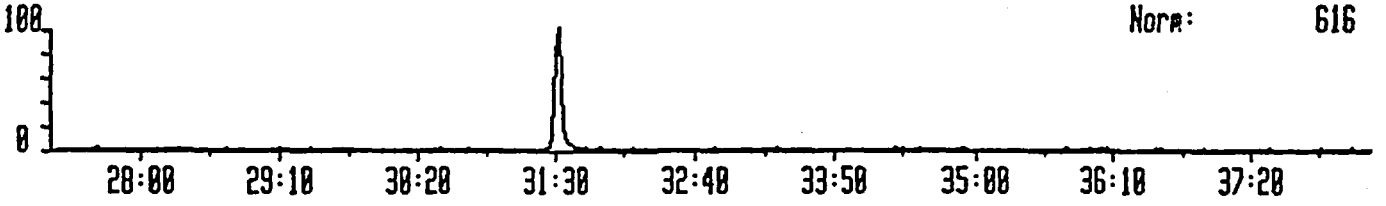
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 319.8965
Text:LF1/9110 TLI# 16661



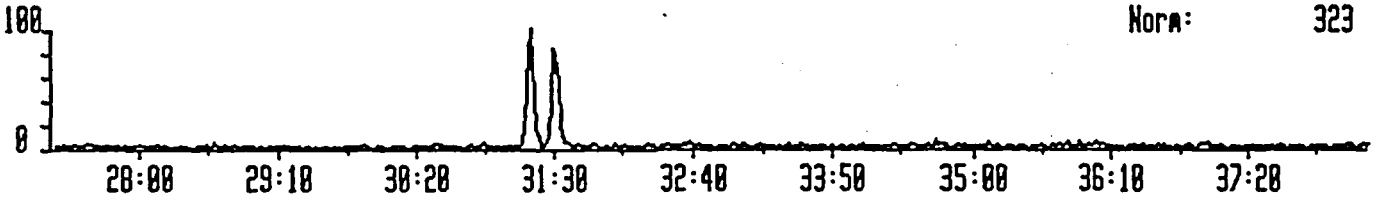
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 321.8936
Text:LF1/9110 TLI# 16661



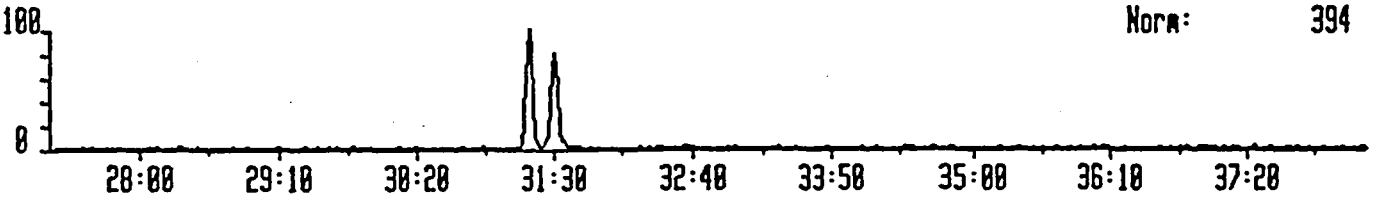
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 327.8847
Text:LF1/9110 TLI# 16661



S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 331.9368
Text:LF1/9110 TLI# 16661

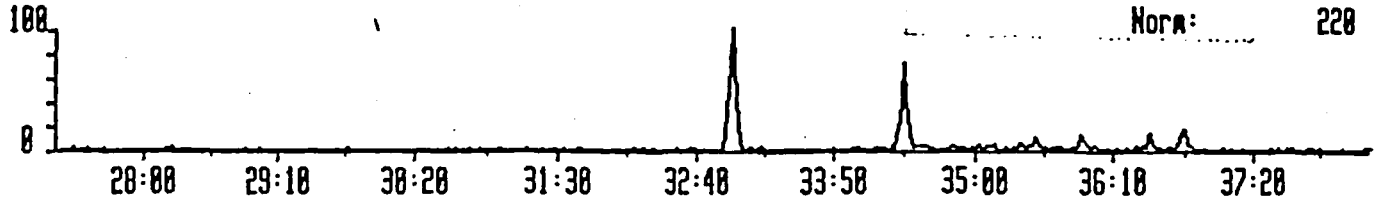


S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 333.9338
Text:LF1/9110 TLI# 16661

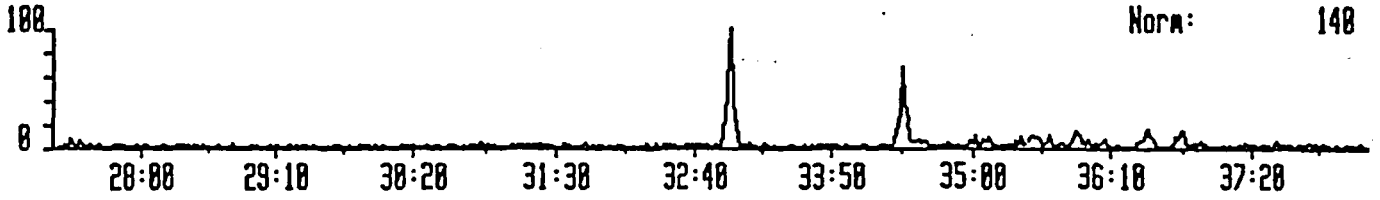


18

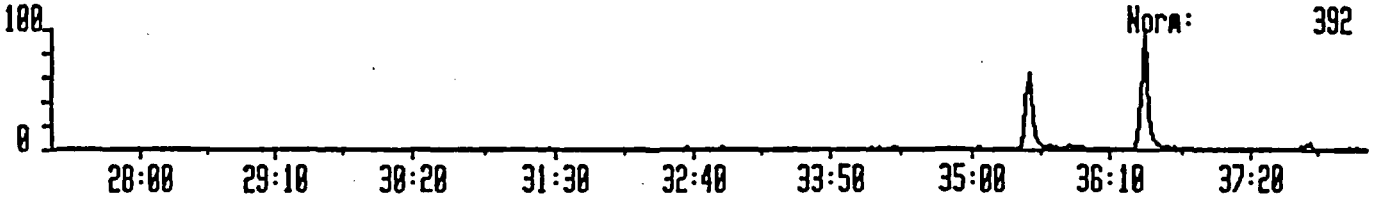
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 339.8597
Text:LF1/9110 TLI# 16661



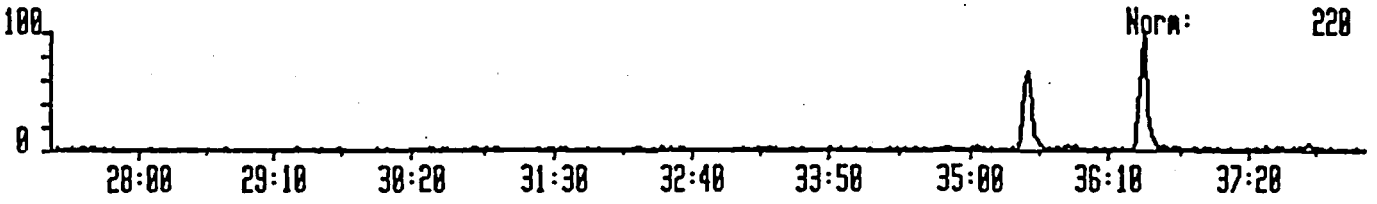
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 341.8567
Text:LF1/9110 TLI# 16661



S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 351.9000
Text:LF1/9110 TLI# 16661



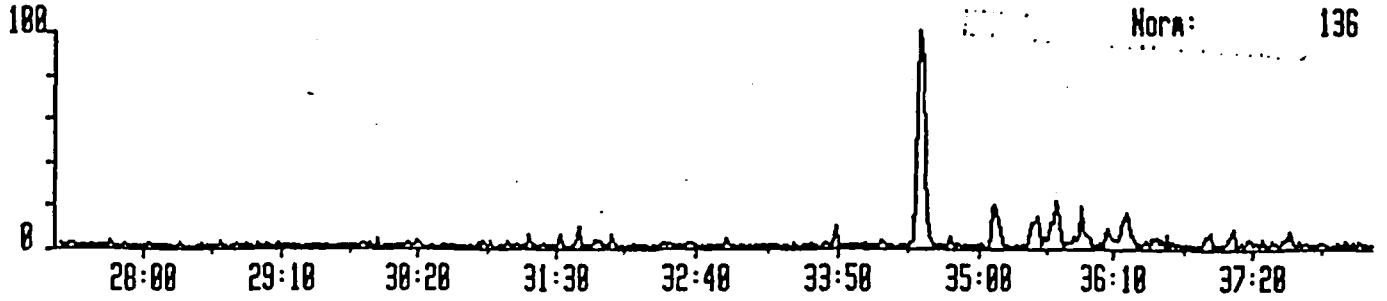
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 353.8970
Text:LF1/9110 TLI# 16661



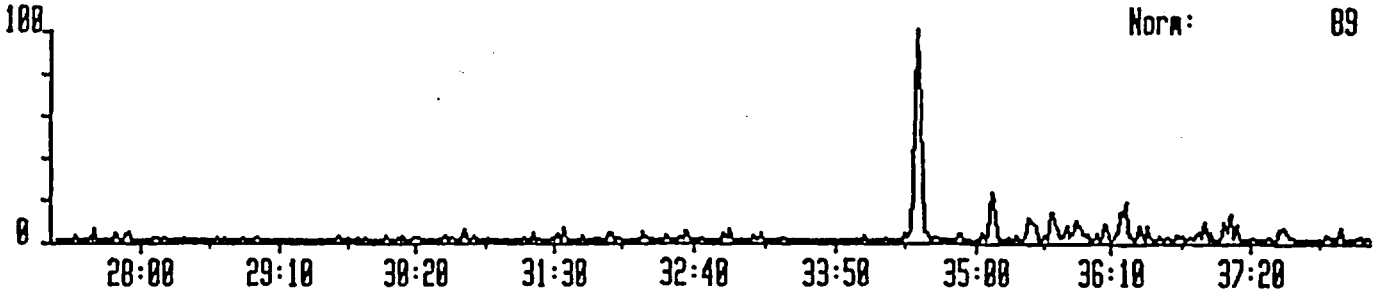
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 409.7974
Text:LF1/9110 TLI# 16661

19

S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 355.8546
Text:LF1/9110 TLI# 16661

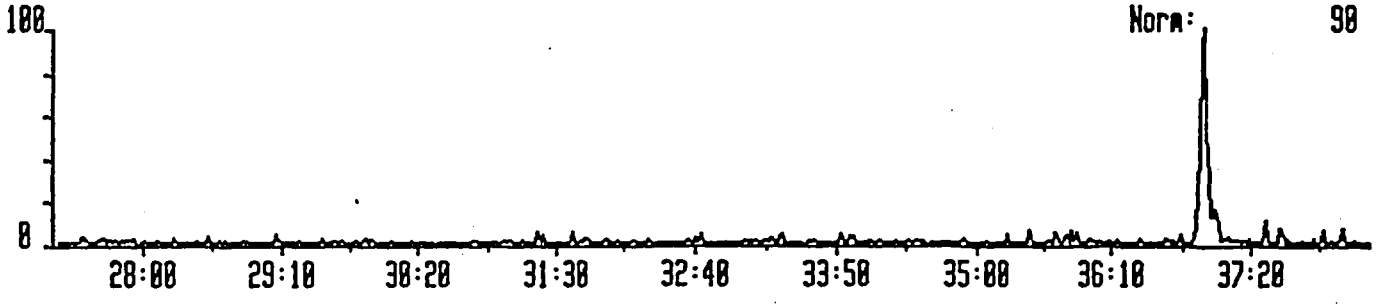


S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 357.8516
Text:LF1/9110 TLI# 16661

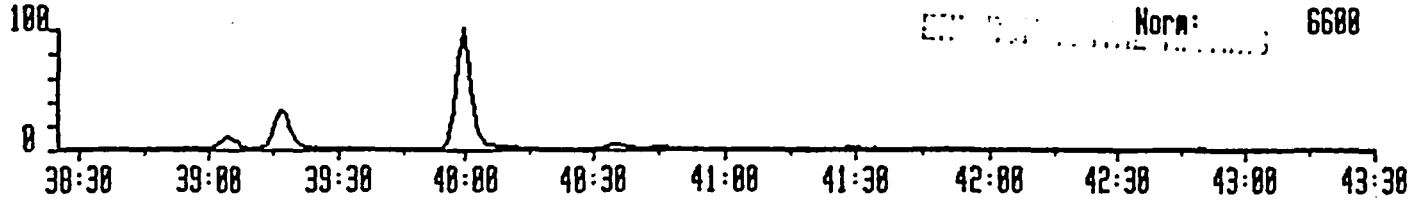


S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 367.8949
Text:LF1/9110 TLI# 16661

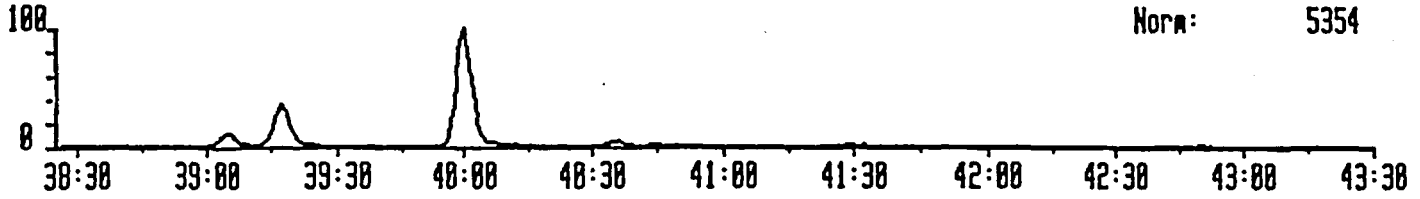
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 369.8919
Text:LF1/9110 TLI# 16661



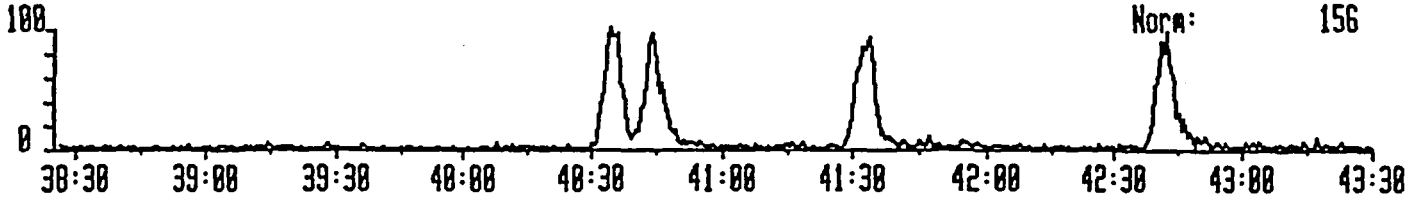
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 373.8200
Text:LF1/9110 TLI# 16661



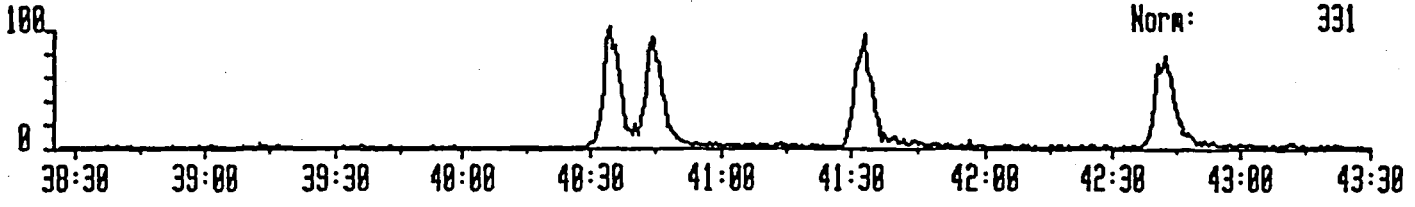
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 375.8178
Text:LF1/9110 TLI# 16661



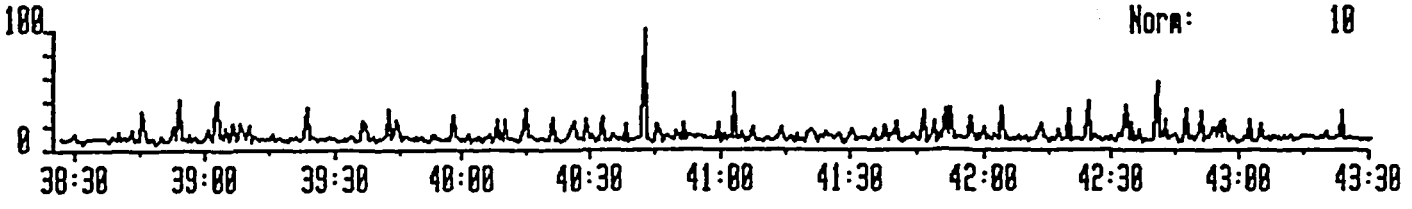
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 383.8639
Text:LF1/9110 TLI# 16661



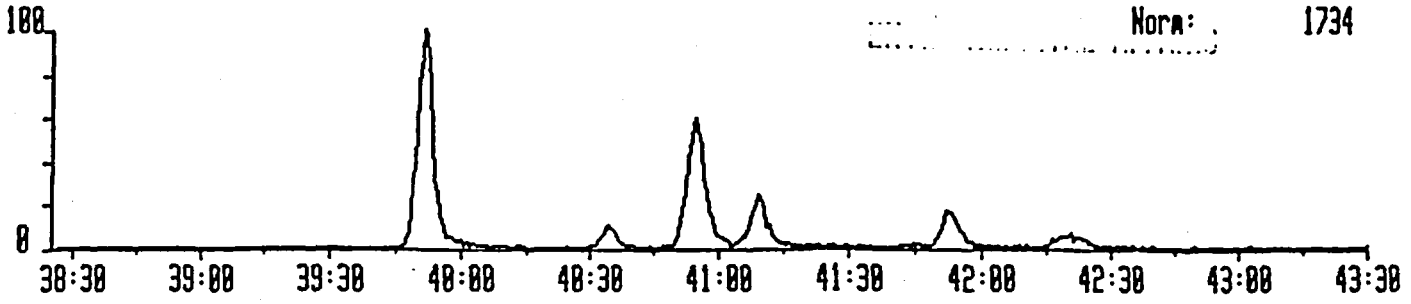
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 385.8610
Text:LF1/9110 TLI# 16661



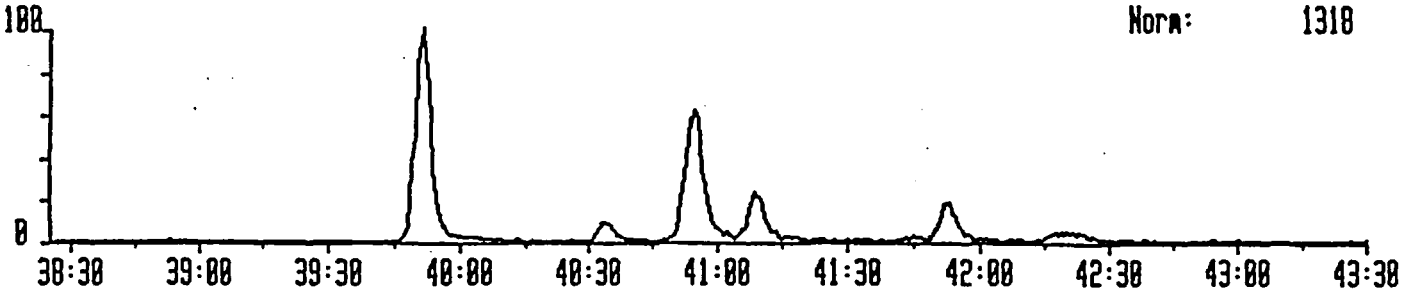
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 445.7555
Text:LF1/9110 TLI# 16661



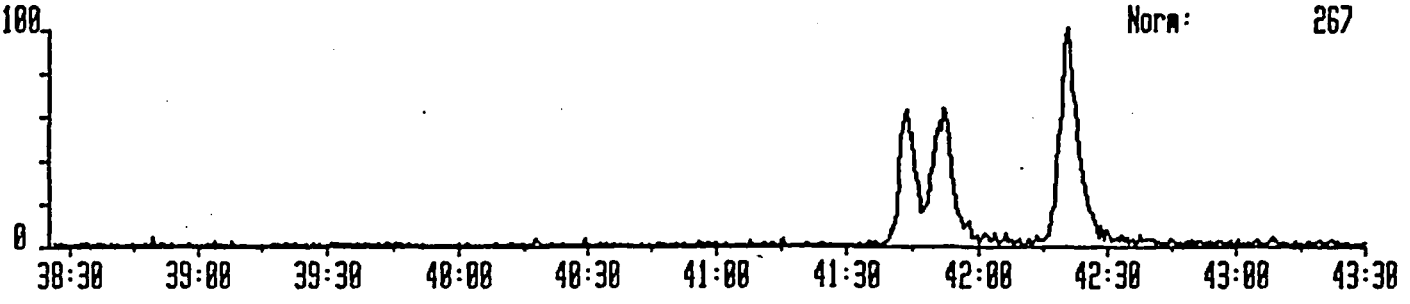
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 389.8156
Text:LF1/9110 TLI# 16661



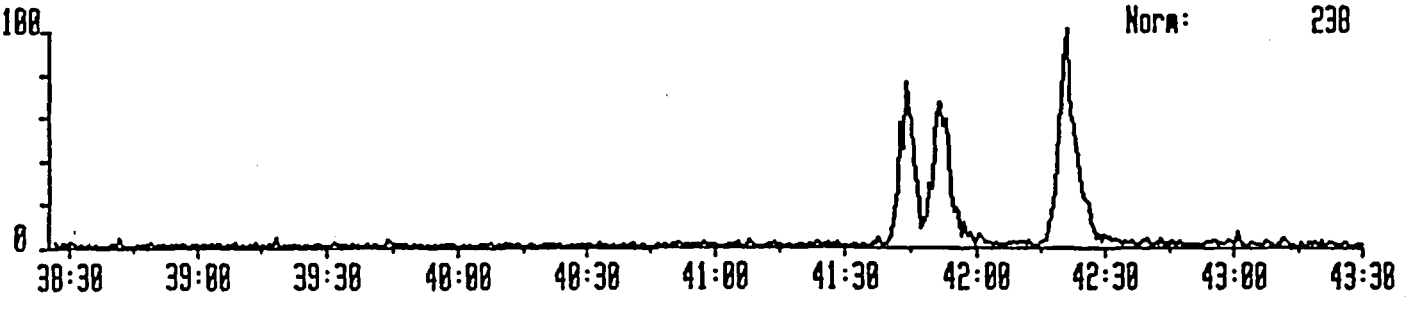
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 391.8127
Text:LF1/9110 TLI# 16661



S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 401.8558
Text:LF1/9110 TLI# 16661

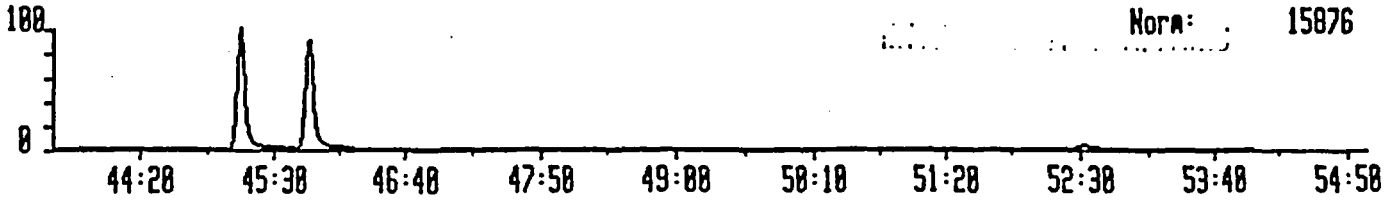


S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 403.8529
Text:LF1/9110 TLI# 16661

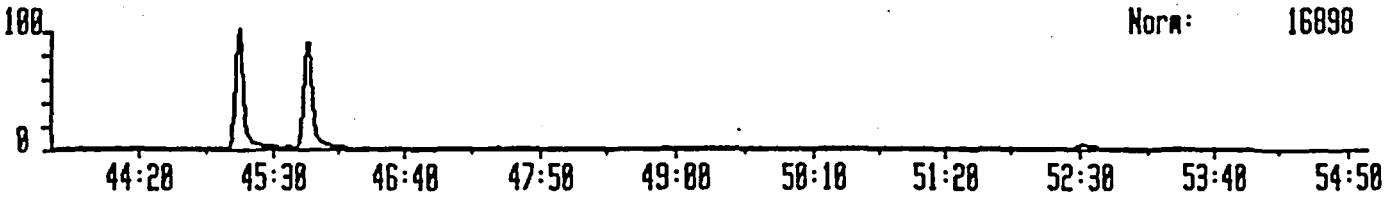


2

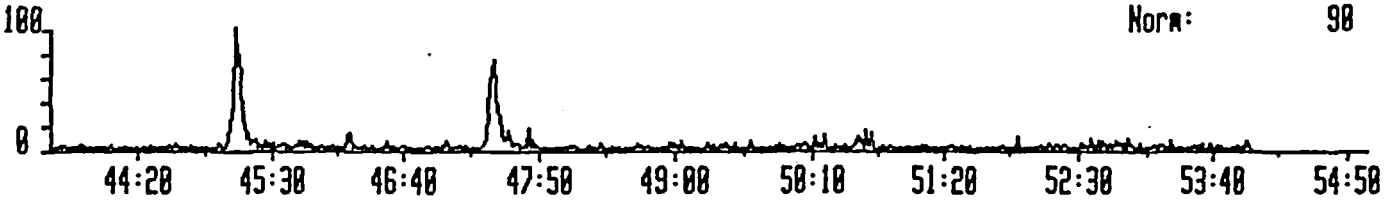
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 407.7818
Text:LF1/9110 TLI# 16661



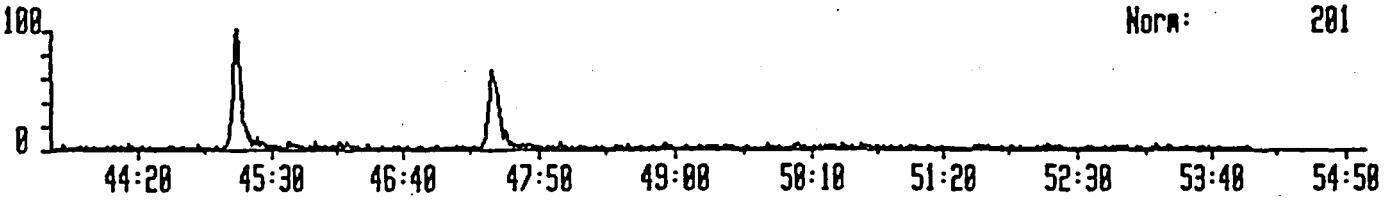
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 409.7789
Text:LF1/9110 TLI# 16661



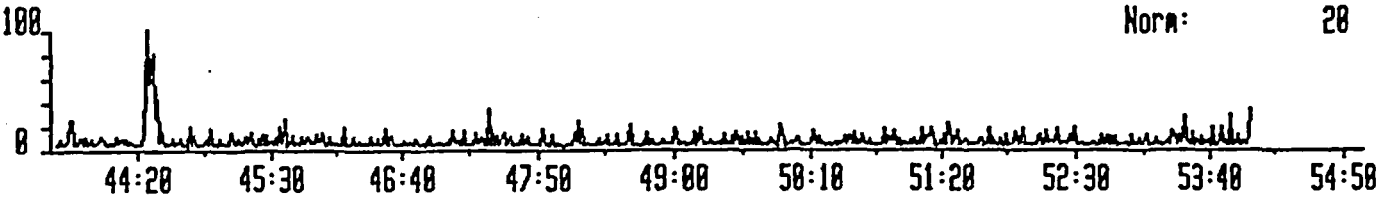
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 417.8253
Text:LF1/9110 TLI# 16661



S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 419.8220
Text:LF1/9110 TLI# 16661

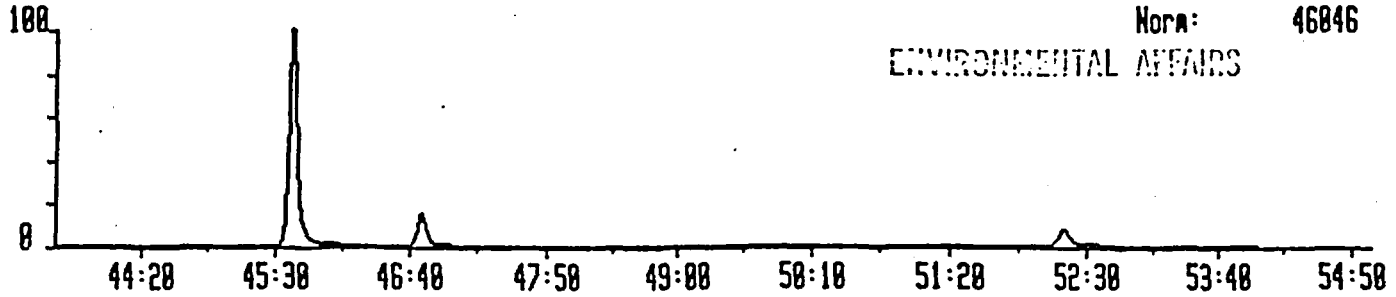


S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 479.7165
Text:LF1/9110 TLI# 16661

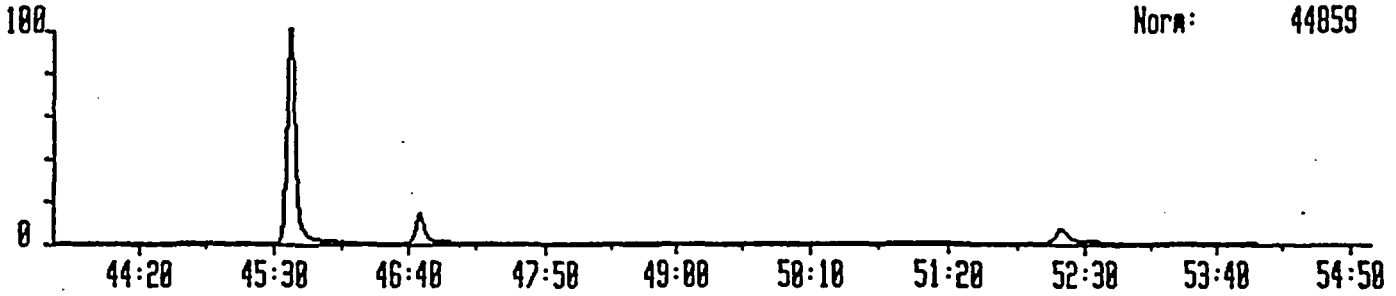


S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 423.7766
Text:LF1/9110 TLI# 16661

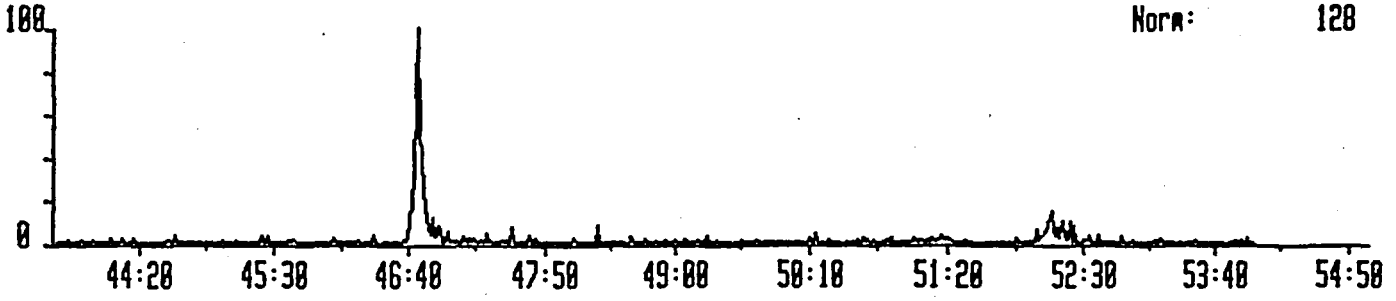
NOV 1 0 1990
ENVIRONMENTAL AFFAIRS



S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 425.7737
Text:LF1/9110 TLI# 16661



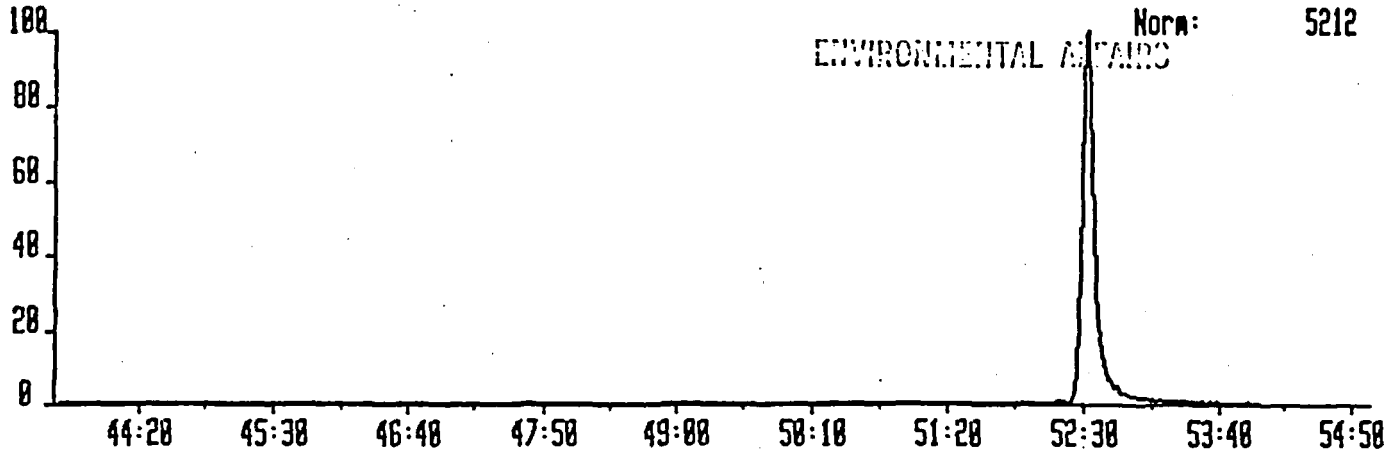
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 435.8169
Text:LF1/9110 TLI# 16661



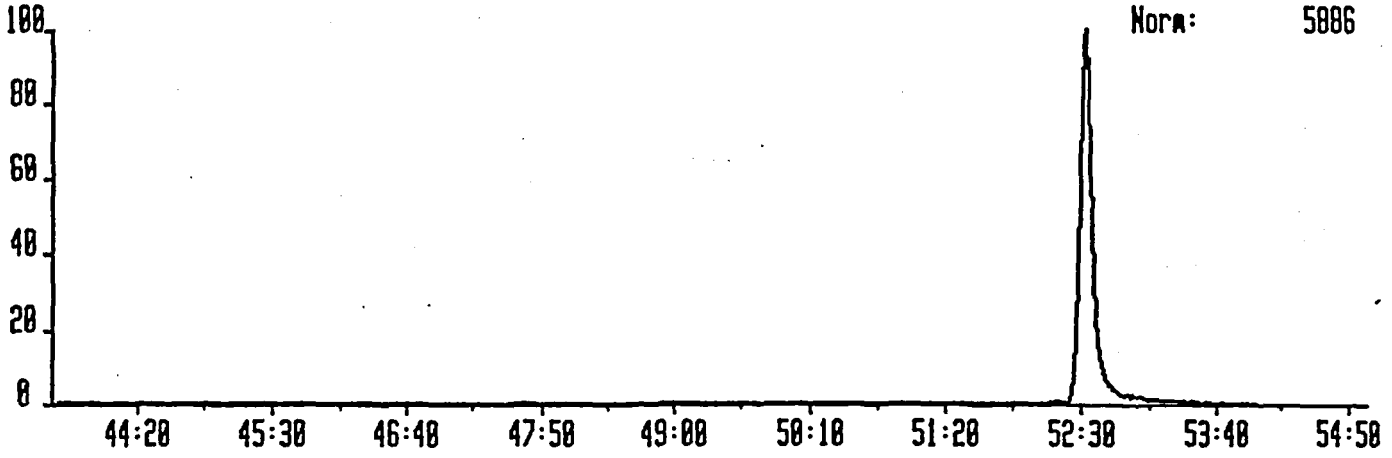
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 437.8140
Text:LF1/9110 TLI# 16661

S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 441.7428
Text:LF1/9110 TLI# 16661

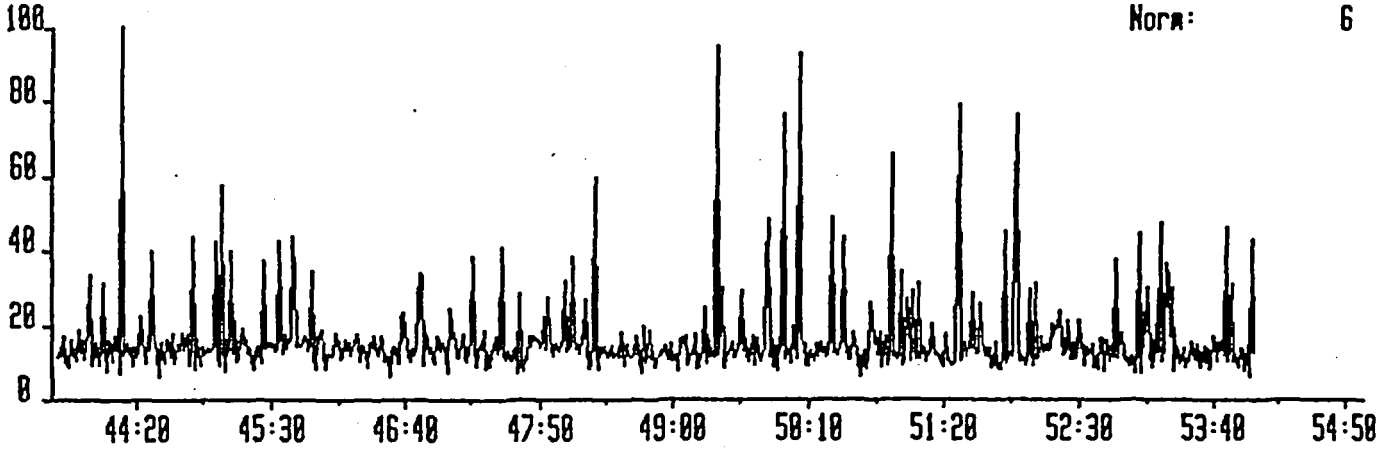
NOV 1 0 1990
ENVIRONMENTAL AFFAIRS



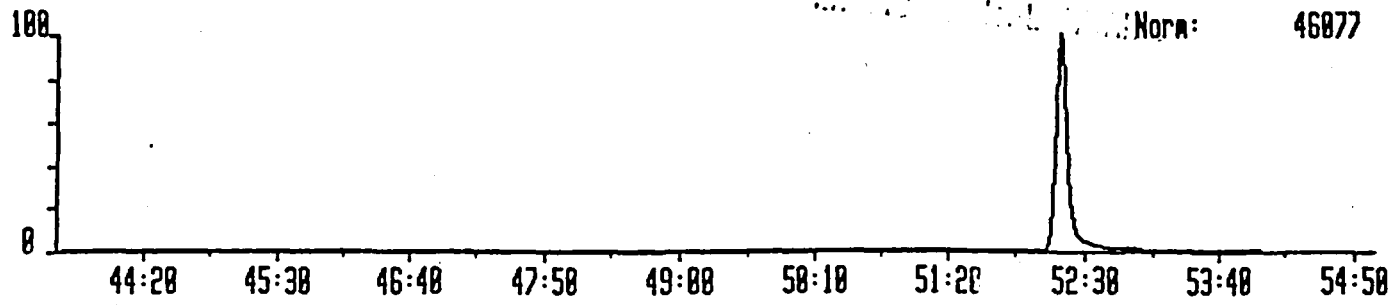
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 443.7399
Text:LF1/9110 TLI# 16661



