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Phase II Screening Level Ecological Risk Assessment of IR Program Site 16 Naval Construction Battalion Center Davisville North Kingstown, Rhode Island

Contract No. N62472-92-D-1296
Task Order No. 0097

Prepared for

Department of the Navy
Engineering Field Activity Northeast
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop No. 82
Lester, Pennsylvania 19113-2090

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November 2004
Version: FINAL
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James A. Shultz, CPG
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23 November 2004
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QUALITY REVIEW STATEMENT

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Naval Construction Battalion Center Davisville, North Kingstown, Rhode Island

EA CTO Manager: James A. Shultz, C.P.G.

In compliance with EA's Quality Procedures for review of deliverables outlined in the Quality Management Plan, this final deliverable has been reviewed for quality by the undersigned Senior Technical Reviewer(s). The information presented in this report/deliverable has been prepared in accordance with the approved Implementation Plan for the Contract Task Order (CTO) and reflects a proper presentation of the data and/or the conclusions drawn and/or the analyses or design completed during the conduct of the work. This statement is based upon the standards identified in the CTO and/or the standard of care existing at the time of preparation.

Senior Technical Reviewer

Christine Papageorgis, Ph.D. 11/22/04 (Date)

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ACRONYMS AND ABBREVIATIONS

AVS	Acid volatile sulfide
BAF	Bioaccumulation factor
BSAF	Biota-sediment accumulation factor
COC	Constituent of concern
COPC	Constituent of potential concern
CSM	Conceptual site model
EBS	Environmental baseline survey
EFANE	Engineering Field Activity Northeast
EPA	U.S. Environmental Protection Agency
EPAPAH	Seventeen individual Target Compound List PAH
ERM	Effects range-median
ERL	Effects range-low
FFTA	Fire fighting training area
HQ	Hazard quotient
LOAEL	Lowest Observed Adverse Effect Level
mg/kg	Milligrams per kilogram
NAVFAC	Naval Facilities Engineering Command
NCBC	Naval Construction Battalion Center
NOAEL	No Observed Adverse Effect Level
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyls
QAPP	Quality assurance project plan
RI	Remedial investigation
RIDEM	Rhode Island Department of Environmental Management
ROC	Receptor of concern
RSC	Rapid sediment characterization
SEM	Simultaneously extracted metals
SEM/AVS	Simultaneously extracted metals/acid volatile sulfide

SLERA	Screening level ecological risk assessment
SPAWAR	Space and Naval Warfare
TOC	Total organic carbon
TPH	Total petroleum hydrocarbon
TRV	Toxicity reference value
UCL	Upper confidence limit
UCLM	Upper confidence limit on the mean
VOC	Volatile organic compounds
XRF	X-ray fluorescence

EXECUTIVE SUMMARY

The U.S. Navy Engineering Field Activity Northeast (EFANE) initiated this investigation to collect additional sediment data to develop the proper decision-making framework for proceeding with the risk management decision appropriate for the area of Allen Harbor adjacent to the Site 16 former creosote dip tank at the former Naval Construction Battalion Center Davisville facility and to characterize potential ecological risks. This characterization effort has provided additional aquatic data necessary to complete a screening level ecological risk assessment for the offshore area adjacent to Site 16, and has provided information on the influence of other possible non-Navy sources, which exist in close proximity to the site. Sediment samples collected were not only from the area immediately adjacent to the site, but also included a range of local reference stations, providing additional information for comparison to site data.

Thirteen metals, polycyclic aromatic hydrocarbons (PAH) (with the exception of naphthalene), total polychlorinated biphenyls, and ten pesticides were identified as constituents of potential concern (COPCs) in Allen Harbor. No volatile organic chemical was identified as a COPC in Allen Harbor adjacent to Site 16. Based on the Step 3a food web, risks to the surrogate mammal (raccoon) and the surrogate avian species (herring gull) were found to be acceptable. Simultaneously extracted metals/acid volatile sulfide ratios were all less than 1.0, indicating that the divalent metals (cadmium, copper, lead, nickel, and zinc) have sufficient acid volatile sulfide available, and consequently, these metals should not be toxic to benthic organisms. These sediments can be classified as "medium-low priority," indicating that there is a small potential of risk to benthic organisms from chemicals such as PAHs and pesticides.

The reference areas sampled for this study proved to be physically dissimilar from Allen Harbor. Concentrations of all classes of chemical were found to be higher in Allen Harbor compared to reference areas; however, Allen Harbor has restricted flow with Narragansett Bay, as well as intensive use (marine traffic and commercial/industrial activity) compared to any of the reference areas. Forensic examination revealed that PAH patterns found in Allen Harbor were closely related to those found in reference areas, indicating a common ubiquitous source.

Concentrations of chemicals in Allen Harbor were homogeneous, and there was no evidence, based on measured concentrations of chemicals in different areas of the harbor, that Site 16 had contributed significant quantities of chemicals to Allen Harbor sediment (see Figures 4-5 through 4-8). There was evidence that shoreline areas, including Site 16, had higher PAH concentrations than those areas outside of the shoreline areas; however this most likely represents PAH sources associated with adjacent land such as storm drain runoff and overland flow. Further, when concentration variability is taken into account, there is no real difference in concentrations close to shoreline areas relative to the other areas of Allen Harbor.

Advanced forensics chemical analyses were performed on samples collected from Allen Harbor, selected hydrocarbon source areas, reference areas in Narragansett Bay, and forensic reference

materials representative of fire fighting training fuels. These results generated the following conclusions:

- A middle distillate petroleum signature in the former fire fighter training area (Source 3-2) generally matched the diesel range hydrocarbons in proximal sediment from a single sampling location, AH-40. However, the low levels of diesel range material at AH-40 could also have originated from more contemporary marina activities. Regardless of the origin, the middle distillate range PAHs (primarily petrogenic 2- and 3-ring PAHs) seen in this sample were not observed in any other Allen Harbor sediments which consisted of pyrogenic 4- to 6-ring PAHs. Therefore, the origin of PAHs in Allen Harbor was not attributable to middle distillate releases from Site 16 or the marina.

- The hydrocarbon signatures of creosote and heavy residual petroleum in soils from the former creosote dipping tank and pole drying/storage areas at Site 16 were not observed in Allen Harbor sediments. The pyrogenic PAHs in Source Area 1 creosotes shared a distinctive enrichment of anthracene that was absent in the proximal Allen Harbor sediments. Likewise, the genetic signature of triterpanes in the heavy residual petroleum differed from the sediments of Allen Harbor.

- Although the Priority Pollutant PAH concentrations in Allen Harbor sediments (EPAPAH averaged 12 mg/kg and ranged from 2.51 mg/kg to 28.1 mg/kg) matched many other coastal areas around the United States (EPAPAH ~ 20 mg/kg at the upper 96th percentile), they were elevated relative to sediments from the three Reference Areas (EPAPAH averaged 0.8 mg/kg and range from 0.03 mg/kg to 2.38 mg/kg). However, the concentrations of TOC (included natural and anthropogenic organic matter) and hopane (a marker for heavy petroleum) indicated that the loading of all organic material in Allen Harbor was elevated. Consequently, the high level of PAHs in Allen Harbor relative to the Reference Areas was likely explained by one or more of the following factors: 1) the higher density of commercial and industrial activities, 2) higher density of paved areas, and 3) potential flushing restrictions at the mouth of Allen Harbor.

- Some hydrocarbon impacts to sediments arising from the drainage of Allen's Harbor Road have been demonstrated. Specifically, sediment samples collected proximate to drains from this road (AH-49 and AH-28) exhibited elevated PAHs (EPAPAHs from 25.0 mg/kg to 28.1 mg/kg). The heavy residual petroleum in sediments from the storm drain associated with Allen's Harbor Road (Source 4-1) matched that found in the outfall (AH-49) and neighboring (AH-28) sediments. The source of this heavy residual petroleum was attributed to typical components of urban runoff (e.g., abraded petroleum asphalt and motor oils). Although not observed in the storm drain sample, low levels of diesel range hydrocarbons in AH-28 and AH-49 were consistent with runoff from streets and parking lots.

- Two Allen Harbor sediment samples (EPAPAH = 11.6 mg/kg in AH-03 and EPAPAH = 24.0 mg/kg in AH-29) collected adjacent to marina dock pilings throughout Allen Harbor

contained refined tar consistent with creosote. As demonstrated in the Elizabeth River Case Study, the relative abundances of diagnostic PAHs demonstrated the direct impact of various types of creosote (Stout *et al.*, 2003). As such, it can be concluded that creosote likely leached from the marina docks at these locations. Although not selected for advanced chemical analyses, sample AH-35 (EPAPAH = 22.3 mg/kg) was located next to a dock piling and may have also experienced localized creosote leaching.

In summary, the Allen Harbor sediment samples exhibited localized PAH impacts from dock pilings and roadway runoff. There was no evidence suggesting that the PAH impacts to Allen Harbor sediments were attributable to historic activities represented by the Site 16 Source Areas studied. Chemical concentrations in the harbor are homogeneous, indicating the absence of a point source, yet at higher concentrations than the reference areas because of the restricted flow of water into and out of the harbor and higher marine traffic and industrial use in Allen Harbor relative to the reference areas. Risks to food web receptors were acceptable, and finally, benthic organisms have a slight potential of risk from exposure to PAHs and pesticides.

1. INTRODUCTION

1.1 PURPOSE OF REPORT

The U.S. Navy Engineering Field Activity Northeast (EFANE) initiated this investigation to collect additional sediment data to develop the proper decision-making framework for proceeding with the risk management decision appropriate for the area of Allen Harbor adjacent to the Site 16 former creosote dip tank at the former Naval Construction Battalion Center (NCBC) Davisville facility by characterizing potential ecological risks. Although the Site 16 Phase I Remedial Investigation (RI) is complete, the Screening Level Ecological Risk Assessment (SLERA) focused mainly on terrestrial ecological risks. This characterization effort has provided additional aquatic data necessary to complete a SLERA for the offshore area adjacent to Site 16 and provided information on the influence of other possible non-Navy sources, which exist in close proximity to the site. Investigative activities at the former NCBC Davisville facility included additional sediment sampling and characterization of potential ecological risks in the area of Allen Harbor adjacent to Site 16, and other potential sources that may influence chemical concentrations. Sediment samples collected were not only from the area immediately adjacent to the site, but also included a range of local reference stations, providing additional information for comparison to site data.

1.2 BACKGROUND

The Site 16 Investigation Area is located at the eastern part of Zone 3 and the northeastern part of Zone 4 of the former NCBC Davisville facility (Figure 1-1). The north central region of Site 16 is a large, wooded area, surrounded by asphalt-paved roads, which were previously used by the Navy for construction equipment operator training (Figure 1-2). Large areas of vegetation, shrubs, and grasses now cover this area. Adjacent to Westcott Road is an area that, in the 1960s, contained creosote tanks used for dipping wood pilings. The pilings were then staged to dry before being loaded onto ships. It is reported that the dipping may have taken place over a larger area then originally reported (Figure 1-2). Just east of the location of the tanks is a former Fire Fighting Training Area (FFTA) where, during the 1960s, buildings were constructed, doused in flammable liquid, set fire, and extinguished. Six Environmental Baseline Survey (EBS) areas were identified within the Site 16 area of investigation. Details on these EBS areas can be found in Phase I Remedial Investigation, IR Program Site 16 (EA 2004a). The purpose of this study is to investigate the potential risk from these sources and their current impact on Allen Harbor. Both the creosote dipping and fire fighting training activities could act as sources, possibly entering Allen Harbor via land overflow or via two seeps located adjacent to Site 16 (Figure 1-2). In addition, a large storm drain drains a surrounding parking lot that discharges in this same general area, potentially representing a source of contaminants to Allen Harbor.

2. STUDY AREA INVESTIGATION

2.1 INTRODUCTION

This chapter provides a summary of the Supplemental Sediment RI for Allen Harbor field program conducted by EA in 2004 to further characterize sediment conditions adjacent Site 16. With minor modifications, the work plan as proposed in the Final Quality Assurance Project Plan (QAPP) for Additional Sediment Sampling and Characterization, Phase II Remedial Investigation, IR Program Site 16 (EA 2004b) has been followed. The minor differences will be addressed at appropriate sections in this RI report. Figure 1-2 shows the Site 16 field investigation area.

2.2 FIELD INVESTIGATION

The purpose of the additional sediment sampling and characterization was to gather data to characterize potential ecological risks for the area of Allen Harbor adjacent to the Site 16 former creosote dip tank at the former NCBC Davisville facility. Investigative activities included additional sediment sampling and characterization of potential ecological risks in the area of Allen Harbor adjacent to Site 16, and other potential sources that may influence chemical concentrations. Sediment samples collected were not only from the area immediately adjacent to the site, but also include a range of local reference stations to provide additional information for comparison to site data. Figure 2-1 shows an overview of Narragansett Bay and the location of Allen Harbor and all of the reference sample areas examined during this project.

Sediment sampling for this project was conducted from 22 to 27 March 2004. Samples were collected from locations as close as possible to those originally proposed in the QAPP (EA 2004b). Sample locations are shown in Figures 2-2 and 2-3 for the area immediately adjacent to Site 16 and the Allen Harbor locations further removed from Site 16, respectively. Originally it was planned to collect 50 surface sediment samples from Allen Harbor; however, at the request of the U.S. Environmental Protection Agency (EPA) oversight person, an additional sample was taken in the vicinity of the Black Beauty (sand blasting residue) deposits (AH-51). Samples were taken by Van Veen sampler off the boat or, when at low tide, by wading the tidal flats and sampling with spoons.

Two sediment cores were originally planned. While Core-1, located in the vicinity of AH-40 (Figure 2-2) was successfully obtained, it was not possible to collect a core at Core-2 located in the direct path of the storm water discharge. Push-coring efforts for Core-2 at the original location (vicinity of AH-50, Figure 2-2) were able to recover approximately 0.5 ft of material composed of sand, gravel, detritus, and plant material. Efforts to penetrate the push core to depths greater than 0.5 ft below the sediment surface resulted in cracking the core liner because of gravel and other hard substrates. Sampling efforts to retrieve Core-2 were relocated to a position approximately halfway between sample locations AH-50 and AH-49, where the same hard-substrates and core refusal was experienced. A third effort to retrieve Core-2 was conducted at sample location AH-49, where push coring was again unsuccessful due to the

impenetrable substrates. A fourth unsuccessful push-core effort was conducted approximately 6 ft downstream of AH-49. Efforts to recover Core-2 were moved another 10 ft downstream. During this fifth attempt, a 3-ft core was successfully recovered; however, the core was comprised of approximately 0.5 ft of silty-sand material, followed by approximately 2.5 ft of the gray-clay parent material. Further efforts to obtain Core-2 were abandoned.

With the exception of AH-40, no remarkable characteristics were noted for any Allen Harbor samples. Field observations of the water near sample location AH-40 found a sheen on the surface of the water that appeared to be of bacterial origin rather than oil. In protected areas near the rocky bulkhead along the shoreline in the vicinity of AH-40, waters were also found to have a light-brown material floating at the surface. It is likely that the discolored water is the result of iron-oxidizing bacteria associated with the ground-water seep. An indication of iron oxidation was also present on the unsubmerged shoreline rocks in the vicinity. Directly below the surface of the water, a cloudy substance seemed to be circulating within the water column. Sediment samples recovered from this location were found to have a sheen. This was not observed in sediment samples from other locations in Allen Harbor.

Reference site samples were taken in Prudence Coggeshall Cove (Figure 2-4) and are termed "REF1" in this document. Prudence Coggeshall Cove was included as a reference location because it is at the same latitude as Allen Harbor, is of similar depth, and reflects Providence River input into Narragansett Bay (Figure 2-1). This site was very pristine, and numerous echinoderms (starfish) were observed at the site. Concerns had been raised by EPA that previous studies in 1991 had shown potential toxicity in Prudence Coggeshall Cove samples. Additionally, Rhode Island Department of Environmental Management (RIDEM) noted, "It has been established that, in general, the further north one is in Narragansett Bay the higher the pollutant load." Despite these concerns, the lowest polycyclic aromatic hydrocarbons (PAH) concentrations were measured in this reference area during this study, and Prudence Coggeshall Cove should qualify as background.

Reference Site 2 (REF2) was originally proposed for Little Allen Harbor, located at the entrance neck to Allen Harbor. Chosen to be representative of non-Navy influences, yet show marina and industrial influences such as would be found in Allen Harbor, the location of this reference area was changed at the request of RIDEM to the northeast shoreline of Jamestown Island (Figure 2-5). Sampling at this area proved difficult. The bottom was rocky in many locations, and it was necessary to utilize most of the ten potential locations originally selected for these samples to obtain five good sediment samples.

One of the purposes of the selection of reference locations was to determine PAH chemical signatures appropriate for sources similar to, but not associated with, Navy activities. It was hoped that Fishing Cove (REF3), located adjacent to Wickford Harbor (Figure 2-6), would serve as a good reference. While it was found that the PAH forensic signature at Fishing Cove was similar to that found in Allen Harbor, PAH concentrations were significantly smaller in the cove relative to Allen Harbor. Physically Fishing Cove proved very shallow and exposed during low tide. The site was accessible only during high tide, and samples were taken at the most inland site at high tide, and further out as the tide receded. Alternatively Allen Harbor is considerably

deeper, and has a restricted hydrodynamic flux. While the original design for this reference area was to capture non-Navy marina influences, Fishing Cove failed to satisfy this objective due to the shallowness of the cove.

One of the objectives of this project was to attempt to identify the potential sources of PAH found in Allen Harbor sediment. Consequently, it was necessary to sample potential sources in Site 16 as well as other potential sources and analyze them for environmental forensics. These areas are shown in Figure 1-2 and were:

1. Source 1—Split-barrel samplers were used to collect two samples (0–6 ft) from the area used for dipping posts into creosote and drying the posts. PAH were found at relatively high concentrations in this area during the previous investigations of Site 16.

2. Source 2—Split-barrel samplers were used to collect two samples (0–6 ft) from a location to the south of the wooden-bermed structure adjacent to the above-mentioned creosote dipping area. An oil odor was observed in this area, and high PAH concentrations were measured during previous studies in these soils.

3. Source 3—Split-barrel samplers were used to collect two samples (0–6 ft) from the location of the former FFTA. Again, PAH were detected in this area in previous investigations.

4. Source 4—Discharge of storm water into surface waters has been recognized as a major source of PAH for sediment. Storm drains channel water running off from parking lots and streets; therefore, storm drains can contain relatively high concentrations of petroleum products. The storm drain that discharges into Allen Harbor at the southeast corner of Allen Harbor could be a significant PAH source. A single sample of sediment from the catch basin was analyzed for environmental forensics to determine if the PAH signature found in Allen Harbor may be characteristic of routine storm-water discharge.

2.3 RAPID SEDIMENT CHARACTERIZATION

As specified in the QAPP (EA 2004b), U.S. Navy's Space and Naval Warfare (SPAWAR) Systems Center in San Diego, California conducted rapid sediment characterization (RSC) screening analysis for selected metals (Cu, Ni, Pb, and Zn) by x-ray fluorescence (XRF) methods, and PAH using an immunoassay technique. A larger list of metals was proposed for analysis by XRF in the QAPP (EA 2004b); however, to expedite the results for sample selection purposes, a shorter list of the more potentially toxic metals were analyzed. These results, along with an understanding of sample locations, were used to select a subset of those samples to be analyzed for full suite chemical analysis using fixed-laboratory SW-846 methods and, in some cases, PAH forensics analysis. RSC methods have been recommended for use by the Navy as effective tools (Kirtay and Apitz 2000) and have been utilized in various locations including the Elizabeth River in Norfolk, Virginia (Stout et al. 2003). The Allen Harbor study has taken advantage of the use of RSC.

The strategy for using RSC is that the higher analytical costs for quantitative analysis and fingerprinting can be substantially reduced if the sediment samples are first screened using less expensive RSC techniques. RSC has been used to cost-effectively provide the spatial coverage that is necessary to:

- Select samples that provide ample spatial coverage of the entire study area,
- Select a sufficient number of samples from specific locations within the study area that address specific project objectives, and
- Select samples that represent the range of RSC concentrations observed, including those that are representative of the ambient/background conditions.

The results of the RSC analyses are shown in Table 2-1 and 2-2 for metals and total PAH, respectively. These RSC results will be placed into the context of fixed-laboratory measurements of these same parameters (copper, lead, zinc, and total PAH).

2.4 SELECTION OF SAMPLES FOR QUANTITATIVE AND ENVIRONMENTAL FORENSICS ANALYSIS

Due to the nature of activities at the Site 16 study area (creosote and fire fighting training), PAH were identified as the primary constituents of concern (COC) for these activities. RSC total PAH results (Table 2-2), in conjunction with sample locations in space, were used to select samples for quantitative analysis by a fixed analytical laboratory (metals, PAH, pesticides, and polychlorinated biphenyls [PCBs], volatile organic compounds [VOC], and simultaneously extracted metals/acid volatile sulfide (SEM/AVS). Additionally, a subset of these quantitative samples was also selected for environmental forensics analysis to assess PAH patterns in these samples. Table 2-3 summarizes the selection of samples for quantitative analysis and environmental forensics analysis, along with the rationale for selecting these particular samples. Figures 2-2 and 2-3 show the physical locations of those samples selected for quantitative as well as quantitative and forensics analysis in Allen Harbor.

Samples for analysis from reference locations were selected to cover the range of reported concentrations of RSC total PAH. The selection of a sample to receive quantitative forensics was based on the highest total PAH concentration within each reference area. These samples are listed in Table 2-3 and are shown in Figures 2-4 through 2-6.

Core-1 was submitted for quantitative analysis as noted in the QAPP (EA 2004b) and shown in Table 2-3. Finally, all source location samples were submitted for environmental forensics analysis.

3. PHYSICAL CHARACTERISTICS OF THE STUDY AREA

Physical properties of sediments collected for this study included grain size (gravel/sand/silt and clay proportions) and total organic carbon (TOC). Sample results for these parameters are shown Appendix A, Table A-6. For convenience, grain size results and TOC are shown in Table 3-1. Examination of Table 3-1 shows that Coggeshall Cove is quite dissimilar to all other locations. The sediment at Coggeshall Cove is primarily sand, with a small proportion of silt and clay. In addition, the TOC at Coggeshall Cove was significantly lower than that found in all other locations.

TOC in most locations of Allen Harbor were higher than TOC in reference locations, although there is not a statistically difference between them. In general the typical inverse relationship between sand content and TOC was found to be intact (when sand content is high, TOC is low, and when TOC is high, sand is low). There is some evidence that stations located closer to the shoreline exhibited greater sand content than those stations farther from the shoreline. This could be due to wave action from boats passing along the shoreline as well as any scouring from stormwater entering Allen Harbor during rain events.

4. NATURE AND EXTENT OF CONTAMINATION

This section of the document presents and discusses the results of the Allen Harbor study. As such, issues revolving around the validity of using RSC data for the selection of quantitative and forensics samples will be discussed. Quantitative data will be presented, and the forensics report discussed.

4.1 COMPARISON OF RSC RESULTS WITH QUANTITATIVE RESULTS

As discussed in Section 2.4, RSC results were used to assist the in selection process for which samples that were to be characterized quantitatively, and for forensics assessment. This section will present the comparison of RSC data with the data generated by the fixed laboratory using standard SW-846 bench analytical methods.

Figures 4-1 through 4-3 show the regression relationships between RSC and fixed laboratory ICP analysis for copper, lead, and zinc, respectively. Nickel has not been assessed because it was not detected using RSC methods (Table 2-1). As can be seen, R^2 values for all three regressions are acceptable at 0.88, 0.81, and 0.76, respectively. Similarly, Figure 4-4 shows the regression of total PAH determined by immunoassay and total PAH determined by SW-8270, which also shows a good correlation ($R^2 = 0.85$). Consequently, using RSC results to select quantitative sample locations was a valid methodology.

While Figures 4-1 through 4-4 show that there is a significant relationship between RSC and fixed lab results, it does not tell if there is an under- or over-prediction in the RSC data. In order to determine if there were under- or over-predictions, those samples for which there were both RSC metals and total PAH regressions were run, forcing the intercept through zero.

For lead, it was found that the slope of the regression was 1.35, indicating that the RSC lead was under-predicting lead measured in the fixed lab by about 25%. Similar under-predictions were found for copper (slope = 1.41) and zinc (slope = 1.40). The under-prediction of metals by XRF is explained by the absence of drying of the sample prior to analysis. While it is recommended in the analytical procedure (SW-846 Method 6200) that samples be dried because of water interfering with the x-ray and resulting in under-reporting lead results, these samples were not dried so as to assure that all samples were processed in time. However, the under-prediction does not impact the ability of these RSC results to be used for the sample selection process because of the significant relationship between RSC and fixed laboratory results (Figure 4-2).

The slope between RSC and fixed laboratory total PAH was 0.394, indicating that total PAH by immunoassay was over-predicting the sum of the 17 target PAH by approximately a multiple of 2.5. The immunoassay method responds to all hydrocarbons; consequently, it is expected to overpredict the limited target PAH. The RSC immunoassay result had already been reduced by a multiple of 5 to attempt to correct for this, based on previous experience at the RSC laboratory, but this proved insufficient for these samples. The implication is that there are some

hydrocarbons present in these samples that were not found in the other samples that the laboratory used to establish the multiple of 5 used for correction.

4.2 NATURE, EXTENT, FATE, AND TRANSPORT OF CONTAMINANTS IN ALLEN HARBOR

Based on the regressions discussed in Section 4.1, the following equations were used to estimate the quantified concentrations of lead and total PAH based on the RSC results for the 51 sediment samples in Allen Harbor:

$$Lead_{quantitative} = 1.35 * Lead_{RSC}$$
$$Copper_{quantitative} = 1.41 * Copper_{RSC}$$
$$Zinc_{quantitative} = 1.40 * Zinc_{RSC}$$
$$Total\ PAH_{quantitative} = 0.394 \times Total\ PAH_{RSC}$$

The only purpose of this exercise is to more closely approximate the nature and extent of metals and total PAH in Allen Harbor. Neither the RCS results nor the estimated quantitative concentrations will be used for the quantitative SLERA discussed in Chapter 5. The results of these calculations are shown in Figures 4-5 through Figure 4-8 for lead, copper, zinc, and total PAH, respectively, in Allen Harbor closest to Site 16. This presentation is strictly to qualitatively evaluate the spatial distribution of contaminants, and no quantitative assessments (such as the SLERA) will be performed using estimated data. Two samples had predicted elevated lead: AH-50 in the vicinity of the storm outfall; and AH-28, to the northeast of the outfall. These two samples resulted in zones of higher lead (Figure 4-5). However, there is no evidence that releases from Site 16 could account for the patterns shown in Figure 4-5. Similarly, copper concentration contours (Figure 4-6) do not show evidence of a release from Site 16. If anything, it appears that copper concentrations are higher in the marina area, which may be accounted for by the use of copper-based boat paint. Sample AH-28 showed high zinc contours (Figure 4-7) as it did for lead, however there is no evidence that Site 16 was responsible for the pattern of zinc shown in Figure 4-7. Total PAH concentration contours are higher the closer one is to the shoreline (Figure 4-8). This would indicate that there were land-based PAH sources, including Site 16, for this contaminant. It is known that there were historical sources (and there are current sources) of PAH into this end of Allen Harbor; consequently, the pattern of contamination for total PAH shown in Figure 4-8 is expected.