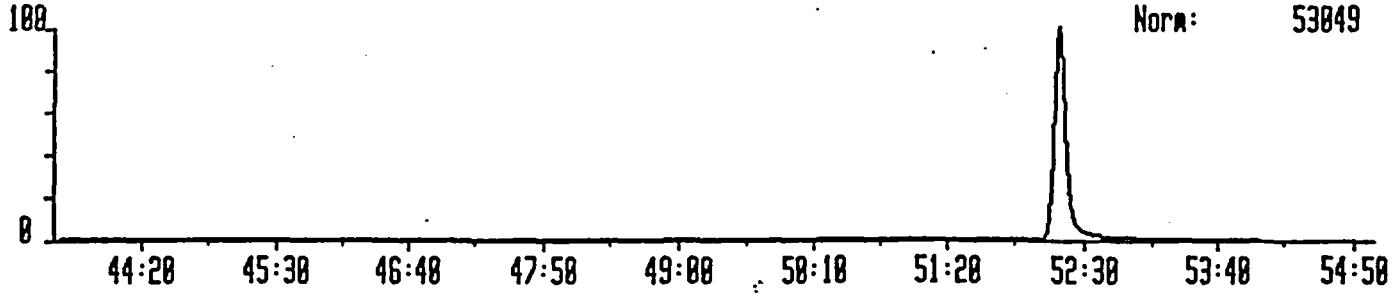
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 513.6775
Text:LF1/9110 TLI# 16661



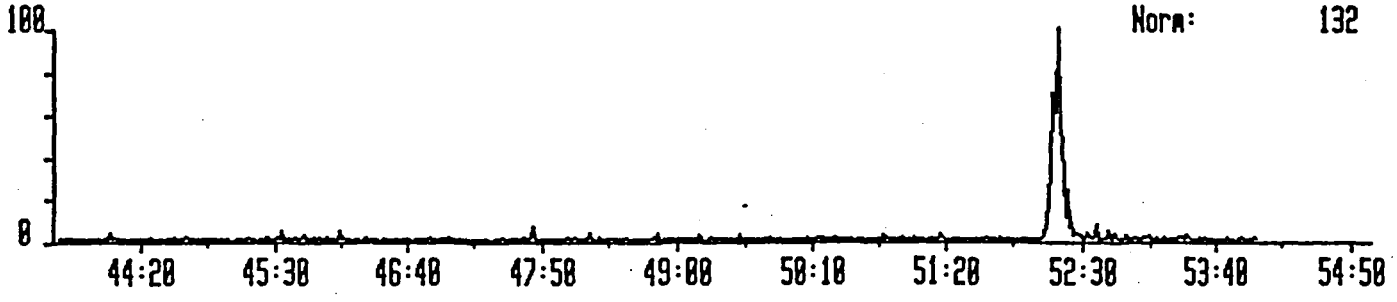
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 457.7377
Text:LF1/9110 TLI# 16661



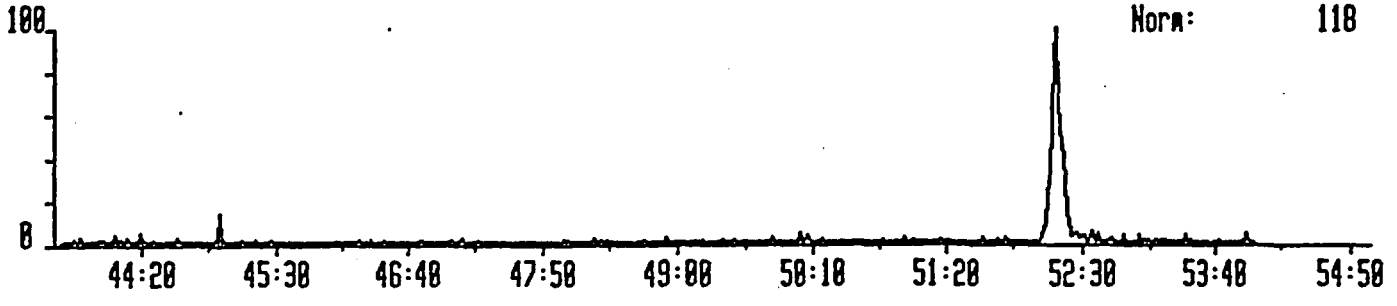
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 459.7348
Text:LF1/9110 TLI# 16661



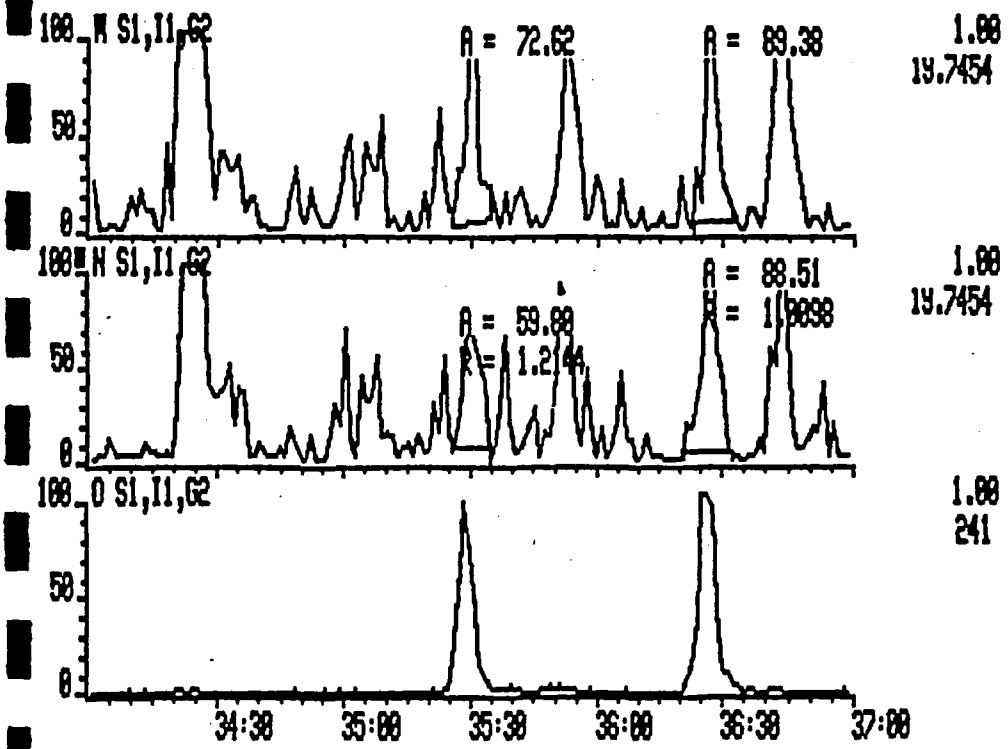
S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 469.7779
Text:LF1/9110 TLI# 16661



S904212 8-NOV-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 471.7750
Text:LF1/9110 TLI# 16661



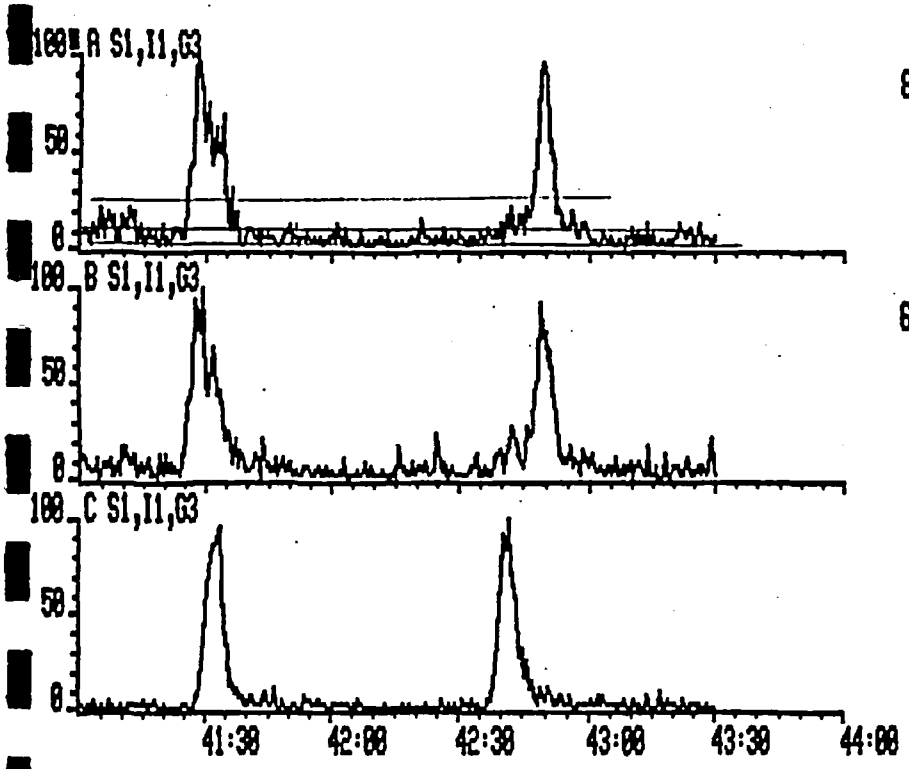
S904212 8-NOV-90 17:21 78S (EI+) Sys:DB5US
GR 2 M: 339.8597 N: 341.8567 O: 351.9000 P: 353.8970 Q: 355.8546
Text:LF1/9110 TLI# 16661



NOV 10 1990

MBS
11-15-90

S904212 8-NOV-90 17:21 78S (EI+) Sys:D85US
R 3 A: 373.8288 B: 375.8178 C: 383.8639 D: 385.8610 E: 389.8156
Text:LF1/9110 TLI# 16661

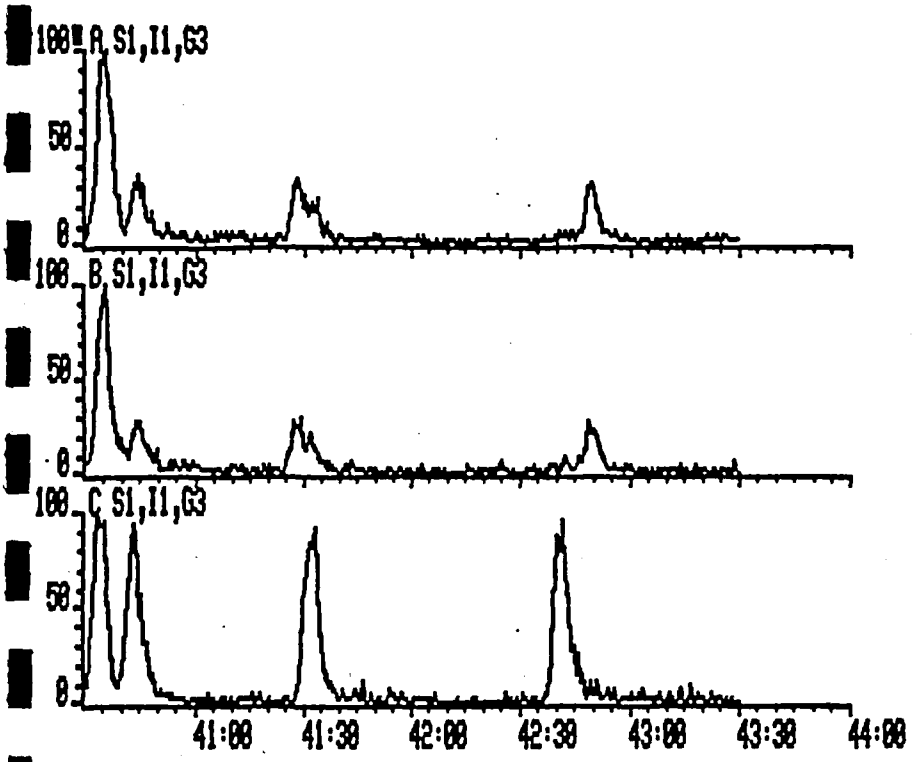


ENVIRONMENTAL AFFAIRS

MJO 11-15-90

28

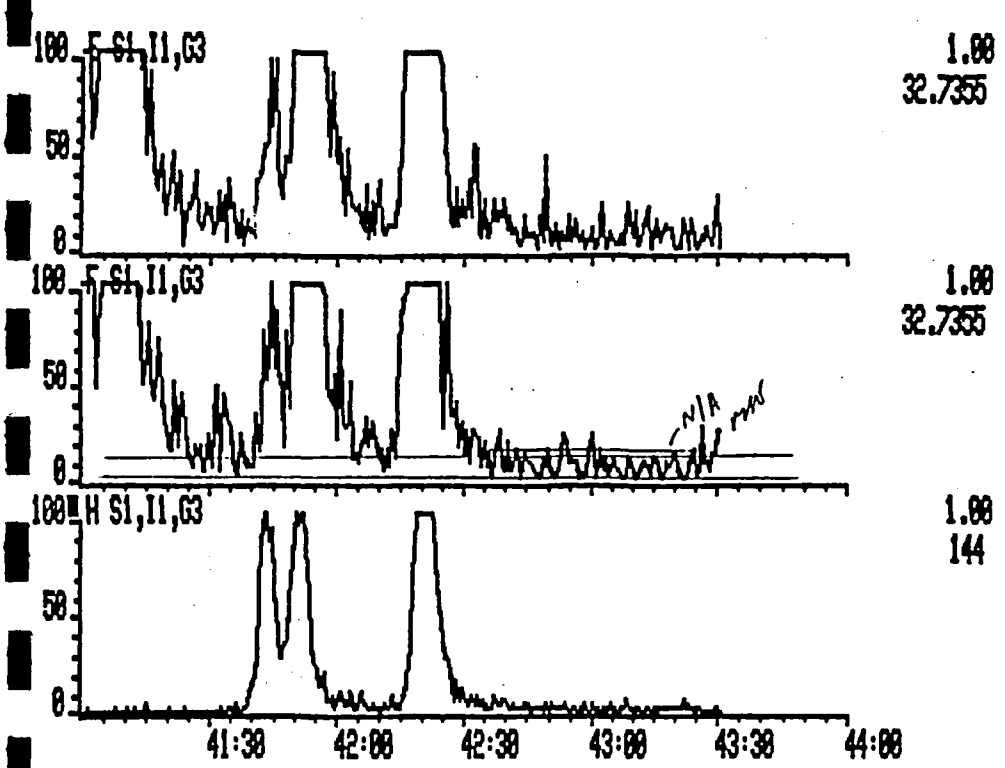
S994212 8-NOV-90 17:21 70S (EI+) Sys:D85US
R 3 A: 373.8288 B: 375.8178 C: 383.8639 D: 385.8610 E: 389.8156
Text:LF1/9110 TLI# 16661



NOV 20 1990
ENVIRONMENTAL ANALYS

MJS
11-15-90

C904212 8-NOV-90 17:21 70S (EI+) Sys:D85US
R 3 E: 389.8156 F: 391.8127 G: 392.9769 H: 401.8558 I: 403.8529
Text:LF1/9110 TLI# 16661

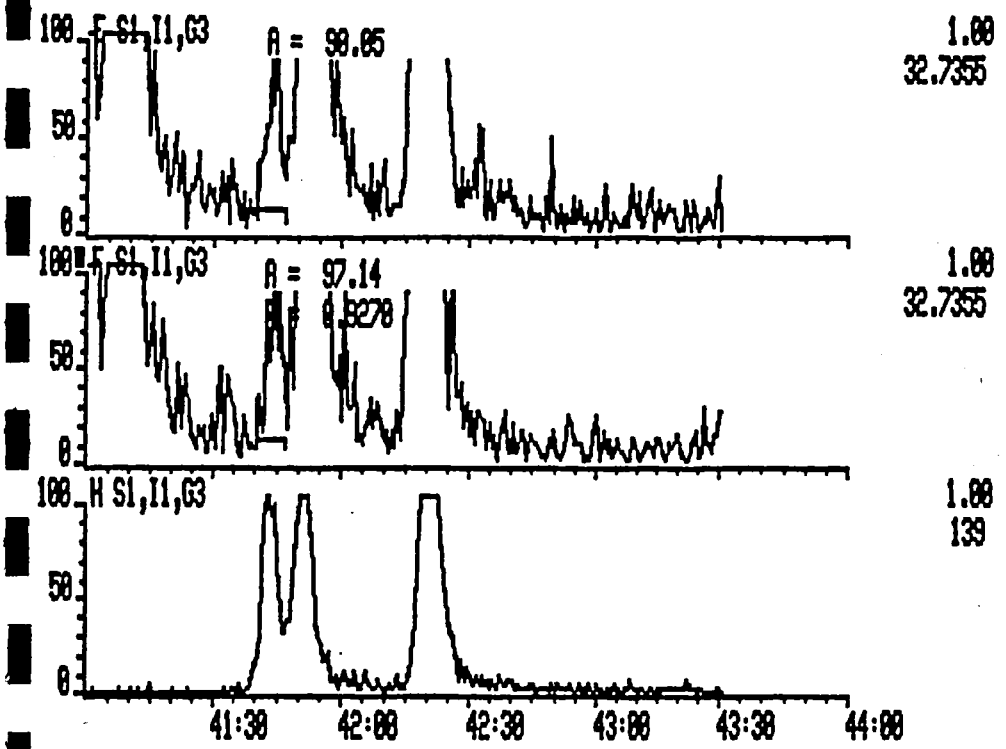


NOV 1 0 1990
ENVIRONMENTAL AFFAIRS

MJS
11-15-90

3

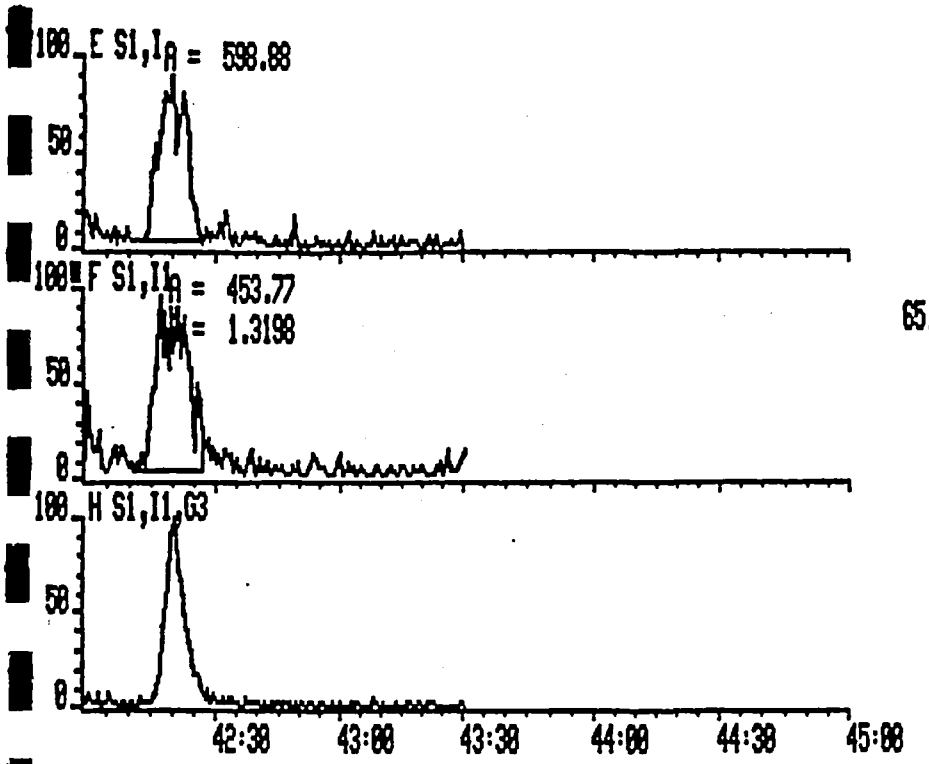
S964212 8-NOV-90 17:21 70S (EI+) Sys:DB5US
GR 3 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558 I: 403.8529
Text:LF1/9110 TLI# 16661



NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

MSB
11-13-90

S904212 8-NOV-90 17:21 785 (EI+) Sys:DB5US
R 3 E: 389.8156 F: 391.8127 G: 392.9768 H: 401.8558 I: 403.8529
Text:LF1/9110 TLI# 16661

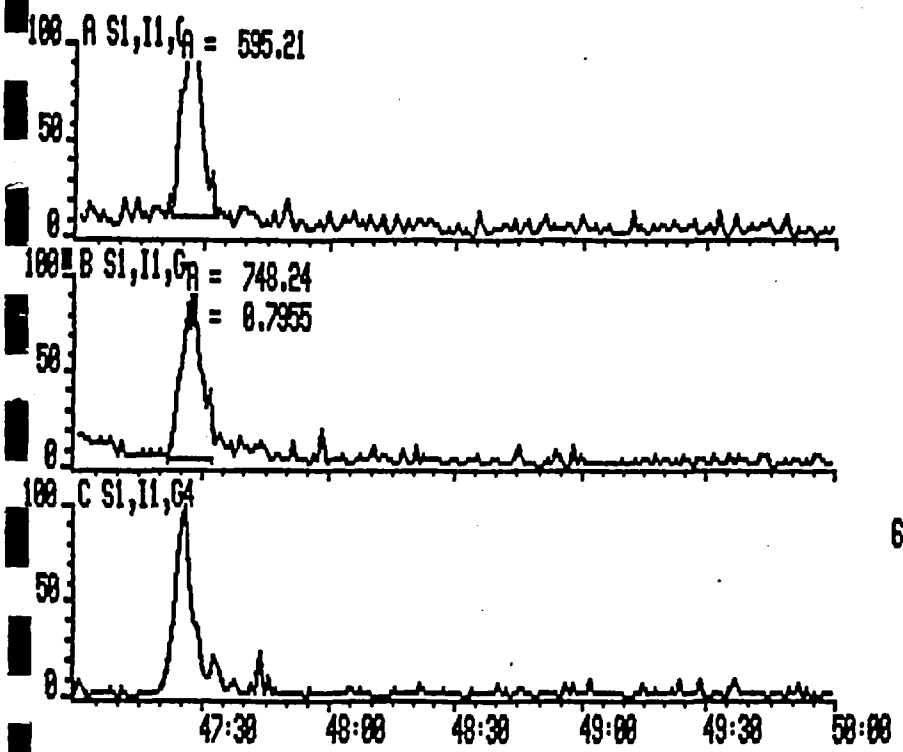


NOV 1 0 1990
ENVIRONMENTAL AFFAIRS

MSS
11-15-90

3c

G904212 8-NOV-90 17:21 78S (EI+) Sys:D85US
R 4 A: 487.7818 B: 489.7789 C: 417.8253 D: 419.8228 E: 423.7766
Text:LF1/9110 TLI# 16661



NOV 1 0 1990
ENVIRONMENTAL ANALYS

MBS
11-15-90

TRIANGLE LABORATORIES, INC.
PCDD/PCDF 2378X ANALYSIS (b)

11/15/90

FILE NAME....: S903790
CONCAL (VER).: S903783
PROJECT NUMBER: 16661
ANALYST.....: CP
SAMPLE SIZE..: 9.460 g
DATE RECEIVED.: 10/10/90
SPIKE FILE...: SPX23710

CLIENT ID....: SWP
SAMPLE ID....: LF1/9110
ICAL DATE....: 10/13/90
ANALYSIS DATE: 10/18/90
SAMPLE MATRIX: SOIL
DATE COLLECTED: 10/09/90

TLI NUMBER....: 37-26-1
SAMPLE ORIGIN: WILMINGTO
SHIPMENT NO...: NC09001

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	EMPC			0.004			—
12378-PeCDD	0.03				1.56	36:55	—
123478-HxCDD	0.10				1.24	41:41	—
123678-HxCDD	1.3				1.22	41:49	—
123789-HxCDD	0.22				1.23	42:15	—
1234678-HpCDD	19.6				1.00	46:34	S
OCDD	56.3				0.92	52:00	S,B
2378-TCDF	0.02				0.74	30:47	—
12378-PeCDF	0.06				1.67	35:29	—
23478-PeCDF	0.06				1.59	36:26	Q
123478-HxCDF	0.71				1.15	40:32	—
123678-HxCDF	0.24				1.16	40:41	—
234678-HxCDF	0.16				1.18	41:31	B
123789-HxCDF	0.04				1.15	42:37	—
1234678-HpCDF	9.7				0.92	45:05	S
1234789-HpCDF	0.77				0.88	47:14	—
OCDF	28.4				0.96	52:13	S
TOTAL TCDD	0.14	7		0.17	0.75		—
TOTAL PeCDD	0.48	11			1.51		Q
TOTAL HxCDD	15.2	8		15.2	1.20		S
TOTAL HpCDD	49.1	2			1.00		S
TOTAL TCDF	0.09	8		0.11	0.76		Q
TOTAL PeCDF	0.92	10		0.92	1.54		Q
TOTAL HxCDF	3.9	9		13.8	1.16		S
TOTAL HpCDF	25.4	3		25.6	0.91		S

MBS 11/15/90

X237_RPT rev:3.03

TRIANGLE LABORATORIES, INC.

PCDD/PCDF 2378X ANALYSIS (b) QA/QC SUMMARY 11/15/90

NOV 19 1990

FILE NAME....: S903790 CLIENT ID....: SWP TLI NUMBER....: 37-26-1
CONCAL (VER).: S903783 SAMPLE ID....: LF1/9110
PROJECT NUMBER: 16661 ICAL DATE....: 10/13/90
ANALYST.....: CP ANALYSIS DATE: 10/18/90
SAMPLE SIZE..: 9.460 g SAMPLE MATRIX: SOIL SAMPLE ORIGIN: WILMINGTO
DATE RECEIVED.: 10/10/90 DATE COLLECTED: 10/09/90
SPIKE FILE...: SPX23710 SHIPMENT NO...: NC09001

SURROGATE RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37Cl-TCDD	0.84	79.7		31:40	___
13C12-PeCDF 234	0.92	87.3	1.53	36:26	___
13C12-HxCDF 478	0.95	89.8	0.52	40:31	___
13C12-HxCDD 478	1.1	101	1.19	41:40	___
13C12-HpCDF 789	0.66	62.6	0.44	47:13	___

ALTERNATE STANDARDS RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-HxCDF 789	0.86	81.0	0.50	42:36	___
13C12-HxCDF 234	0.92	87.1	0.51	41:30	___

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	0.66	62.1	0.78	30:47	___
13C12-2378-TCDD	0.85	80.4	0.81	31:38	___
13C12-PeCDF 123	0.84	79.3	1.53	35:29	Q
13C12-PeCDD 123	1.1	109	1.58	36:55	___
13C12-HxCDF 678	0.85	80.3	0.52	40:40	___
13C12-HxCDD 678	0.98	93.1	1.18	41:47	___
13C12-HpCDF 678	0.69	64.8	0.46	45:02	___ Q,RS
13C12-HpCDD 678	0.76	72.3	1.03	46:33	___
13C12-OCDD	1.5	69.6	0.98	52:01	___

TBS	11/15/90

X237_RPT rev:3.03

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	Initial	Date
B-File/Header Changes	KV	10/31/90
Manual Integrations	KV	10/31/90
Transcription	KV	10/31/90
Dbase Corrections	KV	10/31/90

NOV 19 1990

Page No. 1 Listing of S903790B.dbf
10/26/90

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
304		0.56	28:00	1692.34	F	F	0.910	-Q
		0.68	28:17	2873.19	T	F	0.919	-Q
		0.77	28:34	3874.59	T	F	0.928	-Q
		0.79	28:53	4718.60	T	F	0.938	-Q
		0.68	29:13	4475.07	T	F	0.949	-Q
		0.85	29:39	2559.68	T	F	0.963	-Q
		0.63	29:54	3826.49	F	F	0.971	-Q
		0.75	30:15	2103.48	T	F	0.983	-Q
		0.92	30:32	509.74	F	F	0.992	-Q
		0.74	30:47	4362.84	T	T	1.000	
		0.78	31:20	513.24	T	F	1.018	-Q
		0.91	31:31	437.64	F	F	1.024	-Q
		0.28	31:49	139.53	F	F	1.034	SV
		0.71	33:16	5448.09	T	F	1.081	RV
		0.27	33:32	189.74	F	F	1.089	RV
		0.05	33:43	243.23	F	F	1.095	RV
304		*** Total ***		37967.49	# of Peaks:		16	
316		0.78	30:14	2302.09	T	F	0.982	
		0.78	30:47	291917.80	T	T	1.000	-Q
		0.74	31:18	2473.14	T	F	1.017	
316		*** Total ***		296693.03	# of Peaks:		3	
320		167	31:10	787.6	T	F	1.006	
320		0.71	29:13	1072.05	T	F	0.924	
		0.62	29:30	1231.30	F	F	0.933	
		0.78	30:14.	9664.73	T	F	0.956	-Q
		0.91	30:26	4312.32	F	F	0.962	-
		0.72	31:00	1469.45	T	F	0.980	-Q
		~~0.92~~ 165	31:20	~~1987.16~~ 5064.6	~~F~~ T	F	0.991	-Q
		0.69	31:30	2955.45	T	F	0.996	
		RQC= ~~0.91~~ 154	31:41	~~1116.60~~ 1660.3	~~F~~ F	T	1.002	
		0.85	32:01	1319.34	T	F	1.012	
		0.59	32:46	313.01	F	F	1.036	
		0.34	33:42	58.44	F	F	1.065	RV
		0.49	34:12	608.93	F	F	1.081	RV
		0.85	34:42	360.45	T	F	1.097	RV
		0.87	35:09	628.00 KV 10/31/90	T	F	1.111	RV
320		*** Total ***		27097.23	# of Peaks:		14	
320		187	25:43	~~5064.6~~ 1353.5	T	F	1.90	
328		0.00	31:23	433.95	T	F	0.992	
		0.00	31:40	227727.67	T	T	1.001	
328		*** Total ***		228161.62	# of Peaks:		2	
				261637				
332		~~0.81~~ .90	31:20	~~275871~~.77	T	~~F~~ T	0.991	
		0.81	31:38	218048.20	T	T	1.000	
332		*** Total ***		493919.97	# of Peaks:		2	
340		2.34	31:19	40.80	F	F	0.883	SV

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3.

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
340		5.43	31:32	47.79	F	F	0.889	Sw
		1.54	31:38	21.31	T	F	0.891	
		2.26	32:51	219.17	F	F	0.926	
		1.56	33:16	113417.32	T	F	0.938	-Q
		6.99	33:57	76.87	F	F	0.957	Sw
		1.57	34:40	12262.45	T	F	0.977	
		1.33	34:49	1144.90	T	F	0.981	
		1.58	35:00	10244.35	T	F	0.986	
		1.51	35:22	5078.26	T	F	0.997	
		1.67	35:29	12930.20	T	T	1.000	
		1.24	35:42	670.89	F	F	1.006	
		1.55	35:51	9537.08	T	F	1.010	
		2.94	36:11	26.23	F	F	1.020	Sw
		1.59	36:26	12245.51	T	T	1.027	-Q
		1.57	36:41	21266.48	T	F	1.034	-Q
		3.06	37:04	248.89	F	F	1.045	
		1.51	37:46	1261.75	T	F	1.064	
340		*** Total ***		200740.25	# of Peaks:		18	
352		1.45	35:00	996.54	T	F	0.986	
		1.53	35:29	150619.29	T	T	1.000	-Q
		1.63	35:50	2491.58	T	F	1.010	
		1.53	36:26	193853.65	T	T	1.027	
		1.54	37:45	3534.99	T	F	1.064	
352		*** Total ***		351496.05	# of Peaks:		5	
356		0.48	32:47	295.96	F	F	0.888	RW
		1.57	34:40	7397.86	T	F	0.939	-Q
		1.54	35:08	13059.96	T	F	0.952	-Q
		1.35	35:27	9954.70	T	F	0.960	
		1.55	35:38	7433.02	T	F	0.965	
		1.54	35:52	6630.43	T	F	0.972	
		1.54	36:13	22786.14	T	F	0.981	-Q
		1.56	36:29	2347.26	T	F	0.988	
		1.43	36:40	877.45	T	F	0.993	
		1.56	36:55	6291.59	T	T	1.000	
		1.60	37:07	7157.32	T	F	1.005	
		1.35	37:34	3612.61	T	F	1.018	
356		*** Total ***		87844.30	# of Peaks:		12	
368		0.38	35:27	551.26	F	F	0.960	
		1.58	36:55	108306.59	T	T	1.000	
		1.56	37:34	918.87	T	F	1.018	
368		*** Total ***		109776.72	# of Peaks:		3	
374		1.14	39:01	425148.26	T	F	0.959	
		1.00	39:13	869382.69	F	F	0.964	-S
		1.12	39:40	11563.58	T	F	0.975	
		0.98	39:56	1157617.75	F	F	0.982	-S
		1.15	40:32	172380.56	T	T	0.997	
		1.16	40:41	61516.91	T	T	1.000	
		1.28	41:06	5889.81	T	F	1.011	
		1.13	41:25	39004.88	T	~~T~~ F	1.01~~8~~7	

4

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
374		1.18	41:31	29211.93	T	T	1.021	
		0.92	41:51	508.87	F	F	1.029	
	D	0.88	42:02	69.32	F	F	1.034	SN
		1.15	42:37	5875.95	T	T	1.048	
		1.16	42:44	42431.17	T	F	1.05	
374		*** Total ***		2820601.68	# of Peaks:		13	
384		0.99	38:59	242.62	F	F	0.959	
		1.16	39:13	524.81	F	F	0.964	
		0.52	40:31	166989.98	T	T	0.996	
		0.52	40:40	169774.90	T	T	1.000	
		0.51	41:30	161637.20	T	T	1.020	
		0.50	42:36	126704.03	T	T	1.048	
384		*** Total ***		625873.54	# of Peaks:		6	
390		1.26	42:12	30456.9	T	F	1.03	
390		0.13	38:05	588.74	F	F	0.911	
		1.07	39:48	789321.41	T	F	0.953	S
		1.22	40:29	96515.63	T	F	0.969	
		1.13	40:50	707897.62	T	F	0.977	
		1.22	41:05	245985.41	T	F	0.983	
		1.24	41:41	14374.73	T	T	0.997	
		1.22	41:49	180860.36	T	T	1.001	
	P	0.94	42:30	394.19	F	F	1.017	
	P	0.44	42:43	40.83	F	F	1.022	
390		*** Total ***		2035978.92	# of Peaks:		9	
390		1.23	42:15	28387.2	T	T	1.011	
402		1.19	41:40	103458.99	T	T	0.997	
		1.18	41:47	122975.65	T	T	1.000	
		1.20	42:15	134606.41	T	T	1.011	RS2
402		*** Total ***		361041.05	# of Peaks:		3	
408		0.92	45:05	1828749.44	T	T	1.001	S
		0.93	45:38	1897536.75	T	F	1.013	S
		0.66	46:34	30904.72	F	F	1.034	
		0.88	47:14	86732.31	T	T	1.049	
408		*** Total ***		3843923.22	# of Peaks:		4	
418		0.46	45:02	100995.79	T	T	1.000	
		1.30	45:38	5094.47	F	F	1.013	
		0.50	45:57	6704.31	T	F	1.020	
		0.65	46:35	284.82	F	F	1.034	
		0.44	47:13	74411.68	T	T	1.048	
		0.97	48:10	837.17	F	F	1.070	
418		*** Total ***		188328.24	# of Peaks:		6	
424		1.00	45:29	2689020.38	T	F	0.977	S
		1.00	46:34	1789214.87	T	T	1.000	S
	P	1.38	50:08	1050.78	F	F	1.077	
424		*** Total ***		4479286.03	# of Peaks:		3	
436		1.44	45:29	3235.84	F	F	0.977	
		0.83	45:55	105.51	F	F	0.986	
		1.03	46:33	81233.24	T	T	1.000	

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Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
436		*** Total ***		84574.59	# of Peaks:		3	
442		0.96	52:13	1982768.00	T	T	1.004	-S
		1.12	54:03	2816.04	F	F	1.039	
442		*** Total ***		1985584.04	# of Peaks:		2	
470		1.70	50:13	24.94	F	F	0.965	
		0.57	51:02	26.26	F	F	0.981	
		0.98	52:01	74412.50	T	T	1.000	-S
470		*** Total ***		74463.70	# of Peaks:		3	

*** End of Report *** 0.92 52.00 3328608 T T 1.000 -S

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10/26/90

Listing of S9037901.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
202	10:25	60.07	14:55	85.02	18:29	83.21	20:04	575.05
	10:33	15.50	15:33	23.31	18:37	232.25	20:23	193866.37
	10:55	27.15	15:59	59.40	19:05	210.62	20:55	10844.85
	11:03	50.02	16:20	120.00	19:15	10115.42		
	11:26	46.61	17:01	31.17	19:29	915.05		
	13:31	67.90	17:13	1902.94	19:50	716.49		
204	10:25	21.46	13:04	28.30	16:48	26.13	19:15	249.50
	10:39	38.40	13:28	42.30	16:57	23.34	19:28	106.54
	11:14	12.92	13:45	37.77	17:06	62.37	19:43	21.67
	11:29	42.24	14:58	37.83	17:14	85.54	20:02	92.52
	11:59	18.13	15:33	26.81	17:30	96.69	20:10	222.67
	12:20	14.87	15:41	15.31	17:40	42.54	20:23	6364.32
	12:30	42.11	16:05	8.66	18:04	32.35	20:35	51.84
	12:38	21.36	16:13	34.08	18:15	24.53	20:55	394.12
	12:49	21.95	16:38	35.18	19:00	32.88		
238	17:35	176.81	18:18	63.36	19:27	162.69	21:19	55.14
	17:52	98.75	18:31	164.62	20:01	166.23	21:27	34.26
	18:01	113.05	18:40	486.32	20:22	21.97	21:52	484.53
	18:09	87.45	19:00	60.78	21:06	337.91	22:21	34.09
240	17:27	292.62	18:03	1052.84	19:00	128.39	20:03	577.23
	17:36	323.45	18:28	151.08	19:28	625.03	20:22	66.40
	17:50	374.42	18:41	300.52	19:42	255.87		
252	18:41	401.32	19:40	513.26	20:18	162.38	21:16	14.55
	18:59	-44.11	19:57	16.72	20:51	38.33		
	19:32	508.25	20:06	181.02	21:07	41.91		
254	18:40	27.09	19:38	85.11	20:05	27.79	20:29	7.85
	19:23	26.64	19:56	48.42	20:16	37.85	20:53	38.45
270	21:41	26.91	23:39	5106.84	24:41	390.41	26:16	15.78
	22:16	14.68	24:03	294.10	24:56	166.96	26:22	16.16
	22:51	66.47	24:26	361.57	25:08	550.18		
272	22:52	80.49	24:26	433.15	25:22	54.66	26:16	56.70
	23:31	2458.44	24:40	463.88	25:31	35.07		
	23:40	2351.81	24:56	194.17	25:48	21.21		
	24:03	344.46	25:08	574.98	26:05	8.14		
286	23:37	3592.50	24:12	16.13	25:09	84.26	25:56	7.65
	23:51	146.26	24:29	301.19	25:21	41.49	26:06	194.24
	24:03	111.88	24:54	270.54	25:38	229.94	26:19	14.92
288	23:37	3343.27	24:53	245.46	25:37	272.60		
	24:03	80.71	25:09	123.85	26:06	237.89		
	24:29	353.51	25:22	57.12	26:32	43.96		
218	14:18	34.92	16:27	36.36	17:46	69.23	21:35	119.89
	15:33	118.93	16:39	98.23	19:31	128.14		
	16:13	55.80	16:54	68.08	20:10	109.89		

Listing of S9037901.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
220	11:16	28.64	15:03	76.19	16:08	7.91	20:33	102.56
	11:34	41.07	15:18	7.28	16:58	113.58	21:00	148.92
	11:53	19.83	15:31	112.02	17:15	25.51	21:34	118.46
	13:11	55.68	15:42	115.77	17:43	56.94	21:52	67.07
	14:34	25.02	15:53	69.12	19:30	169.47		
304	28:00	605.90	29:54	1477.06	31:42	30.82	33:32	40.84
	28:17	1165.16	30:15	898.62	31:49	30.82	33:43	10.69
	28:34	1689.98	30:32	244.55	32:19	9.14	33:53	25.21
	28:53	2076.80	30:47	1853.39	32:42	95.84		
	29:13	1811.15	31:20	224.49	32:56	44.89		
	29:39	1175.29	31:31	208.92	33:16	2255.05		
306	27:08	25.31	29:13	2663.92	31:01	62.09	32:48	9.75
	27:46	130.60	29:39	1384.39	31:09	139.61	33:07	59.33
	28:00	1086.44	29:54	2349.43	31:18	288.75	33:16	3193.04
	28:16	1708.03	30:16	1204.86	31:32	228.72	33:31	148.90
	28:36	2184.61	30:32	265.19	31:47	108.71	33:44	232.54
	28:53	2641.80	30:49	2509.45	32:02	74.29	33:59	43.64
320	27:51	69.27	29:53	27.25	31:41	531.59	34:12	199.81
	28:11	6.90	30:14	4229.59	32:01	604.40	34:42	165.39
	28:49	515.70	30:26	2053.39	32:25	18.94	35:09	291.42
	29:13	445.22	31:00	613.67	32:46	115.76		
	29:30	473.57	31:20	953.31	33:42	14.87		
	29:45	32.97	31:30	1206.10	33:59	36.68		
322	27:56	137.62	29:40	71.26	31:48	349.78	33:43	43.57
	28:07	105.76	30:14	5435.14	32:01	714.94	33:54	157.75
	28:34	14.33	30:26	2258.93	32:44	197.25	34:12	409.12
	28:46	643.37	30:58	855.78	32:58	18.07	34:41	195.06
	28:59	86.38	31:20	1033.85	33:04	59.57	34:58	87.55
	29:13	626.83	31:30	1749.35	33:15	57.47	35:09	336.58
	29:28	757.73	31:41	585.01	33:22	134.10		
340	31:19	28.59	33:16	69064.41	35:00	6266.78	36:11	19.58
	31:32	40.36	33:42	65.96	35:22	3054.10	36:26	7522.27
	31:38	12.91	33:57	67.25	35:29	8090.95	36:41	12978.15
	32:18	6.52	34:40	7488.54	35:42	371.05	37:04	187.58
	32:51	151.91	34:49	653.70	35:51	5795.49	37:46	759.48
342	31:18	12.21	33:16	44352.91	35:00	3977.57	36:26	4723.24
	31:31	7.43	33:45	34.84	35:22	2024.16	36:41	8288.33
	31:38	8.40	33:57	9.62	35:29	4839.25	37:04	61.31
	31:47	14.44	34:05	13.32	35:40	299.84	37:46	502.27
	31:55	18.04	34:40	4773.91	35:51	3741.59		
	32:51	67.26	34:49	491.20	36:09	6.65		
356	32:47	95.77	35:08	7908.56	36:13	13821.11	37:07	4406.94
	33:56	8.80	35:27	5712.18	36:29	1429.87	37:34	2073.22
	34:40	4513.74	35:38	4522.05	36:40	516.21		
	34:51	36.26	35:52	4016.13	36:55	3838.50		

Listing of S9037901.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
358	32:48	200.19	35:27	4242.52	36:13	8965.03	36:55	2453.09
	34:40	2884.12	35:38	2910.97	36:29	917.39	37:07	2750.38
	35:08	5151.40	35:52	2614.30	36:40	361.24	37:34	1539.39
316	29:52	214.80	30:14	1011.70	30:47	128225.55	31:18	1055.40
318	30:14	1290.39	30:47	163692.25	31:18	1417.74		
328	31:23	433.95	31:40	227727.67				
332	31:20	123464.13	31:38	97250.98				
334	31:20	152407.64	31:38	120797.22				
352	35:00	590.13	35:50	1543.13	37:45	2141.75		
	35:29	91092.96	36:26	117368.03				
354	35:00	406.41	35:50	948.45	37:45	1393.24		
	35:28	59526.33	36:25	76485.62				
368	35:27	152.06	36:55	66298.05	37:34	559.97		
370	35:27	399.20	36:54	42008.54	37:33	358.90	37:45	29.02
374	39:01	226401.06	40:41	33069.75	41:47	195.59	42:18	23.97
	39:13	435555.72	41:06	3305.09	41:51	244.10	42:21	13.44
	39:40	6115.86	41:15	475.83	41:58	25.61	42:37	3142.07
	39:56	572359.69	41:25	20728.52	42:02	32.35	42:44	22811.38
	40:32	92352.74	41:31	15807.68	42:07	23.33		
376	39:01	198747.20	40:32	80027.82	41:31	13404.25	42:37	2733.88
	39:14	433826.97	40:41	28447.16	41:50	264.77	42:44	19619.79
	39:40	5447.72	41:06	2584.72	41:55	188.20		
	39:55	585258.06	41:25	18276.36	42:04	36.97		
390	38:05	66.57	40:50	375531.50	41:49	99311.80	42:43	12.51
	39:48	408279.25	41:05	135098.17	42:13	36098.40		
	40:22	602.81	41:29	827.61	42:30	190.71		
	40:29	52957.75	41:41	7957.45	42:35	203.14		
392	38:07	522.17	40:50	332366.12	41:41	6417.28	42:32	203.48
	39:48	381042.16	41:05	110887.24	41:49	81548.56	42:44	28.32
	40:29	43557.88	41:32	342.65	42:16	29305.22	42:48	6.40
384	38:59	120.49	39:56	433.97	40:31	56927.87	41:30	54590.52
	39:13	282.29	40:13	60.42	40:40	57729.91	42:36	42427.23
386	39:00	122.13	40:31	110062.11	41:29	107046.68		
	39:13	242.52	40:40	112044.99	42:36	84276.80		
402	41:40	56112.88	41:47	66628.79	42:15	73374.01		
404	41:40	47346.11	41:47	56346.86	42:15	61232.40		

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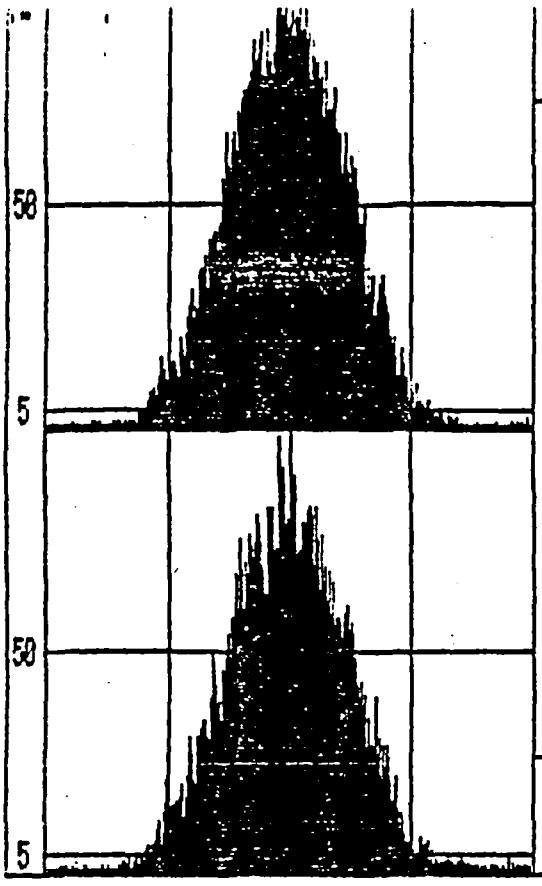
Listing of S903790I.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
408	43:25	162.23	45:38	913277.81	47:14	40539.87		
	45:05	876836.81	46:34	12313.11				
410	45:04	951912.63	45:39	984258.94	46:34	18591.61	47:14	46192.44
418	43:12	12.42	45:38	2875.60	46:35	111.75		
	44:12	13.42	45:57	2249.36	47:13	22576.09		
	45:02	31921.17	46:17	46.78	48:10	411.61		
420	43:30	12.83	45:38	2218.87	47:13	51835.59		
	44:00	20.48	45:57	4454.95	48:11	425.56		
	45:02	69074.62	46:33	173.07	48:46	19.59		
424	45:29	1343708.75	46:34	895721.25	50:08	608.78		
426	45:28	1345311.63	46:34	893493.62	50:10	442.00		
436	45:29	1911.16	45:55	47.70	46:33	41253.74		
438	45:30	1324.68	45:55	57.81	46:33	39979.50	47:20	176.40
442	52:13	973396.69	53:40	2840.78	54:03	1490.42	54:30	305.79
444	52:13	1009371.31	54:03	1325.62	54:34	99.89		
458	48:25	72.11	49:08	33.71	52:02	1942984.25		
460	51:57	2097182.25						
470	49:51	13.16	51:02	9.55	52:59	83.03		
	50:13	15.70	52:01	36840.71	53:18	65.30		
	50:22	22.08	52:45	126.22	53:43	43.97		
472	50:15	9.24	52:01	37571.79	52:53	62.39	53:22	48.56
	51:04	16.71	52:39	196.98	53:04	82.82		

*** End of Report ***



Ref. mass 292.9825 Peak top
Height 6.43 volts Span 200 ppm

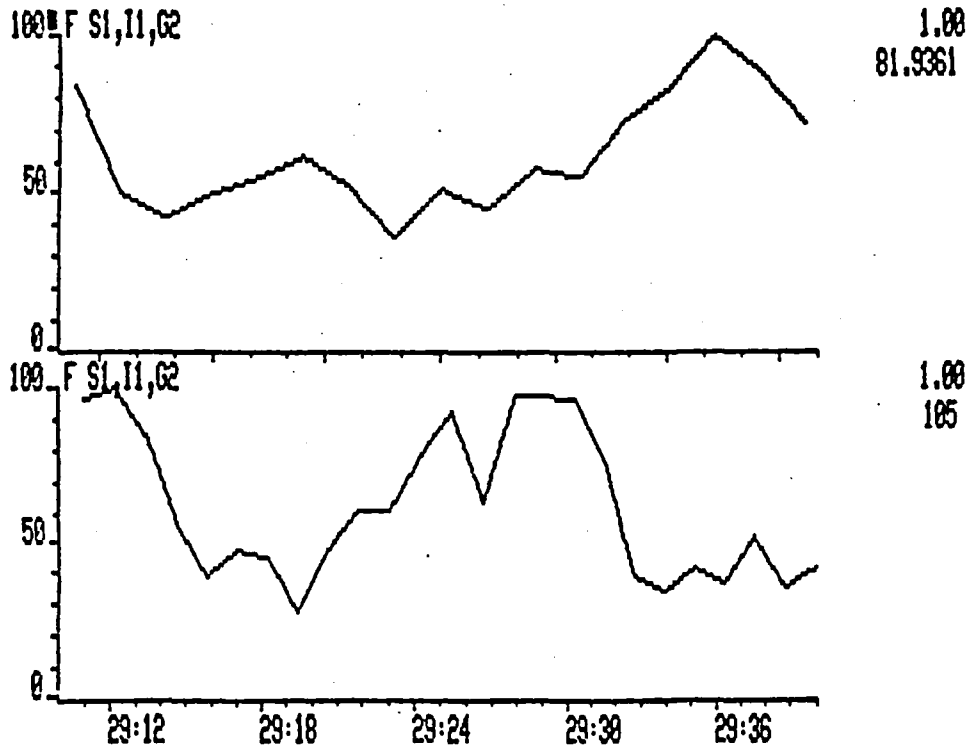
System file name	DBSUS
Data file name	D:S983790
Resolution	10000
Group number	2
Ionization mode	EI+
Switching	VOLTAGE
Ref. masses	292.9825, 416.9760

A	293	J	332	S	368
B	304	K	334	T	370
C	306	L	338	U	376
D	316	M	340	V	410
E	318	N	342		
F	320	O	352		
G	322	P	354		
H	328	Q	356		
I	331	R	358		

Channel I 330.9792 Peak top
Height 4.38 volts Span 200 ppm

NOV 1 0 1993
ENVIRONMENTAL AFFAIRS

GR 2 F: 319.8935 G: 321.8936 H: 327.8947 I: 330.9792 J: 331.9368
Text:LF1/9110 TLI#16661



NOV 1 0 1990
ENVIRONMENTAL AFFAIRS

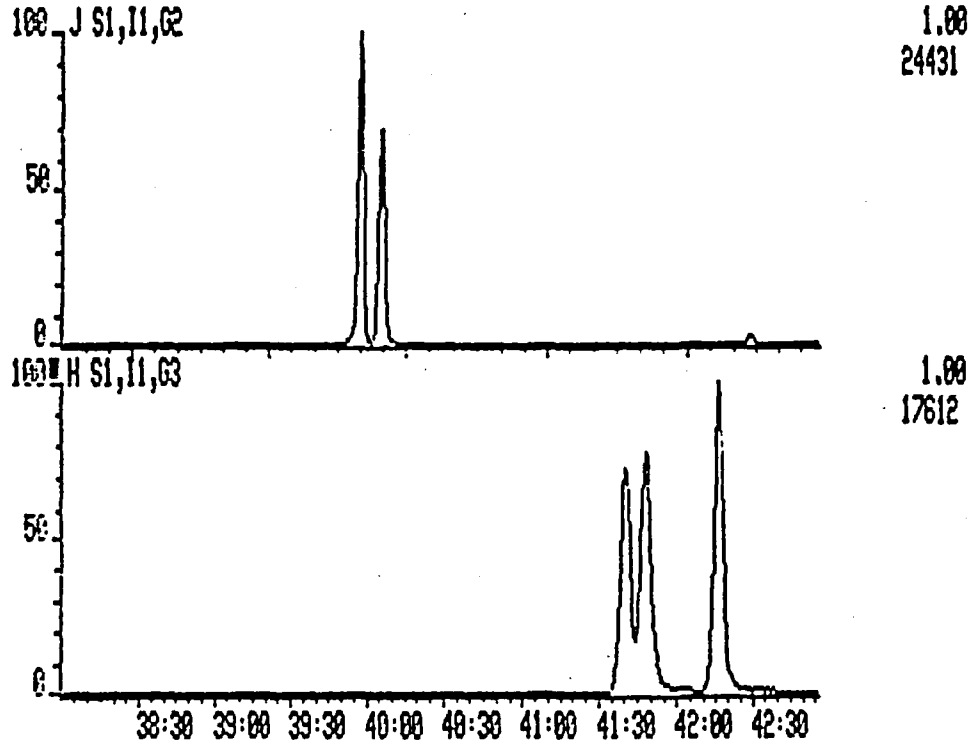
Verified by (GC/MS) Saturated MTB 10·18·

Verified by (Int. QC): TB 10/20/9

Group 3+4 saturation
TB 10/20/90

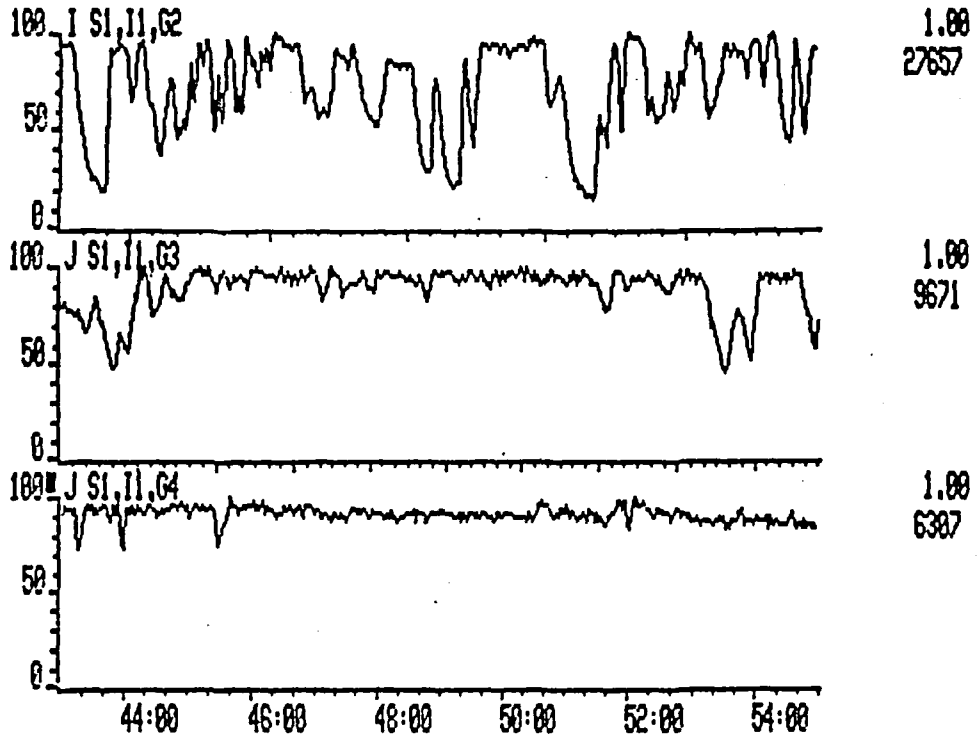
Process, dilute-
reshoot. TB 10/23/9

GR 3 F: 391.8127 G: 392.9760 H: 401.8558 I: 403.8529 J: 430.9729
Text:LF1/9110 TLI#16661



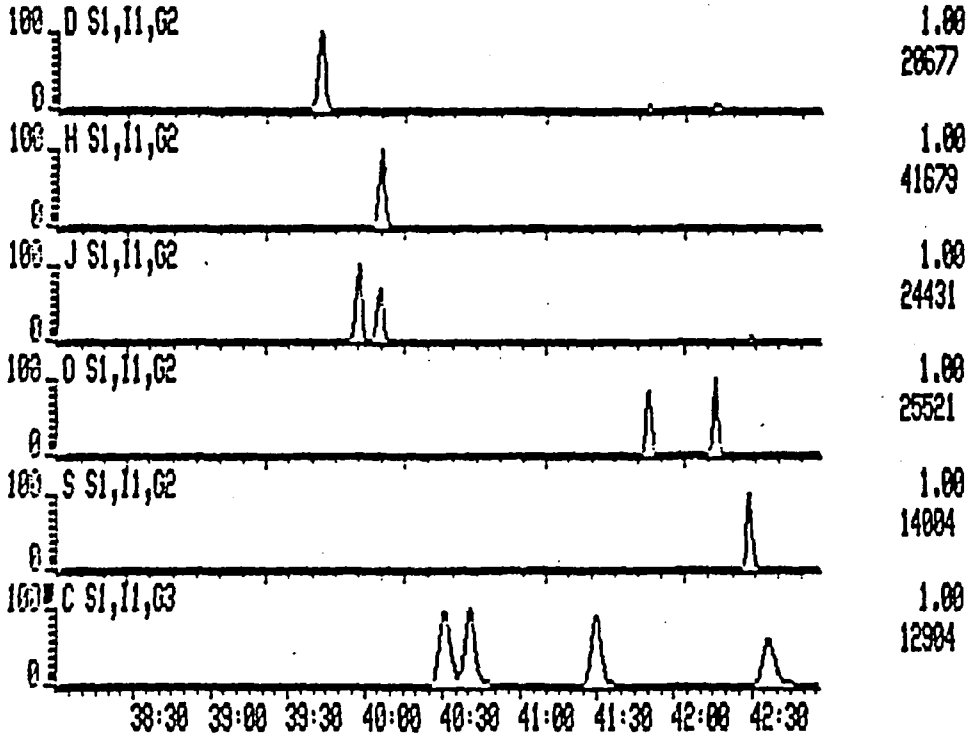
NOV 1 9 1993
ENVIRONMENTAL AFFAIRS

GR 4 D: 419.6220 E: 423.7766 F: 425.7737 G: 430.9725 H: 435.8169
Text:LF1/9110 TLI#16561



NOV 1 0 1993
ENVIRONMENTAL AFFAIRS

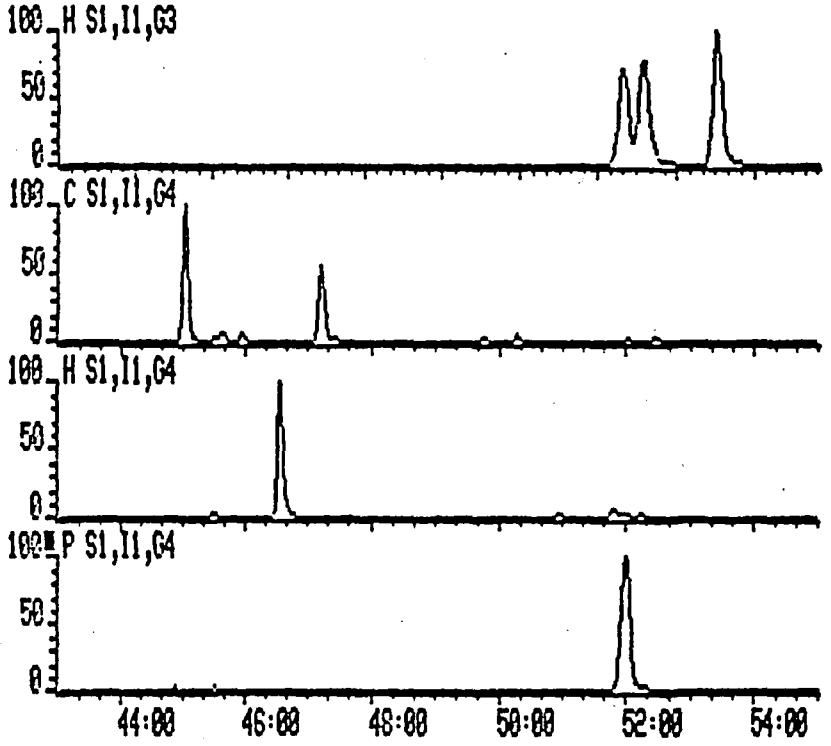
GR 3 D: 385.8610 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558
Text:LF1/9110 TLI#16661



NOV 1 9 1993
ENVIRONMENTAL ANALYS

15

GR: 4 D: 419.8220 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text:LF1/9110 TLI#16661



1.00
17612

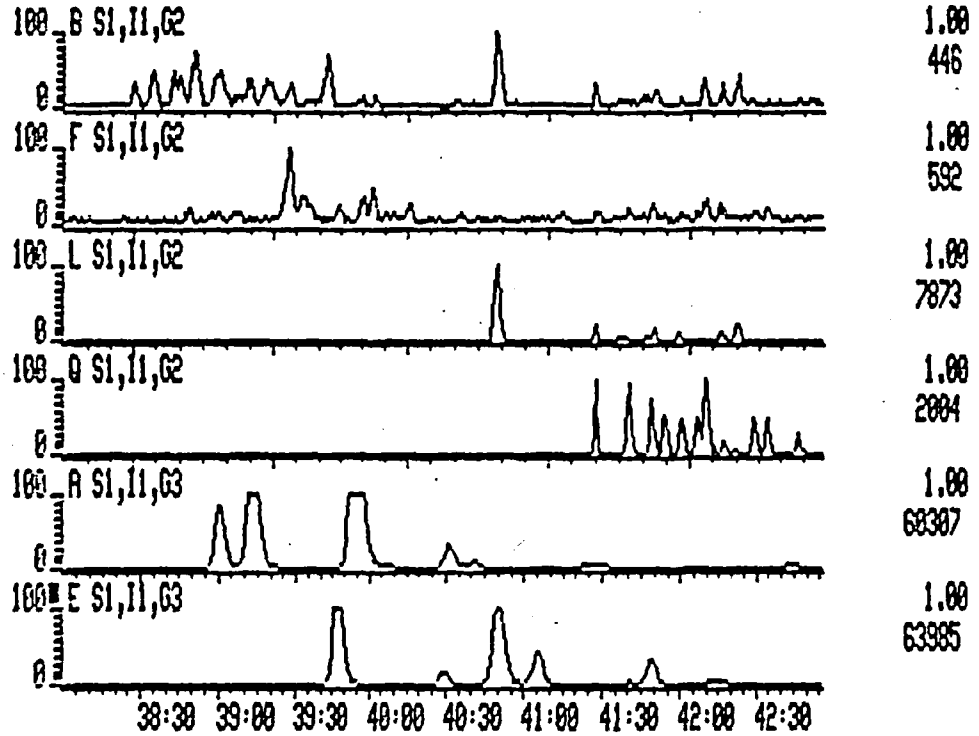
1.00
6278

1.00
7459

1.00
4182

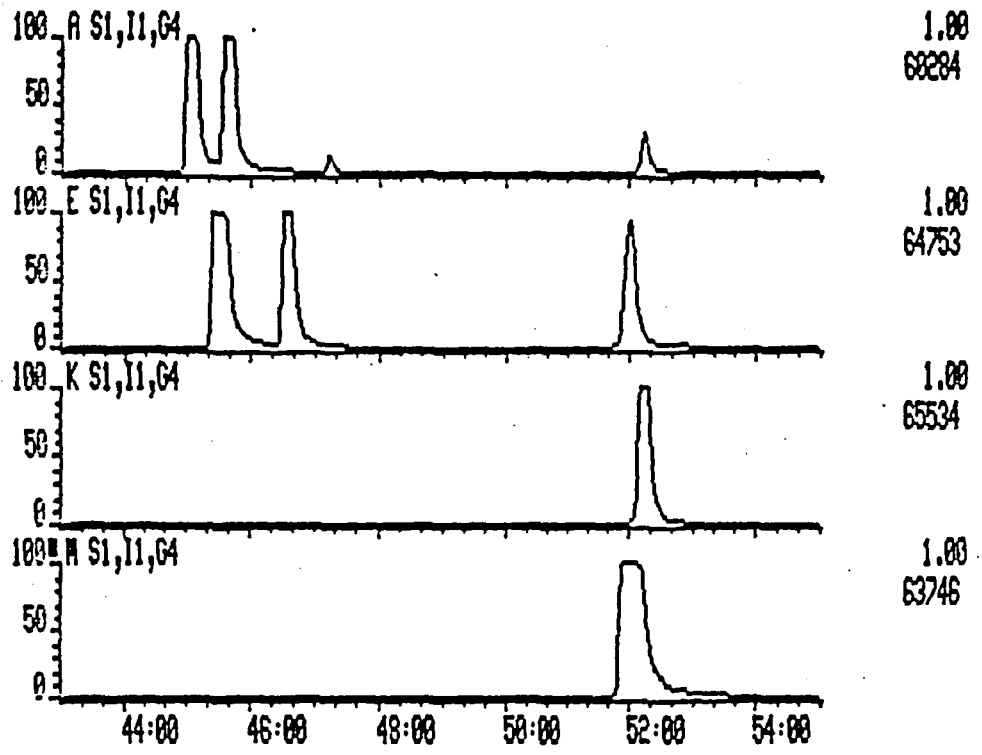
NOV 1 0 1999
ENVIRONMENTAL ANALYSIS

GF 3 D: 385.8610 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558
Text:LF1/3110 TLI#16661



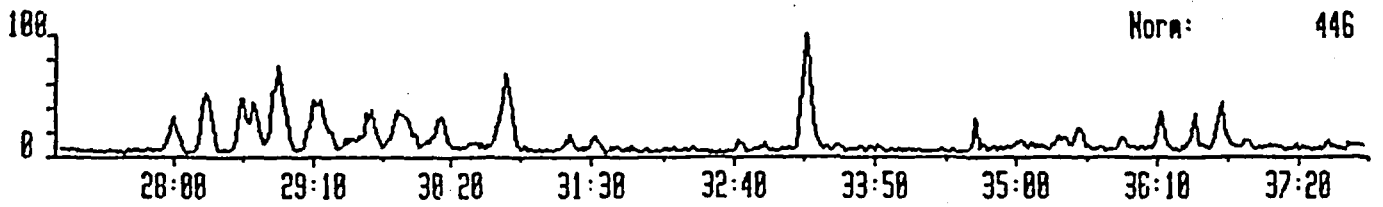
NOV 1 0 1993
ENVIRONMENTAL ANALYSIS

S503730 16-OCT-90 13:28 705 (EI+) Sys:U0505
GF 4 D: 419.8220 E: 423.7766 F: 425.7737 G: 430.9729 H: 435.8169
Text:LF1/9110 TLI#16661

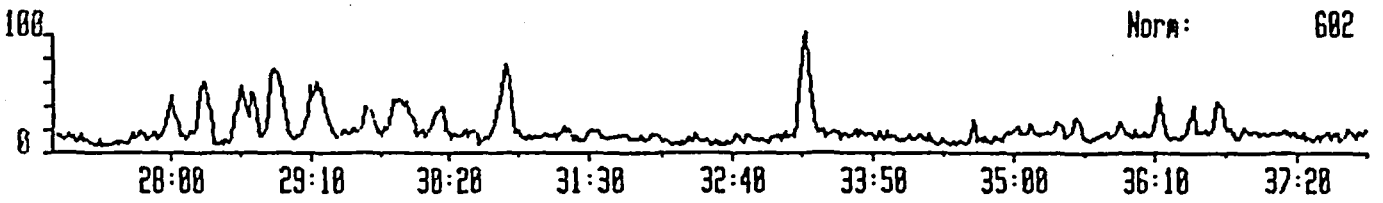


OCT 0 1990
...TAL AFFAIRS

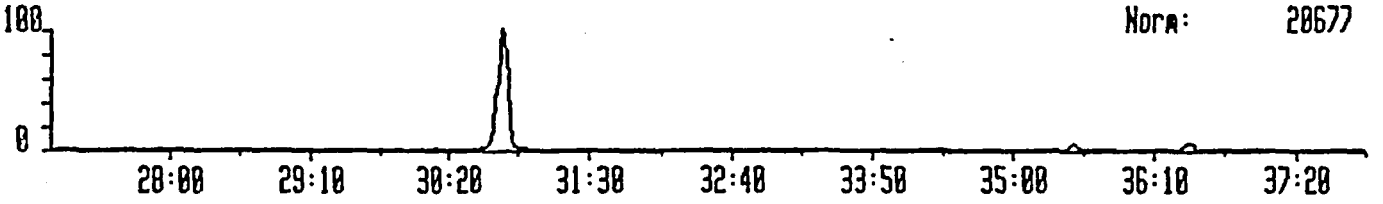
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mas. 303.9016
Text:LF1/9110 TLI#16661



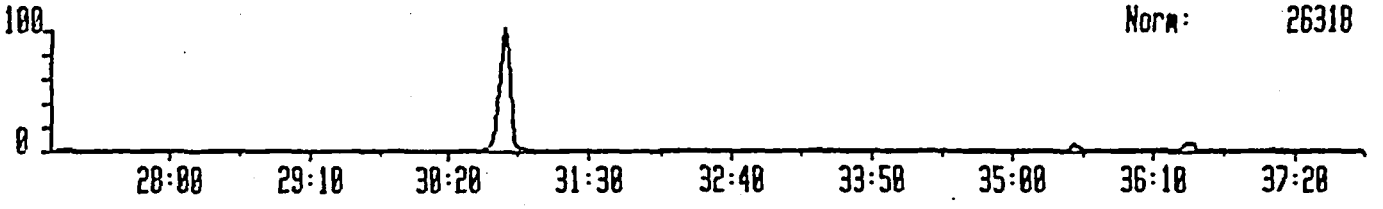
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 305.8987
Text:LF1/9110 TLI#16661



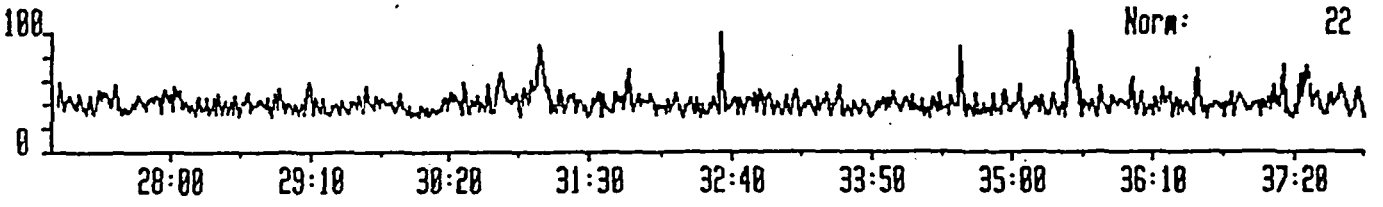
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 315.9419
Text:LF1/9110 TLI#16661



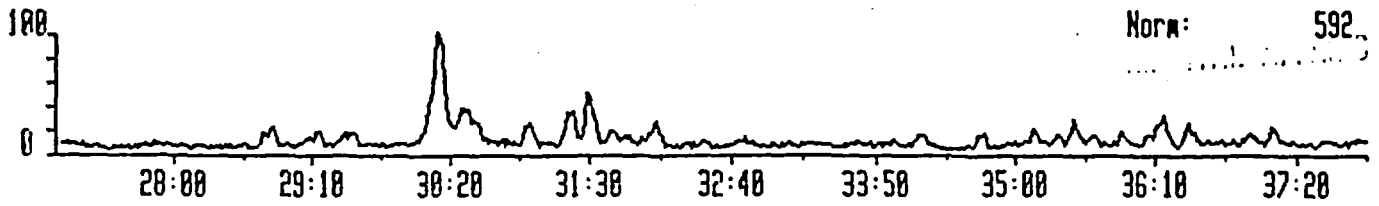
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 317.9389
Text:LF1/9110 TLI#16661



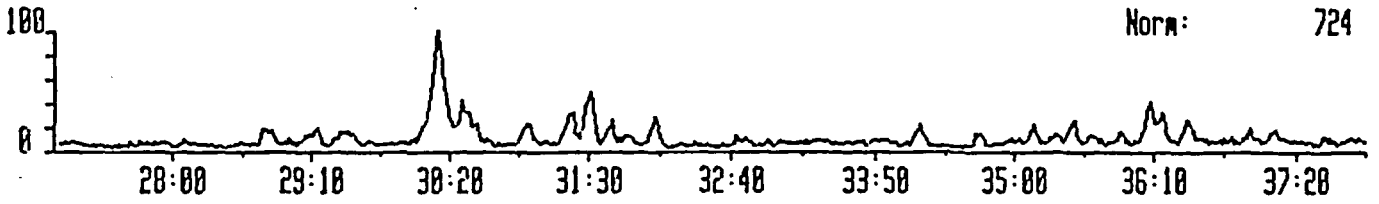
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 375.8364
Text:LF1/9110 TLI#16661



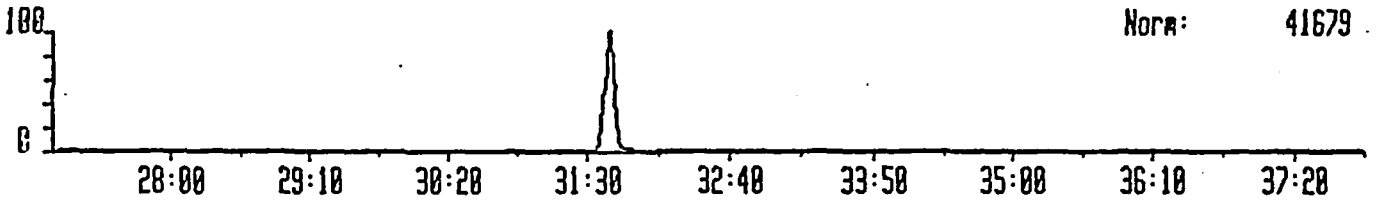
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 319.8965
Text:LF1/9110 TLI#16661



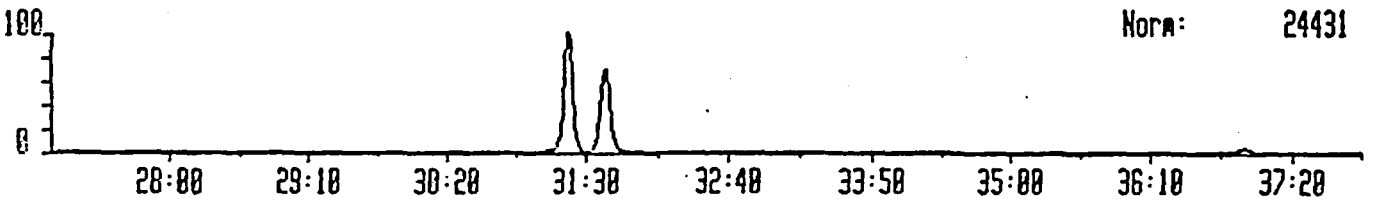
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 321.8936
Text:LF1/9110 TLI#16661



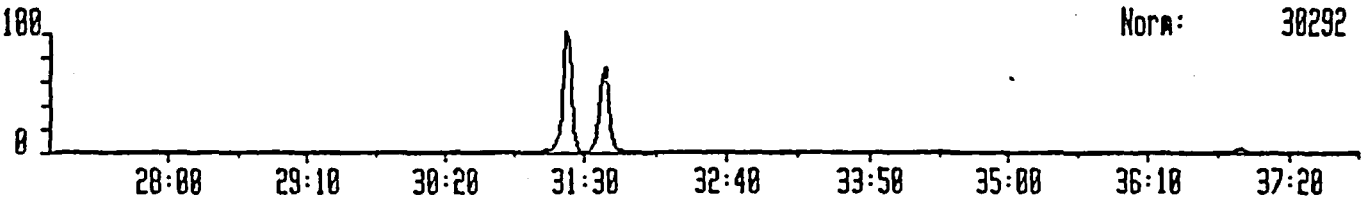
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 327.8847
Text:LF1/9110 TLI#16661