Quantitative analytical data for analytes detected at least once in Allen Harbor, all three reference areas, source areas, and the core sample are summarized in Table 4-1. Analytical details can be found in Appendix A for all individual samples. In Table 4-1, analytical data from the three areas of Allen Harbor (inner harbor adjacent to Site 16, marina, and outer areas as shown in Figures 2-2 and 2-3) are presented separately. As can be seen in Figures 4-5, 4-6, and 4-7, there is no apparent trend for lead, copper or zinc relative to the vicinity to Site 16. Since no evident concentration gradient exists, this suggests that Site 16 is not a potential source of these metals. Total PAH concentrations tend to exhibit higher concentrations close to the shoreline, including the shoreline adjacent to Site 16. This would indicate that there is a potential for Site

16 having been a source of total PAH to Allen Harbor, either historically or currently. However this tendency is not limited to just the shoreline adjacent to Site 16 but adjacent shoreline areas (east and west of Site 16), suggesting that the higher PAH concentrations found in shoreline areas are associated with ubiquitous PAH sources such as storm runoff.

4.3 COMPARISON OF 2004 SEDIMENT DATA WITH PREVIOUS SAMPLES

Prior to this study, there have been few sediment samples taken in this arm of Allen Harbor. Two samples were taken in this arm and reported in the Risk Assessment Pilot Study (SAIC 1992). Taken during Phase 2, one sample (AH7) was taken in the outer harbor area (in the same general area as AH-06 and AH-07) and one sample (SN) was located close to the outfall in the vicinity of 2004 sample AH-49. High total PAH concentrations (150–200 mg/kg) were reported in this sample in 1991. Total PAH in 2004 at AH-49 was considerably smaller at 28.1 mg/kg. The only other reported samples from this arm of Allen Harbor were sampled in 2001 and reported in Appendix Q of the Phase I RI (EA 2004a). The storm drain catch basin, Source 4-1, for which total PAH concentrations of 6.8 mg/kg were found in 2004, was sampled in 2001, during which a similar total PAH concentration of 5.3 mg/kg was found (EA 2004a). The intertidal seep discharge location close to AH-40 was also sampled in 2001, resulting in a total PAH concentration of 5.3 mg/kg (EA 2004a). This is consistent with the total PAH concentration at AH-40 in 2004 of 6.1 mg/kg. Concentrations of total PAH in the 2004 data were found to be similar to previous Allen Harbor samples, except for samples taken in the vicinity of the storm drain outfall taken in 1999.

4.4 ENVIRONMENTAL FORENSICS

A limited environmental forensic study was conducted at the Naval Construction Battalion Center (NCBC) Site 16 located on the western shore of Narragansett Bay in North Kingston, Rhode Island. The detailed forensics report can be found in Appendix B. The technical approach for this investigation followed the Navy User's Guide for Determining the Sources of Contaminants in Sediment (Stout *et al.*, 2003). This investigation was intended to assist the Navy Project team in identifying sources of PAH contamination found in Allen Harbor sediments and to determine if identified PAH sources were related to historical releases from Site 16 activities. In order to address the project objectives, advanced chemical analyses were performed on seven Source Area soils, three Reference Area sediments from other areas in Narragansett Bay, and eleven Allen Harbor sediments. Additional samples were analyzed for EPA Priority Pollutant PAHs and TOC in order to determine the representativeness of any conclusions derived from the advanced chemical analyses. The results of these analyses generated the following conclusions:

- A middle distillate petroleum signature in the former fire fighter training area (Source 3-2) generally matched the diesel range hydrocarbons in proximal sediment from a single sampling location, AH-40. However, the low levels of diesel range material at AH-40 could also have originated from more contemporary marina activities. Regardless of the origin, the middle distillate range PAHs (primarily petrogenic 2- and 3-ring PAHs) seen in this sample were not observed in any other Allen Harbor sediments which consisted of

pyrogenic 4- to 6-ring PAHs. Therefore, the origin of PAHs in Allen Harbor was not attributable to middle distillate releases from Site 16 or the marina.

- The hydrocarbon signatures of creosote and heavy residual petroleum in soils from the former creosote dipping tank and pole drying/storage areas at Site 16 were not observed in Allen Harbor sediments. The pyrogenic PAHs in Source Area 1 creosotes shared a distinctive enrichment of anthracene that was absent in the proximal Allen Harbor sediments. Likewise, the genetic signature of triterpanes in the heavy residual petroleum differed from the sediments of Allen Harbor.
- Although the Priority Pollutant PAH concentrations in Allen Harbor sediments (EPAPAH averaged 12 mg/kg and ranged from 2.51 mg/kg to 28.1 mg/kg) matched many other coastal areas around the United States (EPAPAH ~ 20 mg/kg at the upper 96th percentile, Stout et al. 2004), they were elevated relative to sediments from the three Reference Areas (EPAPAH averaged 0.8 mg/kg and range from 0.03 mg/kg to 2.38 mg/kg). However, the concentrations of TOC (included natural and anthropogenic organic matter) and hopane (a marker for heavy petroleum) indicated that the loading of all organic material in Allen Harbor was elevated. Consequently, the high level of PAHs in Allen Harbor relative to the Reference Areas was likely explained by one or more of the following factors: 1) the higher density of commercial and industrial activities, 2) higher density of paved areas, and 3) potential flushing restrictions at the mouth of Allen Harbor.
- Some hydrocarbon impacts to sediments arising from the drainage of Allen's Harbor Road have been demonstrated. Specifically, sediment samples collected proximate to drains from this road (AH-49 and AH-28) exhibited elevated PAHs (EPAPAHs from 25.0 mg/kg to 28.1 mg/kg). The heavy residual petroleum in sediments from the storm drain associated with Allen's Harbor Road (Source 4-1) matched that found in the outfall (AH-49) and neighboring (AH-28) sediments. The source of this heavy residual petroleum was attributed to typical components of urban runoff (e.g., abraded petroleum asphalt and motor oils). Although not observed in the storm drain sample, low levels of diesel range hydrocarbons in AH-28 and AH-49 were consistent with runoff from streets and parking lots.
- Two Allen Harbor sediment samples (EPAPAH = 11.6 mg/kg in AH-03 and EPAPAH = 24.0 mg/kg in AH-29) collected adjacent to marina dock pilings throughout Allen Harbor contained refined tar consistent with creosote. As demonstrated in the Elizabeth River Case Study, the relative abundances of diagnostic PAHs demonstrated the direct impact of various types of creosote (Stout *et al.*, 2003). As such, it can be concluded that creosote likely leached from the marina docks at these locations. Although not selected for advanced chemical analyses, sample AH-35 (EPAPAH = 22.3 mg/kg) was located next to a dock piling and may have also experienced localized creosote leaching.

In summary, the Allen Harbor sediment samples exhibited localized PAH impacts from dock pilings and roadway runoff. There was no evidence suggesting that the PAH impacts to Allen Harbor sediments were attributable to historic activities represented by the Site 16 Source Areas studied.

4.5 COMPARISON OF ALLEN HARBOR SEDIMENT WITH REFERENCE AREAS

Consistent with Navy policy (NAVFAC 2003), reference sites were sampled and analyzed for the same constituents as Allen Harbor. As discussed in Section 2.2, the three reference areas sampled for this study were not found to be physically similar to Allen Harbor, in that they were either more representative of open Narragansett Bay (Coggeshall Cove and Jamestown Island), or very shallow, with minimal if any boat traffic or other influences (Fishing Cove). Consequently, concentrations of contaminants were lower at all three reference locations when compared to Allen Harbor (Table 4-1). Due to the obvious differences in contaminant concentrations, a statistical comparison was not necessary. However, as discussed elsewhere, Allen Harbor functions in many ways as a sediment trap due to limited flow into and out of Narragansett Bay. The concentrations of contaminants observed in Allen Harbor sediments reflect input from several surrounding sources such as roads and marinas.

4.6 COMPARISON OF CORE-1 TOP AND BOTTOM RESULTS

As discussed in Section 2.2, an attempt to collect two cores was made during this project. The core location outside of the storm drain outfall proved to be impossible to collect due to the severe erosion of these sediments, probably during major storm events. However, a successful core was taken at the location of the seep in the corner of Site 16, Core 1. Examination of the results for the top and bottom of this core (Table 4-1 and Appendix A) shows that with few exceptions (i.e., lead), concentrations of all detected analytes were higher at the top of the core (6–18 in. in depth) than the bottom of the core (24–36 in. in depth). The date of deposition of the various depths of the core are not known, however, it is clear that, at least at the location of Core-1, concentrations of contaminants are higher at the top of the core.

4.7 VISUAL PRESENTATION OF 2004 ALLEN HARBOR QUANTITATIVE RESULTS

Tabular results from the quantitative 2004 sediment samples in Allen Harbor were presented Appendix A. In this format any concentration that exceeded the risk screening value was designated with a "*" symbol. Appendix C contains map presentations of sample locations and concentrations for metals (Figure C-1), PAH (Figures C-2a and C-2b, separated only for presentation purposes), pesticides (Figure C-3), and the ratio of SEM to AVS and total organic carbon in Figure C-4. Analytes than exceed the screening value in at least one sample location have been shown in these maps.

5. SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT

A SLERA was conducted for IR Program Site 16 in 2001 (EA 2001). This SLERA was based on limited data, three sediment samples located adjacent to Site 16, and determined that there was potential risk to marine ecological receptors. The purpose of the Phase II SLERA is to determine if using an expanded data set, and under expected exposure conditions, contaminants in sediments adjacent to Site 16 are at sufficient concentrations to potentially cause unacceptable risk to organisms using the area. The three original samples used as the basis of the first SLERA have been supplemented with additional samples taken for this investigation. The risk assessment has been based on the data from the three original sediment samples, results of which are presented in Appendix D, and the quantitative samples taken in 2004 from the two areas closest to Site 16 ("Inner" and "Marina" areas, Table 2-3). Table 5-1 shows the sample numbers and dates for the sixteen samples used for the SLERA. The key guidance followed in this Phase II SLERA are the *Navy Policy for Conducting Ecological Risk Assessment* (Navy 1999) and *Ecological Risk Assessment Guidance for Superfund* (USEPA 1997). These two approaches are very similar in that they are based on a tiered, step-wise protocol. This SLERA includes Tier 1 (Steps 1 and 2), and Step 3a of Tier 2 for the Allen Harbor sediment (Figure 5-1).

5.1 CONCEPTUAL SITE MODEL

The conceptual site model (CSM) is a description of the physical and ecological characteristics of the site, potential exposure scenarios, identification of receptors of concern (ROCs), and assessment and measurement endpoints.

A major element in every CSM is a description of the exposure scenarios. This consists of four elements:

1. Source of constituents of potential concern (COPC) and release mechanism(s)
2. Transport medium and mechanism of transfer from primary to subsequent media
3. Point (or area) of potential ROC contact with the COPC
4. Route of uptake by the ROC (ingestion of sediment and food).

Site 16 was the location of a creosote dip tank area where, during the 1960s, woodpiles were dipped into tanks containing creosote and staged in the area to dry. In addition, a former FFTA was reportedly located in the site. In such an area, temporary structures would have been doused with flammable materials, ignited, and fire fighters would have put these fires out. Such an operation could have released chemicals to the soil and ground water under Site 16. These chemicals could have been transported via over-land transport or discharge from seeps into the adjacent Allen Harbor. Other potential sources of chemicals, such as storm water outlets and boat marinas, exist in this area of Allen Harbor.

The CSM for Allen Harbor sediment is shown in Figure 5-2. On the basis of this CSM, there are complete exposure pathways for sediment. From sediment, some COPCs could bioaccumulate in plants and prey animals that may be eaten by other consumers.

5.1.1 Receptors of Concern

Ecological ROCs are species or guilds of species that are important to the ecology of the study area and that may be susceptible to chemical constituents detected at the site. ROC examples could include an area of riparian wetland, a particular bird species, a benthic community, or a fish species. Selection of ROCs is systematic, representative, and ecologically based to ensure that assessment endpoints are adequately addressed. Criteria used to identify ecological ROCs include the following:

- Presence – known or expected to occur onsite
- Susceptibility – exposure pathway is likely complete and of sufficient duration/magnitude
- Representative – of the food web and/or guild
- Data Availability – sufficient and appropriate type of toxicity and exposure information
- Societal Importance – species merits public attention.

Ecological ROCs identified for Site 16 Allen Harbor Phase II SLERA include:

- Benthic Communities—Benthic invertebrates such as amphipods and tubeworms that live in the sediments found in Allen Harbor area as a source of food for birds and fish.

- Aquatic Avian Species—The carnivorous herring gull has been selected as the representative avian species for the Phase II SLERA.

- Aquatic Mammalian Species—Mammals can be expected to utilize the aquatic habitat adjacent to Site 16. The omnivorous raccoon has been selected as a receptor that could be found near Allen Harbor.

5.1.2 Assessment and Measurement Endpoints

EPA (1998a) guidance stresses the importance of ecologically significant endpoints. Without identifying such an effect for evaluation, the SLERA brings little value to the decision-making process. Several criteria are applicable for assessment endpoint selection (Suter 1993; USEPA 1998a):

- Unambiguous Definition—Assessment endpoints should indicate a subject and a characteristic of the subject (such as herring gull reproduction).

- Accessibility to Prediction and Measurement—Assessment endpoints should be reliably predictable from measurements.

- Susceptibility to the Hazardous Agent/Stressor—Susceptibility of an organism (plant or animal) results from the combination of potential for exposure and the sensitivity to the concentrations of contaminants or other stressors of concern.

- Biological Relevance—Biological relevance of impacts to an individual organism is determined by the importance of the impact to higher levels of biological organization such as populations or communities.

  Social Relevance and Policy Goals—Assessment endpoints should be of value to decision-makers and the public. The assessment endpoints should represent an effect that would warrant consideration of site remediation or alteration of project plans. Assessment endpoint selection should also include endpoints that may be mandated legally (e.g., protected species).

The extent to which these items are considered varies from site to site, and it depends on several factors including the level of public involvement, the ecological character of the site, and the lead regulatory agency involved in the assessment.

Based on the ROCs observed during the site visits, habitat, and the above observations, the following ecological assessment endpoints are defined:

- Protection of benthic invertebrates that live in the sediment in Allen Harbor adjacent to Site 16 to ensure that COPCs in these media do not have adverse effects on survival, growth, and reproduction.

- Protection of birds, represented by the carnivorous herring gull, to ensure that ingestion of COPCs in food items and sediment does not have adverse impacts on survival, growth, and reproduction.

- Protection of mammals, represented by the omnivorous raccoon to ensure that ingestion of COPCs in food items and sediment does not have adverse impacts on survival, growth, and reproduction.

Measurement endpoints are measurable ecological characteristics that are related to the assessment endpoints (USEPA 1998a). Because it is difficult to "measure" assessment endpoints, measurement endpoints were chosen that permit inference regarding the above-described assessment endpoints. Measurement endpoints selected for this risk assessment include:

- Media Chemistry for Sediment—The measurement of chemical constituent concentrations in sediment provides the means, when compared to appropriate sediment screening values, to assess the protection of aquatic organisms that live in the sediment.

- Calculated Dietary Doses—The primary exposure route for birds and mammals is via intake of food and incidental sediment ingestion. The knowledge of specific COPC concentrations in sediment cannot be used to address this assessment endpoint directly. Rather, these measurements are used in conjunction with food ingestion rate and other

factors to calculate the daily intake, or dietary dose of a constituent. These are then compared to toxicological thresholds to address the assessment endpoint.

5.2 SELECTION OF COPCS

A risk assessment begins with a list of analytes that includes compounds and/or elements known or suspected to have originated from site-related activities. Analytes measured at non-hazardous concentrations may be candidates for elimination. Analytes known or suspected to have originated from site-related activities remaining after the screening process are COPCs.

The screening process that identifies COPCs must be environmentally conservative. That is, the process must not eliminate analytes that could pose potential ecological risk. In statistical terms, the screening process must minimize the potential for false negatives. This potential is minimized by using conservative assumptions and appropriate screening values during the COPC screening process. If possible, these screening values should be toxicologically based. For the Phase II SLERA, the most current conservative screening values for sediment have been identified and are shown in Table 5-2. These have been used for an initial screen of data from current sampling efforts. Maximum measured Allen Harbor concentrations have been compared against these screening values. If the maximum measured site concentration exceeded the screening value, the chemical was designated as a COPC.

Results of the COPC screen are shown in Table 5-3. Based on the conservative screen thirteen metals have been identified as COPCs (arsenic, barium, beryllium, cadmium, cobalt, copper, lead, manganese, mercury, nickel, selenium, vanadium, and zinc). Essential nutrients (calcium, iron, magnesium, potassium, and sodium) were not designated as COPCs due to their critical role in the maintenance of life. All detected PAH were designated as COPCs, as well as total PAH (sum of the 17 measured PAH). Total PCB, and ten pesticides (DDD, DDE, DDT, total DDT, alpha-chlordane, dieldrin, endosulfan sulfate, endrin ketone, gamma chlordane, and heptachlor) were also designated as COPCs.

5.3 EXPOSURE ASSESSMENT

Exposure assessment is a key component of risk quantitation, linking contaminants to receptors through complete pathways. Exposure refers to the degree of contact between ecological receptors at a site and the COPCs. The major difference between the Step 2 food web and Step 3a food web is with regard to the exposure assessment. In the conservative Step 2 food web, the maximum measured COPC concentration is utilized, it is assumed that the organism inhabits the site 100% of the time (habitat usage factor = 1.0), and it is assumed that contaminants in food are at the same concentration as in sediment on a dry weight basis. This is conservative because, while it does not account for the potential of bioaccumulation, use of the maximum measured concentration and consumption of food at dry weight sediment concentrations using wet weight consumption rates assures an overestimate of dose. The Step 3a food web calculation accounts for the propensity of a chemical to accumulate into food on a wet weight basis, the habitat usage factor is reflective of the specific receptor, and the dose is based on either the average sediment concentration (raccoon and herring gull) or the 95% upper

confidence limit on the mean (UCLM) (benthic organisms). Sediment and food are also consumed at wet weight concentrations in the Step 3a food web.

The appropriate exposure units for characterization of risks to benthic organisms living in the sediment of Allen Harbor are measured sediment concentrations. The method to be used to estimate appropriate exposure concentrations is detailed in Section 5.3.1.

The method of calculating dietary dose to mammals and birds follows. Dietary exposures for ROCs are estimated as body-weight-normalized daily doses for comparison to a body-weight-normalized daily dose toxicity reference values (TRVs). Separate doses are calculated for food and sediment contributions, and these are summed to produce the total dose for each ROC.

$$Dose_{total} = Dose_{food} + Dose_{sed}$$

where:

$Dose_{total}$ = Total daily dose of COPC received by receptor; mg COPC/kg-body wt/day
$Dose_{food}$ = Daily dose of COPC received by receptor; mg COPC/kg-body wt/day from food items
$Dose_{sed}$ = Daily dose of COPC received by receptor; mg COPC/kg-body wt/day from incidentally ingested sediment.

The total dose from food is given by:

$$Dose_{food} = F_f \, x \, U \, x \, C_f$$

where:

F_f = Total daily feeding rate in kg food/kg-body weight of ROC/day (wet basis). If an organism consumes different types of food items, the fraction from each food item is included in this exposure.
U = Habitat usage factor (fraction of habitat range represented by site) for receptor
C_f = Concentration of COPC in food; calculated based on Bioaccumulation Factors (BAFs) (mg chemical/kg food) in Step 3a, or assumed to be the same as those concentrations found in sediment on a dry weight basis for a Step 2 analysis.

The total dose from sediment is given by:

$$Dose_{sed} = F_s \, x \, U \, x \, C_s$$

where:

F_s = Total daily incidental sediment feeding rate in kg sediment/ kg-body weight of ROC/day (wet basis)
U = Habitat usage factor (fraction of habitat range represented by site) for receptor
C_s = Concentration of COPC in sediment; mg/kg.

Lastly, the total daily sediment feeding rate is given by:

$$F_s = F_f \times F_{xsed}$$

where:

F_s = Total daily incidental sediment feeding rate in kg sediment/day (wet basis)
F_f = Total daily feeding rate in kg food/day (wet basis)
FX_{sed} = Fraction incidental sediment ingestion as a proportion of food ingestion rate.

Information necessary for calculation includes organism body weight (BW), food ingestion rate (F_f), fraction incidental sediment ingestion as a proportion of food ingestion rate (FX_{sed}), food item fractions, area use factors, and analyte concentrations of ingested materials. Information specifically relevant to the ecology of the ROCs (i.e., body weights, food ingestion rates, and incidental sediment ingestion rates) is presented in Table 5-4 for the aquatic receptors. The primary source used for these exposure parameters was the Exposure Factors Handbook (USEPA 1993). Some parameters were calculated allometrically as per Nagy (1987). These exposure factors will be utilized in both the Step 2 and Step 3a food web calculations. Based on the size of Allen Harbor adjacent to Site 16, it has been calculated that the shoreline length is approximately 0.2 km in length, and contains an area of approximately 1 hectare.

5.3.1 Exposure Concentrations

For the Phase II SLERA Step 2, maximum measured COPC concentrations in the two Allen Harbor zones closest to Site 16 have been used to represent exposure (using both 2004 and the three 2001 samples reported in EA [2004a]), consistent with EPA guidance (USEPA 1997). Doses were calculated assuming that COPC concentrations in food are the same as those found in dry-weight sediment, or for those chemicals with bioaccumulation factors greater than 1.0 (See Section 5.3.2) food concentrations were assumed to be the dry weight sediment concentration times the bioaccumulation factor. This assures a conservative exposure scenario.

For the Phase II SLERA Step 3a, exposure concentrations for both the raccoon and gull were represented by the arithmetic mean (USEPA 1992). However, for benthic organisms, the Step 3a exposure concentrations were represented by the 95% UCLM.

The Shapiro-Wilk W-test, $p < 0.05$ was used to determine whether sediment contaminant concentrations fit either a normal or lognormal distribution. If the data fit a normal distribution, the t-distribution was used to estimate the 95% UCLM. The H-statistic was used if the data fit a lognormal distribution. If the data fit neither normal nor lognormal distributions, the 95% UCLM was determined using a standard bootstrap estimation. The bootstrap approach (Efron 1981) gives a convenient way to estimate the standard error of a sample statistic, $\hat{\theta}$, without making any assumptions of how the original data are distributed. The following is a brief description of how the standard bootstrap procedure is used to estimate the upper confidence limit (UCL) of a sample statistic (Singh et al. 1997).

Step 1. From the original sample $X_n = (X_1, X_2, \ldots, X_n)$; where the deviates Xi are independently and identically distributed, draw a sample of n observations with replacement such that each observation has the same probability of being drawn $(= \frac{1}{n})$. The new data set is called the bootstrap sample, and is typically denoted as $X_n^* = (X_1^*, X_2^*, \ldots, X_n^*)$.

Step 2. Compute the sample statistic, $\hat{\theta}^*$, of interest (in this case, the sample mean $\bar{X}$) from X_n^*.

Step 3. The procedures in Steps 1 and 2 are repeated N times (e.g., 500-2,000) generating N bootstrap estimates of the sample statistic. The general bootstrap estimate is the arithmetic mean of the N estimates, $\bar{\theta}_B = \frac{1}{N}\sum_{i=1}^{N}\hat{\theta}_i^*$. The bootstrapped standard error of $\hat{\theta}$, denoted by $\hat{\sigma}_B$, is given by:

$$\hat{\sigma}_B = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}\left(\hat{\theta}_i - \bar{\theta}_B\right)^2}.$$

Step 4. Finally, the (1-p)100% confidence limits of $\hat{\theta}$ are given by:

$$\hat{\theta} \pm z_p \hat{\sigma}_B.$$

where:

z_p is the pth quantile of the standard normal distribution.

Based on the above description, the exposure factors (arithmetic mean, maximum detect, and UCLM) utilized in this SLERA are shown in Table 5-5, along with the statistic used to calculate the UCLM for that COPC.

5.3.2 Bioaccumulation Factors

Bioaccumulation factors (BAFs) were not applied to most chemicals for Step 2 risk calculations; rather, it was assumed that food COPC concentrations would be the same concentration as dry-weight sediment (i.e., BAF is 1.0). Step 3a exposure assessments consider the propensity for a COC to bioaccumulate into the food organism and the impact of considering moisture content found in food items. Chemicals that bioaccumulate are chemicals in food items with higher concentrations than that found in the abiotic matrix (sediment). BAFs were used in the Step 3a exposure assessment.

Benthic invertebrate BAFs used in the Step 3a aquatic food web for the raccoon and herring gull are shown in Table 5-6. The majority of these BAFs or biota-sediment accumulation factors (BSAFs) are site-specific values determined during an earlier Allen Harbor study (SAIC 1996) in which co-located tissue and sediment concentrations were measured and BAFs developed. BAFs for barium and vanadium are mean uptake factors for soil invertebrates found in Sample et al. (1998).

BAFs are strict ratio relationships between concentrations in the organism (dry weight basis) and sediment (dry weight basis). Concentrations of COPC in food items are calculated as follows:

$$C_{f\ dry\ wt.} = C_{s\ dry\ wt.} \times BAF$$

where:

$C_{f\ dry\ wt.}$ = Concentration of COPC in food on a dry weight basis,
$C_{s\ dry\ wt.}$ = Concentration of COPC in sediment on a dry weight basis, and
BAF = The BAF shown in Tables 5-6 and 5-7.

The dry weight COPC concentration is then converted to wet weight basis:

$$C_{f\ wet\ wt.} = C_{f\ dry\ wt.} \times fx\ dry$$

where:

$C_{f\ wet\ wt.}$ = Concentration of COPC in food on a wet weight basis, and
fx dry = Fraction solids in the food item.

EPA (1993) shows that the fraction solids in aquatic macrophytes is 0.16, and this was utilized in the above equation to estimate COPC concentrations in food on a wet weight basis.

BSAFs relate lipid-normalized COPC concentrations in organisms to organic carbon-normalized COPC concentrations in sediment:

$$BSAF = \frac{\frac{C_{f\ dry\ wt.}}{f_l}}{\frac{C_{s\ dry\ wt.}}{f_{oc}}}$$

where:

f_l = Fraction lipid in organism, and
f_{oc} = Fraction organic carbon in sediment.

Rearrangement of this equation results in the following equation that is used to predict COPC concentrations in organisms on a dry weight basis:

$$C_{f\ dry\ wt.} = f_l \times BSAF \times \frac{C_{s\ dry\ wt.}}{f_{oc}}$$

These dry weight COPC concentrations were converted to wet weight using the same equation presented above for BAFs. For these calculations it was assumed that the lipid fraction is 0.02 (USEPA 1998b), and organic carbon fraction of 0.02 based on site-specific measurements.