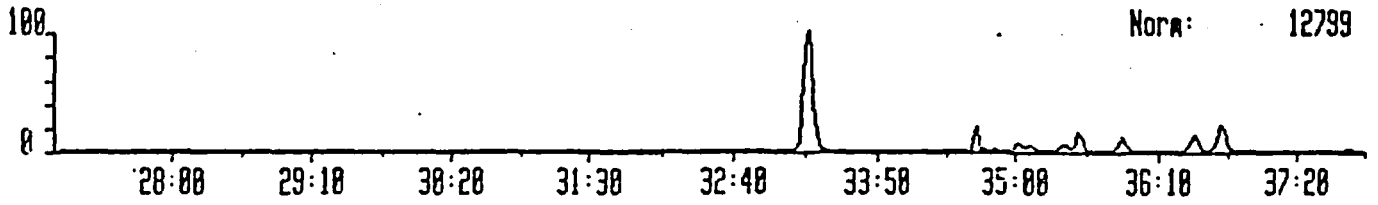
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 331.9368
Text:LF1/9110 TLI#16661



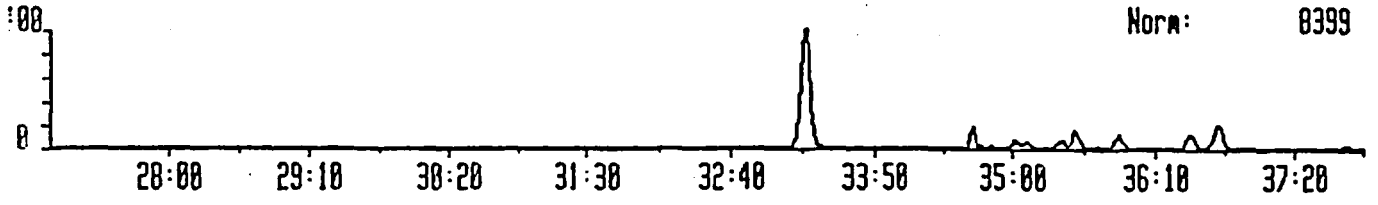
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 333.9338
Text:LF1/9110 TLI#16661



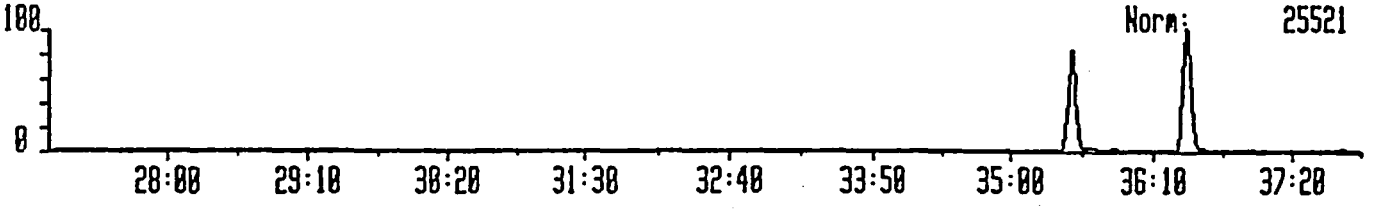
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 339.8597
Text:LF1/9110 TLI#16661



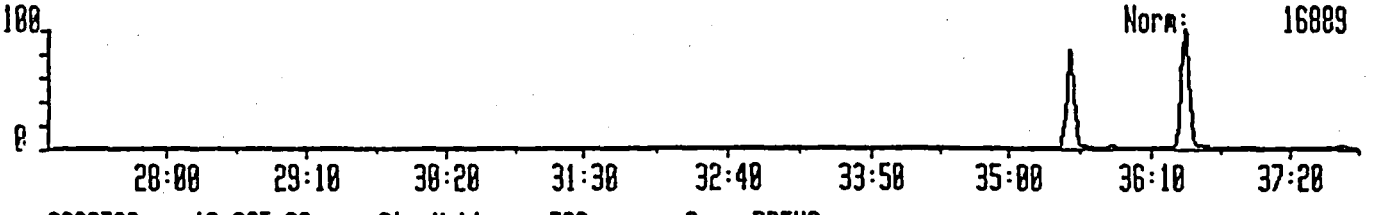
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 341.8567
Text:LF1/9110 TLI#16661



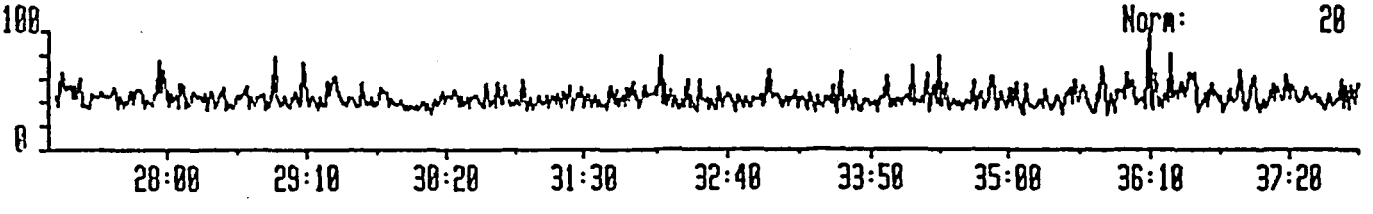
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 351.9000
Text:LF1/9110 TLI#16661



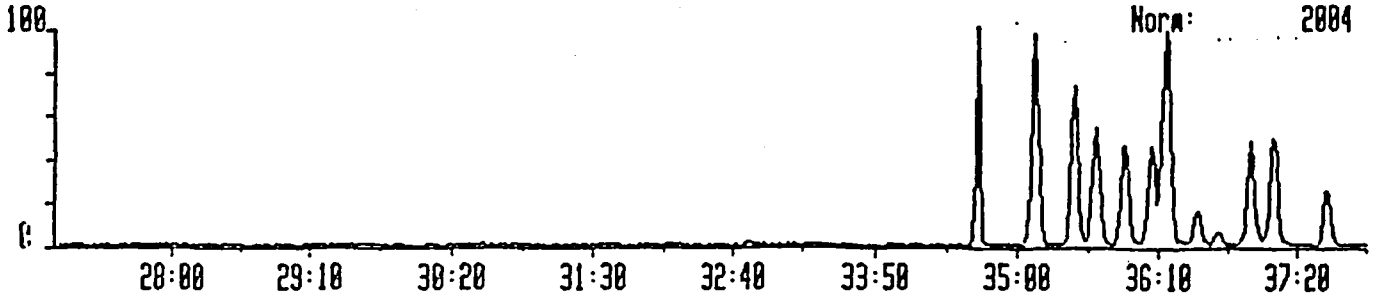
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 353.8970
Text:LF1/9110 TLI#16661



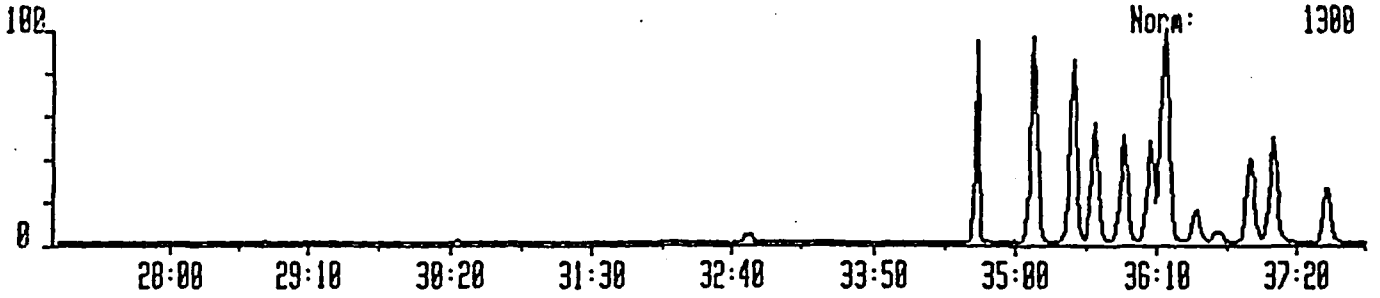
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 409.7974
Text:LF1/9110 TLI#16661



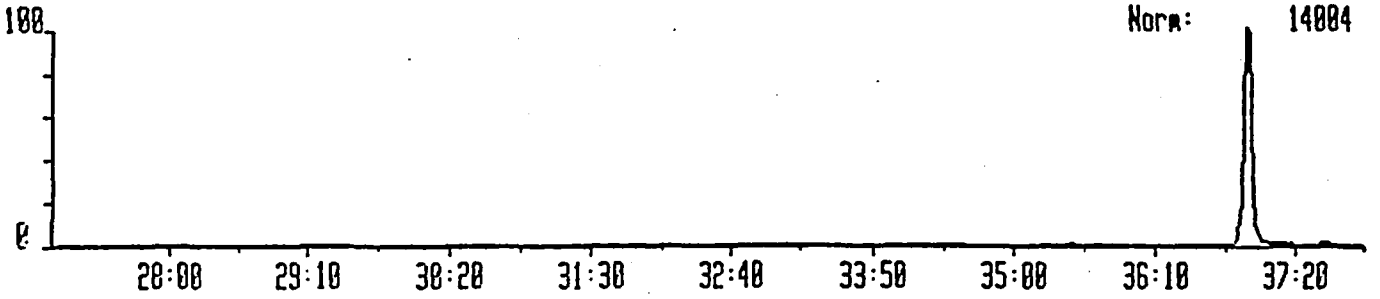
S903790 10-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 355.8546
Text:LF1/9110 TLI#16661



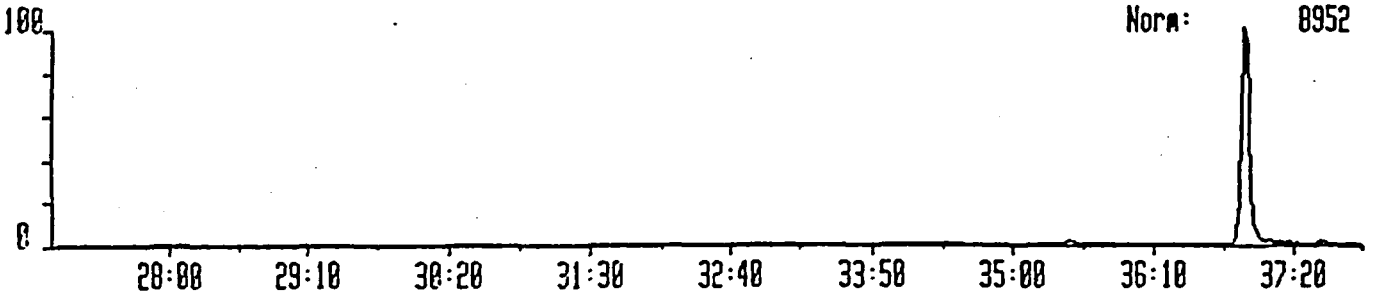
S903790 10-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 357.8516
Text:LF1/9110 TLI#16661



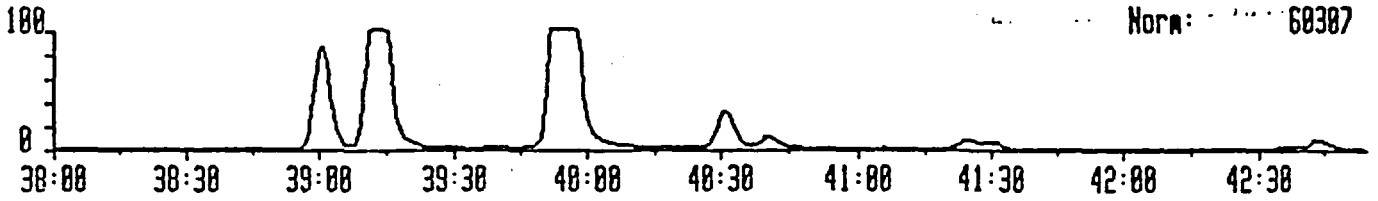
S903790 10-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 367.8949
Text:LF1/9110 TLI#16661



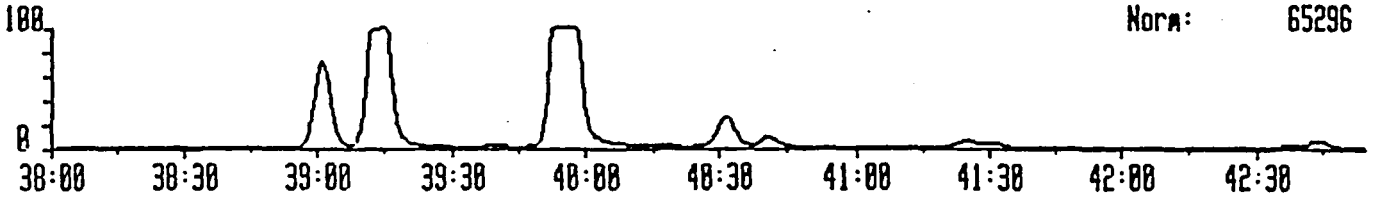
S903790 10-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 2 Mass 369.8919
Text:LF1/9110 TLI#16661



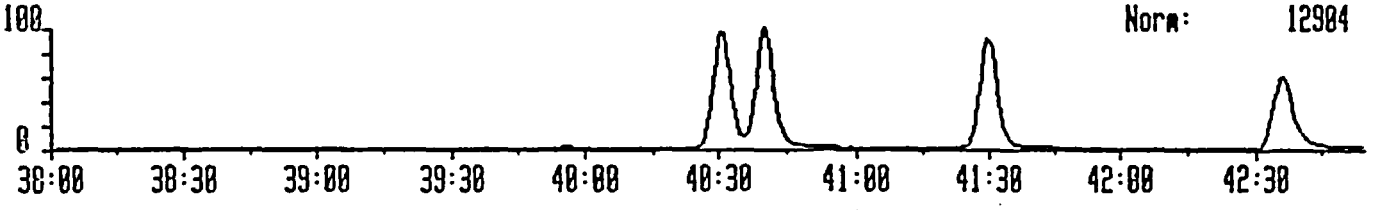
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 373.8200
Text:LF1/9110 TLI#16661



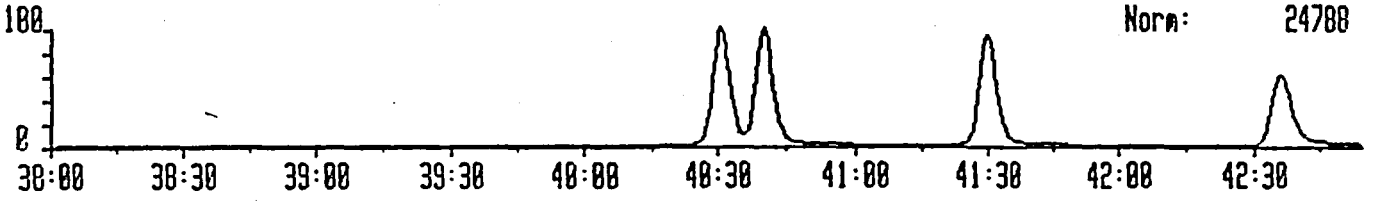
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 375.8170
Text:LF1/9110 TLI#16661



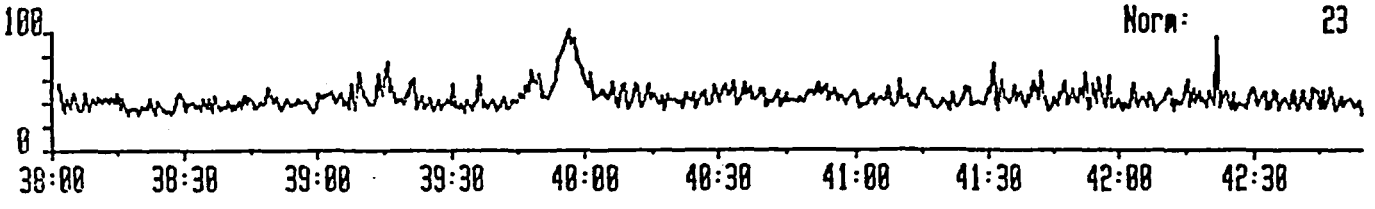
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 383.8639
Text:LF1/9110 TLI#16661



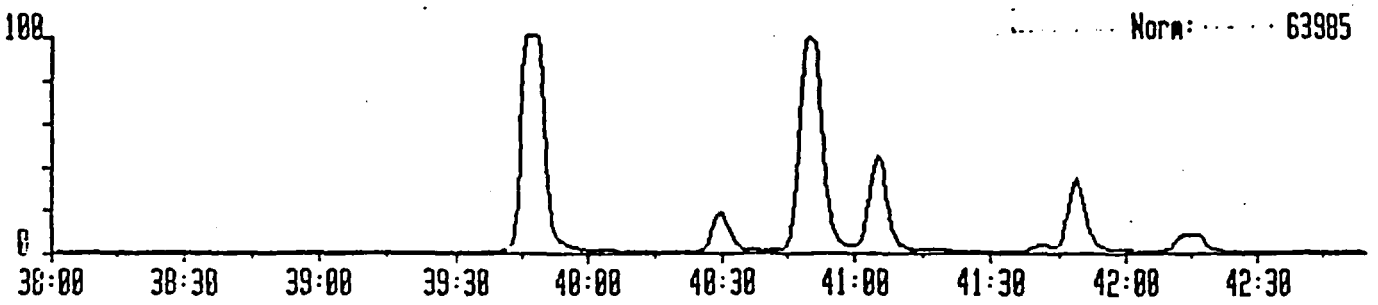
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 385.8610
Text:LF1/9110 TLI#16661



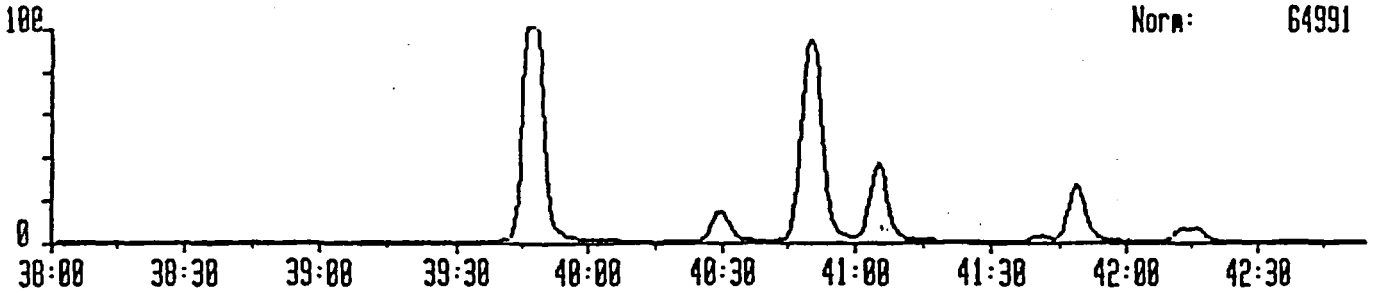
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 445.7555
Text:LF1/9110 TLI#16661



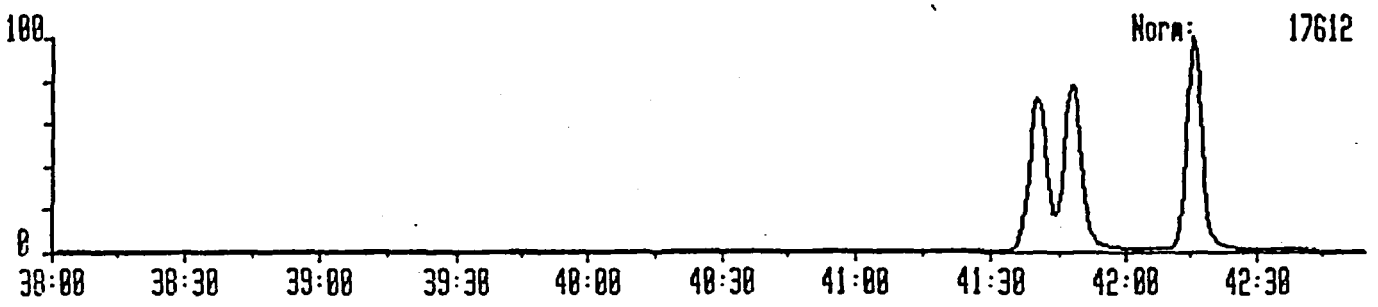
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 389.8156
Text:LF1/9110 TLI#16661



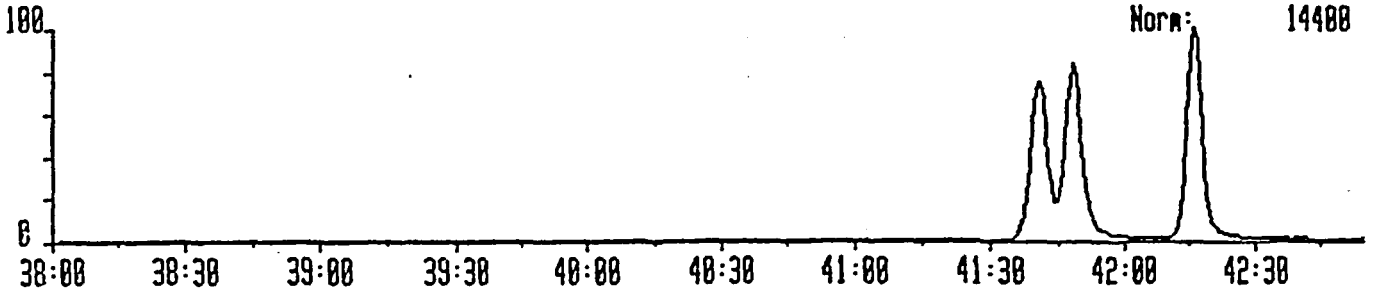
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 391.8127
Text:LF1/9110 TLI#16661



S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 401.8558
Text:LF1/9110 TLI#16661



S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 3 Mass 403.8529
Text:LF1/9110 TLI#16661



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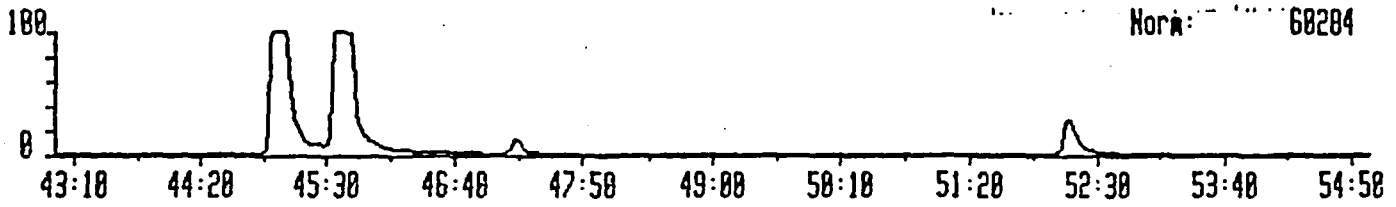
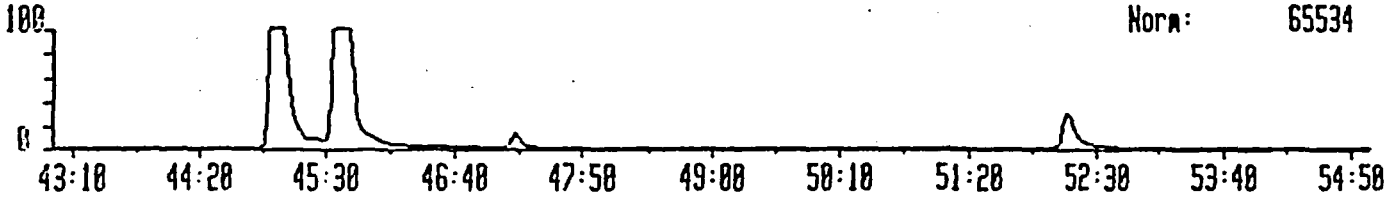
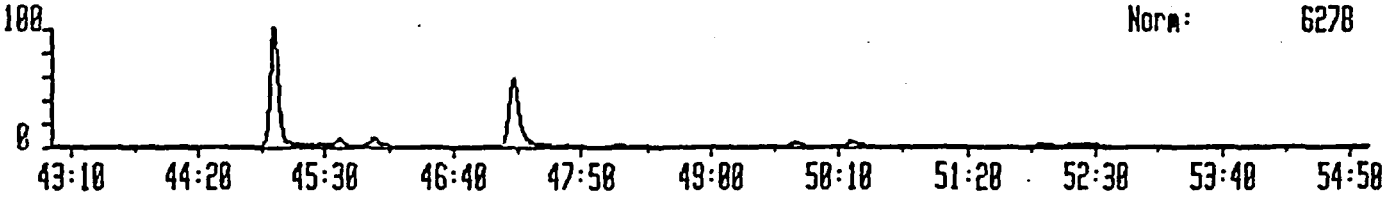
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 407.7818
Text:LF1/9110 TLI#16661



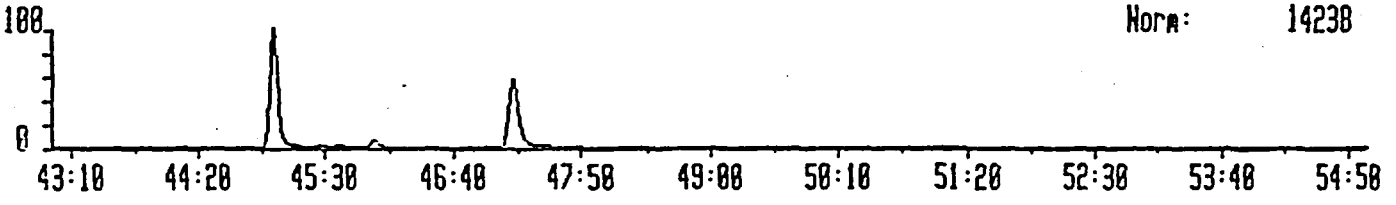
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 409.7789
Text:LF1/9110 TLI#16661



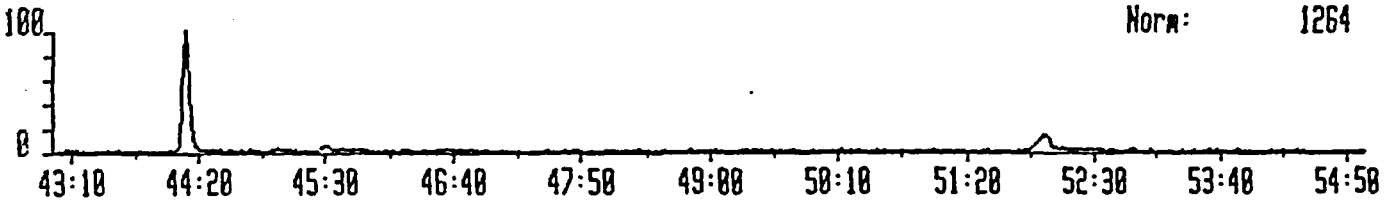
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 417.8253
Text:LF1/9110 TLI#16661



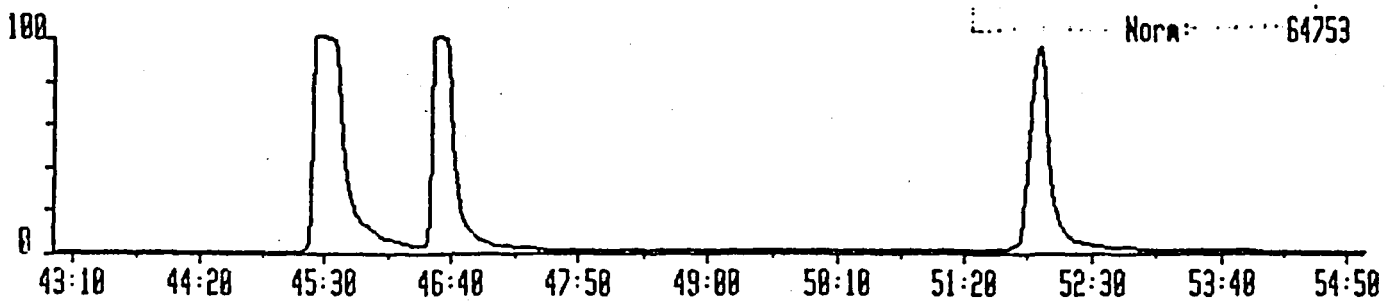
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 419.8228
Text:LF1/9110 TLI#16661



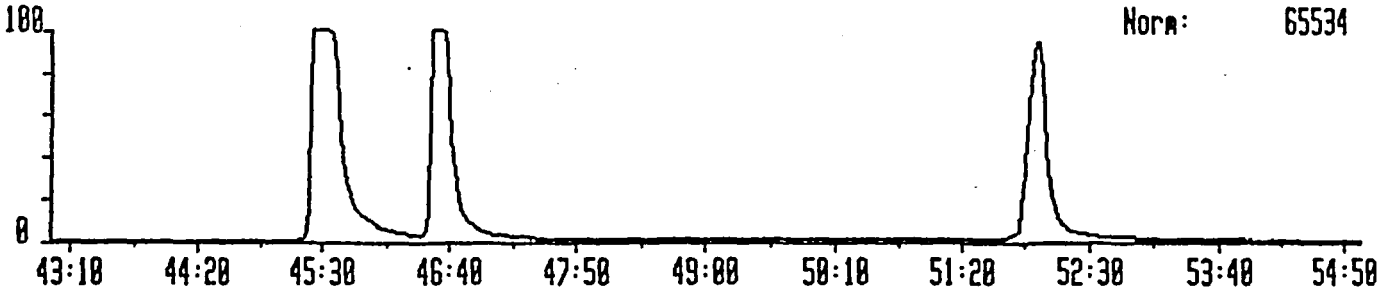
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 479.7165
Text:LF1/9110 TLI#16661



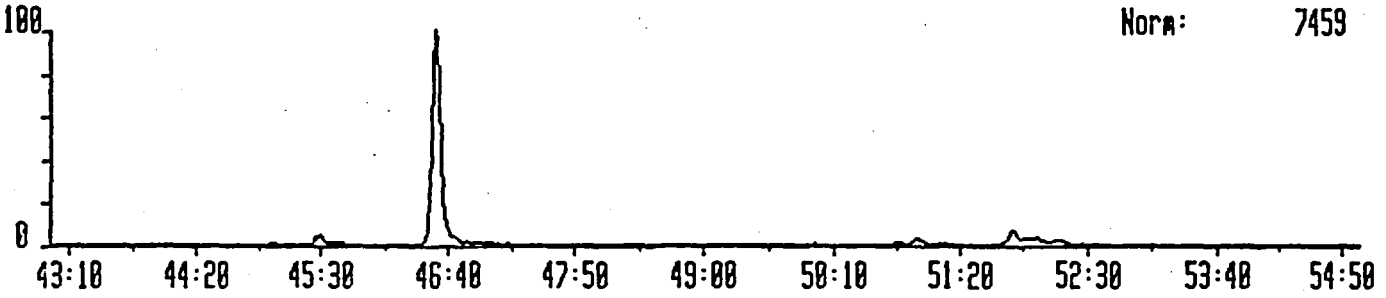
S903790 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 423.7766
Text:LF1/9110 TLI#16661



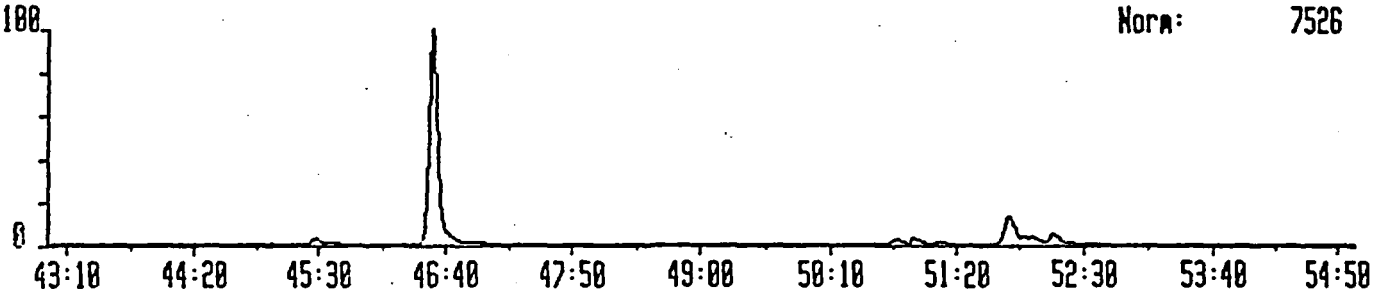
S903790 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 425.7737
Text:LF1/9110 TLI#16661



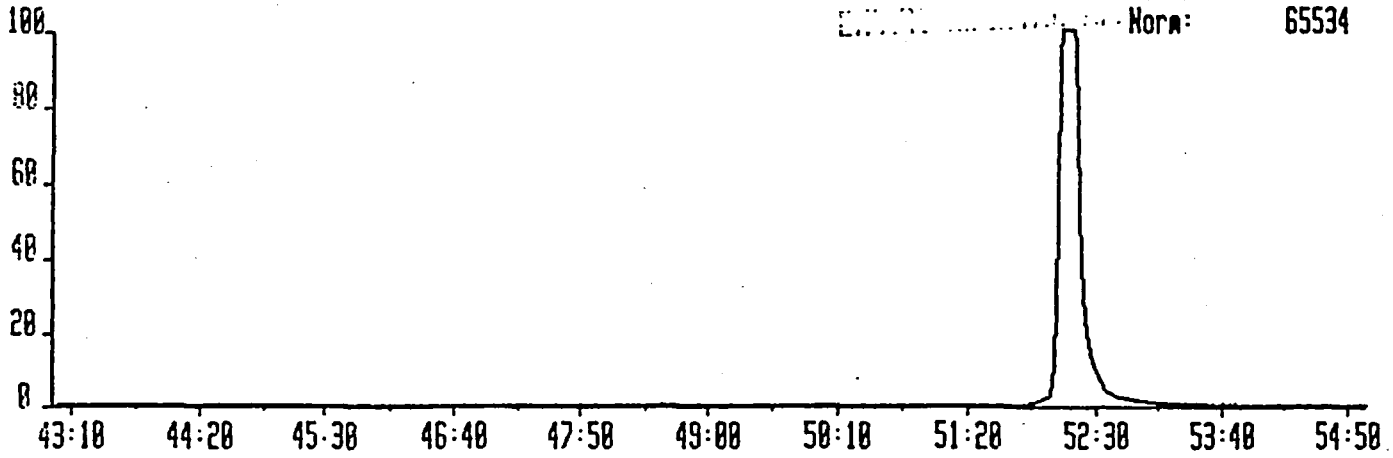
S903790 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 435.8169
Text:LF1/9110 TLI#16661



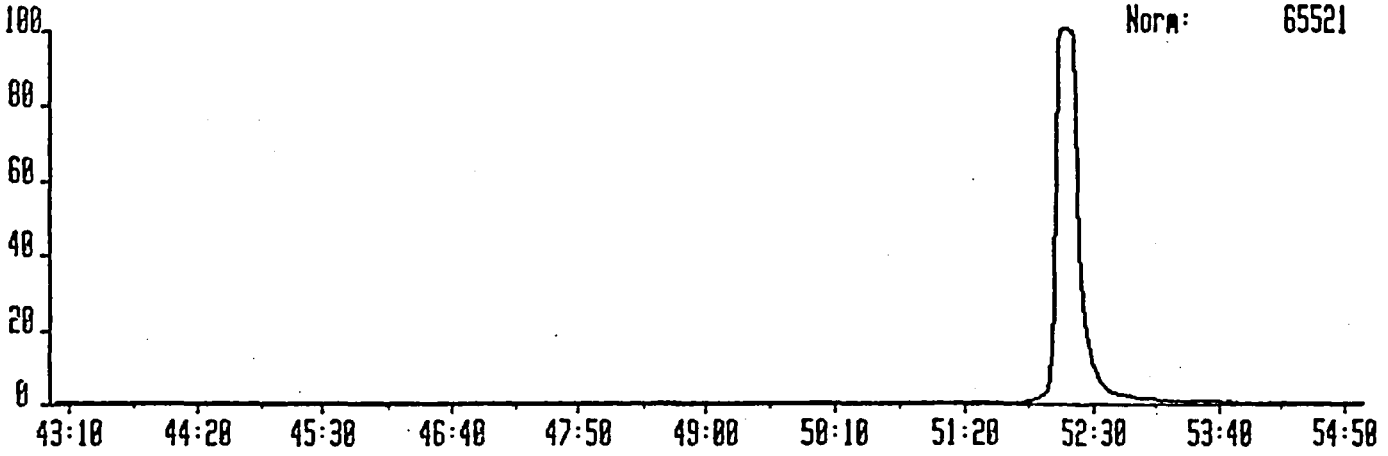
S903790 18-OCT-90 Str:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 437.8140
Text:LF1/9110 TLI#16661



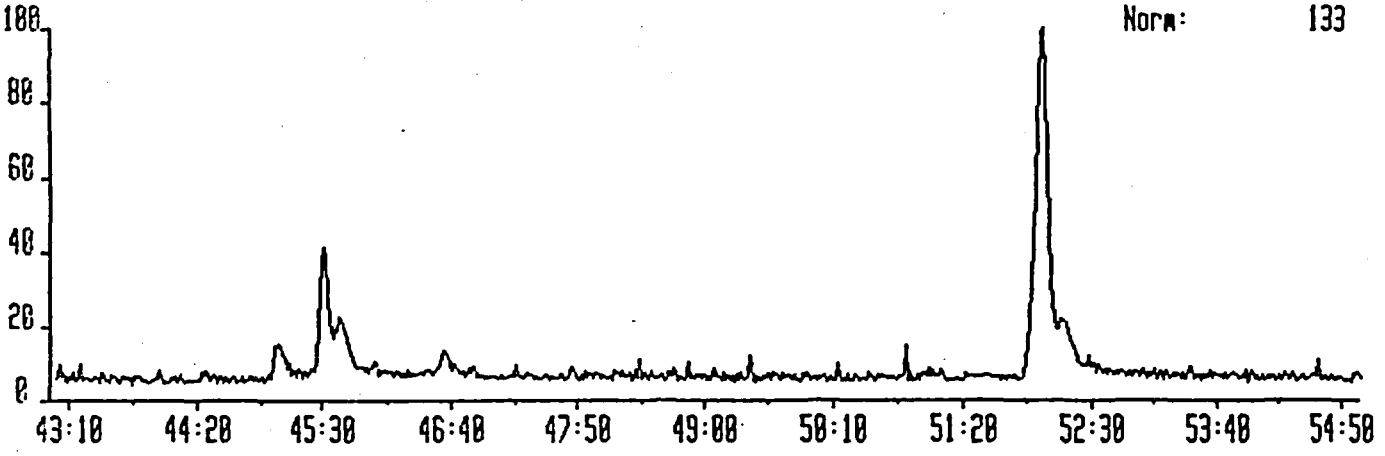
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 441.7420
Text:LF1/9110 TLI#16661



S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 443.7399
Text:LF1/9110 TLI#16661

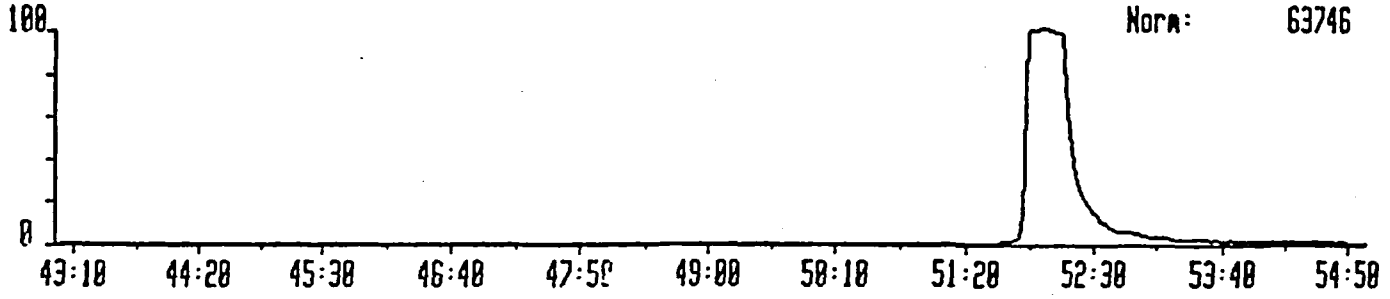


S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 513.6775
Text:LF1/9110 TLI#16661

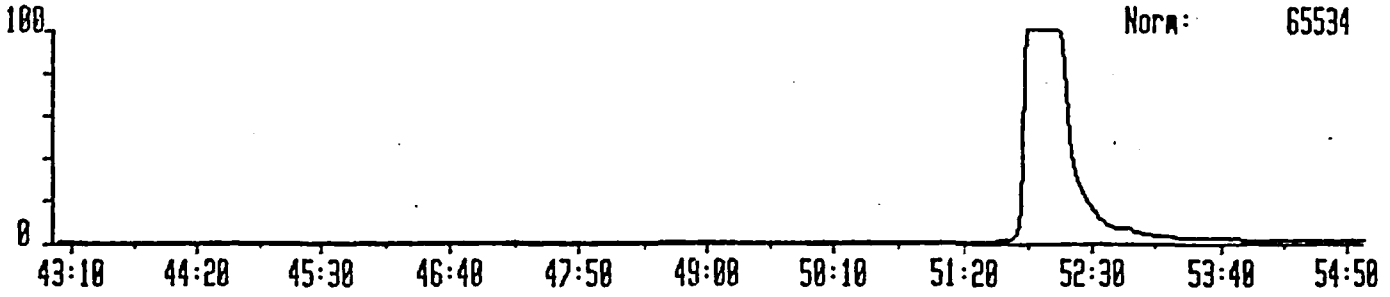


2

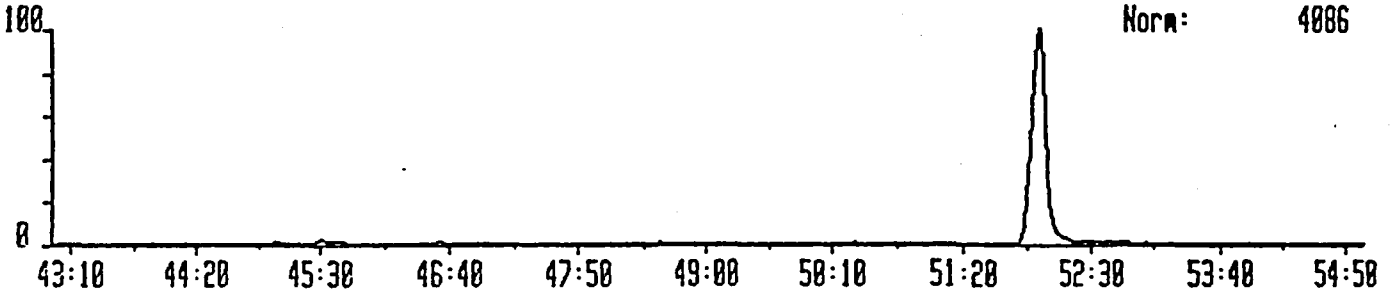
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 457.7377
Text:LF1/9110 TLI#16661



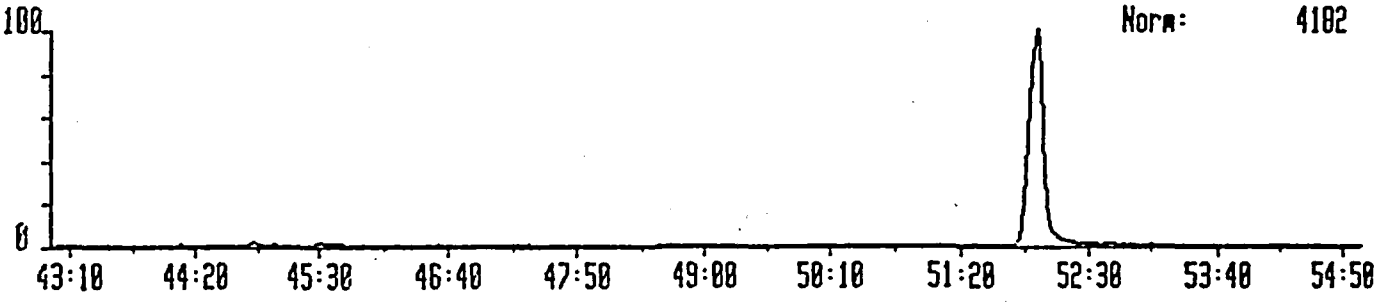
S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 459.7348
Text:LF1/9110 TLI#16661



S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 469.7779
Text:LF1/9110 TLI#16661

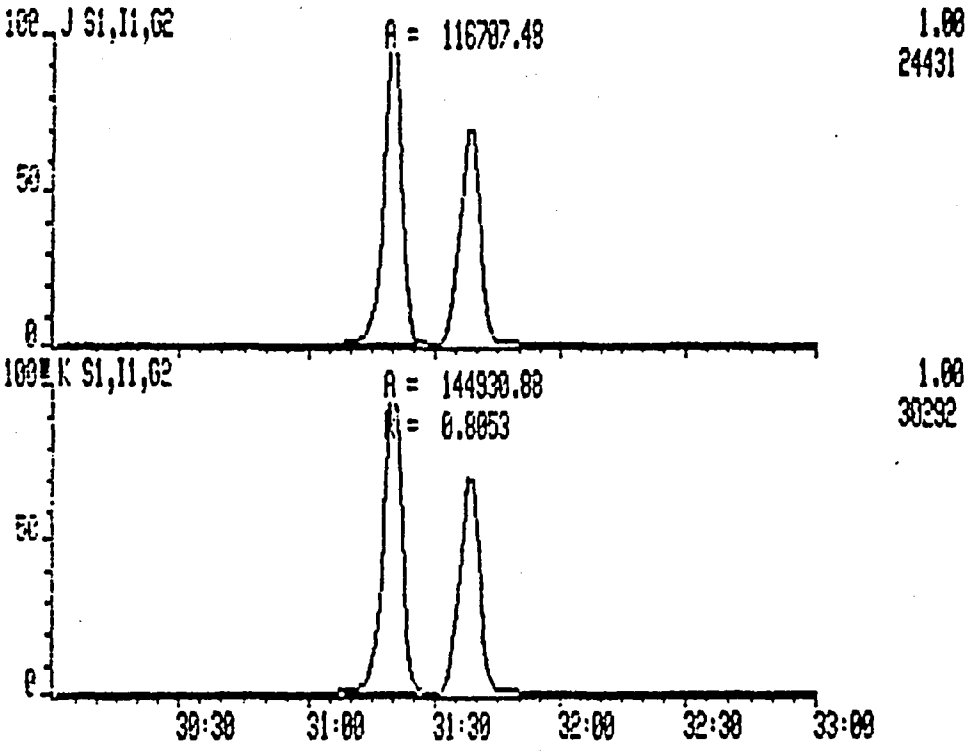


S903790 18-OCT-90 Sir:Voltage 70S Sys: DB5US
Sample 1 Injection 1 Group 4 Mass 471.7758
Text:LF1/9110 TLI#16661

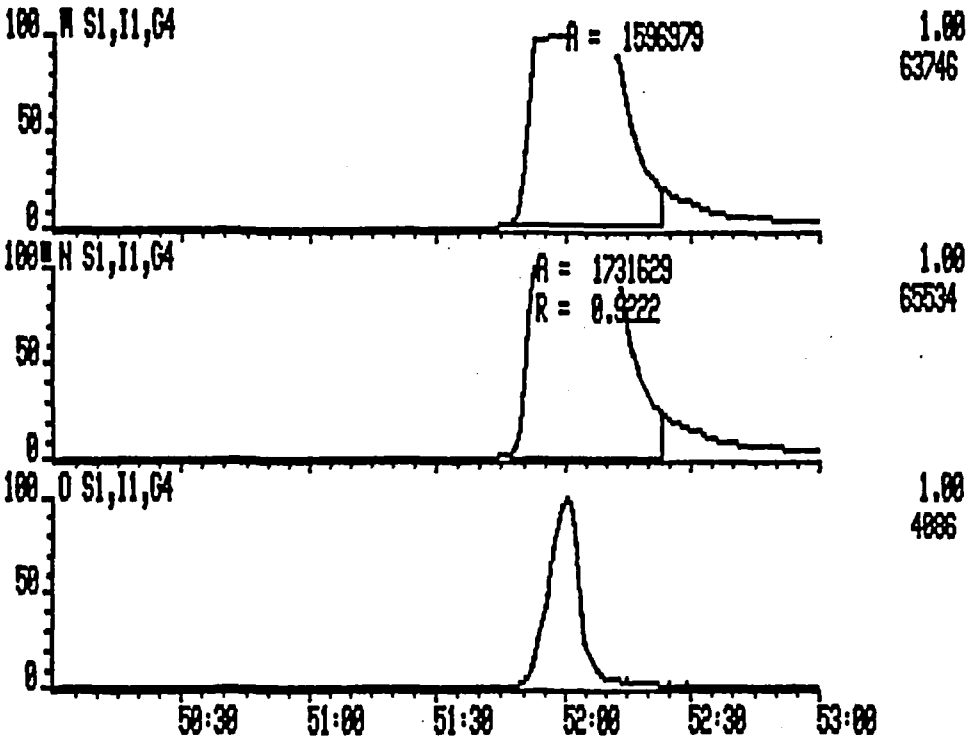


2

3303730 16-OCT-90 13:22 70G (EI+) Sus:DESUS
GP 2 J: 33.9368 K: 333.9338 L: 337.8626 M: 339.8597 N: 341.8567
Text:LF1/9110 TLI#16661



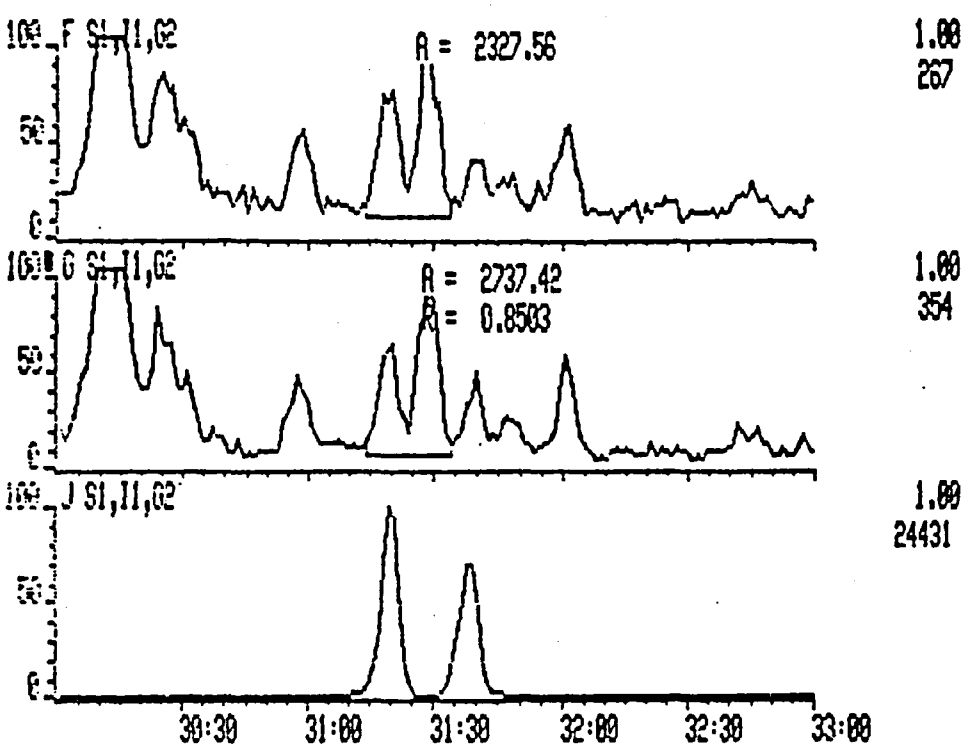
S983790 18-OCT-90 13:28 70S (EI+) Sys:DB5US
GR 4 M: 457.7377 N: 459.7348 O: 469.7779 P: 471.7750 Q: 479.7165
Text:LF1/9110 TLI#16661



MSD
11-15-90

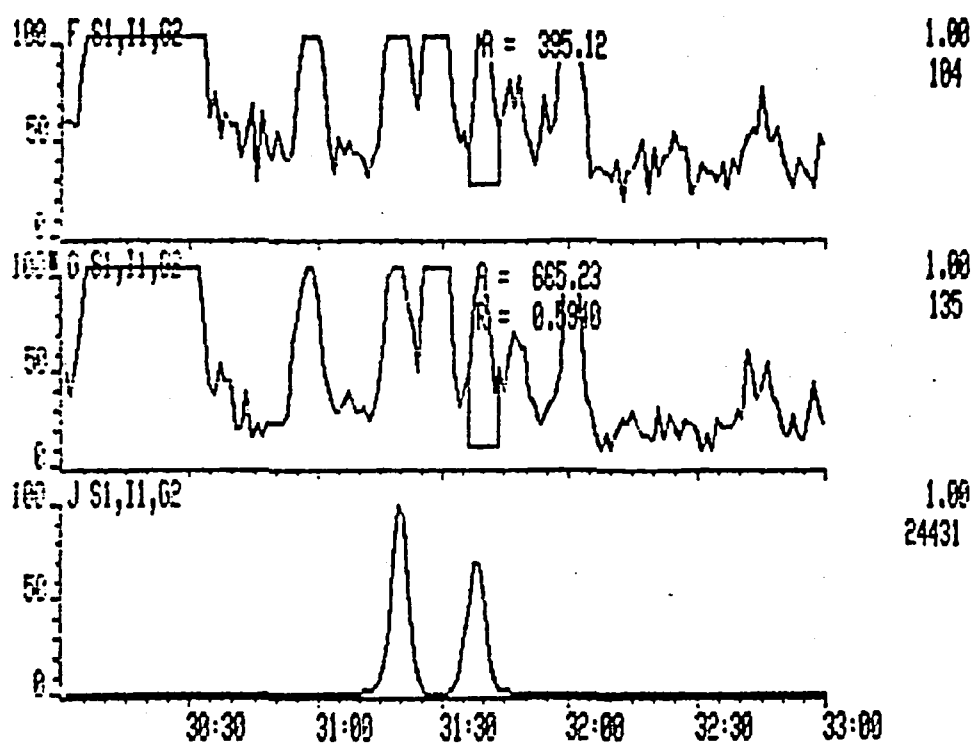
3

3303750 18-OCT-90 13:28 765 (EI+) Sus:D85U9
GR 2 F: 319.8365 G: 321.8336 H: 327.8847 I: 330.9732 J: 331.9368
Text:EF1/9110 TLIW16661



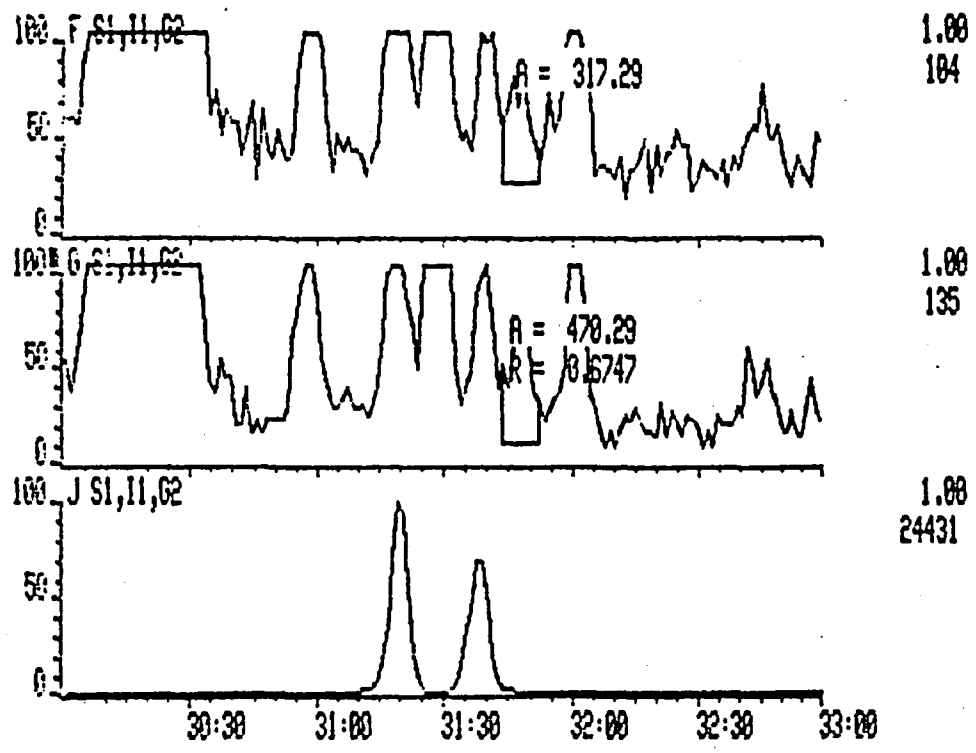
NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

[illegible] 18-OCT-90 13:26 705 (EI+) Sus:DBSUS
F: F: 319.8955 G: 321.8936 H: 327.8847 I: 330.9732 J: 331.9368
Text:LF1/S110 TLI116661



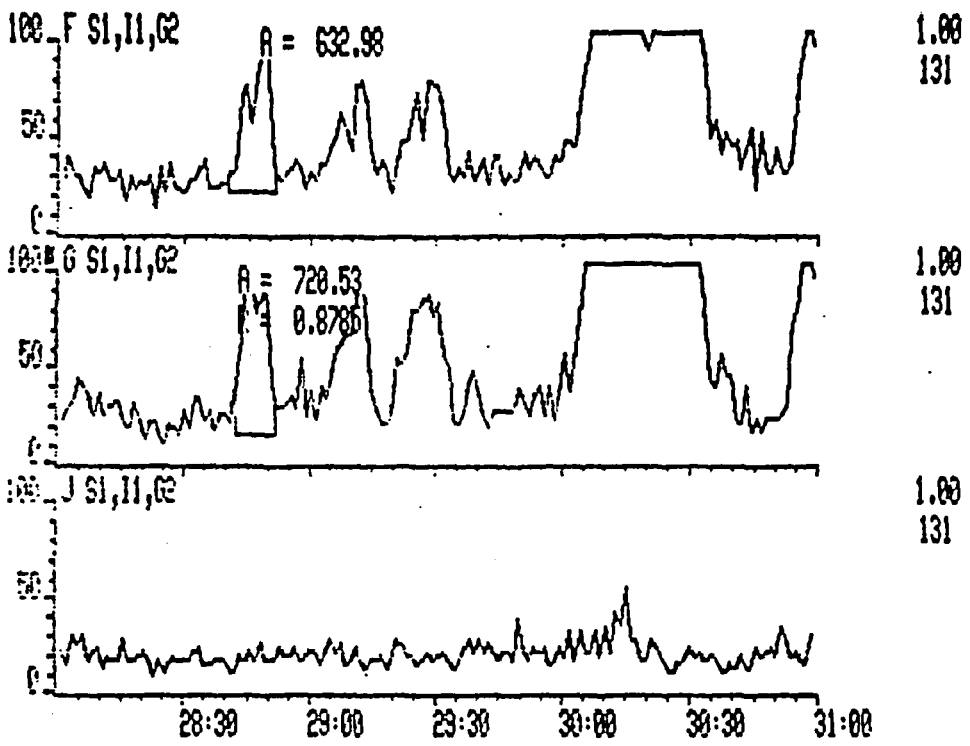
NOV 1 0 1990
ENVIRONMENTAL AFFAIRS

0303790 18-OCT-90 13:28 7GS (EI+) Sus:DBSUS
E: E F: 319.9965 G: 321.8336 H: 327.8347 I: 330.9792 J: 331.9368
Text:LF1/9110 TLI#16661



NOV 1 9 1990
ENVIRONMENTAL AFFAIRS

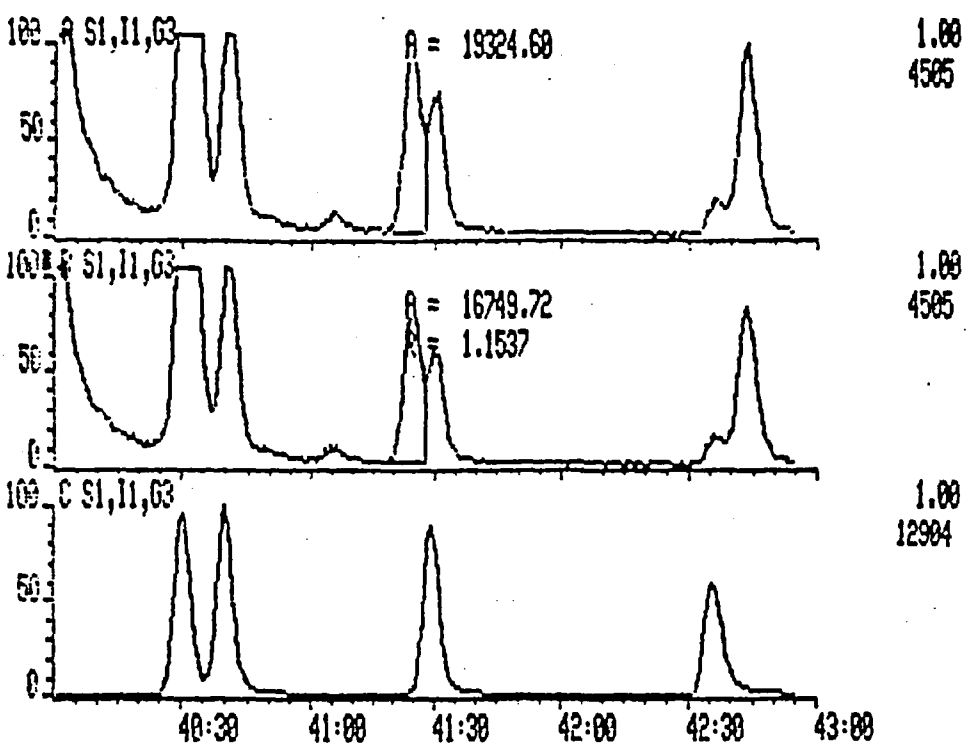
503730 18-OCT-96 13:28 703 (EI+) Sys:DBSUS
F 2 F: 319.8365 G: 321.8936 H: 327.8547 I: 330.5732 J: 331.9368
Text:LF1/9110 TLI#16661



NOV 1 0 1996
ENVIRONMENTAL AFFAIRS

3

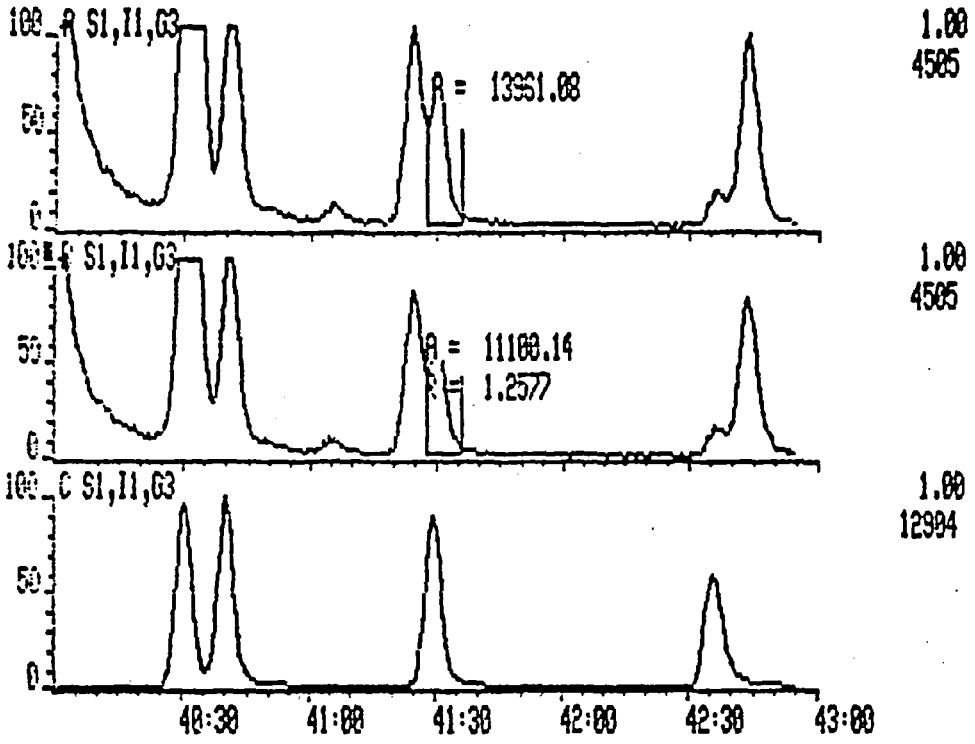
3903750 18-OCT-90 13:26 70S (EI+) Sus:D85US
Mz: A: 373.8208 B: 375.8178 C: 383.8833 D: 385.8810 E: 389.8156
Text:LF1/9110 TL1#16661



NOV 1 0 1990
ENVIRONMENTAL AFFAIRS

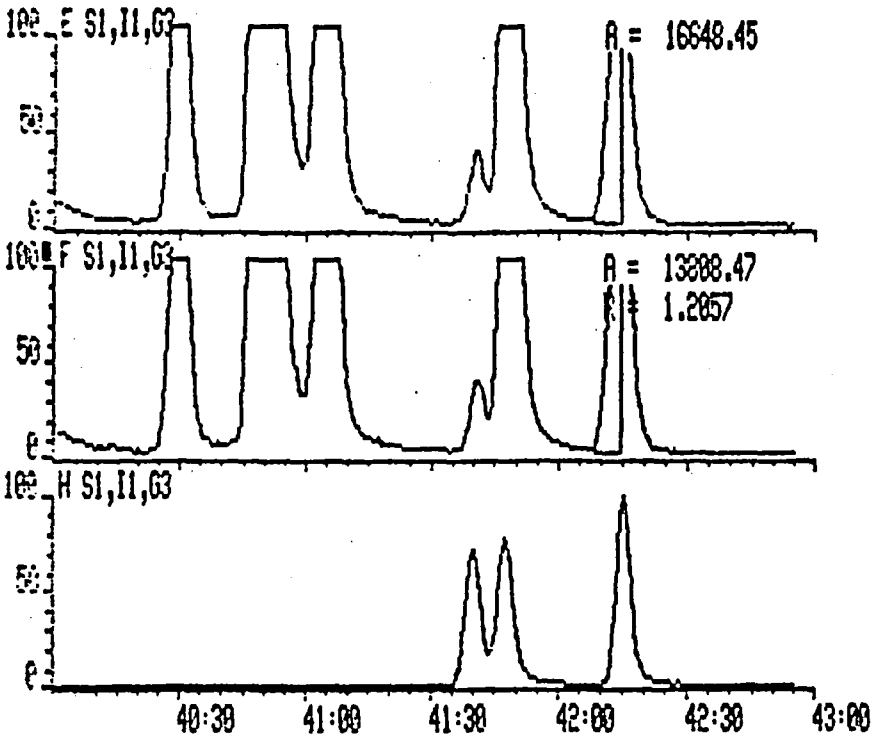
37

[illegible] 18-OCT-96 13:28:[illegible] (EI+) Sys:D85U5.
[illegible] A: 373.8203 B: 375.8176 C: 383.8539 D: 385.8510 E: 389.8156
[illegible]:LF1/9110 TLI#16661



NOV 1 9 1996
ENVIRONMENTAL AFFAIRS

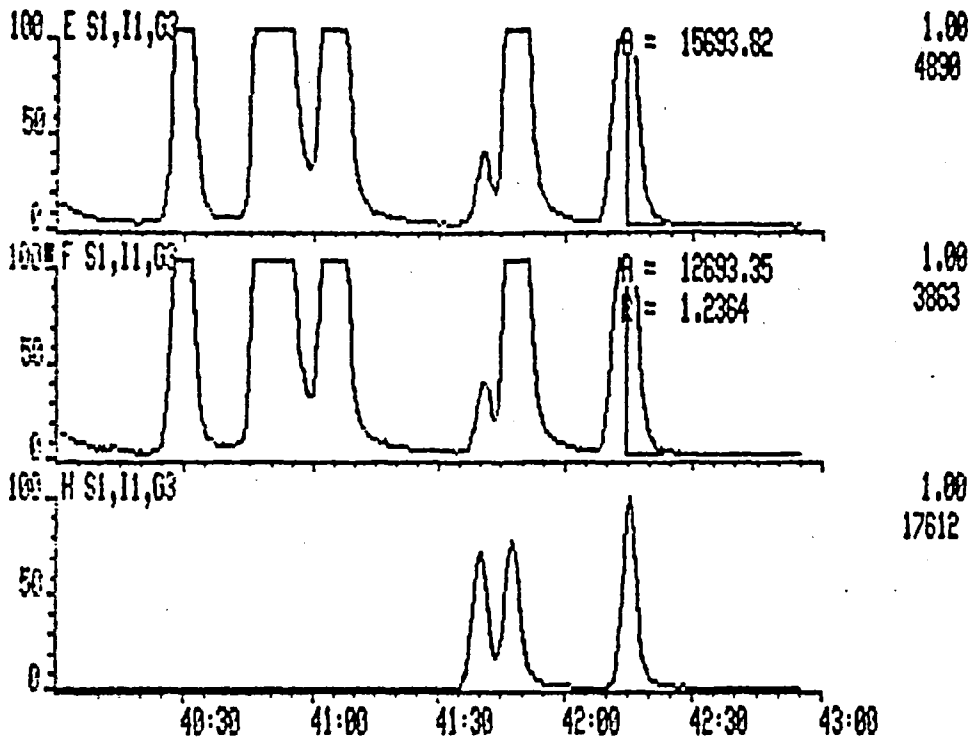
[illegible] 18-OCT-90 13:28 70S (EI+) Sys:DB5MS
GP: 3 E: 389.8156 F: 391.8127 G: 392.9760 H: 401.8558 I: 403.8529
Text: LF1/9110 TLI#16661



OCT 1 0 [illegible]
[illegible]

3

[illegible] 18-OCT-93 13:28 706 (EI+) Sus:DESUS
[illegible] E: 399.6156 F: 331.6127 G: 332.9760 H: 401.8558 I: 403.8529
Text:LF1/9118 TLI#16661



NOV 2 0 1993
ENVIRONMENTAL AFFAIRS

Confirmation Analyses

TRIANGLE LABORATORIES, INC.

NOV 1 0 1990

ENVIRONMENTAL AFFAIRS

SAMPLE DATA

NOV 19 1990

TRIANGLE LABORATORIES, INC. ENVIRONMENTAL AFFAIRS
CONFIRMATION ANALYSIS (DB-225)

11/15/90

FILE NAME....: U902306
CONCAL (VER).: U902298
PROJECT NUMBER: 16661
ANALYST.....: HA
SAMPLE SIZE..: 9.460 g
DATE RECEIVED.: 10/10/90
SPIKE FILE...: SPC2NF10

CLIENT ID....: SWP
SAMPLE ID....: LF1/9110
ICAL DATE....: 09/21/90
ANALYSIS DATE: 10/21/90
SAMPLE MATRIX: SOIL
DATE COLLECTED: 10/09/90

TLI NUMBER....: 37-26-1
SAMPLE ORIGIN: WILMINGTO
SHIPMENT NO...: NC09001

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.02				0.73	18:51	—
2378-TCDF	0.004				0.70	20:01	—
TOTAL TCDD	0.08	9		0.09	0.74		Q
TOTAL TCDF	0.02	6		0.04	0.74		Q

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37Cl-TCDD	1.2	116		18:48	—

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1.2	113	0.77	20:01	—
13C12-2378-TCDD	1.2	112	0.78	18:47	—

MKS 11/15/90

C2NF_RPT rev:3.01

N = 3.4 (320)

	Initial	Date
B-File/Header Changes	MJS	11-6-90
Manual Integrations		
Transcription		
Dbase Corrections	MJS	11-15-90

RECEIVED NOV 19 1990 ENVIRONMENTAL AFFAIRS

10/29/90

Listing of U902306B.dbf

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
304		0.66	16:40	79.67	T	F	0.833	-Q Total Q
		0.39	17:15	173.56	F	F	0.862	
		0.62	17:35	186.07	F	F	0.878	
		0.46	17:48	94.09	F	F	0.889	
		0.48	18:12	69.50	F	F	0.909	
		0.67	18:41	59.65	T	F	0.933	
		0.79	18:59	64.94	T	F	0.948	
		1.10	19:11	21.66	F	F	0.958	
		0.81	19:28	58.18	T	F	0.973	-Q
		~~0.44~~ 0.81	19:48	~~112.28~~ 142	T ~~F~~	F	0.989	
	ek →	~~0.45~~ 0.72	20:01	~~93.43~~ 121	T ~~F~~	T	1.000	
		0.58	20:12	27.43	F	F	1.009	
		0.41	21:56	21.25	F	F	1.096	
	D	-1.02	22:12	16.79	F	F	1.109	-R.W
304		*** Total ***		1078.50	# of Peaks:		14	
316		0.77	20:01	26834.43	T	T	1.000	
316		*** Total ***		26834.43	# of Peaks:		1	
320		0.75	16:31	26.67	T	F	0.879	-Q Total
		0.76	16:48	77.58	T	F	0.894	
		0.71	17:32	100.02	T	F	0.933	
		0.42	17:46	98.89	F	F	0.946	
		0.70	17:59	317.84	T	F	0.957	
		0.76	18:22	59.01	T	F	0.978	-Q
		0.95	18:35	28.79	F	F	0.989	
	ek →	~~0.98~~ 0.73	18:51	~~202.30~~ 234	T ~~F~~	T	1.004	-Q
		0.70	19:41	35.43	T	F	1.048	
		0.86	21:02	19.57	T	F	1.120	
	D	-0.49	22:11	24.56	F	F	1.181	-R.W
320		*** Total ***		990.66	# of Peaks:		11	
328		0.00	18:30	2857.34	T	F	0.985	
		0.00	18:48	16932.10	T	T	1.001	
328		*** Total ***		19789.44	# of Peaks:		2	
332		0.77	18:29	2297.58	T	F	0.984	
		0.78	18:47	16348.32	T	T	1.000	
		0.80	19:01	14047.60	T	T	1.012	
332		*** Total ***		32693.50	# of Peaks:		3	

*** End of Report ***

320	0.69	19:01	294	T	F	1.012	2
	0.64	19:18	34	F	F	1.035	

NOV 19 1990

ENVIRONMENTAL AFFAIRS

Listing of U902306I.dbf File
Raw Mass, Retention Time and Data Area

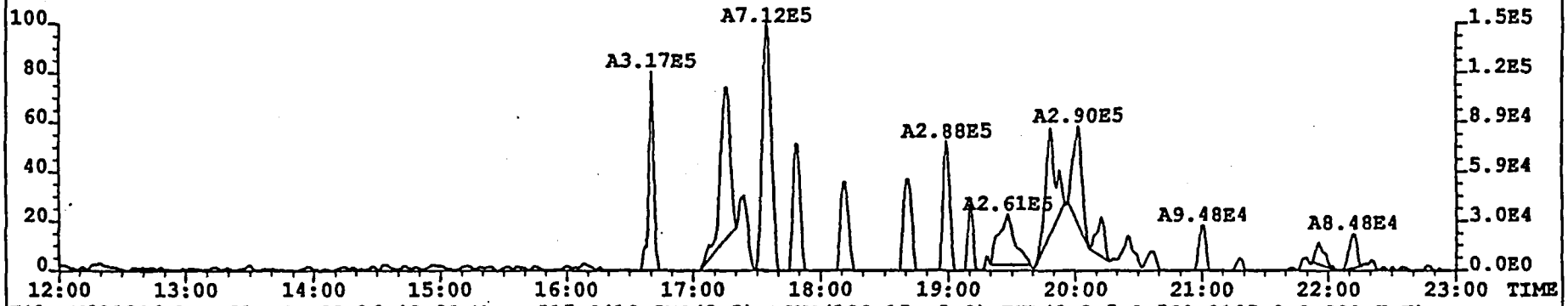
M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
304	16:40	31.67	18:12	22.64	19:28	26.11	21:01	9.48
	17:15	49.06	18:41	24.00	19:48	34.36	21:56	6.23
	17:35	71.24	18:59	28.76	20:01	29.01	22:12	8.48
	17:48	29.54	19:11	11.36	20:12	10.07		
306	16:40	48.00	18:12	46.86	19:48	77.92	21:55	15.02
	17:16	124.50	18:41	35.65	20:01	64.42	22:12	8.31
	17:24	46.92	19:00	36.18	20:10	17.36		
	17:35	114.83	19:11	10.30	20:22	9.89		
	17:49	64.55	19:28	32.07	20:38	5.18		
316	20:01	11655.46						
318	20:01	15178.97						
320	16:31	11.39	17:46	29.37	18:51	96.04	21:02	9.04
	16:48	33.55	17:59	130.71	18:57	113.48	22:11	8.13
	17:19	4.41	18:22	25.55	19:41	14.59		
	17:32	41.49	18:35	14.06	19:50	11.73		
322	16:31	15.28	17:45	69.52	18:35	14.73	19:41	20.84
	16:48	44.03	17:59	187.13	18:50	106.26	21:01	10.53
	17:32	58.53	18:22	33.46	19:04	34.29	22:11	16.43
328	18:30	2857.34	18:48	16932.10				
332	18:29	998.08	18:47	7189.04	19:01	6228.01		
334	18:29	1299.50	18:47	9159.28	19:01	7819.59		