It has been assumed in this SLERA that the raccoon consumes 38% vegetation. In order to estimate the concentration of COPC in plants, terrestrial BAFs and regressions (based on the uptake from soil into vegetation) have been utilized. Plant BAFs are shown in Table 5-7. Most inorganic plant BAFs are the mean uptake factor for plants found in Bechtel (1998) with the exception of beryllium, which is the vegetation uptake factor (Bv) from Baes (1984). The uptake of organic chemicals into plants was estimated using the regression equation developed by Travis and Arms (1988) which relates plant uptake to the Log Kow of the COPC.

In one instance for invertebrates (manganese), and for arsenic, cadmium, copper, lead, mercury, nickel, selenium, and zinc uptake into plants, regressions developed by Sample et al. (1998) and Bechtel (1998) were used to estimate respective concentrations in invertebrates and plants. The calculations used to estimate these concentrations are shown in Table 5-8.

Example calculations of the estimation for food concentrations follow:

Metals for Macroinvertebrates (arsenic as example)

BAF = 0.48 (Table 5-6)
Dry wt concentration in sediment 10.8 mg/kg (Table 5-9)
Fraction Solids = 0.16 (see text above)

$$C_{f\ dry\ wt.} = C_{s\ dry\ wt.} \times BAF$$
$$C_{f\ dry\ wt.} = 10.8\ mg/kg. \times 0.48 = 5.184\ mg/kg\ dry$$

This dry weight concentration is then converted to a wet weight basis as follows:

$$C_{f\ wet\ wt.} = C_{f\ dry\ wt.} \times fx\ dry$$
$$C_{f\ wet\ wt.} = 5.184\ mg/kg\ dry. \times 0.16 = 0.83\ mg/kg\ wet$$

This concentration for benthic macroinvertebrates is shown in Table 5-9.

Organics for Macroinvertebrates (Heptachlor as example)

BSAF = 2.66 (Table 5-6)
Dry wt concentration in sediment 0.000453 mg/kg (Table 5-9)
Fraction Solids = 0.16 (see text above)
Fraction lipids in organism = 0.02 (see text, page 20)
Fraction organic carbon in sediment = 0.02 (see text, page 20)

$$C_{f\ dry\ wt.} = f_l \times BSAF \times \frac{C_{s\ dry\ wt.}}{f_{oc}}$$

$$C_{f\ dry\ wt.} = 0.02 \times 2.66 \times \frac{0.00045\ mg/kg\ dry.}{0.02} = 0.001197\ mg/kg\ wet$$

This dry weight concentration is then converted to a wet weight basis as follows:

$$C_{f\ wet\ wt.} = C_{f\ dry\ wt.} \times fx\ dry$$
$$C_{f\ wet\ wt.} = 0.00133\ mg/kg\ dry. \times 0.16 = 0.00019\ mg/kg\ wet$$

This concentration for benthic macroinvertebrates is shown in Table 5-9.

The calculation of COPC concentrations in plants are similar to the BAF calculations show above for metals, with the only difference being that BAFs are found in Table 5-7 of the document, and the fraction dry for plants is assumed to be 0.15 (Exposure Factors, EPA 1993).

Table 5-9 summarizes the concentrations used in the SLERA, both for the Step 2 and Step 3a risk calculations.

5.4 TOXICITY ASSESSMENT

This section summarizes the TRVs used in the Phase II SLERA. USEPA (1997) guidance specifies that a screening ecotoxicity value should be "equivalent to a documented or best conservatively estimated chronic No Observed Adverse Effect Level (NOAEL)." The same toxicity values were utilized in both Step 2 and 3a food web risk calculations.

5.4.1 Sediment Benthic Organisms

The screening criteria used for this Phase II SLERA were designed to protect benthic organisms. Consequently, those screening values discussed in Section 5.2 and shown in Table 5-2 have been used to assess risk to benthic invertebrates. The difference between a screening and this assessment of risk is that the screen compared the maximum detected concentration to these screening values, while this risk assessment for benthic organisms is based on the upper 95% UCLM concentration.

5.4.2 NOAEL Toxicity Reference Values

ROCs were selected in Section 5.1.1 and include the herring gull and raccoon. Food web risks for avian and mammalian species have been expressed relative to a dose of chemical (mg/kg body weight/day) taken up by the organism from food and sediment. Literature-reported wildlife NOAEL TRVs and Lowest Observed Adverse Effect Level (LOAEL) TRVs (primarily based on Sample et al. 1996) are shown in Table 5-10 and 5-11, respectively. When analyte/receptor combinations were not located in Sample et al. (1996), the scientific literature was used to select alternative toxicity values and these have been reported in Table 5-10.

As noted in Sample et al. (1996), the current state of avian toxicology indicates that the use of allometric relationships, used to relate the body weight of the toxicity test organism to that of the receptor of concern, are not appropriate. Consequently, toxicity values for avian ROCs taken from Sample et al. (1996) are the same regardless of the ROC and are equivalent to that found in the test species (such as pheasant, chickens, and ducks). An allometric conversion was performed to modify the toxicity value from the test species to mammalian ROCs (Sample et al. 1996). This is due to the finding that smaller animals, such as rats and mice that are commonly used as test species in toxicity tests, have higher metabolic rates and detoxify contaminants faster than larger animals. TRVs for the raccoon are the same as those shown for the red fox in Sample et al. (1996) due to the similarity in organism size.

5.5 RISK CHARACTERIZATION

The risk characterization phase of the ERA follows EPA guidance (USEPA 1997, 1998a) and represents the linkage between exposure of COPC to ROC with the appropriate toxicity endpoints. Section 5.5.1 addresses the results of the food web.

5.5.1 Results of the Food Web Risk Assessment

Step 2 risk calculations for the raccoon and herring gull are shown in Tables 5-12 and 5-13 respectively. Hazard quotients for this exposure scenario are summarized in Table 5-14. The exposure under Step 2 is quite conservative, assuming that food organisms are all at the same concentration as that found in dry sediment. Based on this assessment, all metals and total PAH were found to represent risk to either the raccoon or gull or to both (Table 5-14). The highest hazard quotients (HQs) found were for arsenic and vanadium exposure to the raccoon (278 and 215, respectively), and mercury and zinc exposure for the herring gull (13.7 and 10.9, respectively). Neither total PCBs nor any pesticides were found to represent risk (Table 5-14).

As discussed in Section 5.3, the Step3a risk calculations were performed based on less conservative assumptions including the use of average sediment concentrations for food web exposures, and accounting for bioaccumulation potential of chemicals into food and consumption of food on a wet weight basis. The results of the Step 3a risk calculations for the raccoon and herring gull are shown in Tables 5-15 and 5-16, respectively, and are summarized in Table 5-17. In order to show a range of potential risks, in addition to presentation of the NOAEL risks, LOAEL risks have also been calculated and are shown on these tables. However, as shown in Table 5-17, NOAEL HQs are less than 1.0 for all chemical/receptor combinations. The highest HQs found in the Step 3a was 0.15 for exposure of the raccoon to arsenic and 0.04 for exposure of the herring gull to zinc. Consequently, there is no evidence that the representative ROCs are at potential risk from exposure to chemicals or metals in Allen Harbor sediment in the vicinity of Site 16.

5.5.2 Results of the Benthic Invertebrate Risk Assessment

UCLM95s for the various COPCs were used to estimate potential risk to benthic receptors. As discussed earlier, screening values used to represent low effect levels for benthic invertebrates are those shown in Table 5-2, and have been used in this section as toxicity values.

Table 5-18 shows the hazard quotients (UCLM95/screening value = HQ) for the COPCs identified for Allen Harbor. HQs for metals are relatively low, with the highest metal HQ found with copper (4.0). Additional evidence that benthic organisms are not at potential risk from metals, particularly the divalent metals such as copper, lead, nickel, and zinc is that the measured ratio of simultaneously extracted metals (SEM) to acid volatile sulfide (AVS) never exceeded 1.0 in any sample (see summary table below). This indicates that there is sufficient AVS in these sediments to ameliorate any free divalent metals. HQs for PAH are a little higher (Table 5-2), ranging from 1.57 (2-methylnaphthalene) to 14 (acenaphthene). With few exceptions, pesticides and PCBs exhibited relatively low HQs of 0.2 (heptachlor) to 2.32 (total DDT metabolites). Exceptions were gamma-chlordane at 12, endrin ketone at 48, and dieldrin at 222.

SUMMARY OF ΣSEM/AVS RATIOS – 2004 SAMPLES

Sample ID	ΣSEM/AVS Ratio
AH-03	0.036
AH-06	0.028
AH-08	0.021
AH-11	0.055
AH-17	0.022
AH-23	0.217
AH-26	0.028
AH-28	0.287
AH-29	0.053
AH-32	0.069
AH-33	0.097
AH-35	0.017
AH-40	0.109
AH-42	0.246
AH-45	0.015
AH-47	0.088
AH-49	0.407
AH-51	0.106

5.6 UNCERTAINTY

Ecological risk characterization includes analysis of uncertainty (EPA 1997). Uncertainty is distinguished from variability, and arises from lack of knowledge about factors associated with the study. Sources of uncertainty can include the process of selecting COPCs, assumptions made in establishing the CSM, adequacy of ecological characterization of the site, estimates of toxicity to receptors, and selection of model parameters. There are a number of factors that contribute to

uncertainty in the ecological risk characterization for Allen Harbor in the vicinity of Site 16, as described below.

- In cases where all samples were reported below the detection limit, the chemical was not identified as a COPC, and therefore, not carried through the risk assessment. When the project work plan was produced, the latest available methods were used to achieve the lowest possible detection limits (EA 2004b). There were few instances when the detection limits exceeded the applicable screening values, primarily in the pesticide fraction. When a sample is reported at below the detection limit, it does not mean that the concentration is zero; rather, if it is present, it is present at somewhere below the detection limit. The impact of this on the ecological risk assessment is to potentially exclude chemicals as COPCs, even though they may be present at concentrations that exceed screening levels. Examination of Table 5-3 shows that in most cases the detection limits used in this study were lower than the screening values, allowing a clear identification of COPCs. A few samples had detection limits of cadmium, selenium, PAH, and pesticides for which the detection limit exceeded the screening value; however, these were exceptions. Data quality objectives have been met for this project with respect to detection limits.

- Rapid Sediment Characterization using XRF for the analysis of nickel, copper, lead and zinc and immunoassay for the analysis of total PAH were performed to assist in the selection of samples for quantitative and forensics analysis. These techniques are "screening" by nature, and therefore have a higher degree of uncertainty. However, as shown in Figures 4-1 through 4-4, the regressions of screening results relative to quantitative results showed sufficient correlations to allow for the intended use of these screening techniques. Concentrations reported by the screening methods tended to either underestimate (metals) or overestimate (total PAHs); however, concentrations reported by these screening methods did increase or decrease as expected when compared to quantitative concentrations.

  Toxicological data used in the risk characterization represent significant uncertainty. Because there may be no known data on the effects of chemical constituents on specific ROCs, toxicological data for surrogate species are used, and this adds uncertainty.

- In the Step 2 SLERA COPCs were assumed to be 100 percent bioavailable. The assumption that COPCs are 100 percent bioavailable is highly unlikely based on soil chemistry. Elements such as lead, manganese, and zinc are common constituents of soil. In the solid soil matrix, much of these elements' soil levels are not bioavailable, and thus are not taken up into organisms exposed to these soils. The environmental behavior (and thus the bioavailability) of metals in environmental soils is complex and not well understood. The solubility and availability of these metals is dependent on a number of factors including soil Eh (a measure of the oxidation/reduction potential), pH, and availability of ligands (chemical constituents capable of bonding with metal ions) (Bodek et al. 1988).

For the majority of COPCs, site-specific BAFs and BSAFs have been used. However, it is important to recognize that there is a fair degree of variability in these accumulation factors that may vary from site to site and time to time depending on chemistry and bioavailability. This uncertainty may result in an over- or under-estimation of risk.

- The toxicological data that underpin the screening values are inherently uncertain because laboratory data are extrapolated to specific field sites such as Allen Harbor adjacent to Site 16. This uncertainty is to some extent controlled by choosing the lowest available screening values, consistent with EPA (1997) guidance to "be consistently conservative in selecting literature values...." This also contributes to overestimation of risk.

- As discussed in Section 5.5.2, a small potential for risk to benthic invertebrates were found based on comparisons to Effects Range-Low (ERL) sediment screening values. Long and MacDonald (1998) published a paper regarding the recommended uses of sediment quality guidelines such as the ERLs used in this SLERA. In that paper they provide a range of potential risk of sediments, based on comparison to the average Effects Range-Median (ERM), as shown in Table 5-18. The average ERM quotient for Allen Harbor was 0.6, and only two chemicals had ERM quotients that exceeded 1.0 (phenanthrene at 1.22 and gamma-chlordane at 1.02). According to Long and MacDonald (1998) these sediments would fit into the next-to-lowest priority sites, termed "medium-low priority." The implication of this finding is that if there are impacts on benthic invertebrates, they would be marginal.

- The area potentially impacted by Site 16 is small, and has been estimated as approximately 1 hectare and the length is approximately 0.2 km for these risk calculations. Consequently, the area use factor is small for both ROCs. It was found that if the site area was increased from 1 to 7 hectares, the NOAEL risk to raccoons from arsenic increased to 1.0. When the area use factor is artificially assumed to be 100 percent, the NOAEL risk to raccoons from arsenic is 7.0 and the HQ to the raccoon from vanadium is 4.3. No other potential contaminants had HQs greater than 1.0 for the raccoon, assuming a 100 percent area use factor. No potential contaminants had NOAEL HQ exceeding 1.0 for the herring gull, assuming a 100 percent area use factor. The area use factor is a source of uncertainty for any ecological risk assessment; however, the limited exceedances of HQs greater than 1.0, even with 100 percent area use, would imply that populations of raccoons and herring gulls are not at risk from exposure to contaminants in sediment adjacent to Site 16.

5.7 SUMMARY OF THE SLERA

Thirteen metals, PAH (with the exception of naphthalene), total PCB, and ten pesticides were identified as COPCs in (Table 5-3). No VOC were identified as COPCs in Allen Harbor adjacent to Site 16. Based on the Step 3a food web, risks to the surrogate mammal (raccoon) and the surrogate avian species (herring gull) were found to be acceptable. SEM/AVS ratios were all less than 1.0, indicating that the divalent metals (cadmium, copper, lead, nickel, and zinc) have

sufficient AVS available, and consequently, these metals would not be bioavailable to benthic invertebrates or upper trophic level receptors. Using guidelines provided in Long and MacDonald (1998), these sediments were classified as "medium-low priority," indicating that there is a small potential of risk to benthic organisms from chemicals such as PAH and pesticides.

In conclusion, risks to populations of ecological receptors exposed to sediment in Allen Harbor adjacent to Site 16 site were determined to be not likely.

6. SUMMARY AND CONCLUSIONS

The Navy EFANE initiated this investigation to collect additional sediment data to characterize potential ecological risks for the area of Allen Harbor adjacent to the Site 16 former creosote dip tank at the former NCBC Davisville facility. This characterization effort has provided additional sediment data necessary to complete a SLERA for the offshore area adjacent to Site 16, and has provided information on the influence of other possible non-Navy sources, which exist in close proximity to the site. Sediment samples collected were not only from the area immediately adjacent to the site, but also included a range of local reference stations, providing additional information for comparison to site data.

Thirteen metals, PAH (with the exception of naphthalene), total PCB, and ten pesticides were identified as COPCs in Allen Harbor. No VOC were identified as COPCs in Allen Harbor adjacent to Site 16. Based on the Step 3a food web, risks to the mammal (raccoon) and the avian species (herring gull) were found to be acceptable. SEM/AVS ratios were all less than 1.0, indicating that the divalent metals (cadmium, copper, lead, nickel, and zinc) have sufficient AVS available, and consequently, these metals would not be bioavailable to benthic invertebrates or upper trophic receptors. These sediments can be classified as "medium-low priority," indicating that there is a small potential of risk to benthic invertebrates from chemicals such as PAH and pesticides.

The reference area sediments sampled for this study proved to be dissimilar from Allen Harbor sediments adjacent to Site 16. Concentrations of all classes of chemicals were found to be higher in Allen Harbor compared to the reference areas; however, Allen Harbor has restricted flow with Narragansett Bay, as well as intensive use compared to the reference areas. PAH patterns found in Allen Harbor are similar to those found in the reference areas.

Concentrations of metals in sediments in Allen Harbor adjacent to Site 16 were fairly homogeneous and exhibited a random pattern of concentrations. According to the spatial distribution of contaminant concentrations, there was no evidence that Site 16 had contributed significant quantities of metals to Allen Harbor sediment (see Figures 4-5 through 4-7). All shoreline areas, including the shoreline associated with Site 16, appeared to represent potential sources of PAH to Allen Harbor sediment (Figure 4-8). There are many potential sources of this PAH, including storm water runoff, vehicular emissions, and other ubiquitous sources of PAH that could account for this pattern.

Advanced forensics chemical analyses were performed on samples collected from Allen Harbor, selected hydrocarbon source areas, reference areas in Narragansett Bay, and forensic reference materials representative of fire fighting training fuels. These results generated the following conclusions:

- A middle distillate petroleum signature in the former fire fighter training area (Source 3-2) generally matched the diesel range hydrocarbons in proximal sediment from a single sampling location, AH-40. However, the low levels of diesel range material at AH-40

could also have originated from more contemporary marina activities. Regardless of the origin, the middle distillate range PAHs (primarily petrogenic 2- and 3-ring PAHs) seen in this sample were not observed in any other Allen Harbor sediments which consisted of pyrogenic 4- to 6-ring PAHs. Therefore, the origin of PAHs in Allen Harbor was not attributable to middle distillate releases from Site 16 or the marina.

- The hydrocarbon signatures of creosote and heavy residual petroleum in soils from the former creosote dipping tank and pole drying/storage areas at Site 16 were not observed in Allen Harbor sediments. The pyrogenic PAHs in Source Area 1 creosotes shared a distinctive enrichment of anthracene that was absent in the proximal Allen Harbor sediments. Likewise, the genetic signature of triterpanes in the heavy residual petroleum differed from the sediments of Allen Harbor.

- Although the Priority Pollutant PAH concentrations in Allen Harbor sediments (EPAPAH averaged 12 mg/kg and ranged from 2.51 mg/kg to 28.1 mg/kg) matched many other coastal areas around the United States (EPAPAH ~ 20 mg/kg at the upper 96th percentile), they were elevated relative to sediments from the three Reference Areas (EPAPAH averaged 0.8 mg/kg and range from 0.03 mg/kg to 2.38 mg/kg). However, the concentrations of TOC (included natural and anthropogenic organic matter) and hopane (a marker for heavy petroleum) indicated that the loading of all organic material in Allen Harbor was elevated. Consequently, the high level of PAHs in Allen Harbor relative to the Reference Areas was likely explained by one or more of the following factors: 1) the higher density of commercial and industrial activities, 2) higher density of paved areas, and 3) potential flushing restrictions at the mouth of Allen Harbor.

- Some hydrocarbon impacts to sediments arising from the drainage of Allen's Harbor Road have been demonstrated. Specifically, sediment samples collected proximate to drains from this road (AH-49 and AH-28) exhibited elevated PAHs (EPAPAHs from 25.0 mg/kg to 28.1 mg/kg). The heavy residual petroleum in sediments from the storm drain associated with Allen's Harbor Road (Source 4-1) matched that found in the outfall (AH-49) and neighboring (AH-28) sediments. The source of this heavy residual petroleum was attributed to typical components of urban runoff (e.g., abraded petroleum asphalt and motor oils). Although not observed in the storm drain sample, low levels of diesel range hydrocarbons in AH-28 and AH-49 were consistent with runoff from streets and parking lots.

- Two Allen Harbor sediment samples (EPAPAH = 11.6 mg/kg in AH-03 and EPAPAH = 24.0 mg/kg in AH-29) collected adjacent to marina dock pilings throughout Allen Harbor contained refined tar consistent with creosote. As demonstrated in the Elizabeth River Case Study, the relative abundances of diagnostic PAHs demonstrated the direct impact of various types of creosote (Stout *et al.*, 2003). As such, it can be concluded that creosote likely leached from the marina docks at these locations. Although not selected for advanced chemical analyses, sample AH-35 (EPAPAH = 22.3 mg/kg) was located next to a dock piling and may have also experienced localized creosote leaching.

In summary, it was apparent from the data collected that the Allen Harbor sediment samples adjacent to Site 16 exhibited localized PAH impacts from dock pilings and storm water runoff. It was found that there is no strong evidence that Site 16 source areas contributed significant amounts of chemicals to Allen Harbor. Chemical concentrations in the harbor are relatively homogeneous, indicating the absence of a point source, yet at higher concentrations than the reference areas because of the restricted flow into and out of the harbor. Risks to avian and mammalian receptors were acceptable. Finally, benthic invertebrates were found to have a slight potential of risk from exposure to PAH and pesticides.

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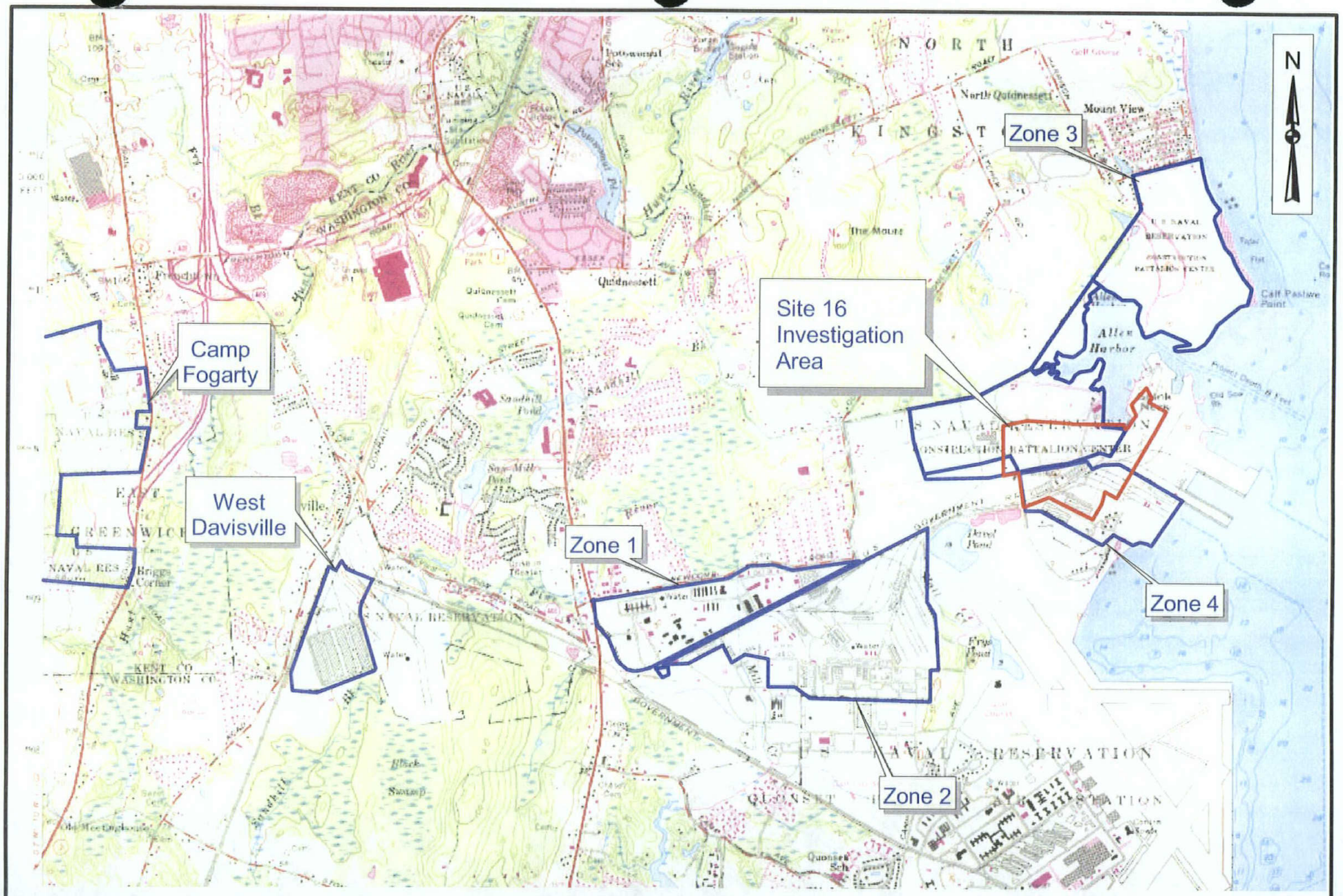

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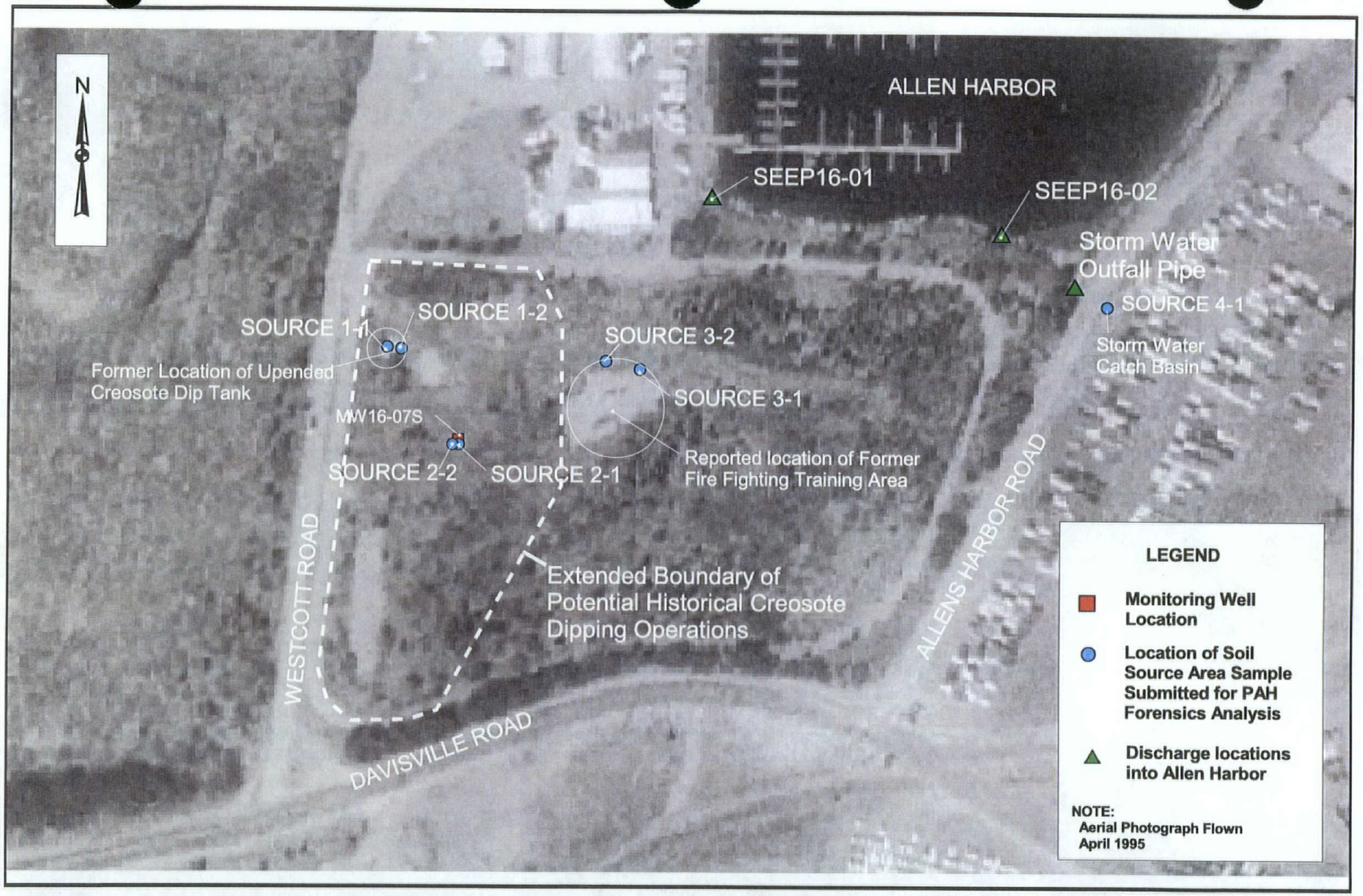
PHASE II REMEDIAL INVESTIGATION
FORMER NCBC DAVISVILLE FACILITY,
NORTH KINGSTOWN, RHODE ISLAND

SITE LOCUS MAP

FIGURE 1-1



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100 0 100 Feet

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POTENTIAL SOIL SOURCE AREA SAMPLE LOCATIONS

FIGURE 1-2

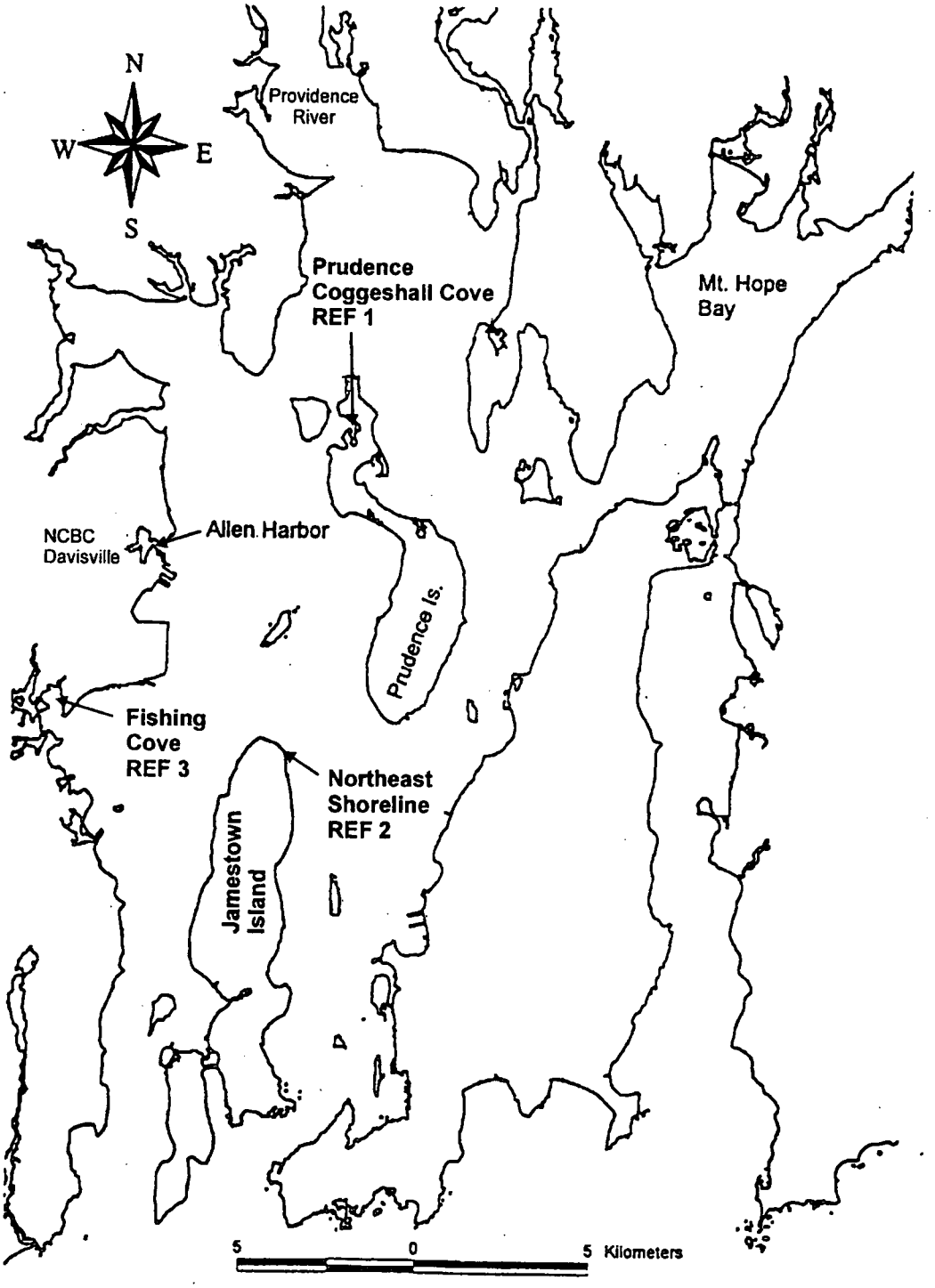

Figure 2-1. Allen Harbor and Reference Locations in Narragans tt Bay.

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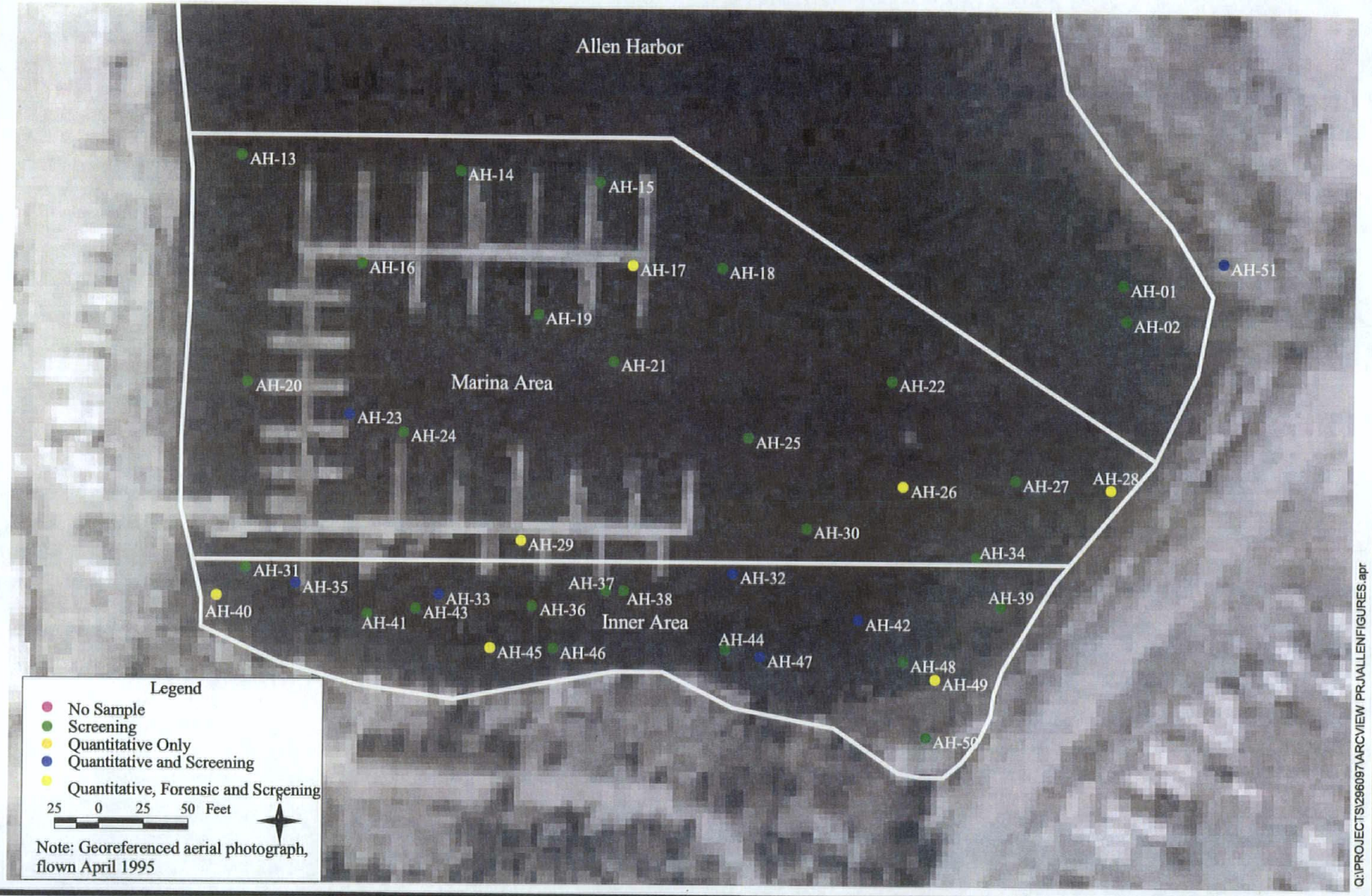

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Sediment Sample Locations
Inner Harbor

FIGURE 2-2

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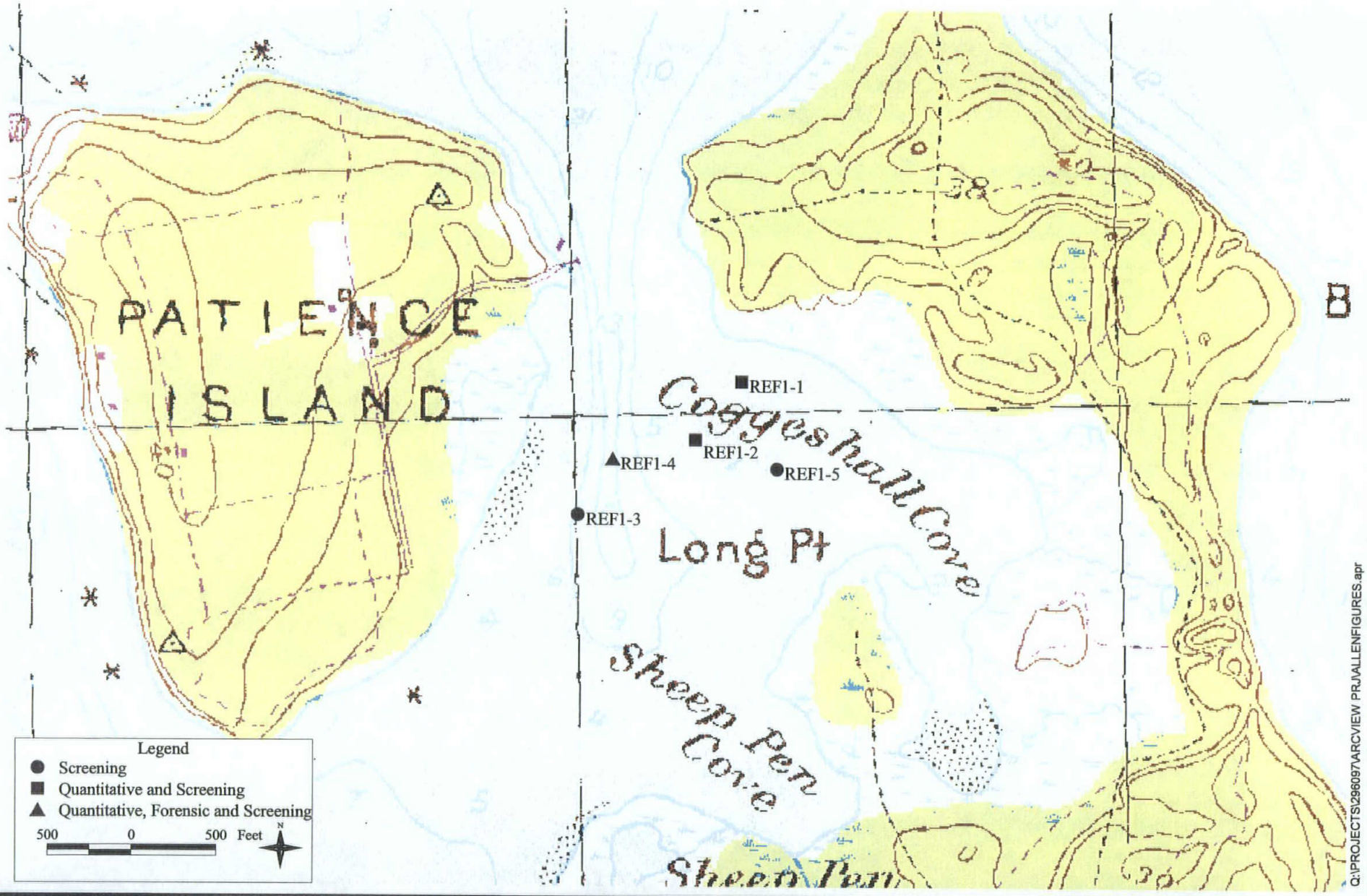
Sediment Sample Locations
Outer Harbor

FIGURE 2-3

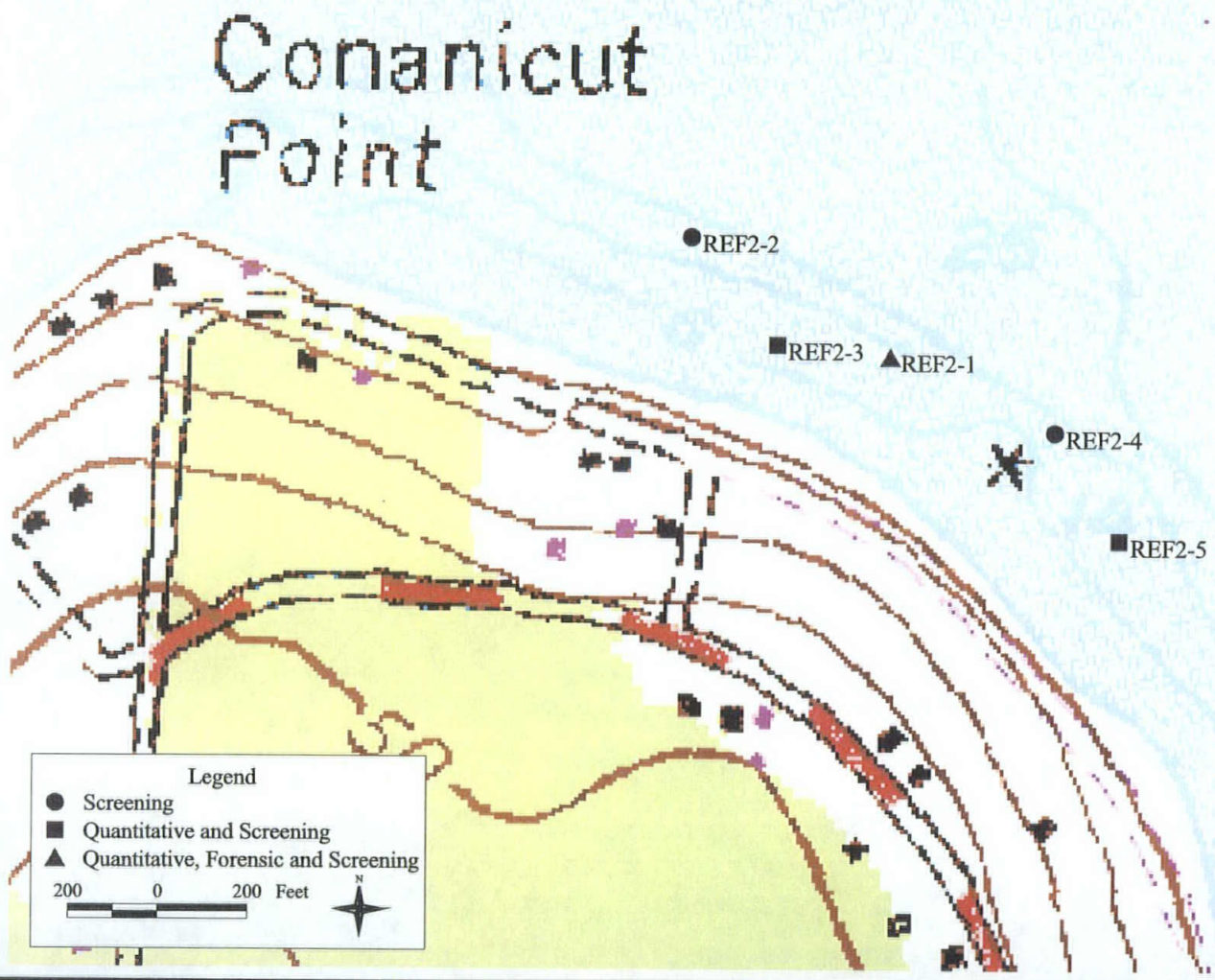


EA Engineering, Science, and Technology, Inc.

EFANE
IR Program Site 16
Phase 2 Screening Level Ecological Risk Assessment,
Former NCBC Davisville Facility
North Kingstown, Rhode Island

Reference Sediment Sampling Locations
Prudence Coggeshall Cove

FIGURE 2-4



Q:\PROJECTS\296097\ARCVIEW PRJ\ALLENFIGURES.apr

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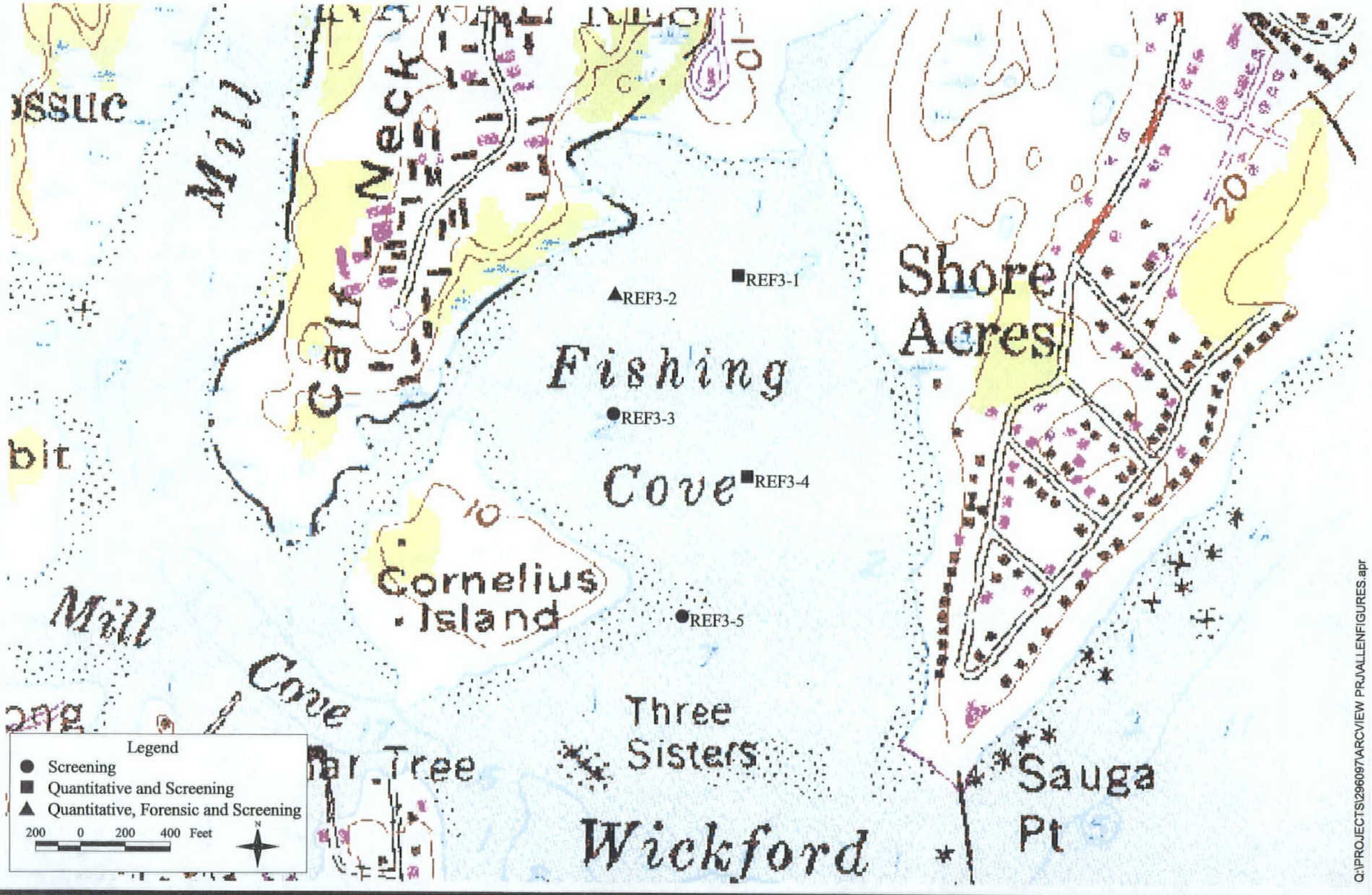
Former NCBC Davisville Facility
North Kingstown, Rhode Island

Reference Sediment Sampling Locations
Northwest of Jamestown Island

FIGURE 2-5



EA Engineering, Science, and Technology, Inc.

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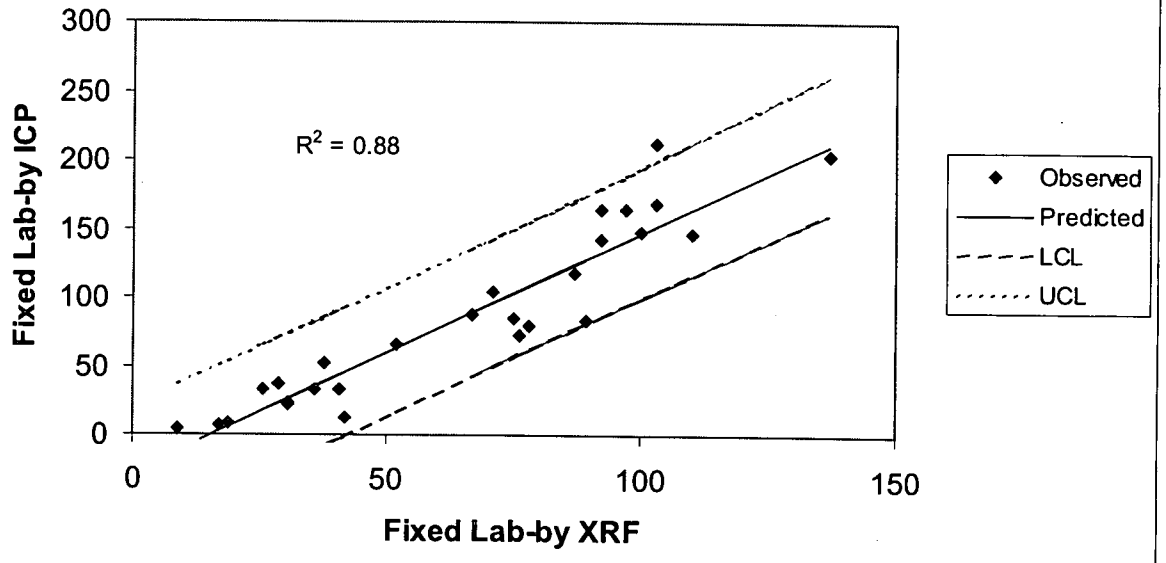
Phase 2 Screening Level Ecological Risk Assessment,
Former NCBC Davisville Facility
North Kingstown, Rhode Island

Reference Sediment Sampling Locations
Fishing Cove

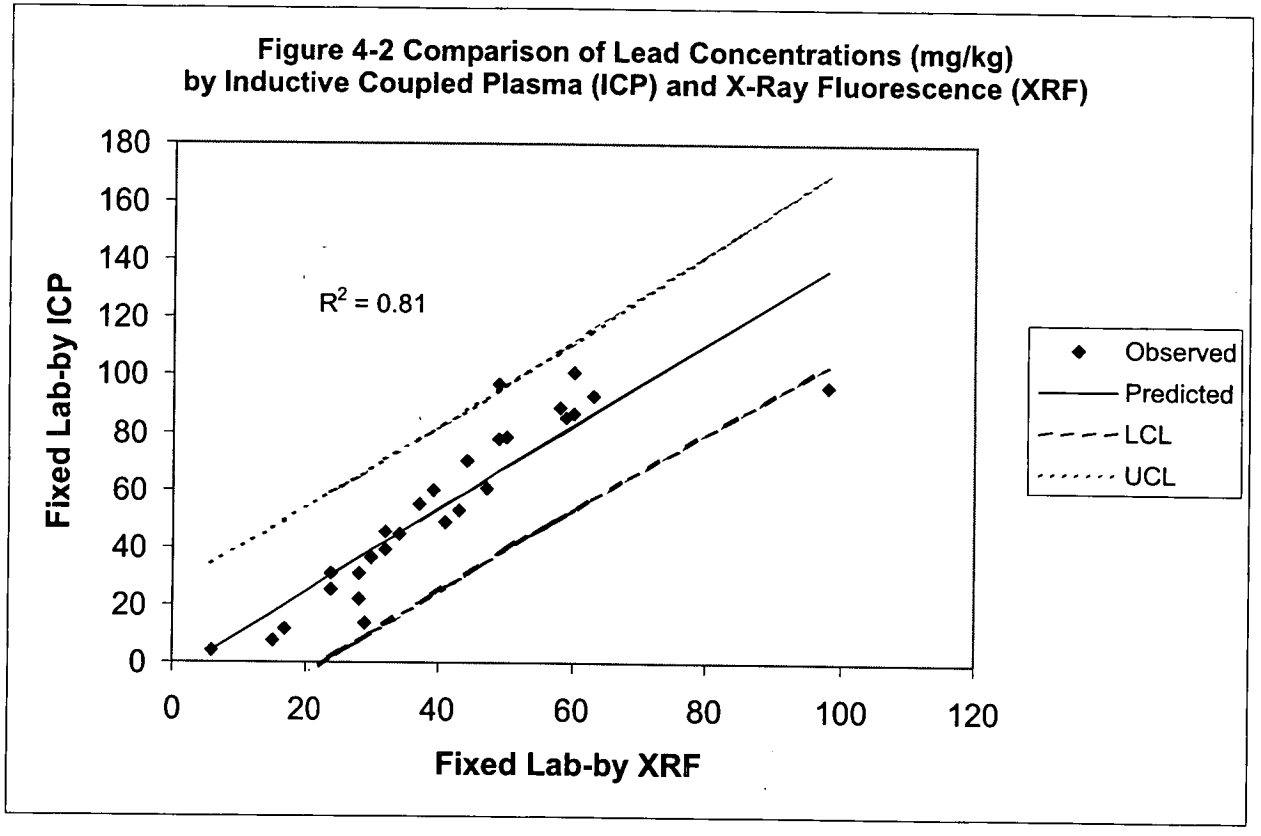
FIGURE 2-6

Figure 4-1 Comparison of Copper Concentrations (mg/kg) by Inductive Coupled Plasma (ICP) and X-Ray Fluorescence (XRF)