*** End of Report ***

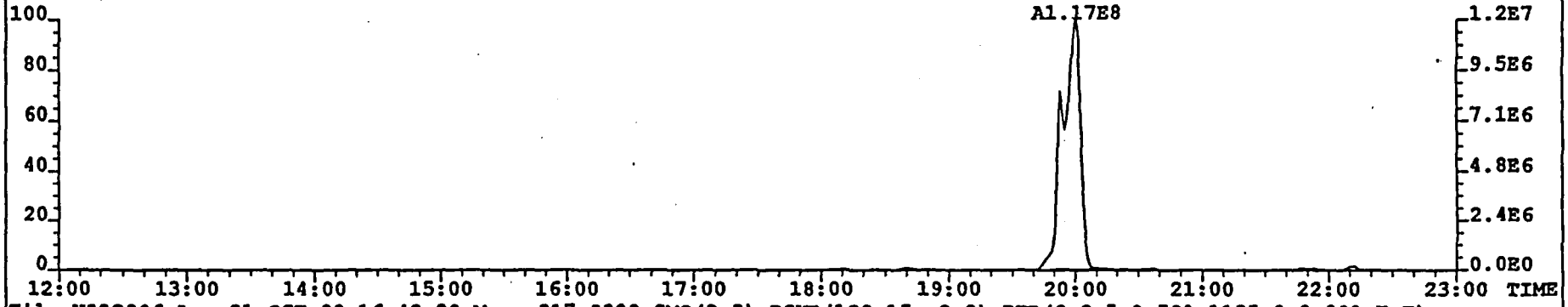
3

PKD'd
OCT. 25 1990
SBL

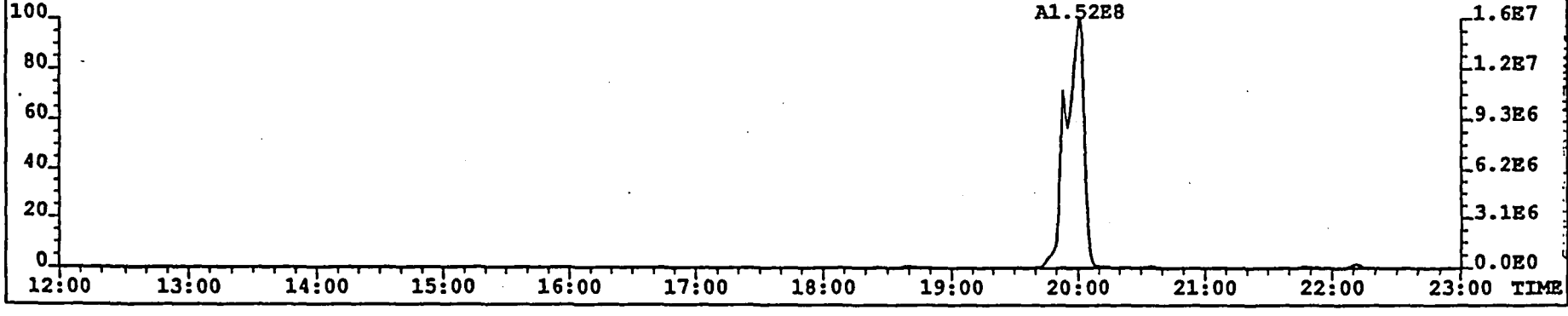
File:U902306 Acq:21-OCT-90 16:42:20 Mass 303.9016 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1560.0,0.00%,F,F)
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 315.9419 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1185.0,0.00%,F,F)
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 317.9389 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1125.0,0.00%,F,F)
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

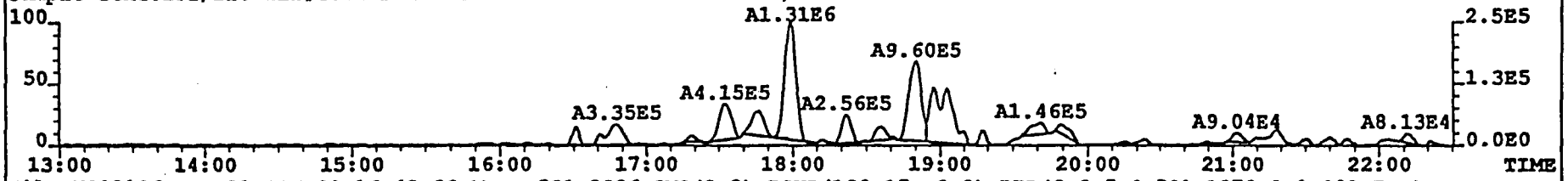


f

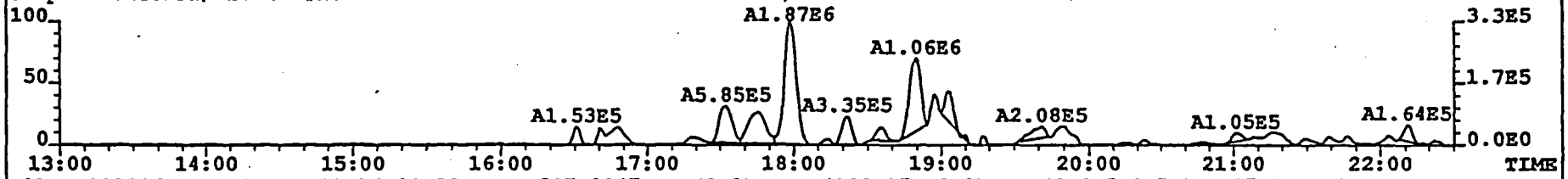
NOV 19 1990

PKD'd
OCT. 25 1990
SBA

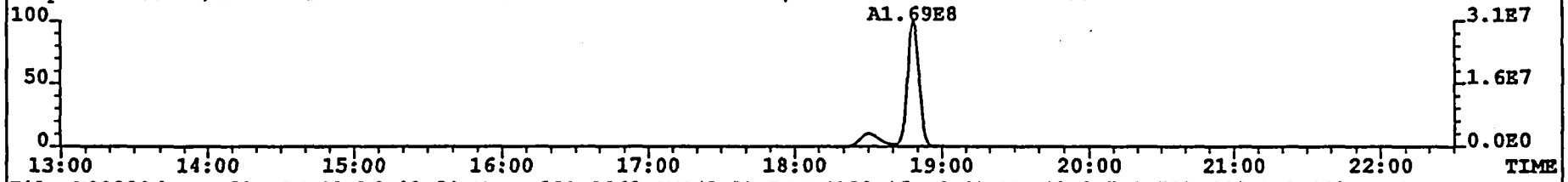
File:U902306 Acq:21-OCT-90 16:42:20 Mass 319.8965 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1782.0,0.00%,F,F)
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



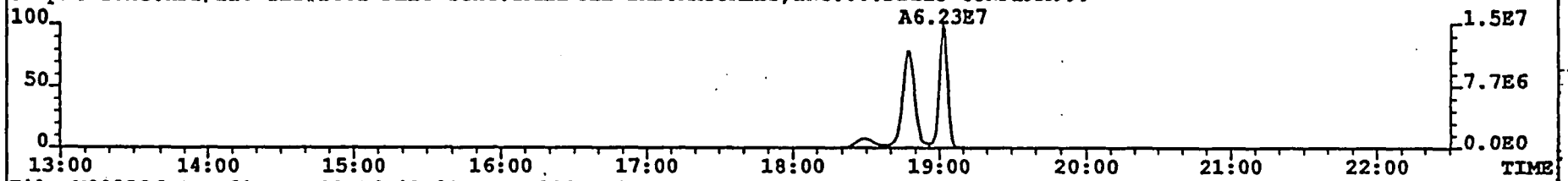
File:U902306 Acq:21-OCT-90 16:42:20 Mass 321.8936 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1278.0,0.00%,F,F)
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



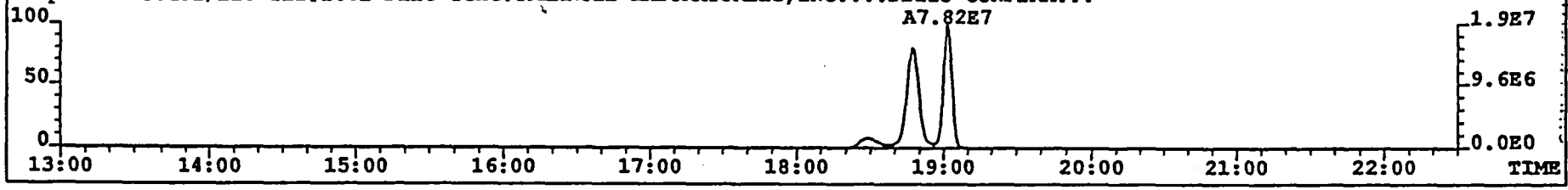
File:U902306 Acq:21-OCT-90 16:42:20 Mass 327.8847 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1017.0,0.00%,F,F)
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 331.9368 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,666.0,0.00%,F,F)
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 333.9338 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1695.0,0.00%,F,F)
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



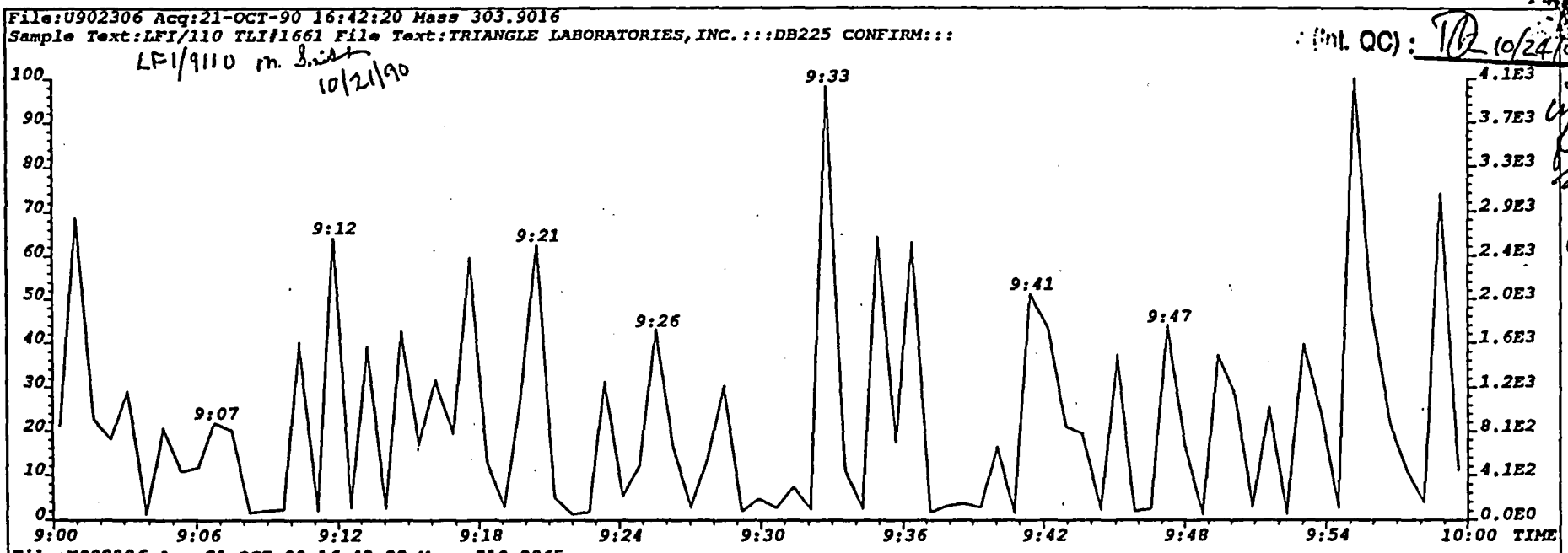
NOV 19 1990

6

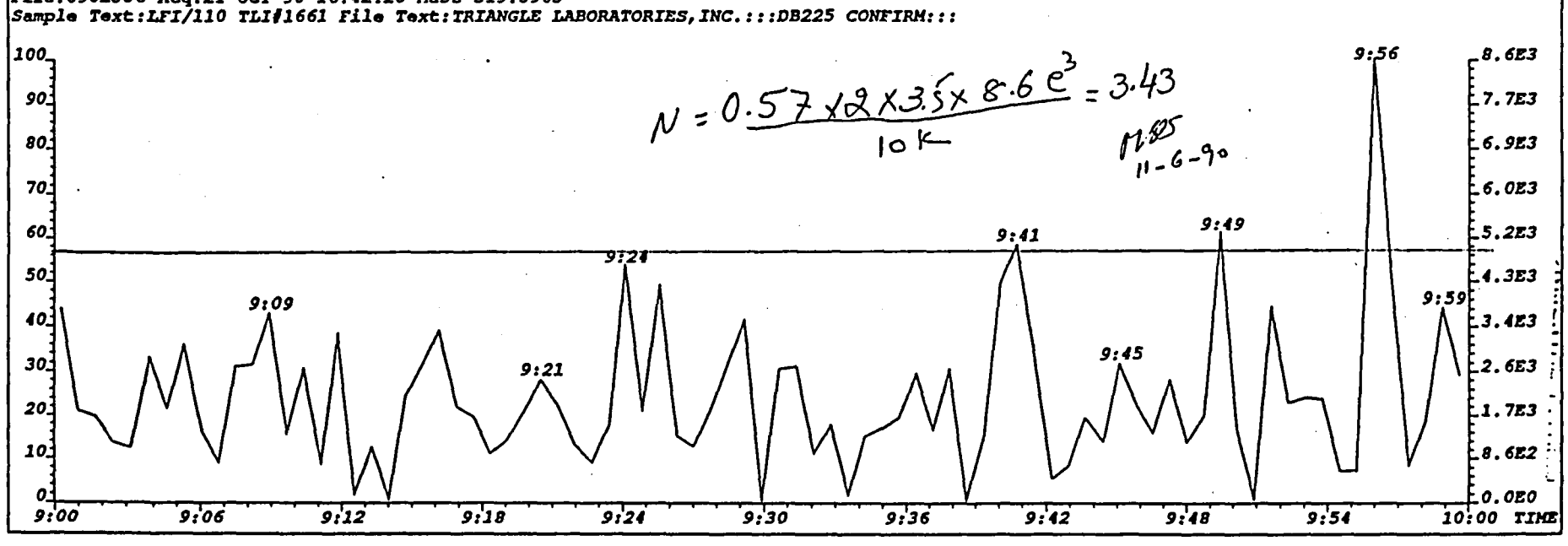
Contains Pesticides Diluted

(GC/MS): JA 10.21.90

(Int. QC): TR 10/24/90



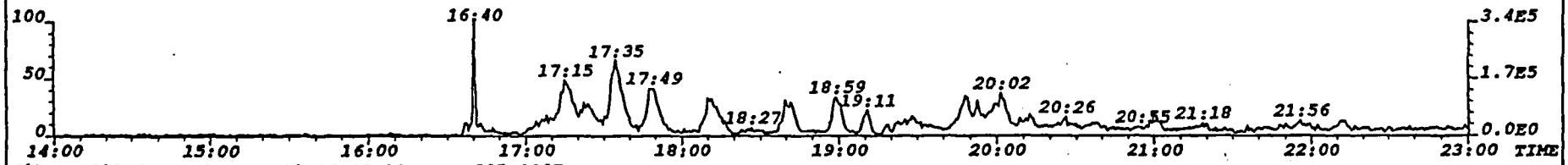
Interference from sample TR 10/24/90



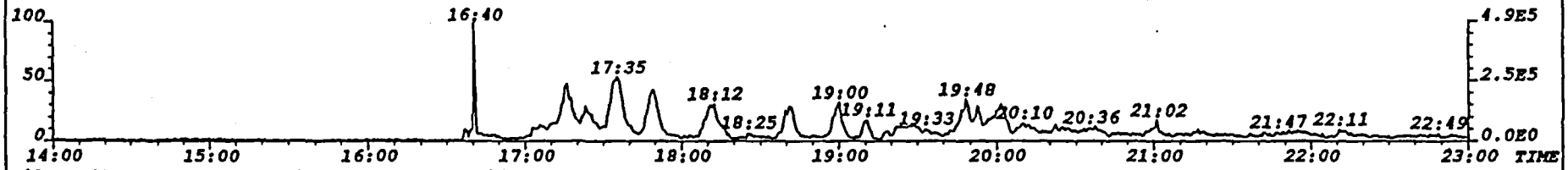
$N = \frac{0.57 \times 2 \times 3.5 \times 8.6\,e^3}{10K} = 3.43$

MS 11-6-90

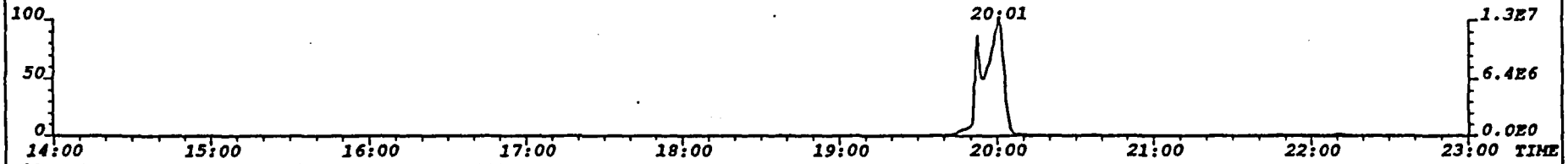
File:U902306 Acq:21-OCT-90 16:42:20 Mass 303.9016
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



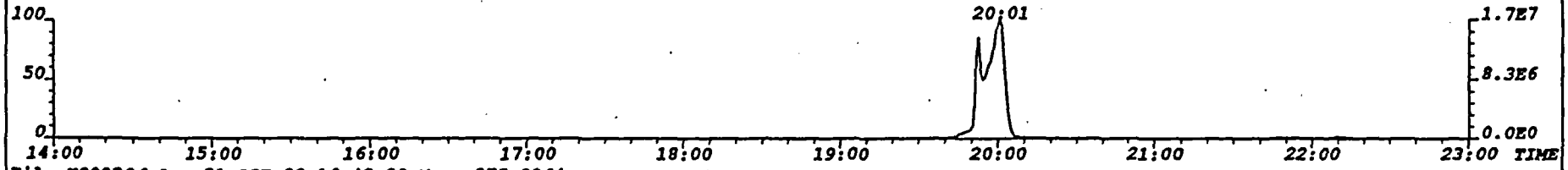
File:U902306 Acq:21-OCT-90 16:42:20 Mass 305.8987
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



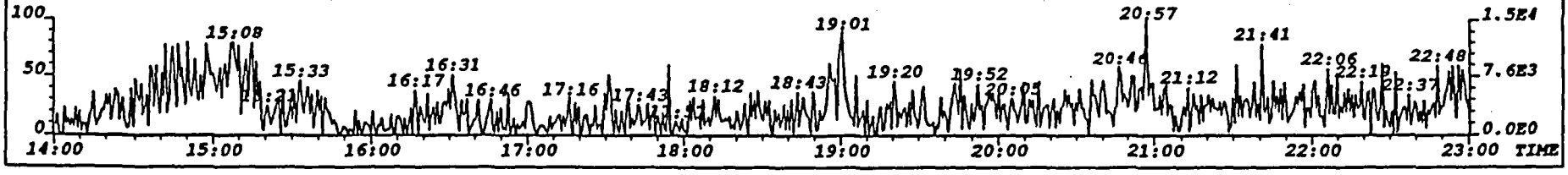
File:U902306 Acq:21-OCT-90 16:42:20 Mass 315.9419
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 317.9389
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 375.8364
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



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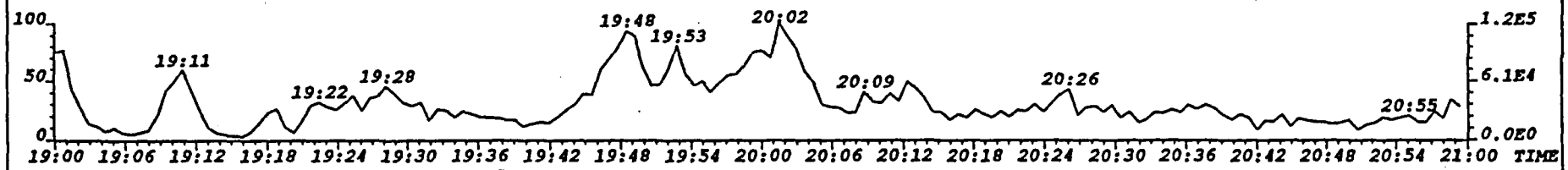
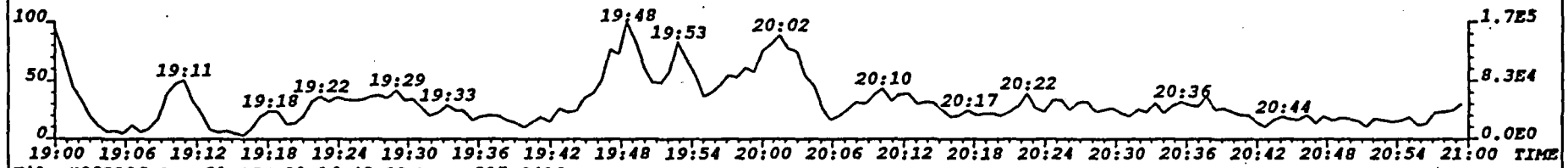
ENVIRONMENTAL AFFAIRS

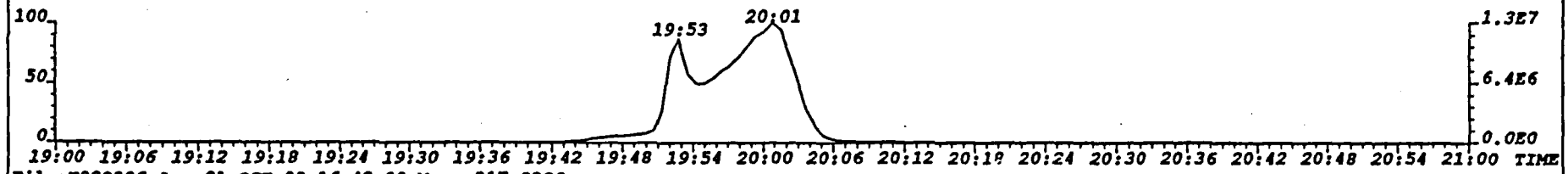
File:U902306 Acq:21-OCT-90 16:42:20 Mass 303.9016
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



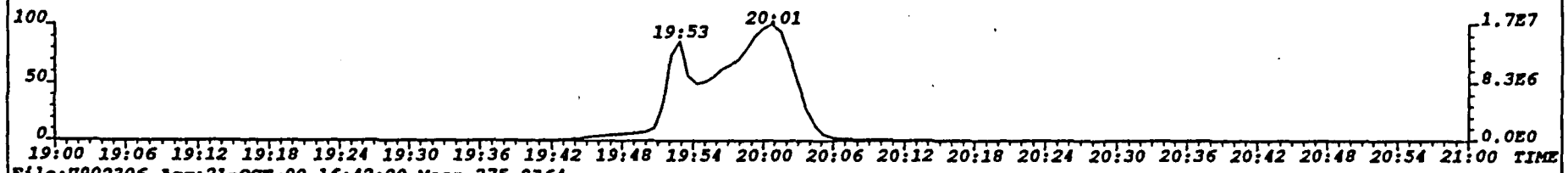
File:U902306 Acq:21-OCT-90 16:42:20 Mass 305.8987
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



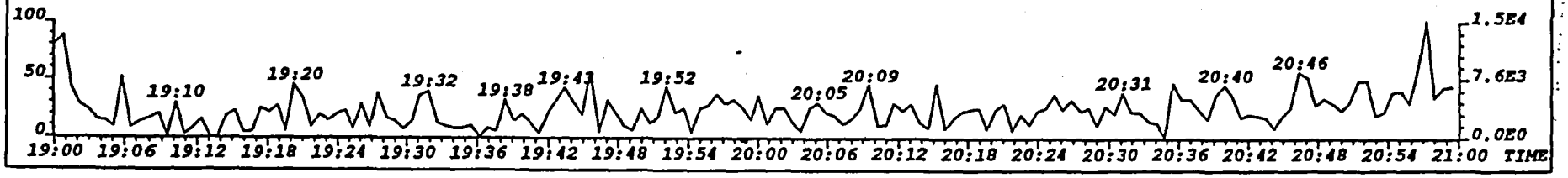
File:U902306 Acq:21-OCT-90 16:42:20 Mass 315.9419
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 317.9389
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

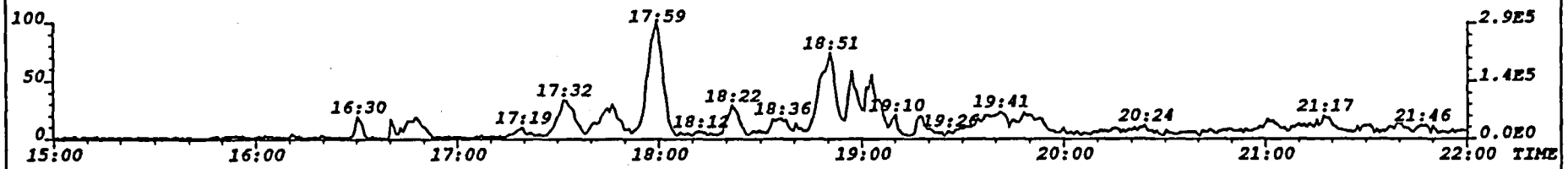


File:U902306 Acq:21-OCT-90 16:42:20 Mass 375.8364
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

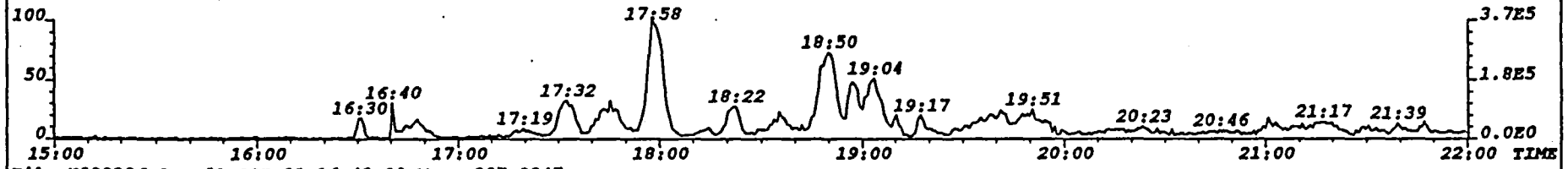


20

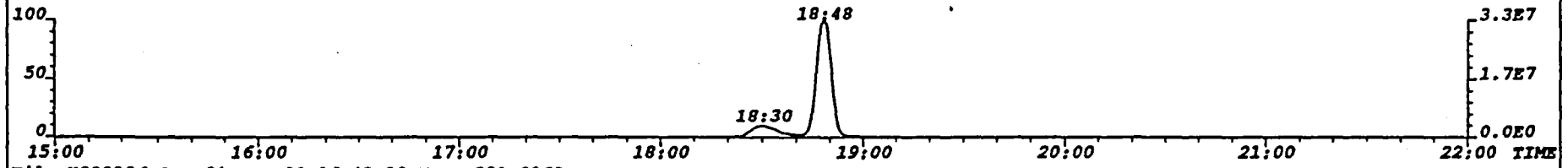
File:U902306 Acq:21-OCT-90 16:42:20 Mass 319.8965
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



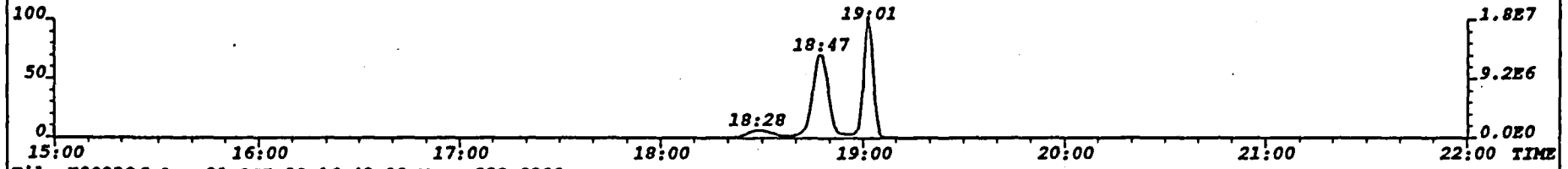
File:U902306 Acq:21-OCT-90 16:42:20 Mass 321.8936
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



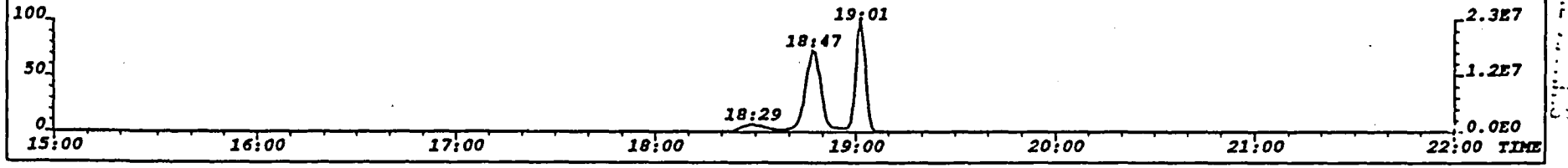
File:U902306 Acq:21-OCT-90 16:42:20 Mass 327.8847
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 331.9368
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 333.9338
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



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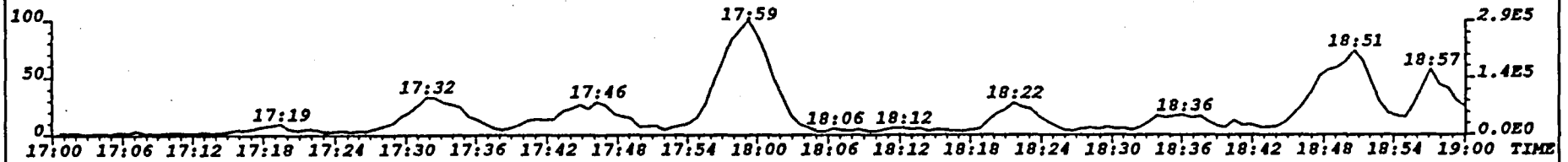
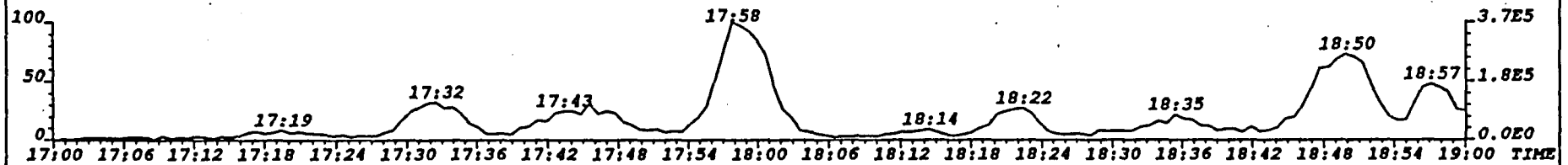
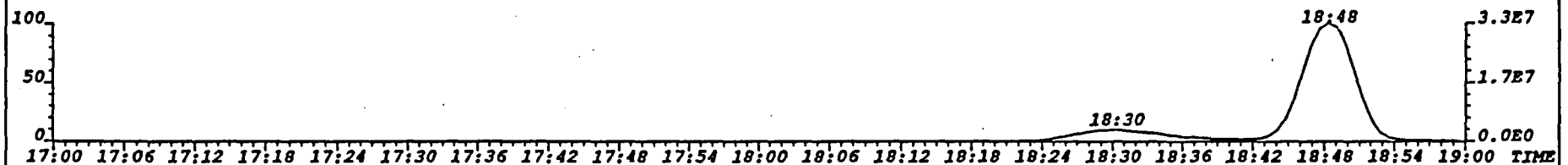
File:U902306 Acq:21-OCT-90 16:42:20 Mass 319.8965
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 321.8936
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 327.8847
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 331.9368
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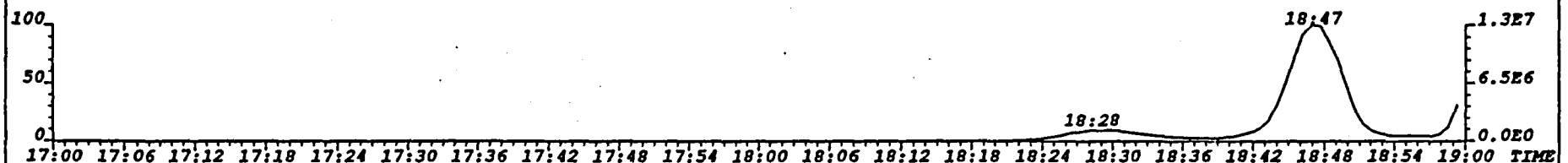
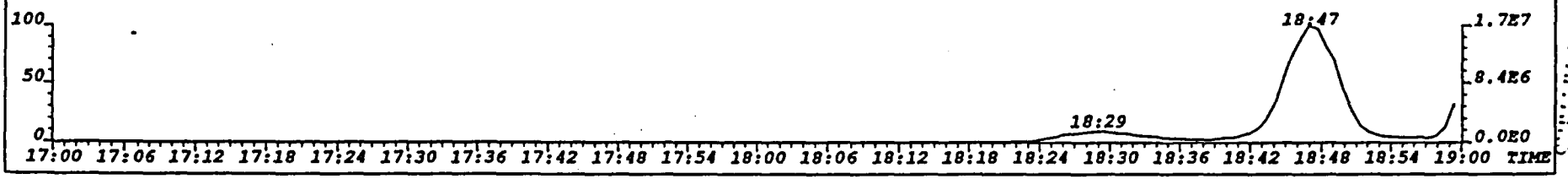


File:U902306 Acq:21-OCT-90 16:42:20 Mass 333.9338
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



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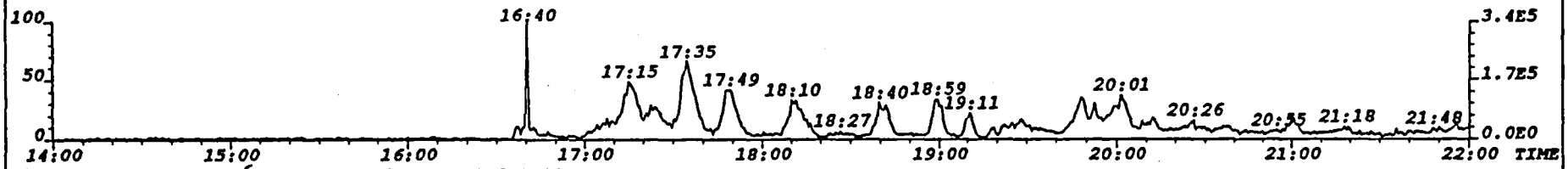
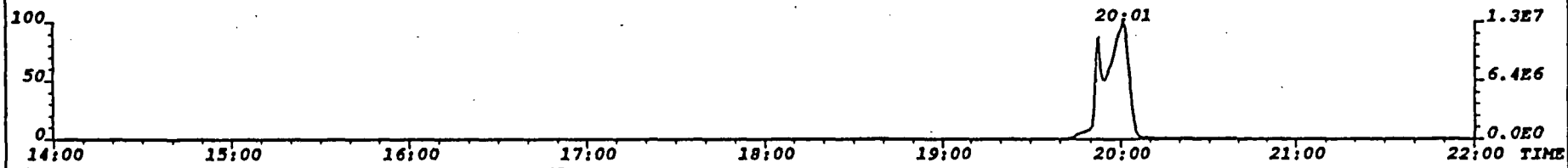
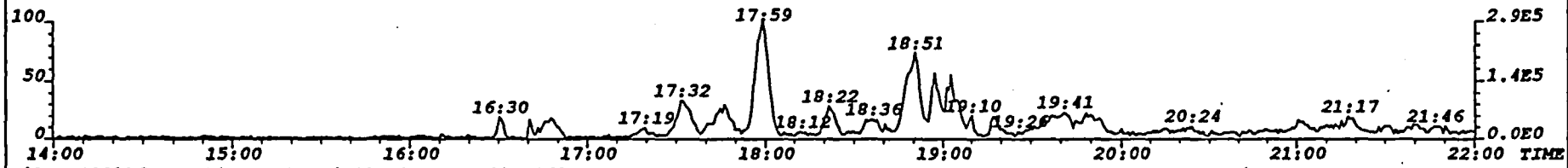
File:U902306 Acq:21-OCT-90 16:42:20 Mass 303.9016
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



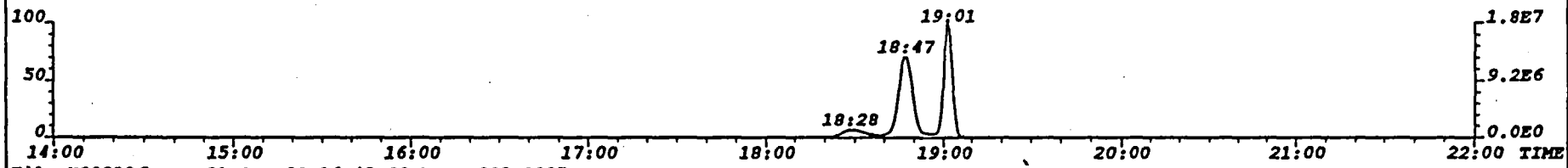
File:U902306 Acq:21-OCT-90 16:42:20 Mass 315.9419
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



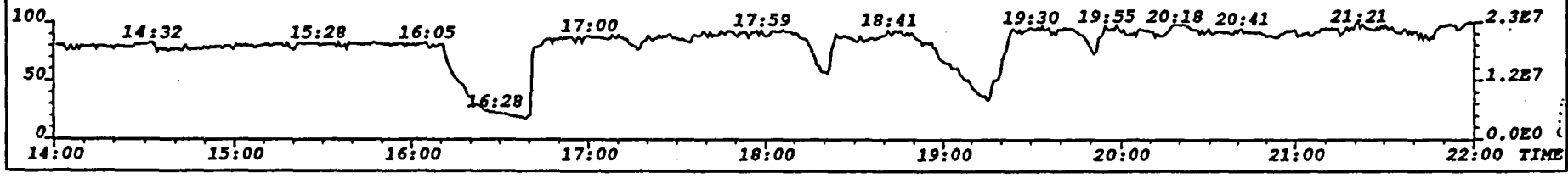
File:U902306 Acq:21-OCT-90 16:42:20 Mass 319.8965
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 331.9368
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Acq:21-OCT-90 16:42:20 Mass 292.9825
Sample Text:LFI/110 TLI#1661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