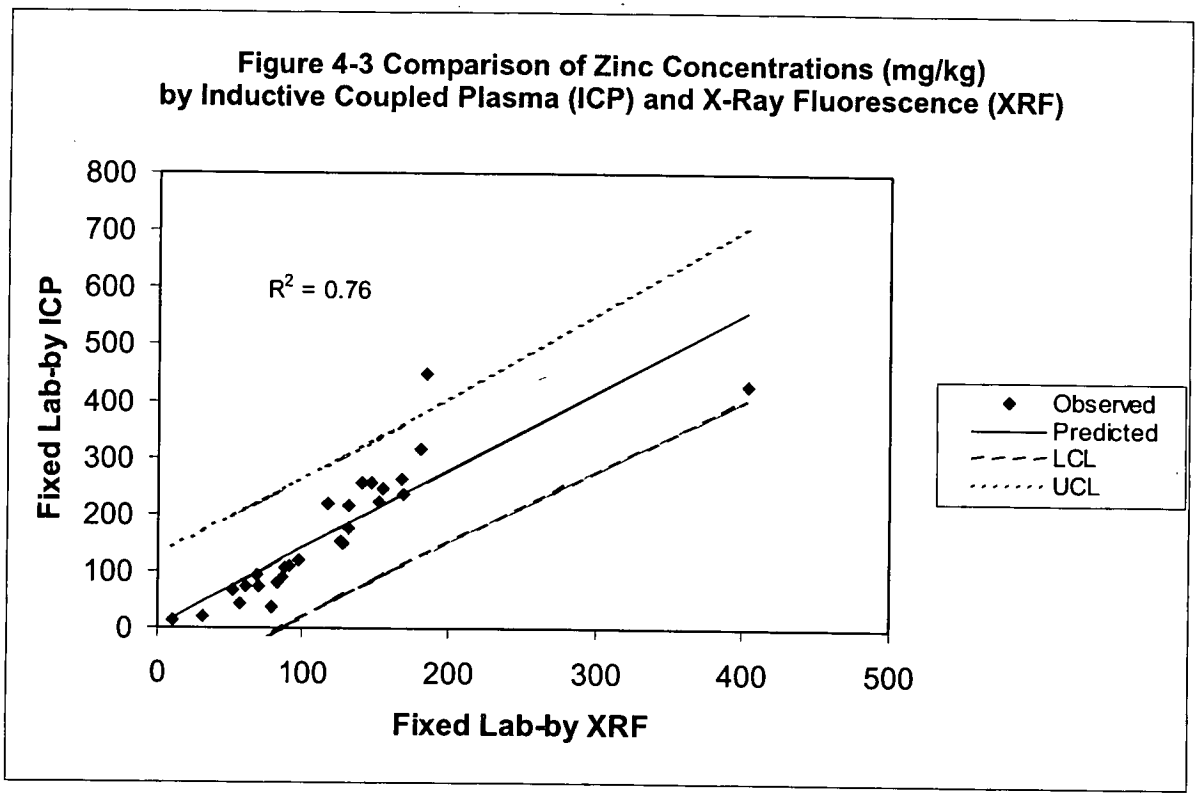
LCL = LOWER CONFIDENCE LEVEL
UCL = UPPER CONFIDENCE LEVEL

EA ENGINEERING, SCIENCE, AND TECHNOLOGY	EFANE IR PROGRAM SITE 16 FORMER NCBC DAVISVILLE FACILITY, NORTH KINGSTOWN, RHODE ISLAND	FIGURE 4-1



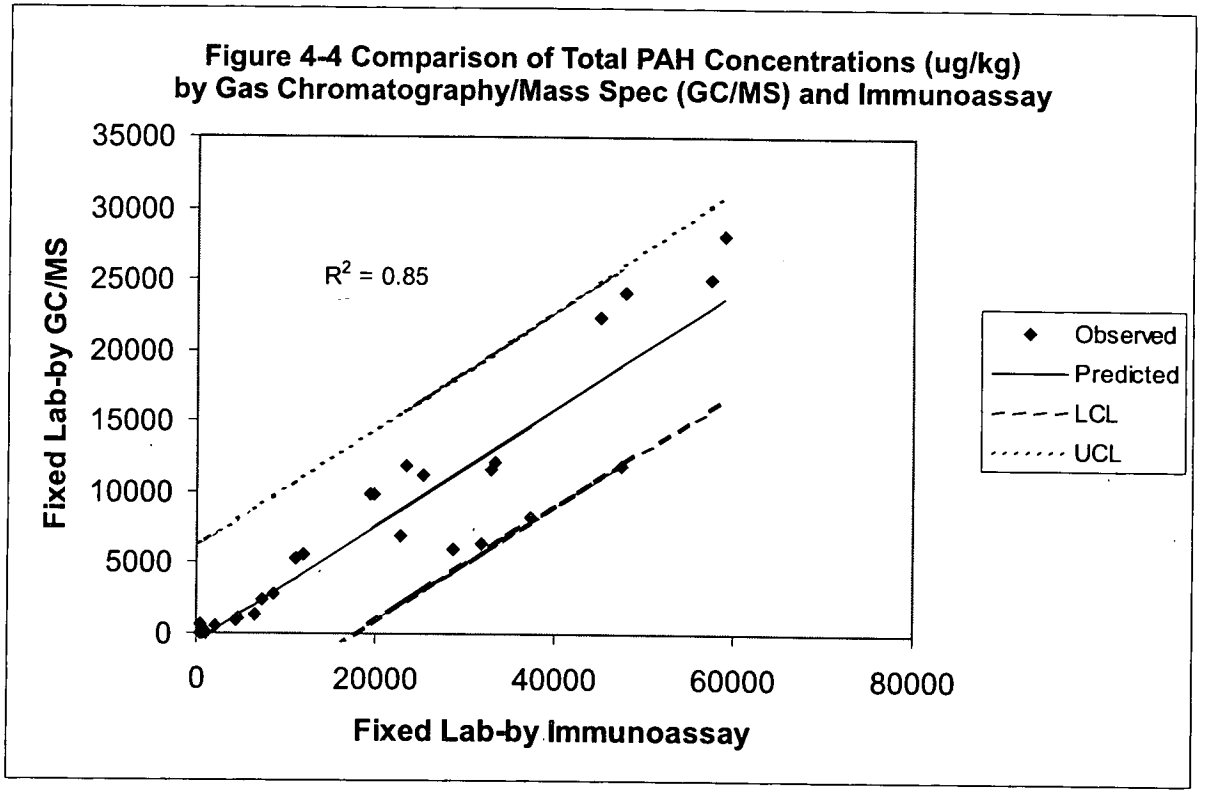
LCL = LOWER CONFIDENCE LEVEL
UCL = UPPER CONFIDENCE LEVEL

EA ENGINEERING, SCIENCE, AND TECHNOLOGY	EFANE IR PROGRAM SITE 16 FORMER NCBC DAVISVILLE FACILITY, NORTH KINGSTOWN, RHODE ISLAND	FIGURE 4-2



LCL = LOWER CONFIDENCE LEVEL
UCL = UPPER CONFIDENCE LEVEL

EA ENGINEERING, SCIENCE, AND TECHNOLOGY	EFANE IR PROGRAM SITE 16 FORMER NCBC DAVISVILLE FACILITY, NORTH KINGSTOWN, RHODE ISLAND	FIGURE 4-3



LCL = LOWER CONFIDENCE LEVEL
UCL = UPPER CONFIDENCE LEVEL

EA ENGINEERING, SCIENCE, AND TECHNOLOGY	EFANE IR PROGRAM SITE 16 FORMER NCBC DAVISVILLE FACILITY, NORTH KINGSTOWN, RHODE ISLAND	FIGURE 4-4

EA Engineering, Science, and Technology, Inc.

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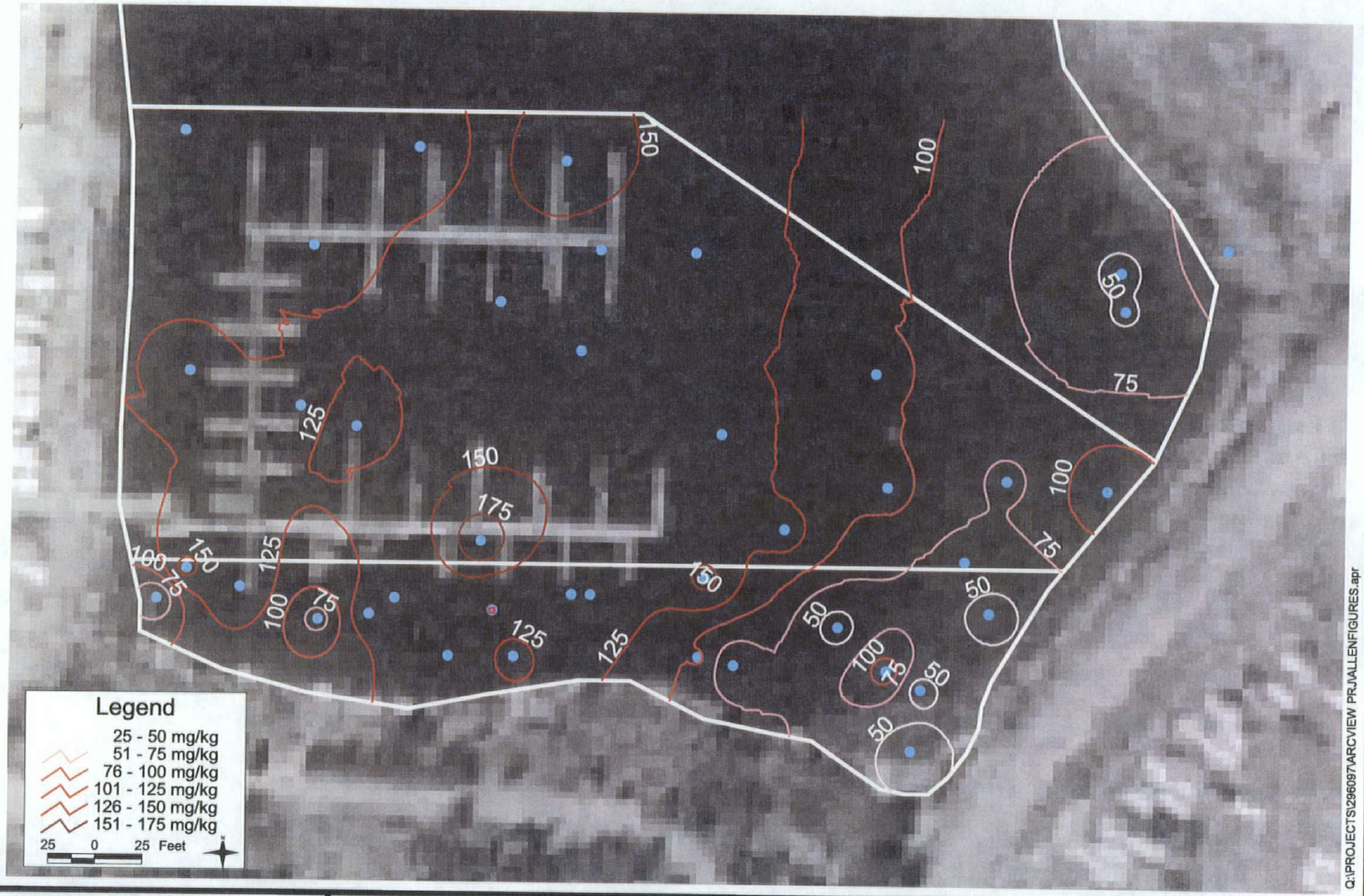
North Kingstown, Rhode Island

Predicted Lead Concentration Contours (mg/kg)

FIGURE 4-5



EA Engineering, Science, and Technology, Inc.

EFANE
IR Program Site 16
Phase 2 Screening Level Ecological Risk Assessment,
Former NCBC Davisville Facility
North Kingstown, Rhode Island

Predicted Copper Concentration Contours (mg/kg)

FIGURE 4-6

EA Engineering, Science, and Technology, Inc.

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Phase 2 Screening Level Ecological Risk Assessment,
Former NCBC Davisville Facility
North Kingstown, Rhode Island

Predicted Zinc Concentration Contours (mg/kg)

FIGURE 4-7

EA Engineering, Science, and Technology, Inc.

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IR Program Site 16
Phase 2 Screening Level Ecological Risk Assessment,
Former NCBC Davisville Facility
North Kingstown, Rhode Island

Predicted Total-PAH Concentration Contours (mg/kg)

FIGURE 4-8

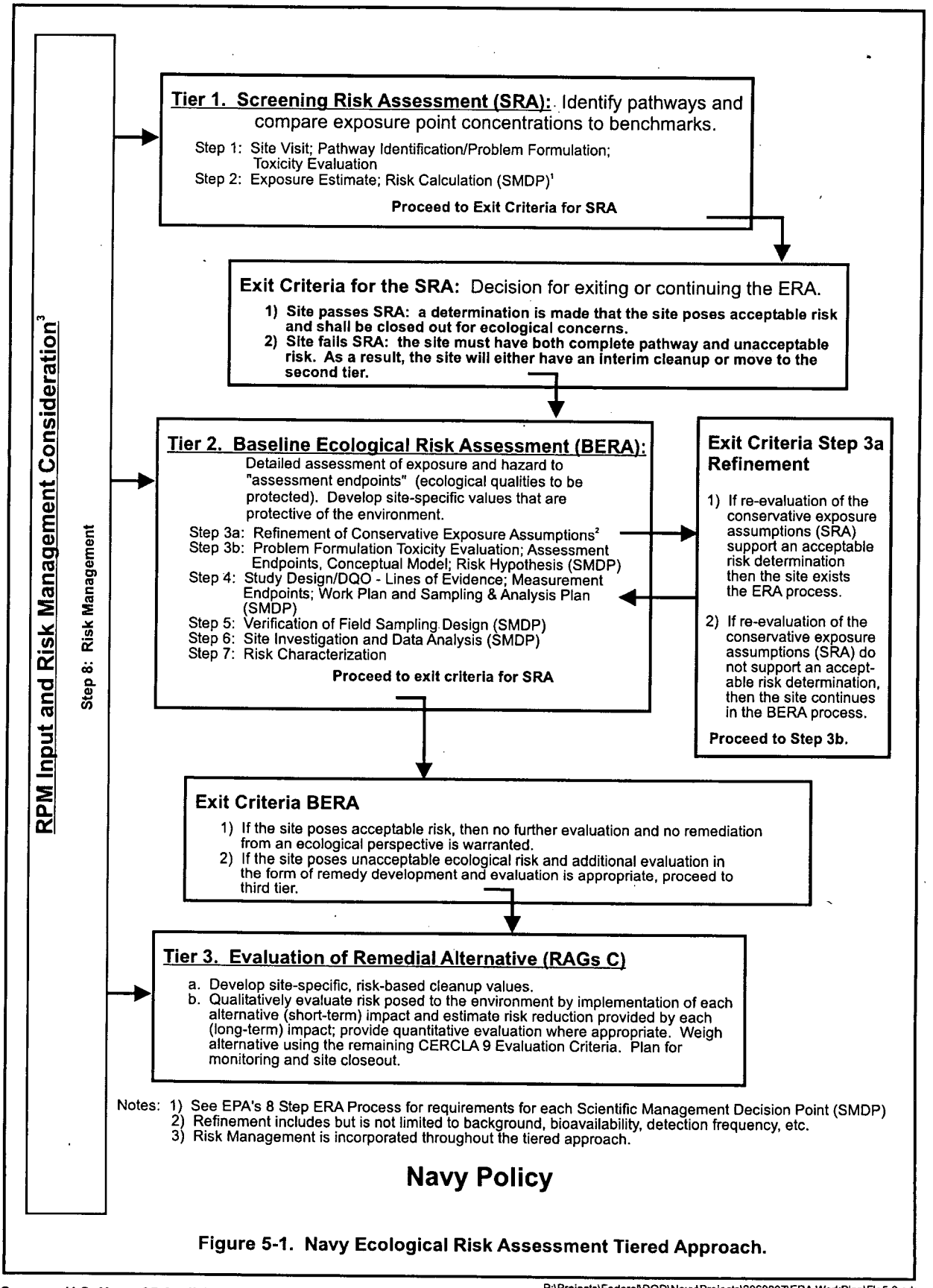

Figure 5-1. Navy Ecological Risk Assessment Tiered Approach.

Source: U.S. Navy, 05 April 1999.

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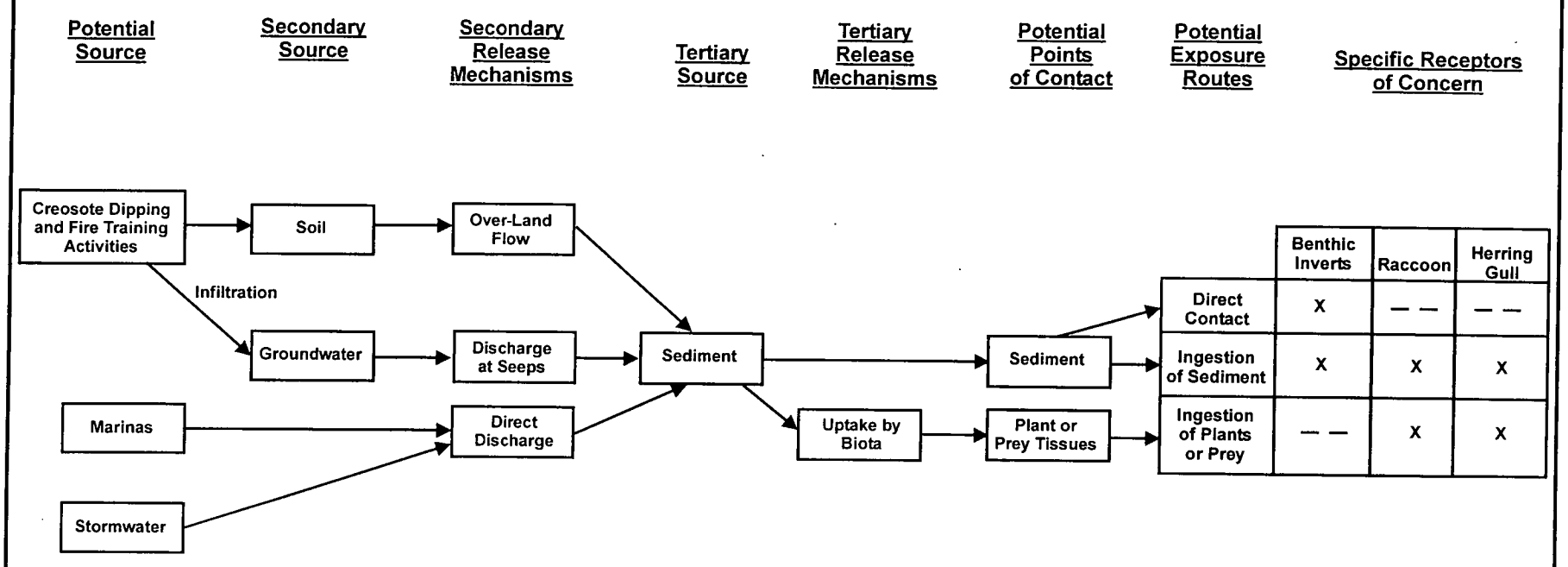

Figure 5-2. Ecological Conceptual Site Model.

P:\Projects\Federal\DOD\Navy\Projects\2960097\3391-AHRI_FS+ERA\Final\Figures\CdrFiles\Fig5-2.cdr

TABLE 2-1 SCREENING METALS RSC RESULTS

SAMPLE	Analysis Date	Ni (ppm)	Stdev	Q	Cu (ppm)	Stdev	Q	Zn (ppm)	Stdev	Q	Pb (ppm)	Stdev	Q
AH COREBOT	4/6/2004			U	36			69			34		
AH CORETOP1	4/6/2004			U	48	5		83	4		50	4	
AH-01	4/1/2004			U	33			63			22		
AH-02	4/1/2004			U	35			67			24		
AH-03	3/31/2001			U	78			131			47		
AH-04	3/31/2001			U	63			110			39		
AH-05	3/31/2001			U	78			134			41		
AH-06	3/31/2001			U	67			126			41		
AH-06MS	3/31/2001			U	73			125			37		
AH-06MSD	3/31/2001			U	68			121			42		
AH-06 duplicate	3/31/2001			U	71			121			41		
AH-07	3/31/2001			U	81			112			33		
AH-08	3/31/2001			U	100			147			44		
AH-08 duplicate	3/31/2001			U	94			188			44		
AH-09	3/31/2001			U	65			116			40		
AH-10	3/31/2001			U	77			134			41		
AH-11	3/31/2001			U	89			128			39		
AH-11MS	3/31/2001			U	79			121			58		
AH-11 duplicate	3/31/2001			U	92			133			49		
AH-12	3/31/2001	7		U	12		J	30			13		J
AH-13	4/1/2004			U	85			131			51		
AH-14	3/31/2001			U	78			113			34		
AH-15	3/31/2001			U	124	18		168	4		49	1	
AH-16	3/31/2001			U	83			133			41		
AH-17	3/31/2001			U	103			184			49		
AH-18	4/1/2004			U	92			137			49		
AH-18 duplicate	4/1/2004			U	89			133			48		
AH-19	3/31/2001			U	95			184			55		
AH-20	4/1/2004			U	91			139			57		
AH-20 duplicate	4/1/2004			U	82			141			50		
AH-21	4/1/2004			U	91			149			50		
AH-22	4/6/2004			U	74			141			47		

TABLE 2-1 SCREENING METALS RSC RESULTS

SAMPLE	Analysis Date	Ni (ppm)	Stdev	Q	Cu (ppm)	Stdev	Q	Zn (ppm)	Stdev	Q	Pb (ppm)	Stdev	Q
AH-23	4/1/2004			U	92			155			63		
AH-24	4/1/2004			U	83			139			55		
AH-25	4/3/2004			U	102			151			54		
AH-26	4/6/2004			U	75			132			37		
AH-27	4/6/2004			U	52			92			29		
AH-28	4/3/2004	10		U	87			403			98		
AH-29	4/3/2004			U	137			181			60		
AH-30	4/3/2004			U	94			149			59		
AH-27	4/6/2004			U	52			92			29		
AH-28	4/3/2004	10		U	87			403			98		
AH-29	4/3/2004			U	137			181			60		
AH-30	4/3/2004			U	94			149			59		
AH-31	4/3/2004			U	110			156			47		
AH-32	4/3/2004			U	110			169			60		
AH-33	4/3/2004			U	92			152			59		
AH-33.duplicate	4/3/2004			U	100			150			62		
AH-34	4/6/2004			U	50			74			31		
AH-35	4/3/2004			U	103			168			50		
AH-36	4/3/2004			U	89			132			56		
AH-37	4/6/2004			U	103			157			50		
AH-38	4/6/2004			U	99	7		165	2		56	5	
AH-39	4/3/2004	4		U	27		J	74			26		
AH-39 duplicate	4/3/2004	5		U	30			82			36		
AH-40	4/6/2004	5		U	41			70			28		
AH-41	4/3/2004			U	48			66			31		
AH-42	4/6/2004			U	29			68			24		
AH-43	4/3/2004			U	97			154			46		
AH-44	4/6/2004			U	72			116			52		
AH-45	4/3/2004			U	97			140			49		
AH-46	4/6/2004			U	86			132			38		
AH-47	4/3/2004			U	36			86			30		
AH-48	4/6/2004			U	79			143			50		
AH-49	4/3/2004	1		U	31			51			43		

TABLE 2-1 SCREENING METALS RSC RESULTS

SAMPLE	Analysis Date	Ni (ppm)	Stdev	Q	Cu (ppm)	Stdev	Q	Zn (ppm)	Stdev	Q	Pb (ppm)	Stdev	Q
AH-50	4/3/2004			U	26		J	82			89		
AH-51	4/6/2004	2		U	71			117			58		
AH-48	4/6/2004			U	79			143			50		
AH-49	4/3/2004	1		U	31			51			43		
AH-50	4/3/2004			U	26		J	82			89		
AH-51	4/6/2004	2		U	71			117			58		
AH-REF1-1	3/31/2001			U	9		J	10			6		J
AH-REF1-2	3/31/2001			U	17		J	31			15		
AH-REF1-3	3/31/2001			U	14		J	20		J	12		J
AH-REF1-4	3/31/2001			U	42			78			29		
AH-REF1-5	3/31/2001			U	11		J	33			13		J
AH-REF2-1	3/31/2001			U	26		J	91			32		
AH-REF2-2	3/31/2001			U	28		J	63			22		
AH-REF2-3	4/1/2004			U	31			82			28		
AH-REF2-4	4/1/2004			U	20		J	41			15		
AH-REF2-5	4/1/2004			U	19		J	57			17		
AH-REF3-1	4/1/2004			U	46			88			32		
AH-REF3-2	4/1/2004			U	52			98			34		
AH-REF3-3	4/1/2004			U	51			83			39		
AH-REF3-4	4/1/2004			U	38			61			24		
AH-REF3-5	4/1/2004	9	2	U	14	3	J	26	3	J	8	1	J
Limit of Quantitation (LOQ)		**55**			**29**			**27**			**15**		
Method Detection Limit (MDL)		**17**			**9**			**8**			**4**		

Stdev: **Standard Deviation from laboratory duplicate assay analyses (n=2)**

Data Qualifiers (Q):

U: The value was less than MDL or the analyte was not detected.