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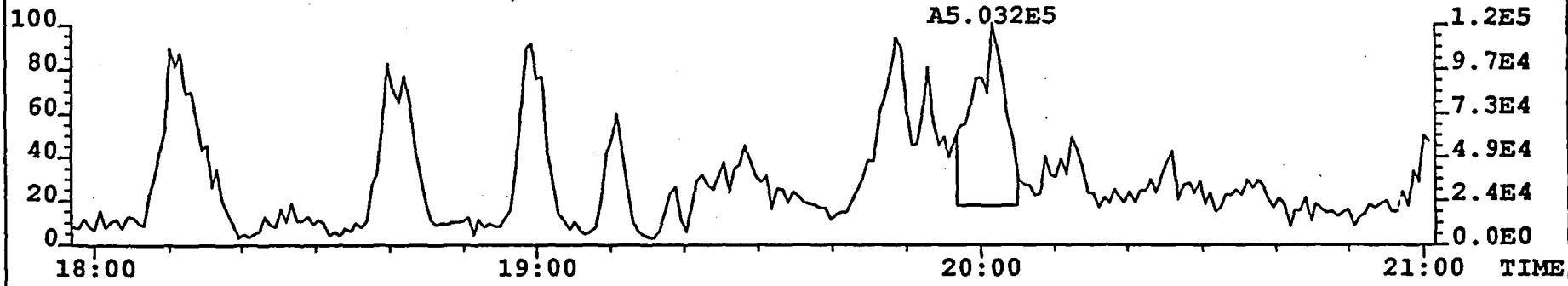
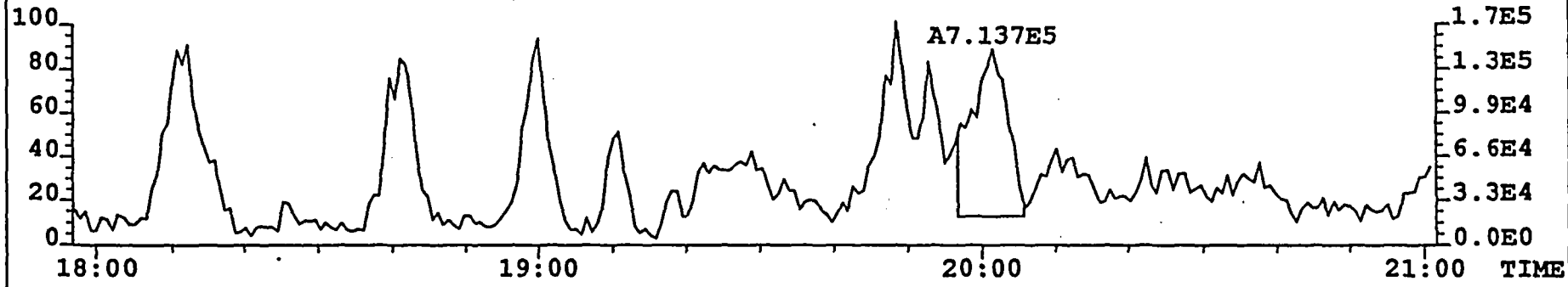
MKS 11-15-90

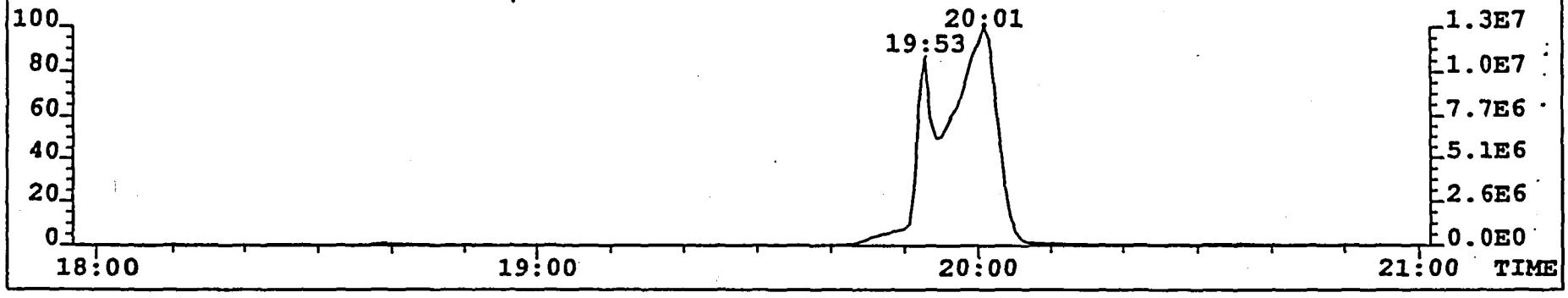
File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 303.9016 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 305.8987 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

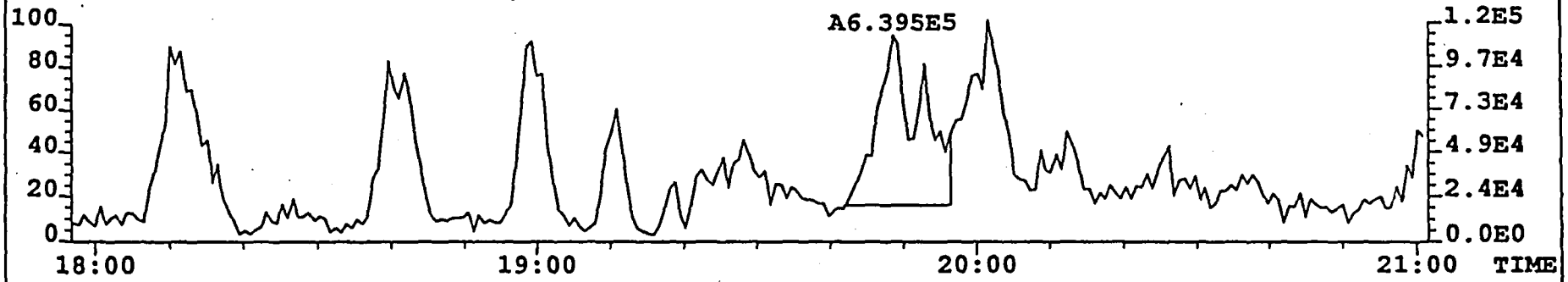


File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 315.9419 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

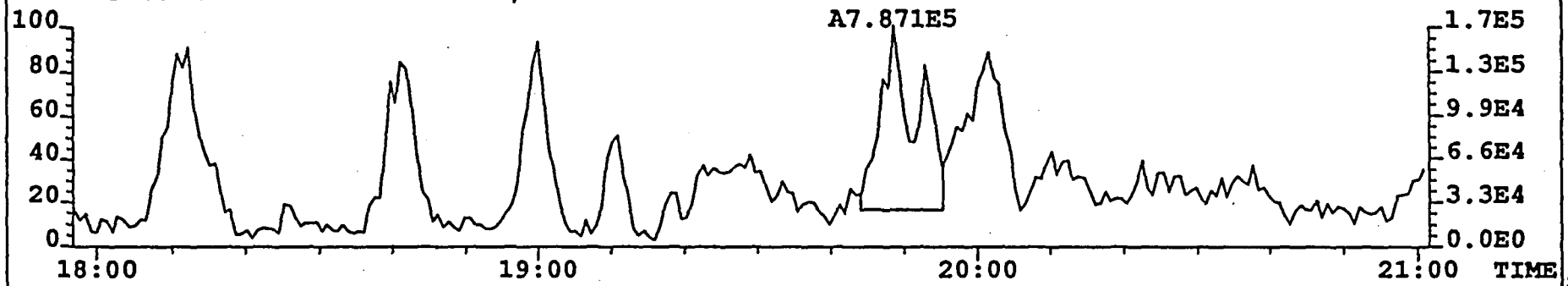


MBS 11-15-90

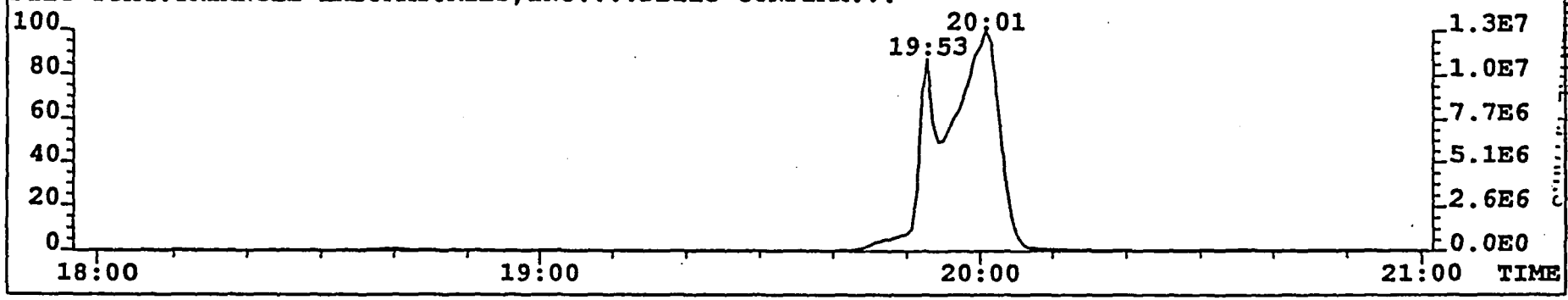
File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 303.9016 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 305.8987 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 315.9419 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



ENVIRONMENTAL ANALYSIS
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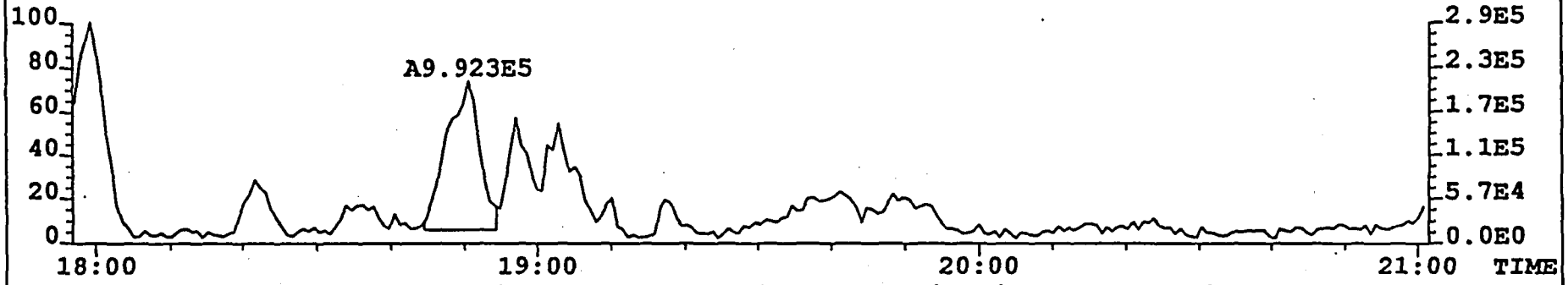
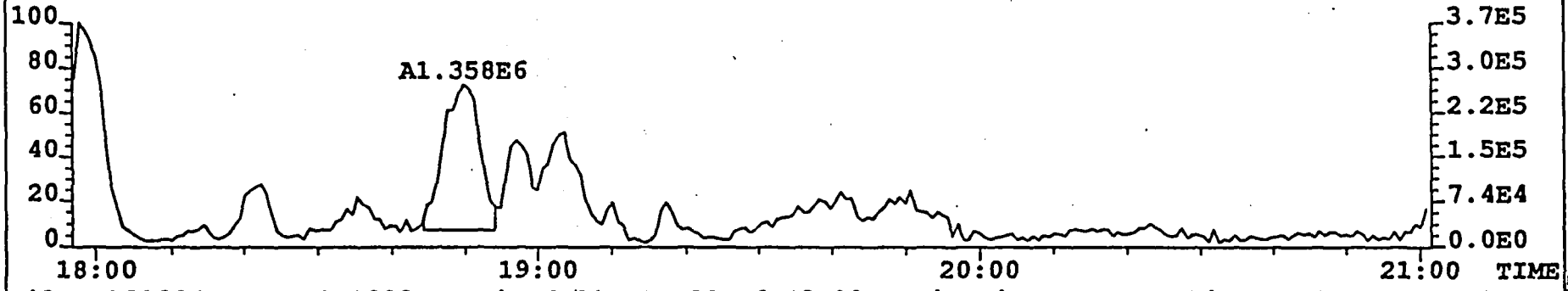
MSB 11-15-90

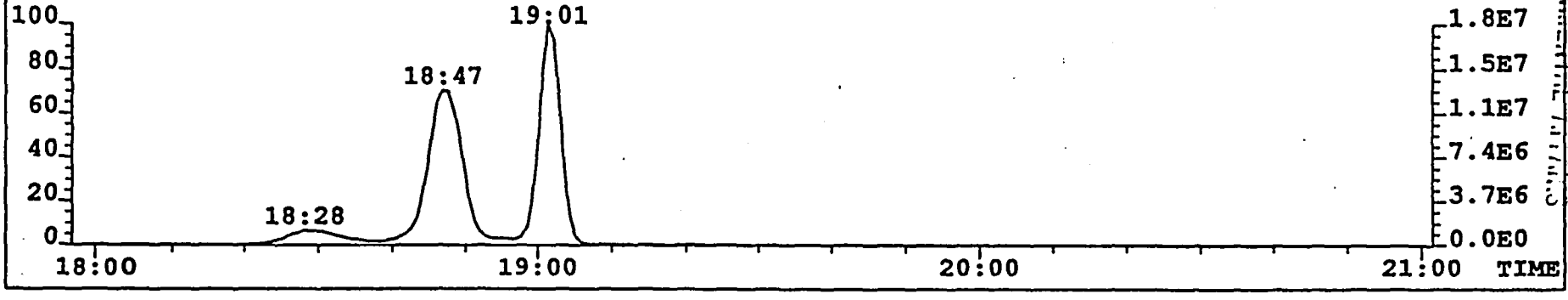
File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 319.8965 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 321.8936 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 331.9368 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



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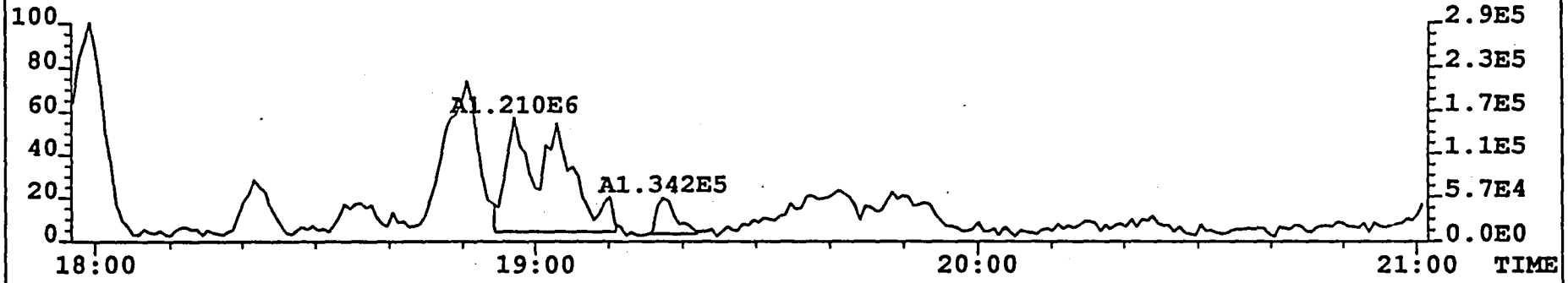
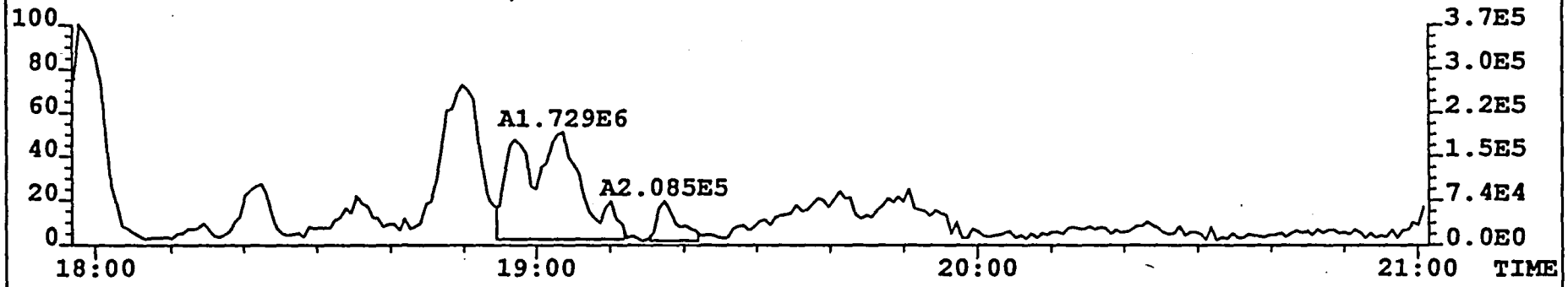
MBS 11-15-90

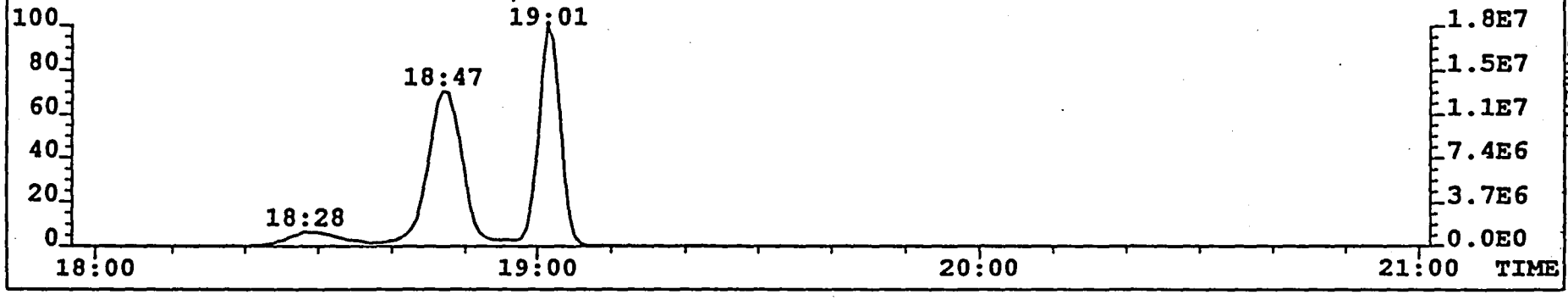
File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 319.8965 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 321.8936 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902306 Scans:1-1908 Acquired:21-OCT-90 16:42:20 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 331.9368 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



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TRIANGLE LABORATORIES, INC.
CONFIRMATION ANALYSIS (DB-225) 11/15/90

FILE NAME....: U902307 CLIENT ID....: SWP TLI NUMBER....: 37-26-2
CONCAL (VER).: U902298 SAMPLE ID....: LF2/9111
PROJECT NUMBER: 16661 ICAL DATE....: 09/21/90
ANALYST.....: JA ANALYSIS DATE: 10/21/90
SAMPLE SIZE..: 9.400 g SAMPLE MATRIX: SOIL SAMPLE ORIGIN: WILMINGTO
DATE RECEIVED.: 10/10/90 DATE COLLECTED: 10/09/90
SPIKE FILE...: SPC2NF10 SHIPMENT NO...: NC09001

NAME	CONC(ppb)	NUMBER	DL	EMPC	RATIO	RT	FLAGS
2378-TCDD	0.03				0.75	18:51	
2378-TCDF	0.005				0.86	20:00	
TOTAL TCDD	0.14	6		0.16	0.80		Q
TOTAL TCDF	0.03	7		0.05	0.79		

SURROGATE STD. RECOVERY SUMMARY (TYPE B)

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
37Cl-TCDD	1.1	101		18:48	

INTERNAL STANDARDS RECOVERY SUMMARY

NAME	CONC (ppb)	% REC.	RATIO	RT	FLAGS
13C12-2378-TCDF	1.0	96.1	0.77	19:59	
13C12-2378-TCDD	0.97	91.1	0.74	18:48	

MAS 11/15/90 C2NF_RPT rev:3.01

N-5-
(520

	Initial	Date
B-File/Header Changes	MBB	11-6-90
Manual Integrations	↓	↓
Transcription	MB	11-15-90
Dbase Corrections		

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ENVIRONMENTAL AFFAIRS

Page No. 1 Listing of U902307B.dbf
10/29/90

Matched GC Peaks / Ratio / Ret. Time

M_Z	Omit	Ratio	RT.	Area	Match Rat	Match RT	REL_RT	Who/ Why
304		0.79	16:43	52.16	T	F	0.837	—Q
		0.56	17:15	157.84	F	F	0.863	
		0.62	17:34	144.62	F	F	0.879	
		0.73	17:48	86.72	T	F	0.891	
		0.73	18:11	129.89	T	F	0.910	
		0.84	18:41	69.80	T	F	0.935	
		0.82	19:00	67.92	T	F	0.951	
		0.75	19:12	18.78	T	F	0.961	
		0.55	19:23	63.53	F	F	0.970	—Q
		0.39	19:48	98.23	F	F	0.991	
		0.86	20:00	94.80	T	T	1.001	
		0.39	20:12	19.33	F	F	1.011	
		1.17	21:54	13.82	F	F	1.096	JR.W
	D	0.65	22:11	13.47	T	F	1.110	
304		*** Total ***		1032.91	# of Peaks:		14	
316		0.77	19:59	16300.13	T	T	1.000	
316		*** Total ***		16300.13	# of Peaks:		1	
320		0.75	16:46	55.49	T	F	0.908	—Q
		0.97	17:32	87.28	F	F	~~0.949~~ 0.933	
		0.87	17:45	102.76	T	F	~~0.961~~ 0.946	
		0.81	17:58	358.52	T	F	~~0.973~~ 0.957	
		0.86	18:22	52.01	T	F	~~0.995~~ 0.978	
		0.54	18:36	32.08	F	F	~~1.007~~ 0.989	
	ek →	~~0.80~~ 0.75	18:51	~~257.34~~ 256	T	~~F~~ T	~~1.021~~ 1.000	
		1.05	19:49	50.49	F	F	1.073	—
320		*** Total ***		995.97	# of Peaks:		8	
328		0.00	18:30	1009.80	T	~~T~~ F	~~1.002~~ 0.984	
		0.00	18:48	10533.61	T	~~F~~ T	~~1.018~~ 1.000	
328		*** Total ***		11543.41	# of Peaks:		2	
332	ek →	0.53	18:28	776.45	F	~~T~~ F	~~1.000~~ 0.984	
		0.74	18:48	9492.65	T	T	~~1.018~~ 1.000	
		0.77	19:03	10047.67	T	~~F~~ T	~~1.032~~ 1.012	
332		*** Total ***		20316.77	# of Peaks:		3	

*** End of Report ***

			321	T	F	1.012	—Q
320	0.74	19:03					
"	0.64	19:38	11.4	F	F	~~1.035~~ 1.044	2

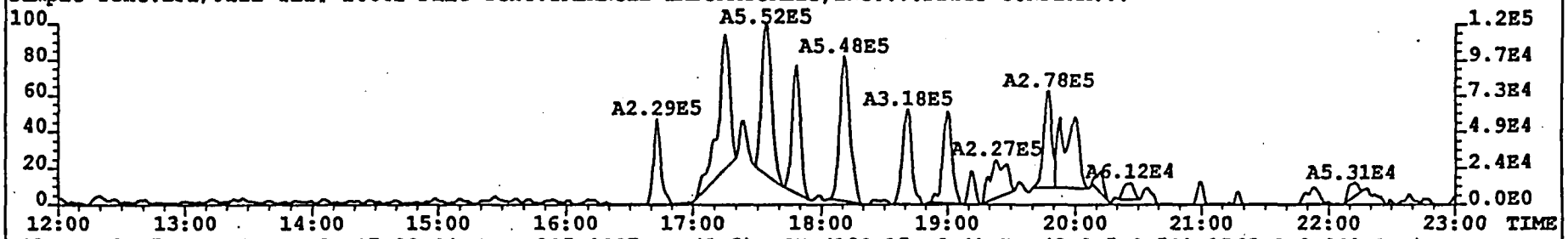
Listing of U902307I.dbf File
Raw Mass, Retention Time and Data Area

M_Z	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....	mm:ss	Data.Area.....
304	16:43	22.94	18:11	54.81	19:23	22.66	20:26	6.12
	17:15	56.96	18:41	31.83	19:48	27.80	21:54	7.45
	17:34	55.22	19:00	30.53	20:00	43.92	22:11	5.31
	17:48	37.54	19:12	8.02	20:12	5.44		
306	16:43	29.22	18:11	75.08	19:47	70.43	21:53	6.37
	17:15	100.88	18:41	37.97	20:00	50.88	22:11	8.16
	17:24	40.27	19:00	37.39	20:10	13.89		
	17:35	89.40	19:12	10.76	20:22	7.20		
	17:48	51.18	19:22	40.87	20:37	4.05		
316	19:59	7106.94						
318	19:59	9193.19						
320	16:35	8.35	17:45	47.77	18:36	11.19	19:37	16.93
	16:46	23.82	17:58	160.15	18:51	114.28	19:49	25.81
	17:32	42.94	18:22	24.05	19:04	122.53		
322	16:46	31.67	17:59	198.37	18:50	143.06	19:49	24.68
	17:32	44.34	18:22	27.96	18:58	156.26	21:01	6.50
	17:45	54.99	18:35	20.89	19:40	27.85		
328	18:30	1009.80	18:48	10533.61				
332	18:28	267.36	18:48	4026.83	19:03	4358.68		
334	18:28	509.09	18:47	5465.82	19:02	5688.99		

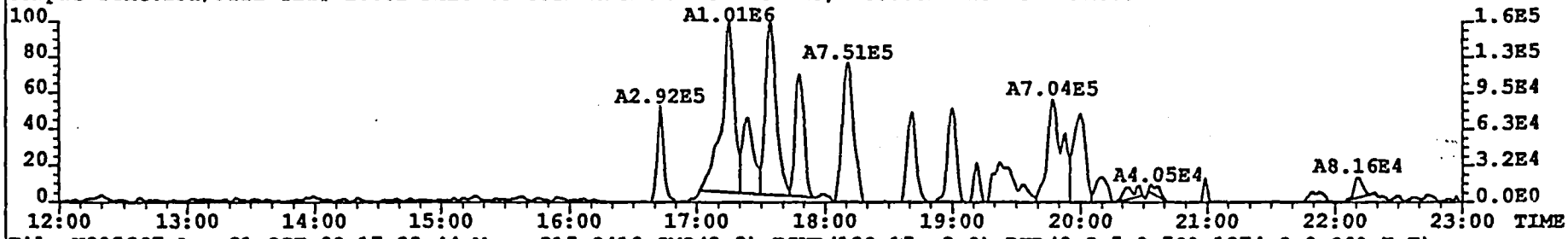
*** End of Report ***

PKD
OCT. 25 1990
SBR

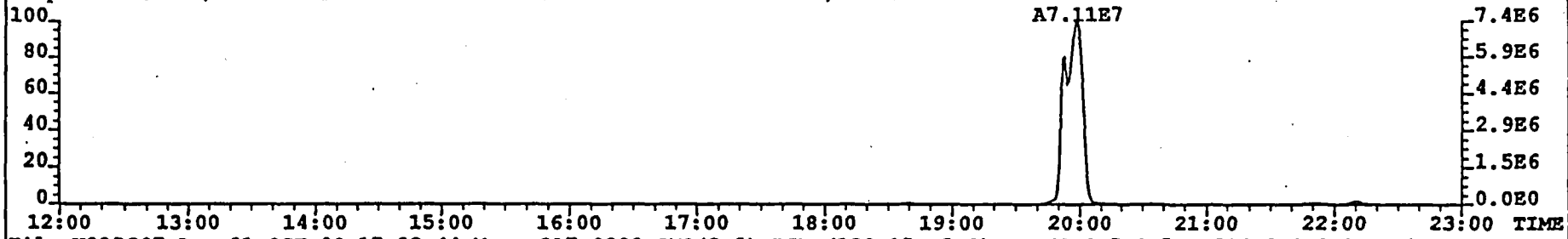
File:U902307 Acq:21-OCT-90 17:32:44 Mass 303.9016 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,576.0,0.00%,F,F)
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



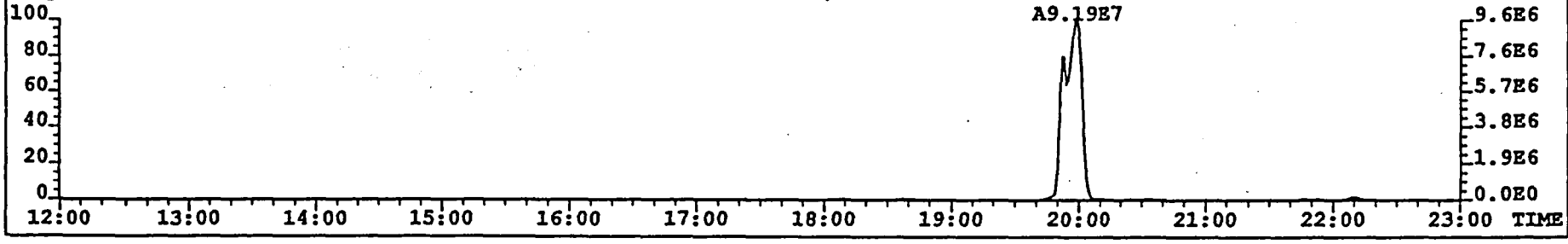
File:U902307 Acq:21-OCT-90 17:32:44 Mass 305.8987 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1362.0,0.00%,F,F)
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Acq:21-OCT-90 17:32:44 Mass 315.9419 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1374.0,0.00%,F,F)
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



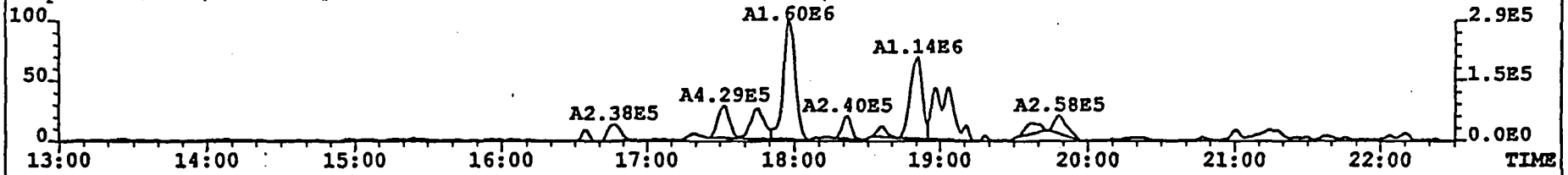
File:U902307 Acq:21-OCT-90 17:32:44 Mass 317.9389 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,924.0,0.00%,F,F)
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



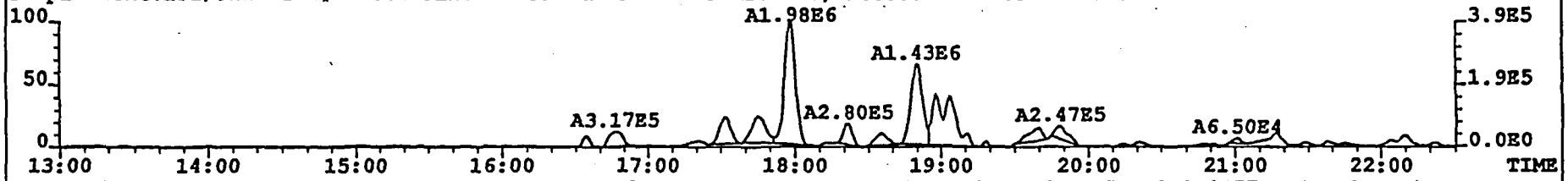
NOV 19 1990

PKD'd
OCT. 25 1990
SBL

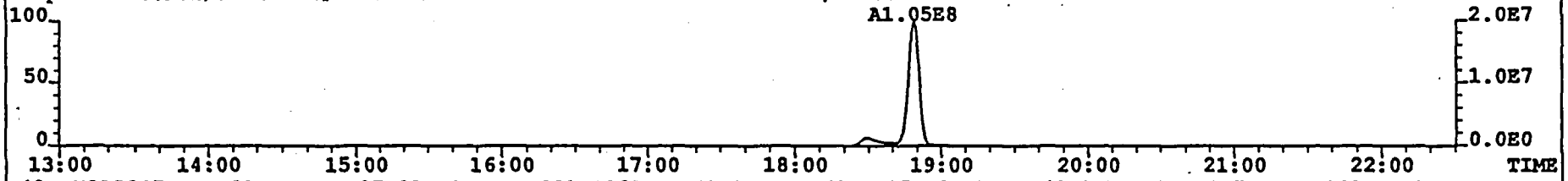
File:U902307 Acq:21-OCT-90 17:32:44 Mass 319.8965 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1698.0,0.00%,F,F)
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



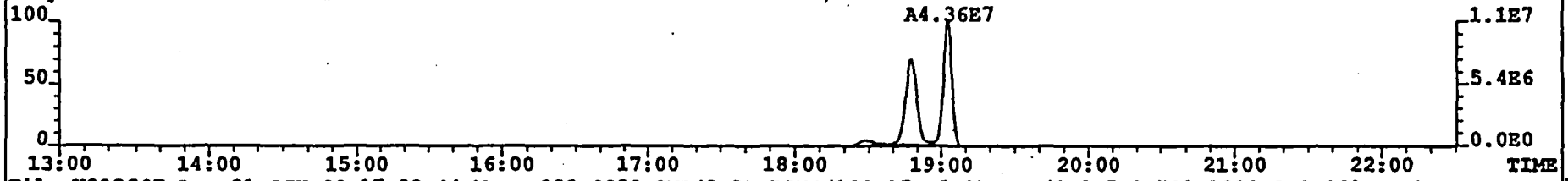
File:U902307 Acq:21-OCT-90 17:32:44 Mass 321.8936 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1641.0,0.00%,F,F)
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



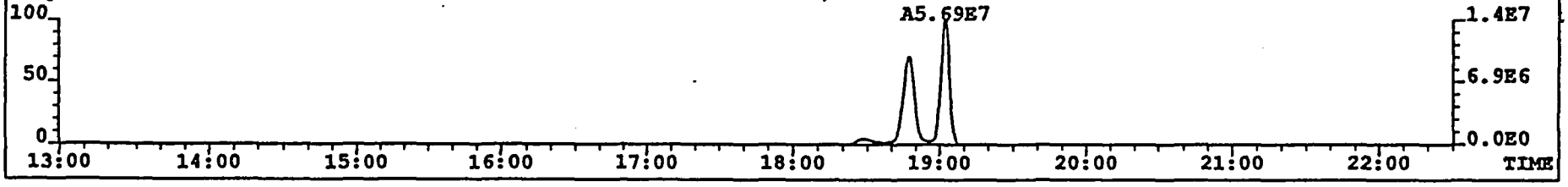
File:U902307 Acq:21-OCT-90 17:32:44 Mass 327.8847 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1077.0,0.00%,F,F)
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Acq:21-OCT-90 17:32:44 Mass 331.9368 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1179.0,0.00%,F,F)
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Acq:21-OCT-90 17:32:44 Mass 333.9338 SMO(2,3) BSUB(128,15,-3.0) PKD(9,2,5,0.50%,1380.0,0.00%,F,F)
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

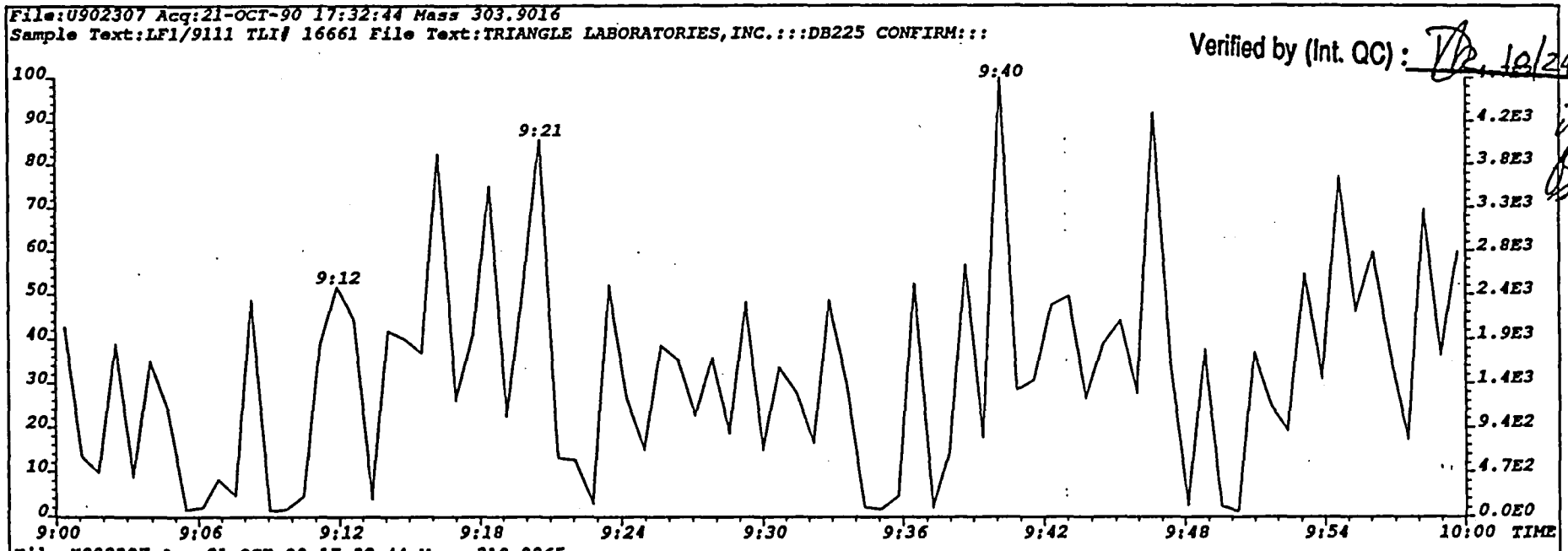


1 n

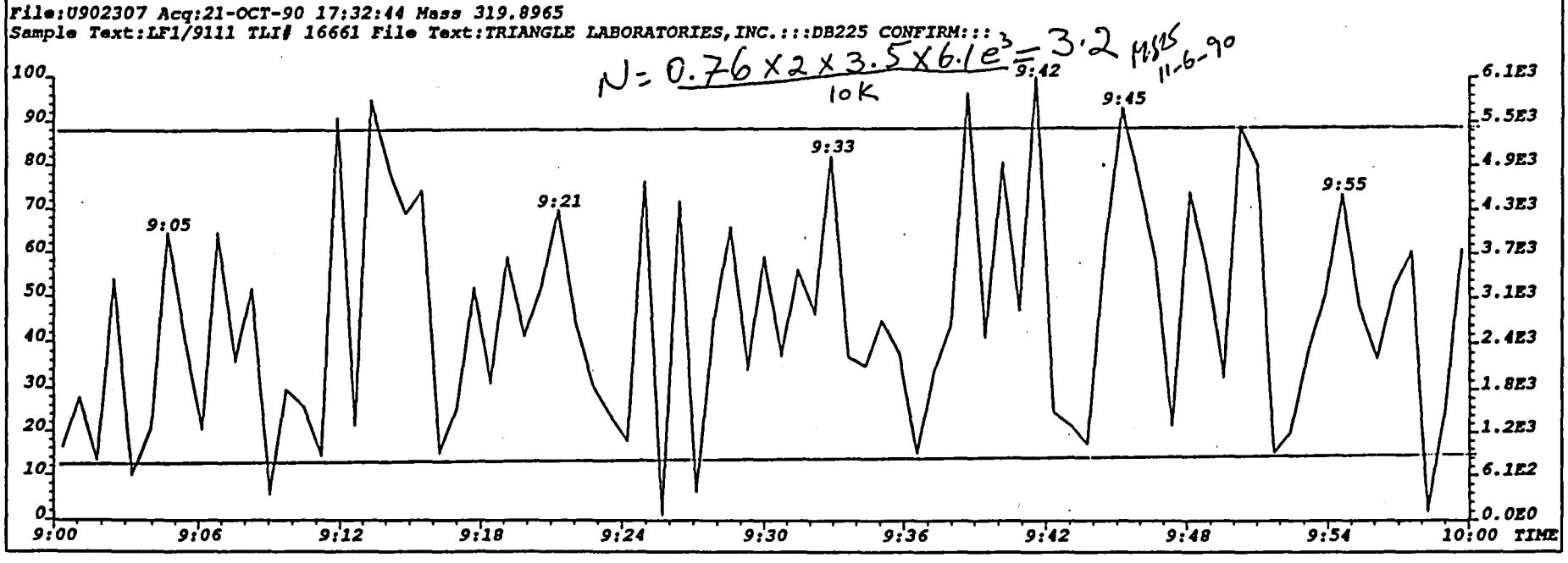
Lacrimus. Requires dilution

Verified by (GC/MS) : JH 10-21-90

Verified by (Int. QC) : DR 10/24/90



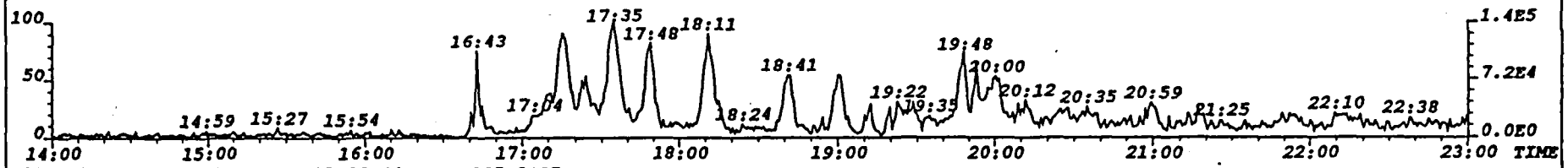
interference from sample DR 10/24/90



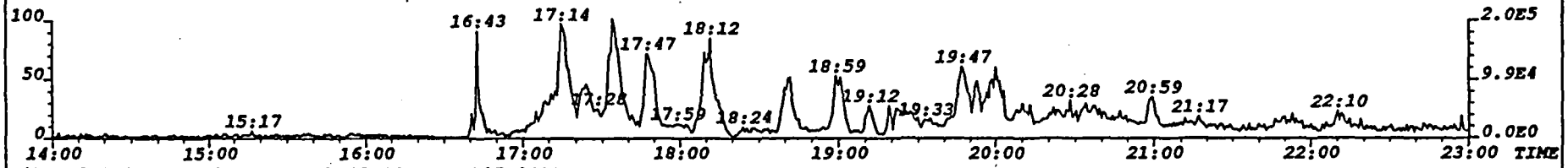
$N = \frac{0.76 \times 2 \times 3.5 \times 6.1e^3}{10K} = 3.2$ MJB 11-6-90