J: Estimated value (MDL < measured value < LOQ)

TABLE 2-2 SCREENING PAH RESULTS

SAMPLE	tPAH (µg/Kg)				
LABEL	1	2	Mean	Stdev	%RSD
AH-01	9038		9038	NA	NA
AH-02	9230		9230	NA	NA
AH-03	47474		47474	NA	NA
AH-04	10091		10091	NA	NA
AH-05	11569		11569	NA	NA
AH-06	8737		8737	NA	NA
AH-06 dup	7637		7637	NA	NA
AH-07	6792		6792	NA	NA
AH-08	11985		11985	NA	NA
AH-08 dup	12982		12982	NA	NA
AH-09	8806		8806	NA	NA
AH-10	10088		10088	NA	NA
AH-11	10902	11329	11115	301	2.71%
AH-11 dup	11682		11682	NA	NA
AH-12	1976		1976	NA	NA
AH-13	47953		47953	NA	NA
AH-14	13609		13609	NA	NA
AH-15	12777	16128	14453	2370	16.40%
AH-16	14240	18481	16361	2999	18.33%
AH-17	22696		22696	NA	NA
AH-18	18726		18726	NA	NA
AH-19	17997		17997	NA	NA
AH-20	43235		43235	NA	NA
AH-20 dup	49569		49569	NA	NA
AH-21	16886		16886	NA	NA
AH-22	16792		16792	NA	NA
AH-23	23434		23434	NA	NA
AH-24	23708		23708	NA	NA
AH-25	20262		20262	NA	NA
AH-26	19902		19902	NA	NA
AH-27	22215		22215	NA	NA
AH-28	57405		57405	NA	NA
AH-29	47965		47965	NA	NA
AH-30	20760		20760	NA	NA
AH-31	46137		46137	NA	NA
AH-32	19462		19462	NA	NA
AH-33	33266		33266	NA	NA
AH-33 dup	33208		33208	NA	NA
AH-34	28315	34217	31266	4173	13.35%
AH-35	45094		45094	NA	NA
AH-36	29956		29956	NA	NA
AH-37	32620		32620	NA	NA

TABLE 2-2 SCREENING PAH RESULTS

SAMPLE	tPAH (µg/Kg)				
LABEL	1	2	Mean	Stdev	%RSD
AH-38	29538		29538	NA	NA
AH-39	34508		34508	NA	NA
AH-39 dup	48673		48673	NA	NA
AH-40	28792		28792	NA	NA
AH-41	5910		5910	NA	NA
AH-42	34531	31460	32995	2171	6.58%
AH-43	27892	24977	26434	2062	7.80%
AH-44	45733		45733	NA	NA
AH-45	32897	30823	31860	1467	4.60%
AH-46	18120		18120	NA	NA
AH-47	37273		37273	NA	NA
AH-48	35040		35040	NA	NA
AH-49	58996		58996	NA	NA
AH-50	35641		35641	NA	NA
AH-51	24895	25791	25343	634	2.50%
REF 1-1	<1000		<1000	NA	NA
REF 1-2	1065		1065	NA	NA
REF 1-3	<1000		<1000	NA	NA
REF 1-4	3025		3025	NA	NA
REF 1-5	1016		1016	NA	NA
REF 2-1	4434		4434	NA	NA
REF 2-2	1798		1798	NA	NA
REF 2-3	2203		2203	NA	NA
REF 2-4	1191		1191	NA	NA
REF 2-5	1083		1083	NA	NA
REF 3-1	6531		6531	NA	NA
REF 3-2	7306		7306	NA	NA
REF 3-3	6480		6480	NA	NA
REF 3-4	4706		4706	NA	NA
REF 3-5	2187		2187	NA	NA

Definitions:

Mean: **Arithmethic Mean**

Stdev: **Standard Deviation from laboratory duplicate assay analyses (n=2)**

% RSD: **Percent Relative Standard Deviation whereby; [{stdev/mean} * 100]**

Label: **AH = Allen Harbor, REF = Reference Site**

TABLE 2-3 QUANTITATIVE AND ENVIRONMENTAL FORENSICS SELECTION

Area	Station ID	DATE COMPLETED	ACTUAL COORDINATES Northing (ft)	ACTUAL COORDINATES Easting (ft)	Comments	Quantitative Analysis?	F rensic Analysis ?
Allen Harbor - Outer Area	AH-01	3/25/2004	194920.023	523758.554	T-PAH 9038 ppb		
	AH-02	3/25/2004	194899.813	523761.101	T-PAH 9230 ppb		
	AH-03	3/23/2004	196149.714	524078.846	T-PAH 47474 ppb, external marina	Yes	Yes
	AH-04	3/23/2004	195954.692	523853.647	T-PAH 10091ppb		
	AH-05	3/23/2004	195830.585	523922.114	T-PAH 11569 ppb		
	AH-06	3/23/2004	195778.447	523609.760	T-PAH 8737 ppb, MS/MSD and duplicate	Yes	Yes
	AH-07	3/22/2004	195597.266	523505.863	T-PAH 6792 ppb		
	AH-08	3/22/2004	195557.350	523739.086	T-PAH 11985 ppb, external marina	Yes	
	AH-09	3/22/2004	195534.791	523291.795	T-PAH 8806 ppb		
	AH-10	3/22/2004	195366.645	523545.624	T-PAH 10088 ppb		
	AH-11	3/22/2004	195198.172	523454.974	T-PAH 1115 ppb, MS/MSD and duplicate	Yes	
	AH-12	3/23/2004	195108.843	523685.651	T-PAH 1976 ppb		
	AH-51	3/27/2004	194932.682	523815.281	T-PAH25343 ppb, black beauty	Yes	

TABLE 2-3 QUANTITATIVE AND ENVIRONMENTAL FORENSICS SELECTION

Area	Station ID	DATE COMPLETED	ACTUAL COORDINATES Northing (ft)	ACTUAL COORDINATES Easting (ft)	Comments	Quantitative Analysis?	Forensic Analysis ?
Allen Harbor - Marina Area	AH-13	3/25/2004	194989.503	523255.266	T-PAH 47953 ppb		
	AH-14	3/23/2004	194982.361	523380.152	T-PAH 13609 ppb		
	AH-15	3/23/2004	194975.935	523459.649	T-PAH 14453 ppb		
	AH-16	3/23/2004	194929.499	523323.996	T-PAH 16361 ppb		
	AH-17	3/23/2004	194928.825	523479.179	T-PAH 22696 ppb, inner marina	Yes	Yes
	AH-18	3/24/2004	194927.860	523530.169	T-PAH 18726 ppb		
	AH-19	3/23/2004	194900.639	523425.733	T-PAH 17997 ppb		
	AH-20	3/25/2004	194862.215	523259.934	T-PAH 43535 ppb		
	AH-21	3/24/2004	194875.184	523469.456	T-PAH 16886 ppb		
	AH-22	3/27/2004	194864.866	523628.490	T-PAH 16792 ppb		
	AH-23	3/24/2004	194844.423	523318.302	T-PAH 23434 ppb, inner marina	Yes	
	AH-24	3/24/2004	194833.828	523348.558	T-PAH 23708 ppb		
	AH-25	3/26/2004	194831.512	523545.778	T-PAH 20262 ppb		
	AH-26	3/27/2004	194804.520	523635.405	T-PAH 19902 ppb, Gradation from Outfall and Marina	Yes	Yes
	AH-27	3/27/2004	194808.514	523699.124	T-PAH 22215 ppb		
	AH-28	3/25/2004	194803.810	523752.900	T-PAH 57405 ppb	Yes	Yes
	AH-29	3/26/2004	194773.392	523417.169	T-PAH 47965 ppb, inner marina	Yes	Yes
	AH-30	3/26/2004	194781.336	523580.332	T-PAH 20760 ppb		
	AH-31	3/26/2004	194757.314	523259.557	T-PAH 46137		

TABLE 2-3 QUANTITATIVE AND ENVIRONMENTAL FORENSICS SELECTION

Area	Station ID	DATE COMPLETED	ACTUAL COORDINATES Northing (ft)	ACTUAL COORDINATES Easting (ft)	Comments	Quantitative Analysis?	Forensic Analysis ?
Allen Harbor - Site 16 Shore & Storm Water Outfall Area (Inner Area)	AH-32	3/26/2004	194754.834	523537.837	T-PAH 19462 ppb, inner marina and Site 16	Yes	
	AH-33	3/26/2004	194742.354	523370.452	T-PAH 33266 ppb, inner marina and Site 16	Yes	
	AH-34	3/27/2004	194764.938	523676.870	T-PAH 31266 ppb		
	AH-35	3/26/2004	194747.514	523287.697	T-PAH 45094 ppb, Gradation from seep	Yes	
	AH-36	3/26/2004	194736.309	523423.720	T-PAH 29956 ppb		
	AH-37	3/26/2004	194745.122	523465.982	T-PAH 32620 ppb		
	AH-38	3/26/2004	194745.145	523476.087	T-PAH 29538 ppb		
	AH-39	3/25/2004	194737.281	523690.588	T-PAH 34508 ppb		
	AH-40	3/27/2004	194741.021	523243.899	T-PAH 28792 ppb, seep sample	Yes	Yes
	AH-41	3/26/2004	194730.690	523329.207	T-PAH 5910 ppb		
	AH-42	3/27/2004	194729.090	523609.705	T-PAH 32995 ppb, gradation from Outfall	Yes	
	AH-43	3/26/2004	194733.864	523356.841	T-PAH 26434 ppb		
	AH-44	3/26/2004	194712.416	523534.448	T-PAH 45733 ppb		
	AH-45	3/26/2004	194711.711	523399.888	T-PAH 31860 ppb, close to Site 16, but not seep or outfall	Yes	Yes
	AH-46	3/26/2004	194711.676	523435.661	T-PAH 18120 ppb		
	AH-47	3/26/2004	194707.936	523553.743	T-PAH 37273, capture second seep	Yes	
	AH-48	3/27/2004	194705.973	523635.924	T-PAH 35040 ppb		
	AH-49	3/25/2004	194696.186	523654.244	T-PAH 58996 ppb, closest to outfall	Yes	Yes
	AH-50	3/25/2004	194663.187	523649.358	T-PAH 35641 ppb		

TABLE 2-3 QUANTITATIVE AND ENVIRONMENTAL FORENSICS SELECTION

Area	Station ID	DATE COMPLETED	ACTUAL COORDINATES Northing (ft)	ACTUAL COORDINATES Easting (ft)	Comments	Quantitative Analysis?	Forensic Analysis ?
Coggeshall Cove-Prudence Is.	REF1-1	3/24/2004	208774.113	369189.374	T-PAH < 1000 ppb	Yes	
	REF1-2	3/24/2004	208425.945	368914.482	T-PAH 1065 ppb	Yes	
	REF1-3	3/24/2004	207978.303	368210.904	T-PAH <1000 ppb		
	REF1-4	3/24/2004	208310.623	368417.334	T-PAH 3025 ppb	Yes	Yes
	REF1-5	3/24/2004	208254.148	369406.523	T-PAH 1016 ppb		
Northeast Shoreline-Jamestown Is.	REF2-1	3/24/2004	178464.332	364727.922	T-PAH 4434 ppb	Yes	Yes
	REF2-2	3/24/2004	178730.676	364275.109	T-PAH 1798 ppb		
	REF2-3	3/24/2004	178489.664	364472.019	T-PAH 2203 ppb	Yes	
	REF2-4	3/24/2004	178295.174	365104.642	T-PAH 1191 ppb		
	REF2-5	3/24/2004	178052.426	365252.970	T-PAH 1083 ppb	Yes	
Fishing Cove	REF3-1	3/25/2004	182100.819	343952.291	T-PAH 6531 ppb	Yes	
	REF3-2	3/25/2004	182016.702	343394.692	T-PAH 7306 ppb	Yes	Yes
	REF3-3	3/25/2004	181480.123	343393.752	T-PAH 6480 ppb		
	REF3-4	3/25/2004	181199.509	344000.124	T-PAH 4706 ppb	Yes	
	REF3-5	3/25/2004	180572.19	343712.214	T-PAH 2187 ppb		

TABLE 2-3 QUANTITATIVE AND ENVIRONMENTAL FORENSICS SELECTION

Area	Station ID	DATE COMPLETED	ACTUAL COORDINATES Northing (ft)	ACTUAL COORDINATES Easting (ft)	Comments	Quantitative Analysis?	Forensic Analysis ?
Field duplicate-	DUP-01	3/22/2004	195198.172	523454.974	dup of AH-11	Yes	
Field duplicate-	DUP-02	3/22/2004	195557.350	523739.086	dup of AH-8		
Field duplicate-	DUP-03	3/23/2004	195778.447	523609.760	dup of AH-6	Yes	Yes
Field duplicate-	DUP-04	3/24/2004	194927.860	523530.169	dup of AH-18		
Field duplicate-	DUP-05	3/25/2004	194862.215	523259.934	dup of AH-20		
Field duplicate-	DUP-06	3/25/2004	194737.281	523690.588	dup of AH-39		
Field duplicate-	DUP-07	3/26/2004	194742.354	523370.452	dup of AH-33	Yes	
Matrix Spike/M.S. Duplicate-indicate station location	AH-11-MS/MSD	3/23/2004	193198.172	523454.974		Yes	
	AH-06-MS/MSD	3/23/2004	195778.447	523609.760		Yes	
Rinsate Blanks	RINS-01	X	X	X		Yes	
	RINS-02	X	X	X		Yes	
	RINS-03	X	X	X			
	RINS-04	X	X	X			
Seep-core sample Top	Core 1-top	3/27/2004	194746.203	523258.102		Yes	
Seep-core sample Bottom	Core 1- bot	3/27/2004	194746.203	523258.102		Yes	

TABLE 2-3 QUANTITATIVE AND ENVIRONMENTAL FORENSICS SELECTION

Area	Station ID	DATE COMPLETED	ACTUAL COORDINATES Northing (ft)	ACTUAL COORDINATES Easting (ft)	Comments	Quantitative Analysis?	Forensic Analysis ?
Davisville Storm Water Outfall-core sample Top	Core 2 - top	3/27/2004	194720.321	523654.815	No Sample		
Davisville Storm Water Outfall-core sample Bottom	Core 2 - bot	3/27/2004	194720.321	523654.815	No Sample		
Source 1 - Dip Tank Area	SOURCE1-1	3/26/2004	194536	522819			Yes
	SOURCE1-2	3/26/2004	194534	522836			Yes
Source 2 - MW16-07S area	SOURCE2-1	3/26/2004	194419	522908			Yes
	SOURCE2-2	3/26/2004	194419	522900			Yes
Source 3 - FFFTA	SOURCE3-1	3/26/2004	194510	523127			Yes
	SOURCE3-2	3/26/2004	194520	523086			Yes
Source 4 - SW Catch Basin	SOURCE4-1		194588	523693			Yes

*** - easting and northing in Rhode Island State Plane NAD27**

TABLE 3-1 GRAIN SIZE AND TOTAL ORGANIC CARBON RESULTS

Allen Harbor – Outer Area				
Station ID	**% Gravel**	**% Sand**	**% Silt & Clay Size**	**% TOC**
AH-03	14.1	58.0	27.9	2.77
AH-06	0.0	1.8	98.2	3.20
AH-08	4.8	22.4	72.9	4.68
AH-11	9.7	79.4	10.9	3.90
Allen Harbor – Marina Area				
AH-17	0.4	3.8	95.8	5.25
AH-23	0.0	20.8	79.2	3.73
AH-26	0.7	23.2	76.1	3.10
AH-28	5.2	78.7	16.1	3.10
AH-29	0.0	2.6	97.4	5.01
Allen Harbor Inner Area				
AH-32	0.0	4.4	95.5	4.29
AH-33	0.0	7.3	92.7	3.89
AH-35	1.3	10.3	88.4	4.55
AH-40	1.4	92.0	6.6	0.78
AH-42	11.3	80.5	8.1	1.13
AH-45	9.1	15.9	75.0	4.97
AH-47	11.9	78.0	10.0	1.60
AH-49	0.8	97.8	1.4	1.36
AH-51	1.8	54.2	44.0	5.05
Core 1-Bot	21.2	59.2	19.6	1.18
Core 1-Top	5.7	79.7	14.6	1.27
Coggeshall Cove - Prudence Is.				
REF 1-1	0.0	98.4	1.6	0.18
REF 1-2	0.0	95.5	4.5	0.31
REF 1-4	14.3	57.3	28.4	1.97
Northeast Shoreline – Jamestown Is.				
REF 2-1	0.0	1.2	98.8	2.85
REF 2-3	10.6	62.1	27.4	2.51
REF 2-5	3.1	87.7	9.2	1.03
Fishing Cove				
REF 3-1	1.5	12.7	85.8	2.86
REF 3-2	0.0	13.3	86.7	No data
REF 3-4	0.0	32.7	67.3	1.89

TABLE 4-1 SUMMARY OF QUANTITATIVE ANALYSES (ANALYTES WITH A MINIMUM OF ONE DETECTION)

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Allen Harbor-Marina							
GenChem	Total Organic Carbon	2.10		5.25		%	5/5
Grain Size	Gravel	.4		5.2		%	3/5
Grain Size	Sand	2.6		78.7		%	5/5
Grain Size	Silt & Clay	16.1		97.4		%	5/5
Inorganics	Aluminum	3760		15900		mg/kg	5/5
Inorganics	Arsenic	3.9		18		mg/kg	5/5
Inorganics	Barium	48.3		89.9		mg/kg	5/5
Inorganics	Beryllium	1		1.9		mg/kg	5/5
Inorganics	Cadmium	.32		2.4		mg/kg	5/5
Inorganics	Chromium	32.1		66.8		mg/kg	5/5
Inorganics	Cobalt	5.6		10.2		mg/kg	5/5
Inorganics	Copper	85.5		212		mg/kg	5/5
Inorganics	Iron	11300		38800		mg/kg	5/5
Inorganics	Lead	54.8		101		mg/kg	5/5
Inorganics	Magnesium	2100		7890		mg/kg	5/5
Inorganics	Manganese	97.4		312		mg/kg	5/5
Inorganics	Mercury	.066		.38		mg/kg	5/5
Inorganics	Nickel	19.7		33.1		mg/kg	5/5
Inorganics	Potassium	2330		4380		mg/kg	4/5
Inorganics	Vanadium	14.8		80.5		mg/kg	5/5
Inorganics	Zinc	176		449		mg/kg	5/5
AVS	Cadmium	.00188		.00885		µmol/g	5/5
AVS	Copper	.0552		.56824		µmol/g	5/5
AVS	Lead	.16246		.38705		µmol/g	5/5
AVS	Nickel	.05112		.21468		µmol/g	5/5
AVS	Zinc	2.12376		4.78514		µmol/g	5/5
AVS	ΣSEM	2.44		5.38		µmol/g	5/5
AVS	Acid Volatile Sulfide	16.3		157		µmol/g	5/5
AVS	ΣSEM/AVS Ratio	0.022		0.28		--	5/5
PAHS	2-Methylnaphthalene	21.20	J	39.74		µg/kg	5/5

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Allen Harbor-Marina							
PAHS	Acenaphthene	22.87	J	97.39		µg/kg	5/5
PAHS	Acenaphthylene	171.97	J	785.17		µg/kg	5/5
PAHS	Anthracene	208.38	J	792.27		µg/kg	5/5
PAHS	Benz(a)anthracene	380.61	J	1339.47		µg/kg	5/5
PAHS	Benzo(a)pyrene	497.20	J	1623.42		µg/kg	5/5
PAHS	Benzo(b)fluoranthene	641.86	J	2195.47		µg/kg	5/5
PAHS	Benzo(k)fluoranthene	617.11	J	2033.61		µg/kg	5/5
PAHS	Benzo[g,h,I]perylene	411.55	J	1243.88		µg/kg	5/5
PAHS	Chrysene	626.91	J	2227.35		µg/kg	5/5
PAHS	Dibenz(a,h)anthracene	100.55	J	317.72		µg/kg	5/5
PAHS	Fluoranthene	1083.67	J	4751.11		µg/kg	5/5
PAHS	Fluorene	39.43	J	136.72		µg/kg	5/5
PAHS	Indeno(1,2,3-c,d)pyrene	462.31	J	1294.80		µg/kg	5/5
PAHS	Naphthalene	36.52	J	128.42	J	µg/kg	5/5
PAHS	Phenanthrene	497.50	J	3316.29		µg/kg	5/5
PAHS	Pyrene	1049.11	J	4322.01		µg/kg	5/5
PCBS	PCB-1260	17	J	70		µg/kg	5/5
Pesticides	4,4'-DDD	1.6		3.3		µg/kg	2/5
Pesticides	4,4'-DDE	3.4	J	3.4	J	µg/kg	1/5
Pesticides	Dieldrin	8.1		8.1		µg/kg	1/5
Pesticides	Gamma-chlordane	5.3	J	10		µg/kg	3/5
Volatiles	2-Butanone	20	J	20	J	µg/kg	1/5
Volatiles	Acetone	200		200		µg/kg	1/5
Allen Harbor-Outer Area							
GenChem	Total Organic Carbon	2.77		5.05		%	5/5
Grain Size	Gravel	4.8		14.1		%	3/5
Grain Size	Sand	1.8		58		%	5/5
Grain Size	Silt & Clay	27.9		98.2		%	5/5
Inorganics	Aluminum	6540		12000		mg/kg	5/5
Inorganics	Arsenic	7.4		10.7		mg/kg	5/5
Inorganics	Barium	35.5		126		mg/kg	5/5

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Allen Harbor-Outer Area							
Inorganics	Beryllium	0.85		1.5		mg/kg	5/5
Inorganics	Cadmium	.22		.81		mg/kg	5/5
Inorganics	Calcium	22600		22600		mg/kg	1/5
Inorganics	Chromium	26.7		50.3		mg/kg	5/5
Inorganics	Cobalt	5.3		8.5		mg/kg	5/5
Inorganics	Copper	79.6		148		mg/kg	5/5
Inorganics	Iron	18000		31100		mg/kg	5/5
Inorganics	Lead	48.9	J	88.9	J	mg/kg	5/5
Inorganics	Magnesium	3120		7190		mg/kg	5/5
Inorganics	Manganese	134		210		mg/kg	5/5
Inorganics	Mercury	.15		.29		mg/kg	5/5
Inorganics	Nickel	16.6		30.3		mg/kg	5/5
Inorganics	Potassium	1620	J	3400	J	mg/kg	5/5
Inorganics	Silver	.42		.62		mg/kg	2/5
Inorganics	Vanadium	24.2		49.7		mg/kg	5/5
Inorganics	Zinc	154		256		mg/kg	5/5
AVS	Cadmium	.00372		.00793		µmol/g	5/5
AVS	Copper	.04097		.14151		µmol/g	5/5
AVS	Lead	.13949		.25498		µmol/g	5/5
AVS	Nickel	.08361		.12342		µmol/g	3/5
AVS	Zinc	1.34282		2.63781		µmol/g	5/5
AVS	ΣSEM	1.69		3.03		µmol/g	5/5
AVS	Acid Volatile Sulfide	38.4		144		µmol/g	5/5
AVS	ΣSEM/AVS Ratio	0.021		0.055		--	5/5
PAHS	2-Methylnaphthalene	6.97	J	16.2	J	µg/kg	5/5
PAHS	Acenaphthene	8.62		33.37		µg/kg	5/5
PAHS	Acenaphthylene	58.74	J	354	J	µg/kg	5/5
PAHS	Anthracene	93.37		359		µg/kg	5/5
PAHS	Benz(a)anthracene	167.23		715.48		µg/kg	5/5
PAHS	Benzo(a)pyrene	213.60		792.32		µg/kg	5/5
PAHS	Benzo(b)fluoranthene	280.68		1408.11		µg/kg	5/5

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Allen Harbor-Outer Area							
PAHS	Benzo(k)fluoranthene	270.95		1100.54		µg/kg	5/5
PAHS	Benzo[g,h,i]perylene	173.03		516.30		µg/kg	5/5
PAHS	Chrysene	292.35		1644.13		µg/kg	5/5
PAHS	Dibenz(a,h)anthracene	43.37		156.39		µg/kg	5/5
PAHS	Fluoranthene	376.06		1869.80		µg/kg	5/5
PAHS	Fluorene	16.83		52.88		µg/kg	5/5
PAHS	Indeno(1,2,3-c,d)pyrene	204.58		689.38		µg/kg	5/5
PAHS	Naphthalene	13.64		39.27		µg/kg	5/5
PAHS	Phenanthrene	177.09		1114.52		µg/kg	5/5
PAHS	Pyrene	406.32		1977.37		µg/kg	5/5
PCBS	PCB-1260	19	J	59	J	µg/kg	4/5
Pesticides	4,4'-DDE	1.6		2.3	J	µg/kg	3/5
Pesticides	Gamma-Chlordane	1.55	J	8.7	J	µg/kg	2/5
Volatiles	2-Butanone	7	J	16	J	µg/kg	3/5
Volatiles	Acetone	220		390	J	µg/kg	2/5
Allen Harbor-Inner Area							
GenChem	Total organic carbons	.78		4.97		%	8/8
Grain Size	Gravel	0.8		11.9		%	6/8
Grain Size	Sand	4.4		97.8		%	8/8
Grain Size	Silt & Clay	1.4		95.5		%	8/8
Inorganics	Aluminum	2410		14600		mg/kg	8/8
Inorganics	Arsenic	3		15		mg/kg	7/8
Inorganics	Barium	13.8		133		mg/kg	8/8
Inorganics	Beryllium	.29		1.7		mg/kg	8/8
Inorganics	Cadmium	.23		.83		mg/kg	5/8
Inorganics	Calcium	5110		5110		mg/kg	1/8
Inorganics	Chromium	7.7		59.7		mg/kg	8/8
Inorganics	Cobalt	2.1		9.3		mg/kg	8/8
Inorganics	Copper	23		168		mg/kg	8/8
Inorganics	Iron	5820		34600		mg/kg	8/8
Inorganics	Lead	22		86.6		mg/kg	8/8

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Allen Harbor-Inner Area							
Inorganics	Magnesium	1690		6620		mg/kg	6/8
Inorganics	Manganese	46.2		301		mg/kg	8/8
Inorganics	Mercury	.039	J	.31		mg/kg	8/8
Inorganics	Nickel	6.3		28.2		mg/kg	8/8
Inorganics	Potassium	3010		3920		mg/kg	4/8
Inorganics	Vanadium	8.6		60.1		mg/kg	8/8
Inorganics	Zinc	66.9		262		mg/kg	8/8
AVS	Cadmium	.00167		.00785		µmol/g	5/8
AVS	Copper	.03971		.54259		µmol/g	8/8
AVS	Lead	.09205		.39602		µmol/g	8/8
AVS	Nickel	.02251		.22183		µmol/g	6/8
AVS	Zinc	.70586		2.67061		µmol/g	8/8
AVS	ΣSEM	0.93		3.31		µmol/g	8/8
AVS	Acid Volatile Sulfide	2.27		220		µmol/g	8/8
AVS	ΣSEM/AVS Ratio	0.015		0.41		--	8/8
PAHS	2-Methylnaphthalene	15.76	J	51.56	J	µg/kg	8/8
PAHS	Acenaphthene	30.65		294.89		µg/kg	8/8
PAHS	Acenaphthylene	27.95		314.45	J	µg/kg	8/8
PAHS	Anthracene	197.53	J	814.22		µg/kg	8/8
PAHS	Benz(a)anthracene	362.69	J	1596.69		µg/kg	8/8
PAHS	Benzo(a)pyrene	389.82		1654.23		µg/kg	8/8
PAHS	Benzo(b)fluoranthene	420.58		1765.93		µg/kg	8/8
PAHS	Benzo(k)fluoranthene	433.61		1799.07		µg/kg	8/8
PAHS	Chrysene	501.0		2416.21		µg/kg	8/8
PAHS	Dibenzo(a,h)anthracene	75.76		331.17		µg/kg	8/8
PAHS	Fluoranthene	1081.60	J	4872.56		µg/kg	8/8
PAHS	Fluorene	43.69	J	248.78		µg/kg	8/8
PAHS	Indeno(1,2,3-c,d)pyrene	306.66		1349.72		µg/kg	8/8
PAHS	Naphthalene	30.46		91.66		µg/kg	8/8
PAHS	Phenanthrene	526.04	J	4493.70		µg/kg	8/8
PAHS	Pyrene	904.73		4721.00		µg/kg	8/8

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Allen Harbor-Inner Area							
PCBS	PCB-1260	16		55	J	µg/kg	7/8
Pesticides	4,4'-DDD	1.7		1.7	J	µg/kg	1/8
Pesticides	Alpha-Chlordane	2		2		µg/kg	1/8
Pesticides	Delta BHC	.92	J	.92	J	µg/kg	1/8
Pesticides	Dieldrin	3.7		3.7		µg/kg	1/8
Pesticides	Gamma-Chloradane	5.1	J	6.8		µg/kg	3/8
Volatiles	1,1-Dichloroethene	0.9	J	.9	J	µg/kg	1/8
Volatiles	2-Butanone	8	J	20	J	µg/kg	7/8
Volatiles	Cis-1,2-Dichlorothene	5	J	880		µg/kg	3/8
Volatiles	Trans-1,2-Dichlorothene	3	J	3	J	µg/kg	1/8
Volatiles	Trichloroethene	2	J	2	J	µg/kg	1/8
Coggeshall Cove							
GenChem	Total organic carbons	.18		1.97		%	3/3
Grain Size	Gravel	14.3		14.3		%	1/3
Grain Size	Sand	57.3		98.4		%	3/3
Grain Size	Silt & Clay	1.6		28.4		%	3/3
Inorganics	Aluminum	1920		4060		mg/kg	3/3
Inorganics	Arsenic	2.8		2.8		mg/kg	1/3
Inorganics	Barium	7.2		7.2		mg/kg	1/3
Inorganics	Beryllium	.14		.23		mg/kg	3/3
Inorganics	Cadmium	.044		.044		mg/kg	1/3
Inorganics	Calcium	6680				mg/kg	1/3
Inorganics	Chromium	4.4		13.7		mg/kg	3/3
Inorganics	Cobalt	1.3		2.4		mg/kg	3/3
Inorganics	Iron	3650		8150		mg/kg	3/3
Inorganics	Lead	3.9	J	13.5	J	mg/kg	3/3
Inorganics	Magnesium	3420		3420		mg/kg	1/3
Inorganics	Manganese	45.6		112		mg/kg	3/3
Inorganics	Mercury	.0246		.079		mg/kg	3/3
Inorganics	Nickel	3.3		6.5		mg/kg	3/3

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
			Coggeshall Cove				
Inorganics	Silver	.26	J	.26	J	mg/kg	1/3
Inorganics	Vanadium	3.6		9.6		mg/kg	3/3
Inorganics	Zinc	36.1		36.1		mg/kg	1/3
AVS	Copper	.01674		.07635		µmol/g	3/3
AVS	Lead	.01296		.0867		µmol/g	3/3
AVS	Nickel	.05015		.05015		µmol/g	1/3
AVS	Zinc	.10508		.45563		µmol/g	3/3
AVS	ΣSEM	0.1468		0.6639		µmol/g	3/3
AVS	Acid Volatile Sulfide	0.0242		28.3		µmol/g	3/3
AVS	ΣSEM/AVS Ratio	0.0234		12.4		--	3/3
PAHS	2-Methylnaphthalene	.43		5.07	J	µg/kg	2/3
PAHS	Acenaphthene	.10	J	2.15		µg/kg	3/3
PAHS	Acenaphthylene	.56		13.02	J	µg/kg	3/3
PAHS	Anthracene	.86		18.21		µg/kg	3/3
PAHS	Benz(a)anthracene	2.01		36.82		µg/kg	3/3
PAHS	Benzo(a)pyrene	2.41		54.75		µg/kg	3/3
PAHS	Benzo(b)fluoranthene	2.52		68.74		µg/kg	3/3
PAHS	Benzo(k)fluoranthene	2.42		58.71		µg/kg	3/3
PAHS	Benzo[G,H,I]perylene	2.16		52.46		µg/kg	3/3
PAHS	Chrysene	2.35		48.48		µg/kg	3/3
PAHS	Dibenzo(a,h)anthracene	.44		11.73		µg/kg	3/3
PAHS	Fluoranthene	4.73		90.43		µg/kg	3/3
PAHS	Fluorene	.28		5.97		µg/kg	3/3
PAHS	Indeno(1,2,3-c,d)pyrene	2.45		61.45		µg/kg	3/3
PAHS	Naphthalene	10.82	J	10.82	J	µg/kg	1/3
PAHS	Phenanthrene	3.12		34.40		µg/kg	3/3
PAHS	Pyrene	4.15		78.35		µg/kg	3/3
Volatiles	2-Butanone	38		38		µg/kg	1/3
Volatiles	Carbon Disulfide	12		46		µg/kg	2/3
Volatiles	Trichlorothene	1		1		µg/kg	1/3

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Fishing Cove							
GenChem	Total organic carbons	1.89		2.86		%	2/2
Grain Size	Gravel	1.5		1.5		%	1/3
Grain Size	Sand	12.7		32.7		%	3/3
Grain Size	Silt & Clay	67.3		85.8		%	3/3
Inorganics	Aluminum	6480		9280		mg/kg	3/3
Inorganics	Arsenic	4.9		6.1		mg/kg	3/3
Inorganics	Barium	14.8		23.3		mg/kg	3/3
Inorganics	Beryllium	.74		1.1		mg/kg	3/3
Inorganics	Cadmium	.34		.38		mg/kg	2/3
Inorganics	Calcium	7530		7530		mg/kg	1/3
Inorganics	Chromium	26.8		43.3		mg/kg	3/3
Inorganics	Cobalt	4.2		6.1		mg/kg	3/3
Inorganics	Copper	52.6		72.6		mg/kg	3/3
Inorganics	Iron	13500		21700		mg/kg	3/3
Inorganics	Lead	25.7		45		mg/kg	3/3
Inorganics	Magnesium	4020		6200		mg/kg	3/3
Inorganics	Manganese	116		175		mg/kg	3/3
Inorganics	Mercury	.21		.48		mg/kg	3/3
Inorganics	Nickel	9.9		15.8		mg/kg	3/3
Inorganics	Potassium	1860		2870		mg/kg	3/3
Inorganics	Vanadium	19.7		31.5		mg/kg	3/3
Inorganics	Zinc	73.2		119		mg/kg	3/3
AVS	Cadmium	.00252		.00363		µmol/g	2/3
AVS	Copper	.16948		.22713		µmol/g	3/3
AVS	Lead	.09782		.17086		µmol/g	3/3
AVS	Nickel	.09275		.09275		µmol/g	1/3
AVS	Zinc	0.5581		1.22686		µmol/g	3/3
AVS	ΣSEM	0.9207		1.6533		µmol/g	3/3
AVS	Acid Volatile Sulfide	3.1946		16.55		µmol/g	3/3
AVS	ΣSEM/AVS Ratio	0.0808		0.2882		--	3/3
PAHS	2-Methylnaphthalene	3.18		5.42	J	µg/kg	3/3
PAHS	Acenaphthene	3.27		5.82		µg/kg	3/3

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Fishing Cove							
PAHS	Acenaphthylene	12.51		27.11	J	µg/kg	3/3
PAHS	Anthracene	24.61		52.05		µg/kg	3/3
PAHS	Benz(a)anthracene	74.24		175.29		µg/kg	3/3
PAHS	Benzo(a)pyrene	90.04		206.95		µg/kg	3/3
PAHS	Benzo(b)fluoranthene	89.22		203.99		µg/kg	3/3
PAHS	Benzo(k)fluoranthene	83.62		202.15		µg/kg	3/3
PAHS	Benzo[g,h,i]perylene	65.50		148.83		µg/kg	3/3
PAHS	Chrysene	78.42		188.13		µg/kg	3/3
PAHS	Dibenz(a,h)anthracene	15.99		36.27		µg/kg	3/3
PAHS	Fluoranthene	168.96		406.54		µg/kg	3/3
PAHS	Fluorene	7.01		16.22		µg/kg	3/3
PAHS	Indeno(1,2,3-c,d)pyrene	79.31		186.49		µg/kg	3/3
PAHS	Naphthalene	7.23		13.96	J	µg/kg	3/3
PAHS	Phenanthrene	64.80		164.01		µg/kg	3/3
PAHS	Pyrene	143.79		343.26		µg/kg	3/3
Volatiles	2-Butanone	13	J	13	J	µg/kg	3/3
Jamestown Island							
GenChem	Total organic carbons	1.03		2.51		%	3/3
Grain Size	Gravel	3.1		10.6		%	2/3
Grain Size	Sand	1.2		87.7		%	3/3
Grain Size	Silt & Clay	9.2		98.8		%	3/3
Inorganics	Aluminum	6790		10900		mg/kg	3/3
Inorganics	Arsenic	3.9		5.4		mg/kg	3/3
Inorganics	Barium	8.1		26.4		mg/kg	3/3
Inorganics	Beryllium	.47		1		mg/kg	3/3
Inorganics	Calcium	5700		8170		mg/kg	3/3
Inorganics	Chromium	15.1		40		mg/kg	3/3
Inorganics	Cobalt	4.8		7.2		mg/kg	3/3
Inorganics	Copper	21.8		33.2		mg/kg	2/3
Inorganics	Iron	13100		22400		mg/kg	3/3
Inorganics	Lead	11.7		45.5		mg/kg	3/3
Inorganics	Magnesium	3380		6820		mg/kg	3/3

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Jamestown Island							
Inorganics	Manganese	105		204		mg/kg	3/3
Inorganics	Mercury	.06		.18		mg/kg	3/3
Inorganics	Nickel	9.6		17.9		mg/kg	3/3
Inorganics	Potassium	2160		3190		mg/kg	2/3
Inorganics	Vanadium	12.9		36.4		mg/kg	3/3
Inorganics	Zinc	41.6		108		mg/kg	3/3
AVS	Cadmium	.00197		.00197		µmol/g	1/3
AVS	Copper	.05348		.25133		µmol/g	3/3
AVS	Lead	.04368		.21551		µmol/g	3/3
AVS	Nickel	.02091		.08601		µmol/g	3/3
AVS	Zinc	.32121		1.23662		µmol/g	3/3
AVS	ΣSEM	0.4406		1.7918		µmol/g	3/3
AVS	Acid Volatile Sulfide	1.8523		84.2		µmol/g	3/3
AVS	ΣSEM/AVS Ratio	0.0212		0.2378		--	3/3
PAHS	2-Methylnaphthalene	.91		8.16	J	µg/kg	3/3
PAHS	Acenaphthene	.46		3.46		µg/kg	3/3
PAHS	Acenaphthylene	2.32		18.30	J	µg/kg	3/3
PAHS	Anthracene	2.95		24.55		µg/kg	3/3
PAHS	Benz(a)anthracene	6.96		48.84		µg/kg	3/3
PAHS	Benzo(a)pyrene	9.49		74.11		µg/kg	3/3
PAHS	Benzo(b)fluoranthene	10.15		92.88		µg/kg	3/3
PAHS	Benzo(k)fluoranthene	10.00		80.25		µg/kg	3/3
PAHS	Benzo[g,h,i]perylene	8.70		67.10		µg/kg	3/3
PAHS	Chrysene	8.54		64.66		µg/kg	3/3
PAHS	Dibenz(a,h)anthracene	1.89		15.10		µg/kg	3/3
PAHS	Fluoranthene	14.47		115.97		µg/kg	3/3
PAHS	Fluorene	1.01		8.62		µg/kg	3/3
PAHS	Indeno(1,2,3-c,d)pyrene	9.98		79.62		µg/kg	3/3
PAHS	Naphthalene	2.78		16.73	J	µg/kg	3/3
PAHS	Phenanthrene	7.41		43.53		µg/kg	3/3
PAHS	Pyrene	13.73		104.41		µg/kg	3/3

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Jamestown Island							
PCBS	PCB-1260	11	J	11	J	µg/kg	1/3
Source 1							
PAHS	2-Methylnaphthalene	11.7	J	50.00	J	µg/kg	2/2
PAHS	Acenaphthene	12.26		47.19	J	µg/kg	2/2
PAHS	Acenaphthylene	159.35	J	963.01	J	µg/kg	2/2
PAHS	Anthracene	529.63		1885.32	J	µg/kg	2/2
PAHS	Benz(a)anthracene	770.25		3812.16	J	µg/kg	2/2
PAHS	Benzo(a)pyrene	318.34		2338.54	J	µg/kg	2/2
PAHS	Benzo(b)fluoranthene	1020.86		7235.67	J	µg/kg	2/2
PAHS	Benzo(k)fluoranthene	985.73		6221.25	J	µg/kg	2/2
PAHS	Benzo[G,H,I]perylene	300.82		1904.12		µg/kg	2/2
PAHS	Chrysene	1297.64		6548.95		µg/kg	2/2
PAHS	Dibenzo(a,h)anthracene	116.24		824.90	J	µg/kg	2/2
PAHS	Fluoranthene	2548.92		6958.00	J	µg/kg	2/2
PAHS	Fluorene	42.99		144.77	J	µg/kg	2/2
PAHS	Indeno(1,2,3-c,d)pyrene	435.21		2707.70	J	µg/kg	2/2
PAHS	Naphthalene	18.95	J	121.50	J	µg/kg	2/2
PAHS	Phenanthrene	363.61		959.02	J	µg/kg	2/2
PAHS	Pyrene	2131.25		8016.78	J	µg/kg	2/2
Source 2							
PAHS	2-Methylnaphthalene	9428.33	J	10012.10	J	µg/kg	2/2
PAHS	Acenaphthene	440.58		748.75		µg/kg	2/2
PAHS	Acenaphthylene	650.90	J	650.90	J	µg/kg	½
PAHS	Anthracene	651.79		222.68		µg/kg	2/2
PAHS	Benz(a)anthracene	314.01		1059.88		µg/kg	2/2
PAHS	Benzo(a)pyrene	328.14		988.67		µg/kg	2/2
PAHS	Benzo(b)fluoranthene	382.86		1128.68		µg/kg	2/2
PAHS	Benzo(k)fluoranthene	347.37		1029.39		µg/kg	2/2
PAHS	Benzo[G,H,I]perylene	295.21		875.34		µg/kg	2/2
PAHS	Chrysene	338.46		1207.94		µg/kg	2/2
PAHS	Dibenzo(a,h)anthracene	91.54		258.74		µg/kg	2/2

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Source 2							
PAHS	Fluoranthene	461.79		1942.94		µg/kg	2/2
PAHS	Fluorene	677.93		983.53		µg/kg	2/2
PAHS	Indeno(1,2,3-c,d)pyrene	307.27		935.45		µg/kg	2/2
PAHS	Naphthalene	3366.92	J	3685.04	J	µg/kg	2/2
PAHS	Phenanthrene	1563.07		2766.64		µg/kg	2/2
PAHS	Pyrene	491.82		1739.83		µg/kg	2/2
Source 3							
GenChem	Total Organic Carbons	.80		.80		%	1/1
PAHS	2-Methylnaphthalene	4.15	J	99.56	J	µg/kg	2/2
PAHS	Acenaphthene	4.93		64.95		µg/kg	2/2
PAHS	Acenaphthylene	11.28	J	26.26	J	µg/kg	2/2
PAHS	Anthracene	20.83		66.01		µg/kg	2/2
PAHS	Benz(a)anthracene	58.96		186.42		µg/kg	2/2
PAHS	Benzo(a)pyrene	42.38		170.42		µg/kg	2/2
PAHS	Benzo(b)fluoranthene	66.93		261.65		µg/kg	2/2
PAHS	Benzo(k)fluoranthene	62.47		213.57		µg/kg	2/2
PAHS	Benzo[g,h,i]perylene	44.71		154.26		µg/kg	2/2
PAHS	Chrysene	67.89		213.61		µg/kg	2/2
PAHS	Dibenz(a,h)anthracene	13.09		46.61		µg/kg	2/2
PAHS	Fluoranthene	136.26		329.37		µg/kg	2/2
PAHS	Fluorene	5.49		66.46		µg/kg	2/2
2/2PAHS	Indeno(1,2,3-c,d)pyrene	51.87		180.88		µg/kg	2/2
PAHS	Naphthalene	13.46	J	163.29	J	µg/kg	2/2
PAHS	Phenanthrene	92.64		235.38		µg/kg	2/2
PAHS	Pyrene	106.45		271.02		µg/kg	2/2
Source 4							
PAHS	2-Methylnaphthalene	15.30	J	15.30	J	µg/kg	1/1
PAHS	Acenaphthene	24.44		24.44		µg/kg	1/1
PAHS	Acenaphthylene	172.28	J	172.28	J	µg/kg	1/1
PAHS	Anthracene	211.64		211.64		µg/kg	1/1
PAHS	Benz(a)anthracene	321.70		321.70		µg/kg	1/1
PAHS	Benzo(a)pyrene	369.75		369.75		µg/kg	1/1
PAHS	Benzo(b)fluoranthene	494.83		494.83		µg/kg	1/1

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Source 4							
PAHS	Benzo(k)fluoranthene	464.01		464.01		µg/kg	1/1
PAHS	Benzo[g,h,i]perylene	357.35		357.35		µg/kg	1/1
PAHS	Chrysene	636.01		636.01		µg/kg	1/1
PAHS	Dibenzo(a,h)anthracene	83.98		83.98		µg/kg	1/1
PAHS	Fluoranthene	1202.09		1202.09		µg/kg	1/1
PAHS	Fluorene	44.35		44.35		µg/kg	1/1
PAHS	Indeno(1,2,3-c,d)pyrene	362.83		362.83		µg/kg	1/1
PAHS	Naphthalene	29.74	J	29.74	J	µg/kg	1/1
PAHS	Phenanthrene	916.28		916.28		µg/kg	1/1
PAHS	Pyrene	1089.54		1089.54		µg/kg	1/1
Core 1 - Top							
GenChem	Total Organic Carbon	1.27		1.27		%	1/1
Grain Size	Gravel	5.7		5.7		%	1/1
Grain Size	Sand	79.7		79.7		%	1/1
Grain Size	Silt & Clay	14.6		14.6		%	1/1
Inorganics	Aluminum	5430		5430		mg/kg	1/1
Inorganics	Arsenic	4.9		4.9		mg/kg	1/1
Inorganics	Barium	37.1		37.1		mg/kg	1/1
Inorganics	Beryllium	0.68		0.68		mg/kg	1/1
Inorganics	Cadmium	0.39		0.39		mg/kg	1/1
Inorganics	Calcium	9680		9680			1/1
Inorganics	Chromium	18.6		18.6		mg/kg	1/1
Inorganics	Cobalt	3.6		3.6		mg/kg	1/1
Inorganics	Copper	56.9		56.9		mg/kg	1/1
Inorganics	Iron	14700		14700		mg/kg	1/1
Inorganics	Lead	35.3		35.3		mg/kg	1/1
Inorganics	Magnesium	2700		2700		mg/kg	1/1
Inorganics	Manganese	99.4		99.4		mg/kg	1/1
Inorganics	Mercury	0.11		0.11		mg/kg	1/1

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Core 1 - Top							
Inorganics	Nickel	10.3		10.3		mg/kg	1/1
Inorganics	Vanadium	23.7		23.7		mg/kg	1/1
Inorganics	Zinc	101		101		mg/kg	1/1
AVS	Cadmium	0.00287		0.00287		µmol/g	1/1
AVS	Lead	0.12696		0.12696		µmol/g	1/1
AVS	Nickel	0.22077		0.22077		µmol/g	1/1
AVS	Zinc	1.2393		1.2393		µmol/g	1/1
AVS	ΣSEM	1.48629		1.48629		µmol/g	1/1
AVS	Acid Volatile Sulfide	70.47344		70.47344		µmol/g	1/1
AVS	ΣSEM/AVS Ratio	0.02109		0.02109		--	1/1
PAHS	2-Methylnaphthalene	32.75		32.75		µg/kg	1/1
PAHS	Acenaphthene	213.90		213.90		µg/kg	1/1
PAHS	Acenaphthylene	54.24		54.24		µg/kg	1/1
PAHS	Anthracene	302.24		302.24		µg/kg	1/1
PAHS	Benz(a)anthracene	737.41		737.41		µg/kg	1/1
PAHS	Benzo(a)pyrene	668.48		668.48		µg/kg	1/1
PAHS	Benzo(b)fluoranthene	718.80		718.80		µg/kg	1/1
PAHS	Benzo(k)fluoranthene	717.41		717.41		µg/kg	1/1
PAHS	Benzo[g,h,I]perylene	401.58		401.58		µg/kg	1/1
PAHS	Chrysene	855.55		855.55		µg/kg	1/1
PAHS	Dibenz(a,h)anthracene	124.04		124.04		µg/kg	1/1
PAHS	Fluoranthene	1783.54		1783.54		µg/kg	1/1
PAHS	Fluorene	155.10		155.10		µg/kg	1/1
PAHS	Indeno(1,2,3-c,d)pyrene	506.20		506.20		µg/kg	1/1
PAHS	Naphthalene	92.86		92.86		µg/kg	1/1
PAHS	Phenanthrene	1441.84		1441.84		µg/kg	1/1
PAHS	Pyrene	1560.92		1560.92		µg/kg	1/1
PCBS	PCB-1260	25		25		µg/kg	1/1
Pesticides	4,4'-DDD	1.7		1.7		µg/kg	1/1
Pesticides	Delta BHC	2		2		µg/kg	1/1
Pesticides	Gamma-chlordane	0.88		0.88		µg/kg	1/1

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Core 1 - Top							
Volatiles	2-Butanone	5		5		µg/kg	1/1
Core 1 - Bottom							
GenChem	Total Organic Carbon	1.18		1.18		%	1/1
Grain Size	Gravel	21.2		21.2		%	1/1
Grain Size	Sand	59.2		59.2		%	1/1
Grain Size	Silt & Clay	19.6		19.6		%	1/1
Inorganics	Aluminum	3600		3600		mg/kg	1/1
Inorganics	Arsenic	2.8		2.8		mg/kg	1/1
Inorganics	Barium	21		21		mg/kg	1/1
Inorganics	Beryllium	0.44		0.44		mg/kg	1/1
Inorganics	Cadmium	0.19		0.19		mg/kg	1/1
Inorganics	Calcium	6000		6000		mg/kg	1/1
Inorganics	Chromium	9.4		9.4		mg/kg	1/1
Inorganics	Cobalt	2.6		2.6		mg/kg	1/1
Inorganics	Copper	22.8		22.8		mg/kg	1/1
Inorganics	Iron	10100		10100		mg/kg	1/1
Inorganics	Lead	35.2		35.2		mg/kg	1/1
Inorganics	Manganese	72.8		72.8		mg/kg	1/1
Inorganics	Mercury	0.038		0.038		mg/kg	1/1
Inorganics	Nickel	7		7		mg/kg	1/1
Inorganics	Vanadium	12.1		12.1		mg/kg	1/1
Inorganics	Zinc	52.7		52.7		mg/kg	1/1
AVS	Cadmium	0.0016		0.0016		µmol/g	1/1
AVS	Copper	0.10369		0.10369		µmol/g	1/1
AVS	Lead	0.11935		0.11935		µmol/g	1/1
AVS	Nickel	0.03043		0.03043		µmol/g	1/1
AVS	Zinc	0.6127		0.6127		µmol/g	1/1
AVS	ΣSEM	0.86779		0.86779		µmol/g	1/1
AVS	Acid Volatile Sulfide	50.56655		50.56655		µmol/g	1/1
AVS	ΣSEM/AVS Ratio	0.01716		0.01716		--	1/1

Analyte Group	Analyte	Minimum Detection	Minimum Detection Qualifier	Maximum Detection	Maximum Detection Qualifier	Units	Frequency of Detection
Core 1 - Bottom							
PAHS	2-Methylnaphthalene	6.28		6.28		µg/kg	1/1
PAHS	Acenaphthene	18.98		18.98		µg/kg	1/1
PAHS	Acenaphthylene	33.33		33.33		µg/kg	1/1
PAHS	Anthracene	79.68		79.68		µg/kg	1/1
PAHS	Benz(a)anthracene	145.37		145.37		µg/kg	1/1
PAHS	Benzo(a)pyrene	110.10		110.10		µg/kg	1/1
PAHS	Benzo(b)fluoranthene	196.12		196.12		µg/kg	1/1
PAHS	Benzo(k)fluoranthene	188.42		188.42		µg/kg	1/1
PAHS	Benzo[g,h,I]perylene	84.45		84.45		µg/kg	1/1
PAHS	Chrysene	274.36		274.36		µg/kg	1/1
PAHS	Dibenz(a,h)anthracene	22.72		22.72		µg/kg	1/1
PAHS	Fluoranthene	776.86		776.86		µg/kg	1/1
PAHS	Fluorene	16.33		16.33		µg/kg	1/1
PAHS	Indeno(1,2,3-c,d)pyrene	101.67		101.67		µg/kg	1/1
PAHS	Naphthalene	9.45		9.45		µg/kg	1/1
PAHS	Phenanthrene	134.43		134.43		µg/kg	1/1
PAHS	Pyrene	604.18		604.18		µg/kg	1/1
PCBS	PCB-1260	38		38		µg/kg	1/1
Pesticides	4,4'-DDD	1.7		1.7		µg/kg	1/1
Pesticides	Delta BHC	0.53		0.53		µg/kg	1/1
Volatiles	2-Butanone	5		5		µg/kg	1/1

TABLE 5-1 ALLEN HARBOR SAMPLES USED IN SLERA

Area	Sample Number	Sample Date
Allen Harbor Inner Area	AH-32	3/26/04
	AH-33	3/26/04
	AH-35	3/26/04
	AH-40	3/27/04
	AH-42	3/27/04
	AH-45	3/26/04
	AH-47	3/26/04
	AH-49	3/26/04
	SED16-01	3/21/01
	SED16-02	3/26/01
	OPSED16-01	3/22/01
Allen Harbor Marina Area	AH-17	3/23/04
	AH-23	3/24/04
	AH-26	3/27/04
	AH-28	3/25/04
	AH-29	3/26/04

TABLE 5-2 RISK-BASED ECOLOGICAL SCREENING VALUES FOR SEDIMENT ALLEN HARBOR ADJACENT TO SITE 16 (mg/kg dry wt.)