ICP 10 RCS

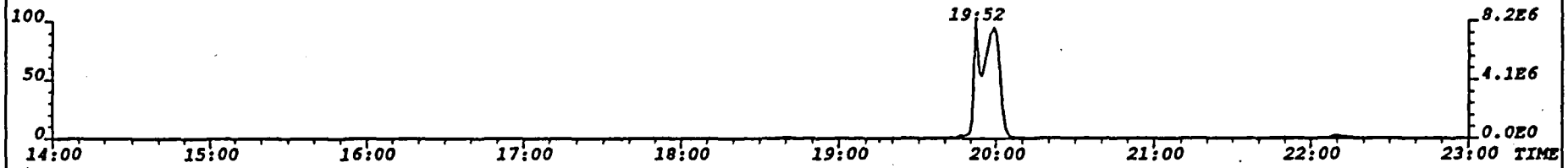
File:U902307 Acq:21-OCT-90 17:32:44 Mass 303.9016
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



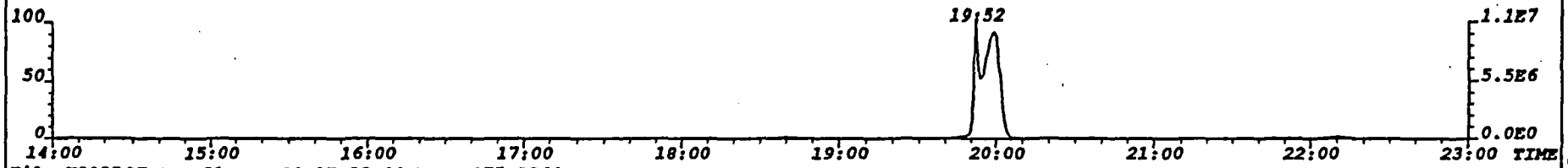
File:U902307 Acq:21-OCT-90 17:32:44 Mass 305.8987
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



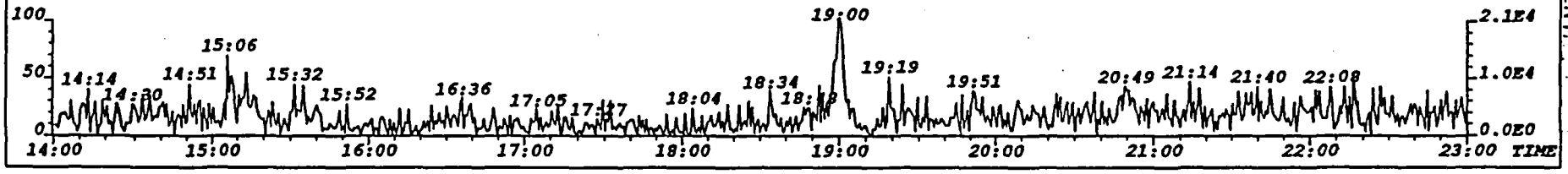
File:U902307 Acq:21-OCT-90 17:32:44 Mass 315.9419
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



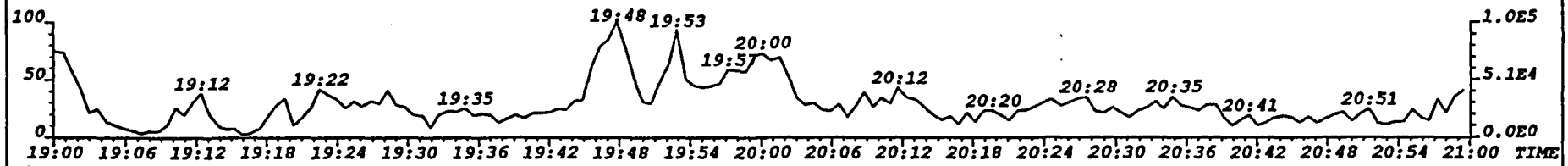
File:U902307 Acq:21-OCT-90 17:32:44 Mass 317.9389
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



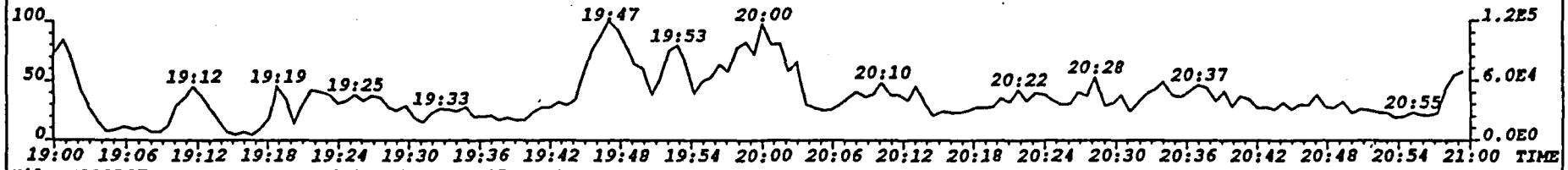
File:U902307 Acq:21-OCT-90 17:32:44 Mass 375.8364
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



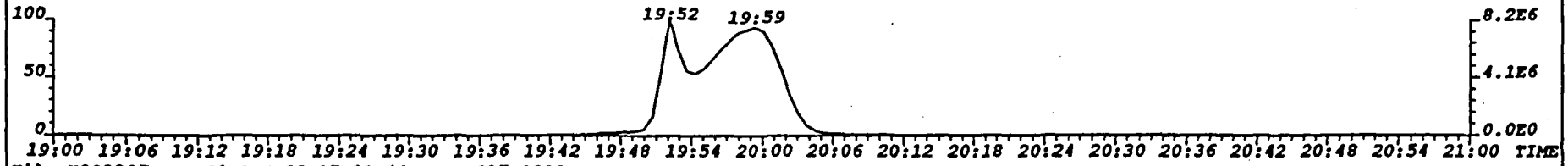
File:U902307 Acq:21-OCT-90 17:32:44 Mass 303.9016
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



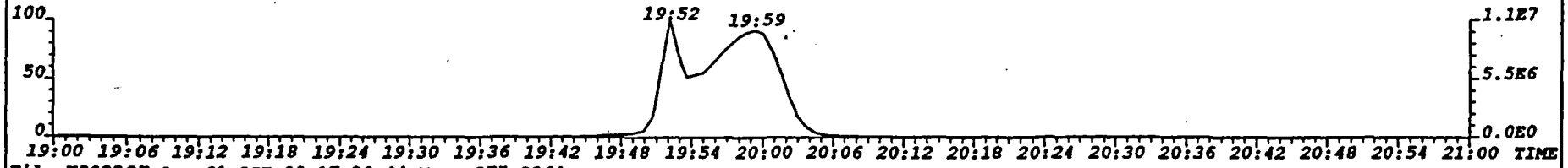
File:U902307 Acq:21-OCT-90 17:32:44 Mass 305.8987
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



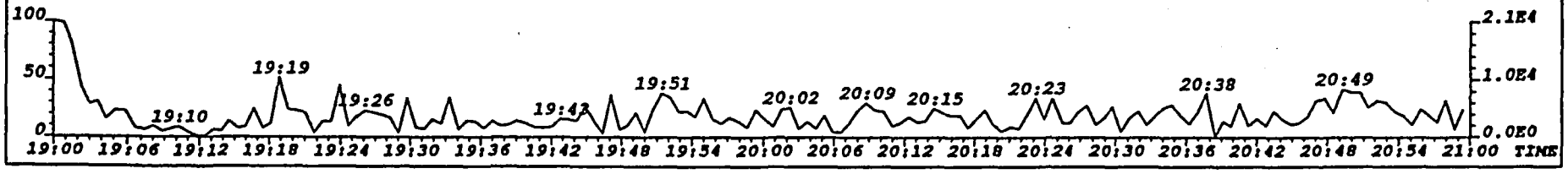
File:U902307 Acq:21-OCT-90 17:32:44 Mass 315.9419
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Acq:21-OCT-90 17:32:44 Mass 317.9389
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Acq:21-OCT-90 17:32:44 Mass 375.8364
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



NOV 19 1990
ENVIRONMENTAL ASSOCS

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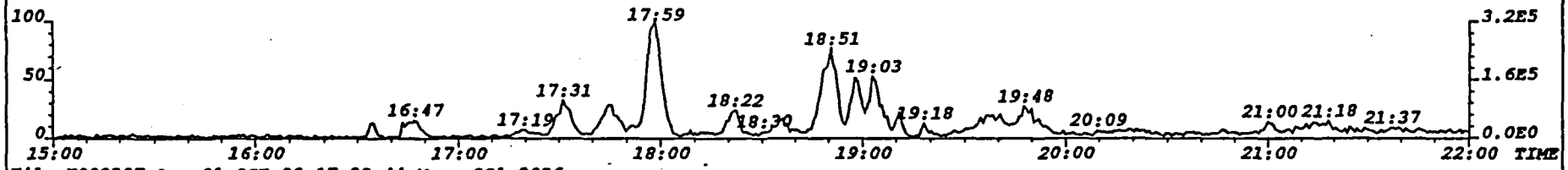
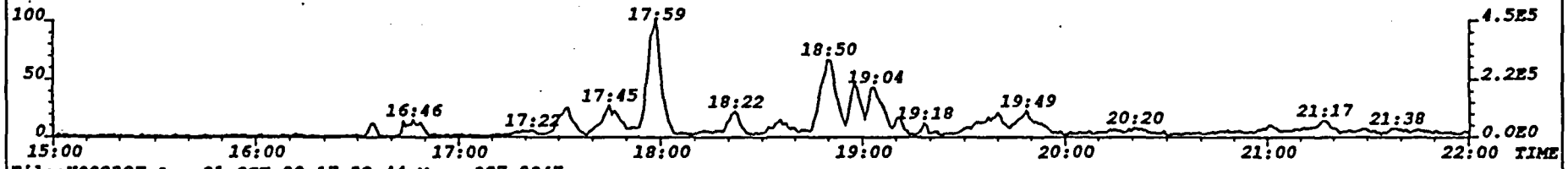
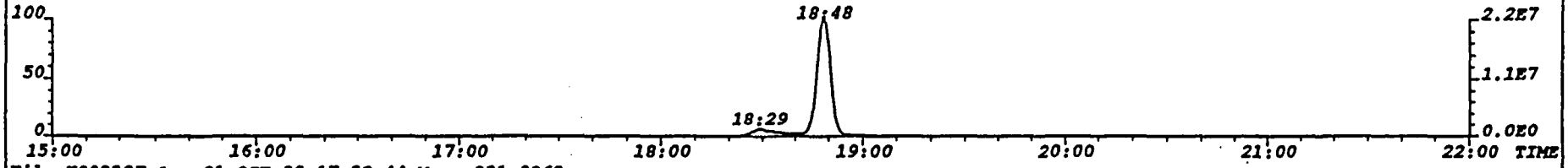
File:U902307 Acq:21-OCT-90 17:32:44 Mass 319.8965
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



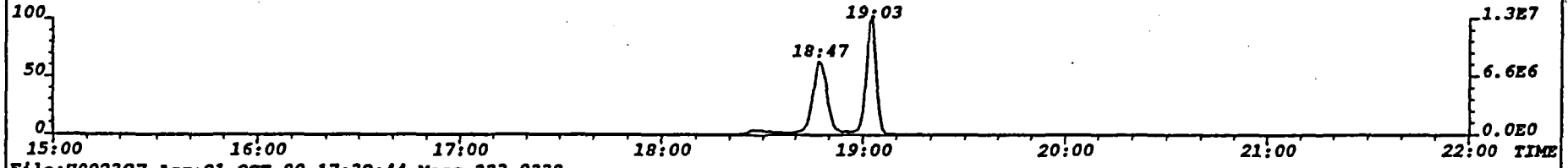
File:U902307 Acq:21-OCT-90 17:32:44 Mass 321.8936
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



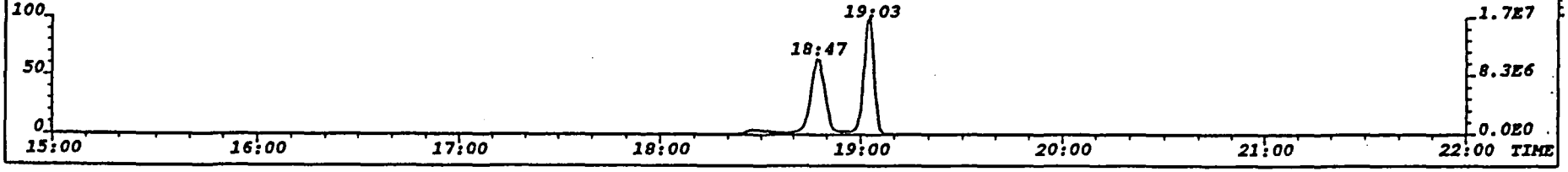
File:U902307 Acq:21-OCT-90 17:32:44 Mass 327.8847
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Acq:21-OCT-90 17:32:44 Mass 331.9368
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

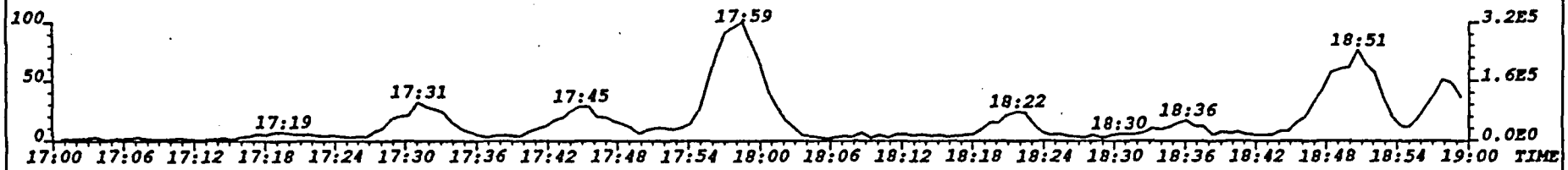


File:U902307 Acq:21-OCT-90 17:32:44 Mass 333.9338
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

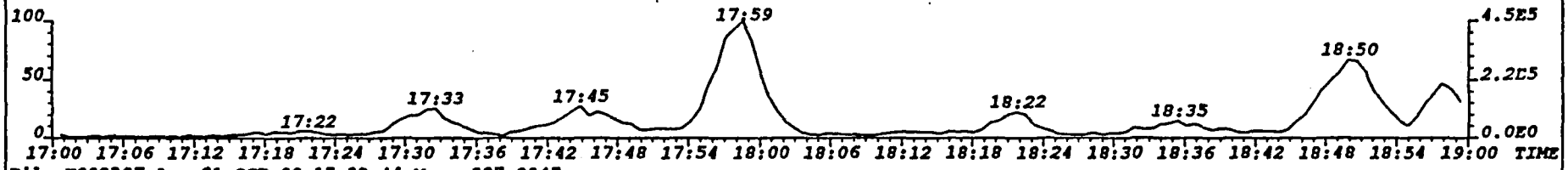


6

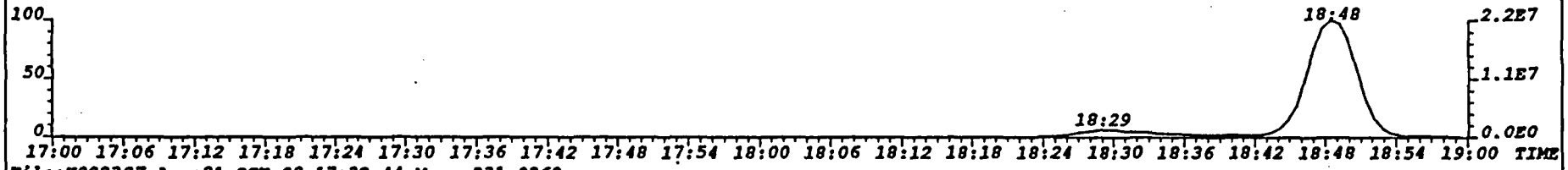
File:U902307 Acq:21-OCT-90 17:32:44 Mass 319.8965
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



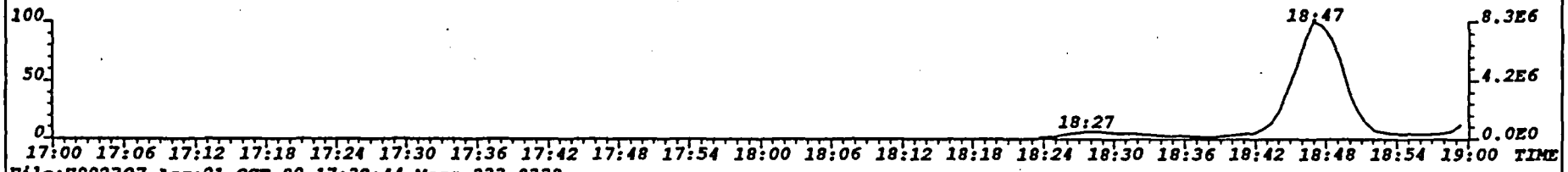
File:U902307 Acq:21-OCT-90 17:32:44 Mass 321.8936
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



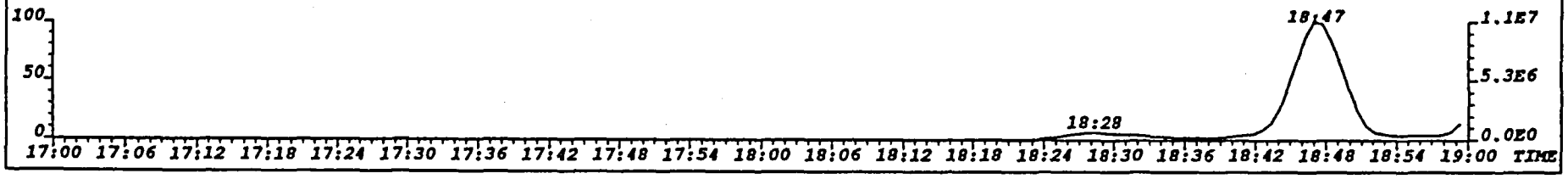
File:U902307 Acq:21-OCT-90 17:32:44 Mass 327.8847
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



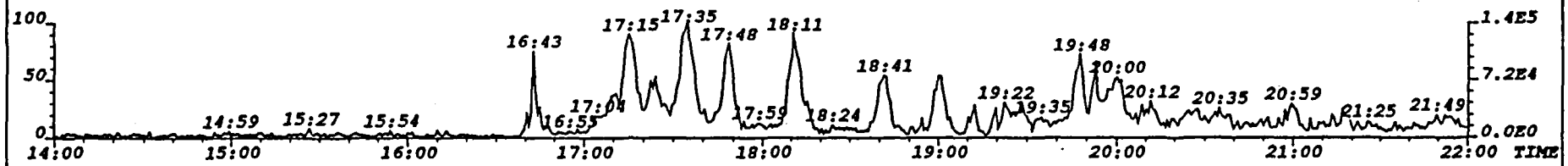
File:U902307 Acq:21-OCT-90 17:32:44 Mass 331.9368
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



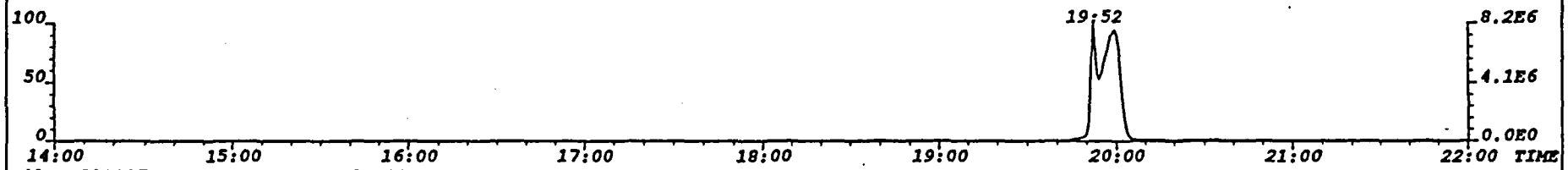
File:U902307 Acq:21-OCT-90 17:32:44 Mass 333.9338
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



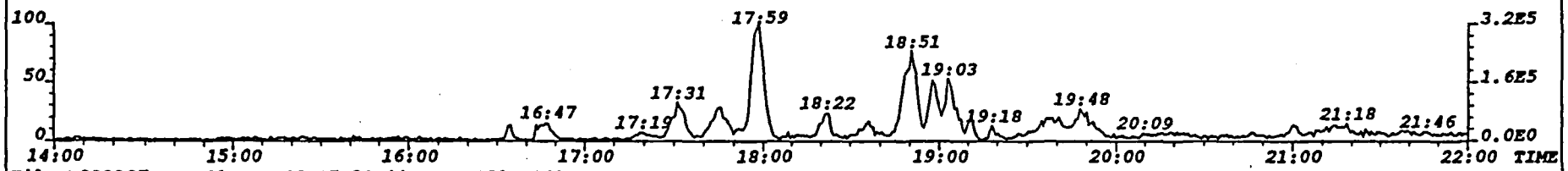
File:U902307 Acq:21-OCT-90 17:32:44 Mass 303.9016
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



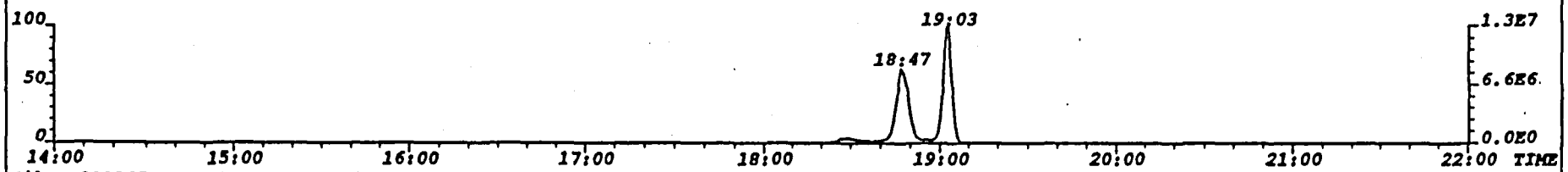
File:U902307 Acq:21-OCT-90 17:32:44 Mass 315.9419
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



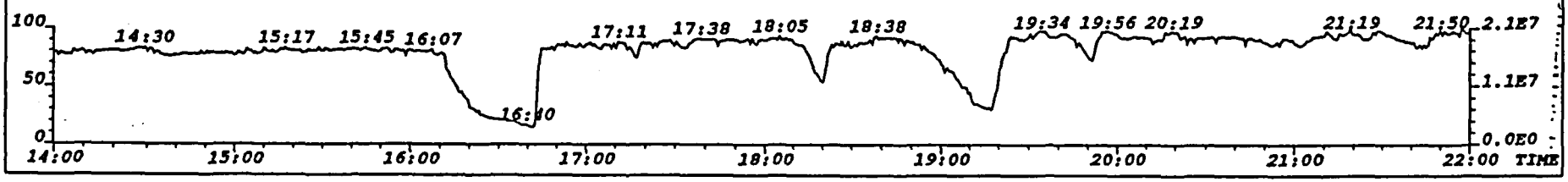
File:U902307 Acq:21-OCT-90 17:32:44 Mass 319.8965
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Acq:21-OCT-90 17:32:44 Mass 331.9368
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

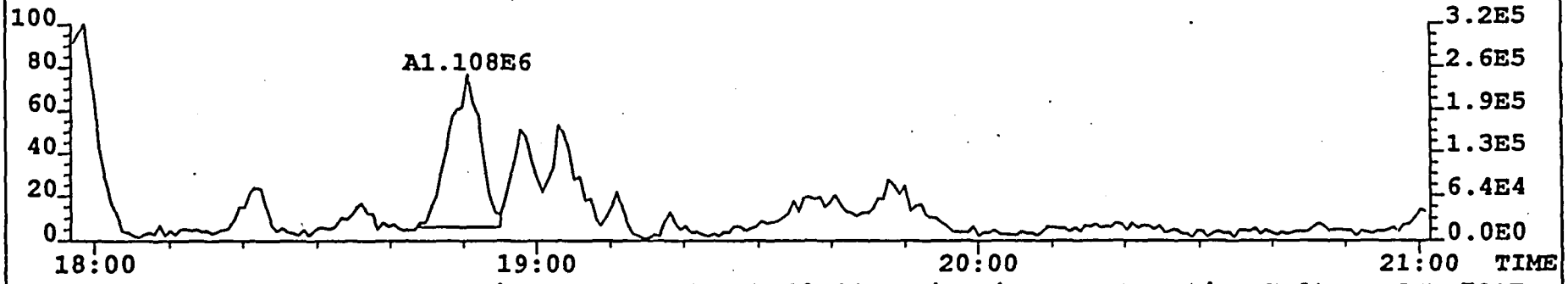


File:U902307 Acq:21-OCT-90 17:32:44 Mass 292.9825
Sample Text:LF1/9111 TLI# 16661 File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

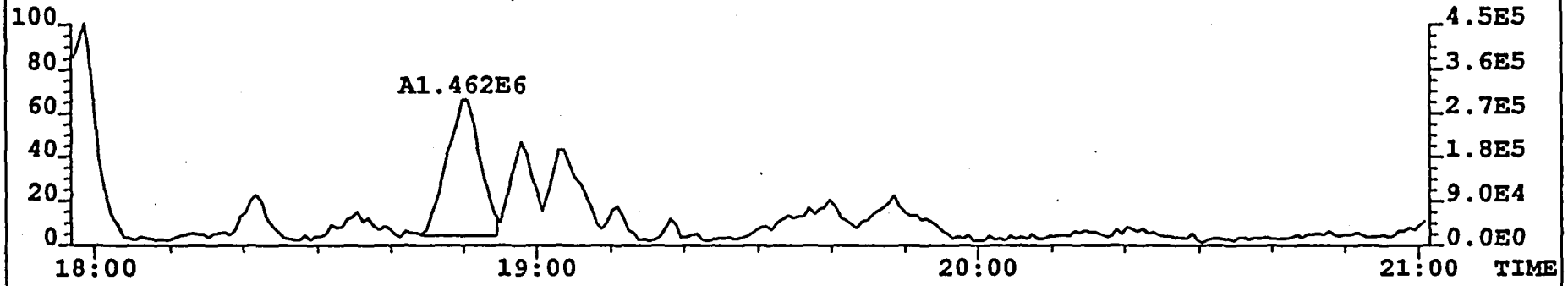


MRD 11-15-90

File:U902307 Scans:1-1908 Acquired:21-OCT-90 17:32:44 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 319.8965 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Scans:1-1908 Acquired:21-OCT-90 17:32:44 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 321.8936 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

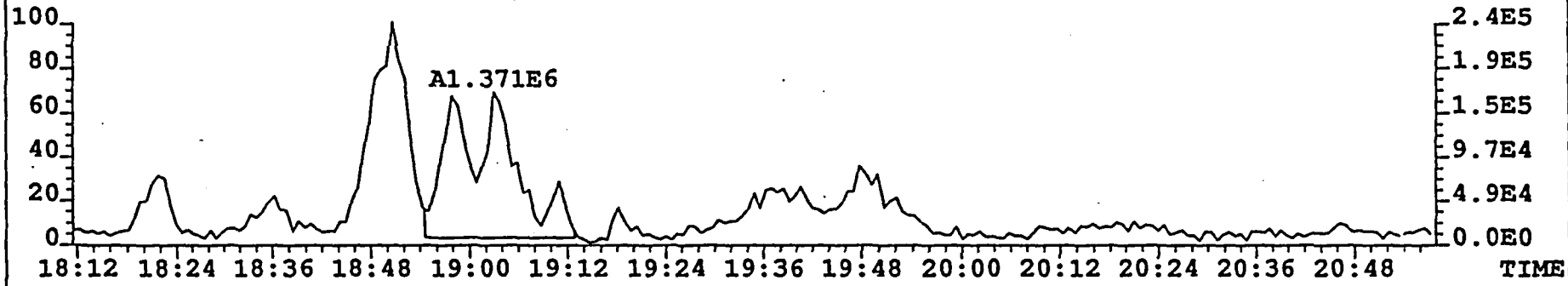


File:U902307 Scans:1-1908 Acquired:21-OCT-90 17:32:44 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 331.9368 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

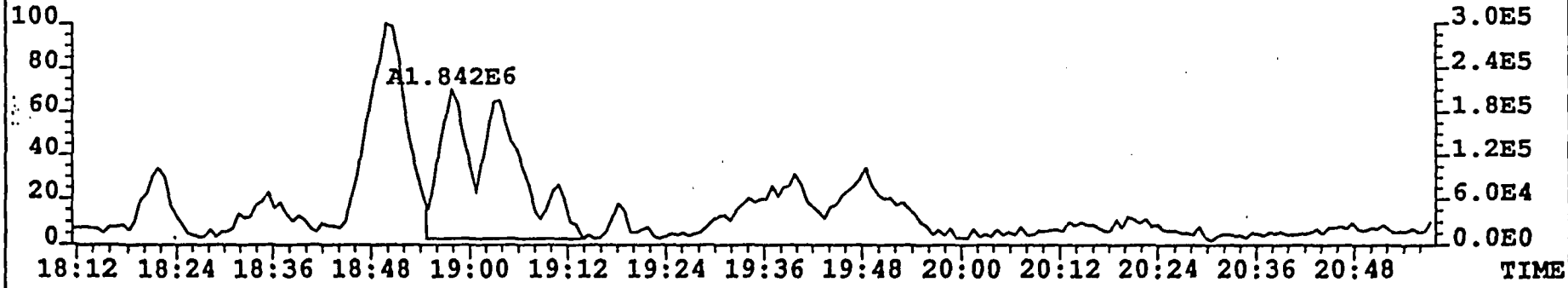
NOV 19 1990

PMB 11-15-90

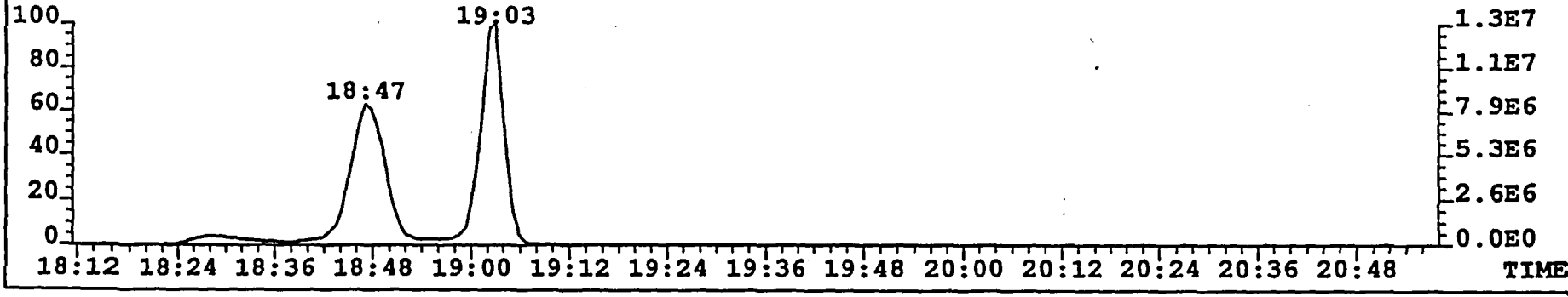
File:U902307 Scans:1-1908 Acquired:21-OCT-90 17:32:44 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 319.8965 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Scans:1-1908 Acquired:21-OCT-90 17:32:44 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 321.8936 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

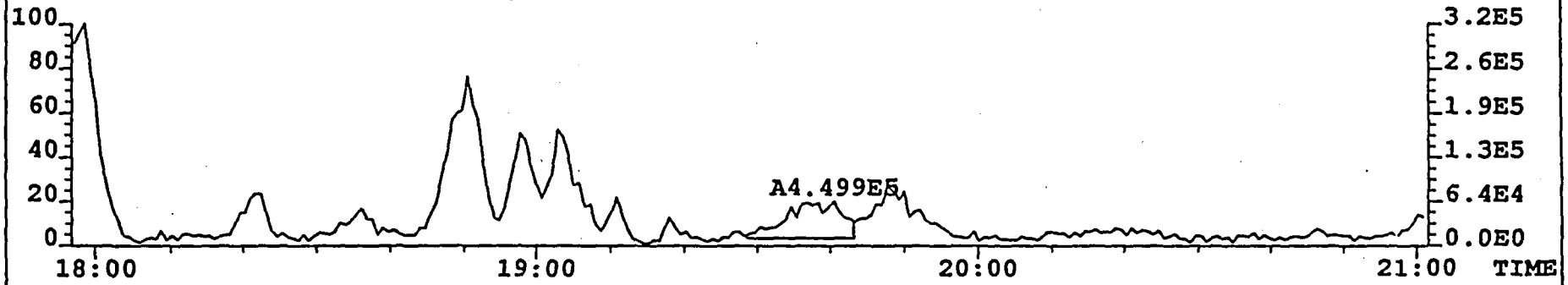


File:U902307 Scans:1-1908 Acquired:21-OCT-90 17:32:44 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 331.9368 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::

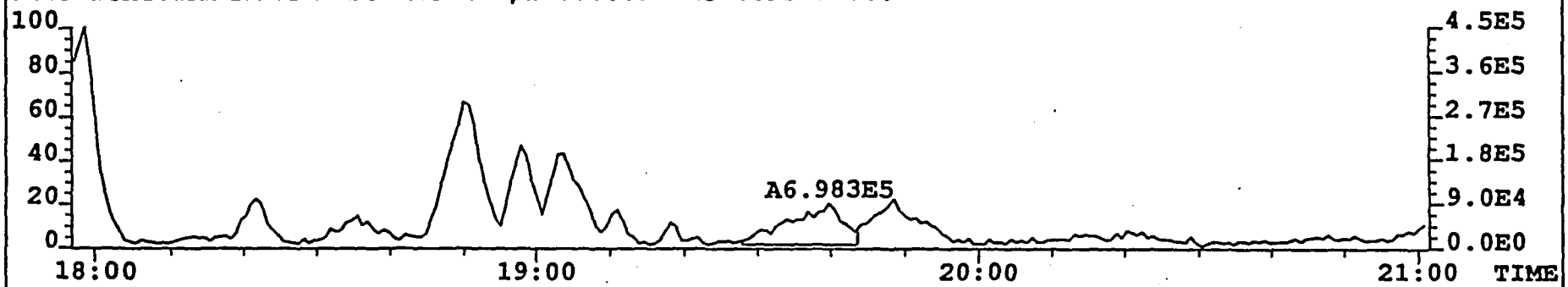
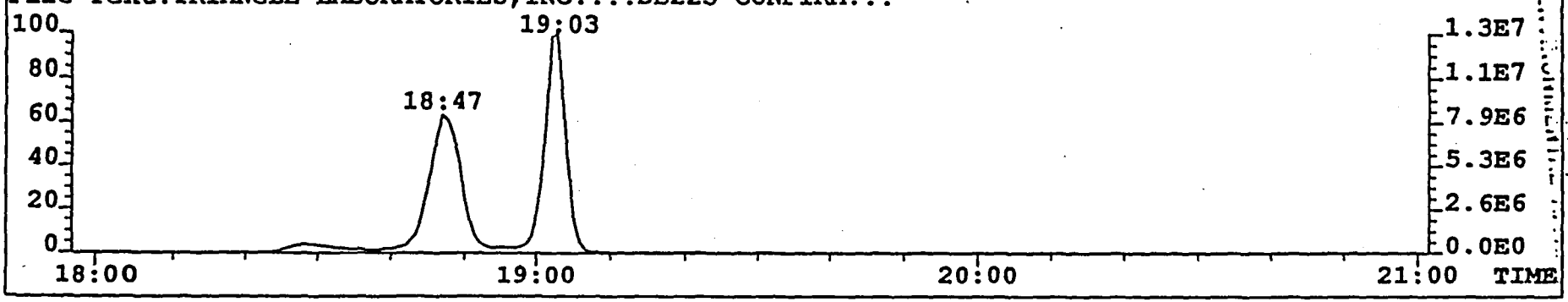


MBB 11-15-90

File:U902307 Scans:1-1908 Acquired:21-OCT-90 17:32:44 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 319.8965 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Scans:1-1908 Acquired:21-OCT-90 17:32:44 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 321.8936 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::



File:U902307 Scans:1-1908 Acquired:21-OCT-90 17:32:44 Ionization:EI+ Function:Voltage SIR 70SE »
Mass 331.9368 Experiment:DB225
File Text:TRIANGLE LABORATORIES,INC.:::DB225 CONFIRM:::