ANALYTE	VALUE	SOURCE
INORGANICS		
Aluminum	26000	Ingersoll et al. (1996)
Antimony	9.3	Buchman (1999)
Arsenic	8.2	ER-L, Long et al. (1995)
Barium	48	Buchman (1999)
Beryllium	NA	No Data
Cadmium	1.2	ER-L, Long et al. (1995)
Calcium	NA	Essential Nutrient
Chromium	81	ER-L, Long et al. (1995)
Cobalt	10	Buchman (1999)
Copper	34	ER-L, Long et al. (1995)
Iron	NA	Essential Nutrient
Lead	46.7	ER-L, Long et al. (1995)
Magnesium	NA	Essential Nutrient
Manganese	260	Buchman (1999)
Mercury	0.15	ER-L, Long et al. (1995)
Nickel	20.9	ER-L, Long et al. (1995)
Potassium	NA	Essential Nutrient
Selenium	1	Buchman (1999)
Sodium	NA	Essential Nutrient
Vanadium	57	Buchman (1999)
Zinc	150	ER-L, Long et al. (1995)
PAHs		
2-Methylnaphthalene	0.07	ER-L, Long et al. (1995)
Acenaphthene	0.016	ER-L, Long et al. (1995)
Acenaphthylene	0.044	ER-L, Long et al. (1995)
Anthracene	0.085	ER-L, Long et al. (1995)
Benz[a]anthracene	0.26	ER-L, Long et al. (1995)
Benzo[a]pyrene	0.43	ER-L, Long et al. (1995)
Benzo[b]fluoranthene[(a)]	0.24	ER-L, Long et al. (1995)
Benzo[g,h,i]perylene	0.29	Freshwater ER-L based on 14 day *C. riparius* test USEPA 1996
Benzo[k]fluoranthene	0.24	ER-L, Long et al. (1995)
Chrysene	0.38	ER-L, Long et al. (1995)
Dibenz[a,h]anthracene	0.063	ER-L, Long et al. (1995)
Fluoranthene	0.6	ER-L, Long et al. (1995)
Fluorene	0.019	ER-L, Long et al. (1995)
Indeno[1,2,3-cd]pyrene	0.078	Freshwater ER-L, based on 14 day *H. azteca* test. USEPA 1996
Naphthalene	0.160	ER-L, Long et al. (1995)
Phenanthrene	0.240	ER-L, Long et al. (1995)
Pyrene	0.67	ER-L, Long et al. (1995)
Total PAHs	2.9	Swartz (1999) assuming 1 % OC
PCBs		
Total PCBs	0.023	ER-L, Long et al. (1995)

ANALYTE	VALUE	SOURCE
PESTICIDES		
4,4'-DDD	0.002	ER-L, Long et al. (1995)
4,4'-DDE	0.002	ER-L, Long et al. (1995)
4,4'-DDT	0.001	ER-L, Long et al. (1995)
Total DDT	0.003	ER-L, Long et al. (1995)
Chlordane (alpha-and gamma-)	0.0005	ER-L, Long et al. (1995)
Delta BHC	0.0032	ER-L, Long et al. (1995)
Dieldrin	0.00002	ER-L, Long et al. (1995)
Endrin Ketone	0.00002[(b)]	ER-L, Long et al. (1995)
Heptachlor	0.003	Buchman (1999)
Heptachlor Epoxide	0.00247	MacDonald et al. (2000)
VOLATILES		
1,1-Dichloroethene[(b)]	4.8	DiToro and McGrath (2000) assuming 1 % OC
1,2-Dichloroethene, Total	4.8	DiToro and McGrath (2000) assuming 1 % OC
2-Butanone	2.9	DiToro and McGrath (2000) assuming 1 % OC
Acetone	2.3	DiToro and McGrath (2000) assuming 1 % OC
Carbon Disulfide	0.22	Fuchsman (2003)
Trichloroethene	6.5	DiToro and McGrath (2000) assuming 1 % OC

NOTE:
(a) Value for benzo[k]fluoranthene used for benzo[b]fluoranthene
(b) Value for dieldrin used as a surrogate.

TABLE 5-3 SEDIMENT COPC SELECTION

Chemical	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Eco Screening Value	Screening Quotient Ratio	COPC Flag
INORGANICS											
Aluminum	2370		15900	/	mg/kg	AH-29	16/16	2.7 - 56	26000	0.61	No
Antimony	0.5	J	1.35	UJ / J	mg/kg	SED16-01	3/12	0.76 - 2.4	9.3	0.14	No
Arsenic	0.97		36.6		mg/kg	SED16-02	15/16	0.3 - 2.1	8.2	4.46	**Yes**
Barium	13.8	/	133	/	mg/kg	AH-32	16/16	0.05 - 0.94	48	2.77	**Yes**
Beryllium	0.29	/	1.9	/	mg/kg	AH-17	16/16	0.014 - 0.94	ND	N/A	**Yes**
Cadmium	0.19		2.4	/	mg/kg	AH-17	11/16	0.031 - 2.65	1.2	2	**Yes**
Calcium	1380		5110	/	mg/kg	AH-42	4/16	4.8 - 29	ND	N/A	No
Chromium	7.7	/	66.8	/	mg/kg	AH-29	16/16	0.081 - 2.8	81	0.82	No
Cobalt	2.1	/	37.9		mg/kg	SED16-02	16/16	0.22 - 5.6	10	3.79	**Yes**
Copper	13.4	J	212	/	mg/kg	AH-17	16/16	0.44 - 6.6	34	6.23	**Yes**
Iron	5820	/	63350		mg/kg	SED16-01	16/16	2.6 - 190	ND	N/A	No
Lead	11.4		154	J	mg/kg	OPSED16-01	16/16	0.13 - 1.3	46.7	3.30	**Yes**
Magnesium	994	J	7890	/	mg/kg	AH-17	14/16	2.1 - 9.4	ND	N/A	No
Manganese	46.2	/	788		mg/kg	SED16-02	16/16	0.15 - 0.94	260	3.03	**Yes**
Mercury	0.039	J/J / J/J	0.38	/	mg/kg	AH-17	13/16	0.023 - 0.071	0.15	2.53	**Yes**
Nickel	6.3	/	53.8		mg/kg	SED16-01	16/16	0.17-10.55	20.9	2.57	**Yes**
Potassium	599		4380	/	mg/kg	AH-29	11/16	6.8 - 190	ND	N/A	No
Selenium	1.3	U / _	1.3	U / _	mg/kg	SED16-01	1/16	0.67 -2.65	1	1.3	**Yes**
Sodium	239.5		239.5		mg/kg	SED16-01	1/16	13.9 - 190	ND	N/A	No
Vanadium	8.6	/	80.9	/	mg/kg	AH-29	16/16	0.3 - 4.7	57	1.42	**Yes**
Zinc	50.5		449	/	mg/kg	AH-17	16/16	1.4 - 6.6	150	2.99	**Yes**
PAHS											
2-methylnapthalene	0.01576	J/J	0.21346	J/J	mg/kg	AH-29	13/16	0.00157 -0.62	0.07	3.05	**Yes**
Acenaphthene	0.02287	J/J	0.905	J / _	mg/kg	SED16-01	14/16	0.00157 -0.62	0.016	56.56	**Yes**
Acenaphthylene	0.02795	J/J	0.79131	J/J	mg/kg	AH-49	14/16	0.00157 -0.62	0.044	17.98	**Yes**
Anthracene	0.19753	J/J	0.81422	/	mg/kg	AH-49	14/16	0.00157 -0.62	0.085	9.58	**Yes**
Benzo(a)anthracene	0.02		1.59669	/	mg/kg	AH-35	16/16	0.00157 -0.62	0.26	6.14	**Yes**
Benzo(a)pyrene	0.3		1.65423	/	mg/kg	AH-49	14/16	0.00157 -0.62	0.43	3.85	**Yes**
Benzo(b)fluoranthene	0.041		2.19547	/	mg/kg	AH-29	16/16	0.00157 -0.62	0.24	9.15	**Yes**
Benz (k)flu ranthene	0.34		2.03361	/	mg/kg	AH-29	14/16	0.00313 -0.62	0.24	8.47	**Yes**

Chemical	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Eco Screening Value	Screening Quotient Ratio	COPC Flag
Benzo[g,h,i]perylene	0.023		1.24388	/	mg/kg	AH-28	15/16	0.00157 -0.62	0.29	4.29	**Yes**
Chrysene	0.034		2.41621	/	mg/kg	AH-49	16/16	0.00157 -0.62	0.38	6.36	**Yes**
Dibenz (a,h)anthracene	0.07576	/	0.33117	/	mg/kg	AH-49	13/16	0.00157 -0.62	0.063	5.26	**Yes**
Flu ranthene	0.064		4.87256	/	mg/kg	AH-49	16/16	0.00157 -0.62	0.6	8.12	**Yes**
Fluorene	0.03943	J/J	0.58	J	mg/kg	SED16-01	14/16	0.00157 -0.62	0.019	30.53	**Yes**
Inden (1,2,3-cd)pyrene	0.25		1.36112	/	mg/kg	AH-28	14/16	0.00157 -0.62	0.078	17.45	**Yes**
Naphthalene	0.03046	J/J	0.12842	J/J	mg/kg	AH-29	13/16	0.00157 -0.62	0.16	0.80	**No**
Phenanthrene	0.044		4.4937	/	mg/kg	AH-49	16/16	0.00157 -0.62	0.24	18.72	**Yes**
Pyrene	0.068		4.721	/	mg/kg	AH-49	16/16	0.00157 -0.62	0.67	7.04	**Yes**
TOTAL PAH	0.294		28.14211	/	mg/kg	AH-49	16/16	0.00313 -0.62	2.9	9.70	**Yes**
PCBs											
PCB-1260[1]	0.016	/	0.07	/	mg/kg	AH-23	13/16	0.0087 -0.033	ND	N/A	No
TOTAL PCB	0.016	/	0.07	/	mg/kg	AH-23	13/15	0.018 - 0.039	0.023	3.04	**Yes**
PESTICIDES											
4,4'-DDD	0.0016	/	0.00345	J	mg/kg	SED16-01	5/14	0.00087-0.0065	0.002	1.73	**Yes**
4,4'-DDE	0.0015	J	0.0034	J/J	mg/kg	AH-23	4/12	0.00087 - 0.0065	0.002	1.7	**Yes**
4,4'-DDT	0.0014	J	0.0018	J	mg/kg	SED16-02	2/14	0.00087 - 0.0065	0.001	1.0	**Yes**
TOTAL DDT Metabolites	0.0014		0.0053		mg/kg	SED16-02	8/8	0.00087 - 0.0065	0.003	1.77	**Yes**
Alpha-chlordane	0.002	/	0.002	/	mg/kg	AH-47	1/13	0.00045 - 0.0033	0.0005	4	**Yes**
DELTA BHC	0.00092	J/J	0.0015		mg/kg	OPSED16-01	2/13	0.00045 - 0.0033	0.0032	0.47	No
Dieldrin	0.0017	J	0.0081	/	mg/kg	AH-28	3/11	0.00087 - 0.0065	0.00002	405	**Yes**
Endosulfan sulfate	0.0021	J / U	0.0021	J / U	mg/kg	SED16-01	1/14	0.00087 - 0.0065	ND	N/A	**Yes**
Endrin ketone	0.00064	J	0.0016		mg/kg	OPSED16-01	3/13	0.00087 - 0.0065	0.00002	80	**Yes**
Gamma-chlordane	0.0017		0.01	/	mg/kg	AH-23	7/10	0.00045 - 0.0033	0.0005	20	**Yes**
Heptachlor	0.000625	J /	0.00071		mg/kg	SED16-02	2/10	0.00045 - 0.0033	0.0003	2.37	**Yes**
Heptachlor epoxide	0.0012	J	0.0012	J	mg/kg	OPSED16-01	1/11	0.00045 - 0.0033	0.00247	0.49	No
VOLATILES											
1,1-Dichloroethene	0.0009	J/J	0.0009	J/J	mg/kg	AH-47	1/16	0.005 - 0.02	4.8	0.00018	No
2-Butanone	0.008	J/J / / / J/J	0.02	J/J /// J/J / /J	mg/kg	AH-17 / AH-35 / AH-33	8/16	0.01 - 0.041	2.9	0.007	No
Acetone	0.057	J	0.2	/	mg/kg	AH-17	4/16	0.01 - 0.041	2.3	0.087	No
Carbon disulfide	0.012		0.0275	J	mg/kg	SED16-01	2/16	0.005 - 0.02	0.22	0.13	No

Chemical	Minimum Concentration	Minimum Qualifier	Maximum Concentration	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Eco Screening Value	Screening Quotient Ratio	COPC Flag
Cis-1,2-Dichloroethene	0.005	J/J	0.88	/	mg/kg	AH-47	3/16	0.005 - 1.3	4.8	0.18	No
Trans-1,2-Dichloroethene	0.003	J/J	0.003	J/J	mg/kg	AH-47	1/16	0.005 - 0.02	4.8	0.000625	No
Trichloroethene	0.002	J/J	0.002	J/J	mg/kg	AH-47	1/16	0.005 - 0.02	6.5	0.00031	No

(1) Use Total PCB for Aroclor 1260 risk.

NOTES: NA = Not Applicable
ND = No Data
COPC = Constituent of Potential Concern
-- = No Qualifier, or not applicable
J = Indicates an estimated value.

TABLE 5-4 EXPOSURE FACTORS FOR ECOLOGICAL RECEPTORS OF CONCERN

Exposure Factor	Receptor	
	Raccoon	Herring Gull
Body Weight (kg)	6.0 (USEPA 1993) Mean for adult female, IL	0.951 (USEPA 1993) Mean adult female Spring/Lake Huron
Food Ingestion Rate (g/g/day)	0.25 (USEPA 1993) Calculated, see below	0.2 (USEPA 1993) Breeding male, Newfoundland
Incidental Sediment Ingestion Rate (g/g/day)	0.0235 (USEPA 1993) Based on 9.4% sediment in diet	0.016 (USEPA 1993) Based on 8.2% sediment in diet using the goose as a surrogate
Home Range	108 Ha (USEPA 1993) Based on adult female in MI riparian habitat	5 km foraging radius (USEPA 1993) Based on the middle of the mean foraging range
Dietary Composition	62% invertebrates 38% vegetation (USEPA 1993) Based on Maryland forested bottomland	100% invertebrates (ignore fish component of diet) (USEPA 1993)

NOTE:
Food intake rates for mammals can be calculated using the following equation (USEPA 1993):

$$F_i = 0.0687 \times (BW)^{0.822}$$

Substituting the BW of 6 kg for the raccoon, the equation becomes:

$$F_i = 0.0687 \times (6.0)^{0.822} = 0.30 \frac{kg\,dry}{day} = 0.05 \frac{kg\,dry}{kg\,bw-day} / 0.2\,(assumed fx\,dry\,in\,food) = 0.25 \frac{kg\,wet}{kg\,bw-day}$$

Ha = Hectare
Km = kilometer

TABLE 5-5 SUMMARY OF SEDIMENT EXPOSURE STATISTICS

					Shapiro Wilk Test									
Analyte	Units	N	% FOD	Arithmetic Mean	W	Probability	W-log	Probability	Method	95% UCL of Normal Data	95% UCL of Lognormal Data	95% UCL of Nonparametric Data	Maximum Concentration	UCLM95
INORGANICS														
Arsenic	mg/kg	16	94%	1.08E+01	8.48E-01	1.27E-02	9.18E-01	1.59E-01	95% UCLM-H	1.48E+01	2.64E+01	1.47E+01	3.66E+01	2.64E+01
Barium	mg/kg	16	100%	5.72E+01	9.28E-01	2.29E-01	9.19E-01	1.61E-01	UCLM-t	7.28E+01	9.21E+01	7.23E+01	1.33E+02	7.28E+01
Beryllium	mg/kg	16	100%	1.03E+00	8.96E-01	6.83E-02	8.74E-01	3.09E-02	UCLM-t	1.29E+00	1.61E+00	1.28E+00	1.90E+00	1.29E+00
Cadmium	mg/kg	16	69%	6.74E-01	8.68E-01	2.56E-02	8.86E-01	4.74E-02	95% UCLM-Bootstrap	9.40E-01	3.32E+00	9.32E-01	2.40E+00	9.32E-01
Cobalt	mg/kg	16	100%	8.18E+00	5.90E-01	1.30E-05	9.13E-01	1.31E-01	95% UCLM-H	1.19E+01	1.25E+01	1.18E+01	3.79E+01	1.25E+01
Copper	mg/kg	16	100%	1.06E+02	8.98E-01	7.43E-02	8.67E-01	2.43E-02	UCLM-t	1.36E+02	2.12E+02	1.35E+02	2.12E+02	1.36E+02
Lead	mg/kg	16	100%	7.37E+01	9.57E-01	6.03E-01	8.78E-01	3.67E-02	UCLM-t	8.99E+01	1.17E+02	8.94E+01	1.54E+02	8.99E+01
Manganese	mg/kg	16	100%	2.13E+02	7.42E-01	5.13E-04	9.46E-01	4.31E-01	95% UCLM-H	2.91E+02	3.41E+02	2.88E+02	7.88E+02	3.41E+02
Mercury	mg/kg	16	81%	1.73E-01	8.17E-01	4.69E-03	8.63E-01	2.16E-02	95% UCLM-Bootstrap	2.34E-01	5.32E-01	2.32E-01	3.80E-01	2.32E-01
Nickel	mg/kg	16	100%	2.20E+01	9.15E-01	1.39E-01	9.08E-01	1.09E-01	UCLM-t	2.75E+01	3.31E+01	2.74E+01	5.38E+01	2.75E+01
Selenium	mg/kg	16	6%	8.14E-01	9.07E-01	1.03E-01	8.91E-01	5.69E-02	UCLM-t	9.59E-01	1.04E+00	9.55E-01	1.30E+00	9.59E-01
Vanadium	mg/kg	16	100%	3.64E+01	8.67E-01	2.41E-02	8.85E-01	4.70E-02	95% UCLM-Bootstrap	4.70E+01	5.88E+01	4.67E+01	8.09E+01	4.67E+01
Zinc	mg/kg	16	100%	2.17E+02	9.38E-01	3.29E-01	9.23E-01	1.88E-01	UCLM-t	2.72E+02	3.40E+02	2.70E+02	4.49E+02	2.72E+02
PAHs														
2-Methylnaphthalene	mg/kg	16	81%	7.00E-02	6.10E-01	2.02E-05	7.85E-01	1.75E-03	95% UCLM-Bootstrap	1.11E-01	1.28E-01	1.10E-01	2.13E-01	1.10E-01
Acenaphthene	mg/kg	16	88%	1.33E-01	5.18E-01	3.01E-06	8.59E-01	1.85E-02	95% UCLM-Bootstrap	2.29E-01	2.30E-01	2.26E-01	9.05E-01	2.26E-01
Acenaphthylene	mg/kg	16	88%	2.97E-01	8.35E-01	8.19E-03	9.01E-01	8.47E-02	95% UCLM-H	3.96E-01	6.03E-01	3.93E-01	7.91E-01	6.03E-01
Anthracene	mg/kg	16	88%	3.81E-01	8.31E-01	7.17E-03	8.57E-01	1.76E-02	95% UCLM-Bootstrap	4.88E-01	6.37E-01	4.84E-01	8.14E-01	4.84E-01
Benzo(a)anthracene	mg/kg	16	100%	6.65E-01	8.90E-01	5.53E-02	8.49E-01	1.34E-02	UCLM-t	8.77E-01	1.85E+00	8.70E-01	1.60E+00	8.77E-01
Benzo(a)pyrene	mg/kg	16	88%	7.88E-01	8.78E-01	3.68E-02	8.42E-01	1.05E-02	95% UCLM-Bootstrap	1.02E+00	1.69E+00	1.01E+00	1.65E+00	1.01E+00
Benzo(b)fluoranthene	mg/kg	16	100%	9.37E-01	9.22E-01	1.82E-01	8.52E-01	1.44E-02	UCLM-t	1.21E+00	2.14E+00	1.20E+00	2.20E+00	1.21E+00
Benzo(k)fluoranthene	mg/kg	16	88%	8.96E-01	9.08E-01	1.10E-01	8.48E-01	1.28E-02	UCLM-t	1.16E+00	2.02E+00	1.15E+00	2.03E+00	1.16E+00
Benzo[g,h,i]perylene	mg/kg	16	94%	5.91E-01	8.96E-01	6.92E-02	7.74E-01	1.25E-03	UCLM-t	7.49E-01	1.33E+00	7.44E-01	1.24E+00	7.49E-01
Chrysene	mg/kg	16	100%	1.04E+00	8.98E-01	7.55E-02	8.46E-01	1.21E-02	UCLM-t	1.36E+00	2.85E+00	1.35E+00	2.42E+00	1.36E+00
Dibenzo(a,h)Anthracene	mg/kg	16	81%	1.83E-01	8.98E-01	7.38E-02	9.25E-01	2.02E-01	UCLM-t	2.26E-01	2.67E-01	2.25E-01	3.31E-01	2.26E-01
Fluoranthene	mg/kg	16	100%	2.13E+00	8.39E-01	9.37E-03	7.46E-01	5.62E-04	95% UCLM-Bootstrap	2.75E+00	5.25E+00	2.73E+00	4.87E+00	2.73E+00
Fluorene	mg/kg	16	88%	1.38E-01	6.93E-01	1.43E-04	9.21E-01	1.78E-01	95% UCLM-H	1.99E-01	2.18E-01	1.97E-01	5.80E-01	2.18E-01
Indeno(1,2,3-cd)Pyrene	mg/kg	16	88%	6.67E-01	8.87E-01	4.97E-02	8.45E-01	1.14E-02	95% UCLM-Bootstrap	8.52E-01	1.34E+00	8.46E-01	1.36E+00	8.46E-01
Phenanthrene	mg/kg	16	100%	1.33E+00	8.05E-01	3.20E-03	8.80E-01	3.82E-02	95% UCLM-Bootstrap	1.85E+00	3.37E+00	1.83E+00	4.49E+00	1.83E+00
Pyrene	mg/kg	16	100%	1.90E+00	8.68E-01	2.56E-02	8.66E-01	2.40E-02	95% UCLM-Bootstrap	2.53E+00	4.94E+00	2.51E+00	4.72E+00	2.51E+00
Total PAH	mg/kg	16	100%	1.20E+01	8.66E-01	2.35E-02	7.69E-01	1.07E-03	95% UCLM-Bootstrap	1.56E+01	3.27E+01	1.55E+01	2.81E+01	1.55E+01

Analyte	Units	N	% FOD	Arithmetic Mean	W	Probability	W-log	Probability	Method	95% UCL of Normal Data	95% UCL of Lognormal Data	95% UCL of Nonparametric Data	Maximum Concentration	UCLM95
PCBs and PESTICIDES														
Total PCB	mg/kg	15	87%	3.08E-02	9.08E-01	1.27E-01	9.75E-01	9.20E-01	UCLM-t	3.83E-02	4.18E-02	3.80E-02	7.00E-02	3.83E-02
4,4'-DDD	mg/kg	14	36%	1.38E-03	8.28E-01	1.12E-02	9.18E-01	2.09E-01	95% UCLM-H	1.86E-03	2.20E-03	1.84E-03	3.45E-03	2.20E-03
4,4'-DDE	mg/kg	12	33%	1.24E-03	8.14E-01	1.34E-02	8.91E-01	1.21E-01	95% UCLM-H	1.71E-03	2.03E-03	1.69E-03	3.40E-03	2.03E-03
4,4'-DDT	mg/kg	14	14%	8.65E-04	7.83E-01	3.13E-03	8.87E-01	7.28E-02	95% UCLM-H	1.11E-03	1.16E-03	1.10E-03	1.80E-03	1.16E-03
Alpha-Chlordane	mg/kg	13	8%	6.75E-04	7.52E-01	1.96E-03	8.71E-01	5.35E-02	95% UCLM-H	9.61E-04	1.12E-03	9.50E-04	2.00E-03	1.12E-03
Dieldrin	mg/kg	11	27%	1.94E-03	6.86E-01	3.09E-04	9.17E-01	2.95E-01	95% UCLM-H	3.18E-03	4.45E-03	3.12E-03	8.10E-03	4.45E-03
Endosulfan Sulfate	mg/kg	14	7%	1.02E-03	7.02E-01	3.83E-04	8.42E-01	1.71E-02	95% UCLM-Bootstrap	1.41E-03	1.49E-03	1.40E-03	2.10E-03	1.40E-03
Endrin Ketone	mg/kg	13	23%	7.72E-04	8.12E-01	9.44E-03	9.09E-01	1.79E-01	95% UCLM-H	9.46E-04	9.73E-04	9.39E-04	1.60E-03	9.73E-04
Gamma-Chlordane	mg/kg	10	70%	4.33E-03	9.27E-01	4.17E-01	8.58E-01	7.19E-02	UCLM-t	6.12E-03	2.12E-02	6.03E-03	1.00E-02	6.12E-03
Heptachlor	mg/kg	10	20%	4.53E-04	8.60E-01	7.56E-02	9.26E-01	4.14E-01	UCLM-t	6.00E-04	6.72E-04	5.92E-04	7.10E-04	6.00E-04
Total DDT metabolites	mg/kg	8	100%	2.77E-03	8.78E-01	1.80E-01	9.12E-01	3.70E-01	UCLM-t	3.66E-03	4.27E-03	3.61E-03	5.30E-03	3.66E-03

TABLE 5-6 INVERTEBRATE BIOACCUMULATION FACTORS FOR AQUATIC RECEPTORS

COPC	BSAF (ug/g lipid/ug/g OC)	BAF (unitless)	Source
INORGANICS			
Arsenic		0.48	SAIC (1996)
Barium		0.09	Sample (1998) Mean uptake factor using soil inverts as surrogate
Beryllium		0.045	Sample (1998) Mean uptake factor using soil inverts as surrogate
Cadmium		0.76	SAIC (1996)
Cobalt		0.122	Sample (1998) Mean uptake factor using soil inverts as surrogate
Copper		0.19	SAIC (1996)
Lead		0.02	SAIC (1996)
Manganese			Used soil invert regression
Mercury		0.29	SAIC (1996)
Nickel		0.15	SAIC (1996)
Selenium		1.798	Sample (1998) Mean uptake factor using soil inverts as surrogate
Vanadium		0.04	Sample (1998) Mean uptake factor using soil inverts as surrogate
Zinc		1.68	SAIC (1996)
PAHs			
Total PAH	0.24		SAIC (1996)
PCBs			
Total PCB	1.96		SAIC (1996)
PESTICIDES			
Alpha Chlordane	2.04		Mean of invert BSAF (USEPA 2000)
Dieldrin	0.685		Mean of invert BSAF (USEPA 2000)
Endosulfan Sulfate	15.7		Mean of invert BSAF (USEPA 2000)
Endrin Ketone	31.4		Mean of invert BSAF (USEPA 2000)
Gamma Chlordane	2.04		Mean of invert BSAF (USEPA 2000)
Heptachlor	2.66		Mean of invert BSAF (USEPA 2000)
Total DDT	2.62		SAIC (1996)

TABLE 5-7 PLANT BIOACCUMULATION FACTORS FOR AQUATIC RECEPTORS

COPC	BAF (unitless)	Source
INORGANICS		
Arsenic	0.048 (see Table 5-8)	Used regression from Bechtel (1998)
Barium	0.21	Mean uptake factor from Bechtel (1998)
Beryllium	0.01	Bv from Baes (1984)
Cadmium	0.75 (see Table 5-8)	Used regression from Bechtel (1998)
Cobalt	0.0115	Mean uptake factor from Bechtel (1998)
Copper	0.12 (see Table 5-8)	Used regression from Bechtel (1998)
Lead	0.004 (see Table 5-8)	Used regression from Bechtel (1998)
Manganese	0.113	Mean uptake factor from Bechtel (1998)
Mercury	0.84 (see Table 5-8)	Used regression from Bechtel (1998)
Nickel	0.05 (see Table 5-8)	Used regression from Bechtel (1998)
Selenium	0.49 (see Table 5-8)	Used regression from Bechtel (1998)
Vanadium	0.00548	Mean uptake factor from Bechtel (1998)
Zinc	0.44 (see Table 5-8)	Used regression from Bechtel (1998)
PAH		
Total PAH	0.042	Based on Log Kow regression (Travis and Arms 1988)
PCB		
Total PCB	0.216	Based on Log Kow regression (Travis and Arms 1988)
PESTICIDES		
Alpha Chlordane	0.024	Based on Log Kow regression (Travis and Arms 1988)
Dieldrin	0.091	Based on Log Kow regression (Travis and Arms 1988)
Endosulfan Sulfate	0.237	Based on Log Kow regression (Travis and Arms 1988))
Endrin Ketone	0.09	Based on Log Kow regression (Travis and Arms 1988)
Gamma Chlordane	0.024	Based on Log Kow regression (Travis and Arms 1988)
Heptachlor	0.132	Based on Log Kow regression (Travis and Arms 1988)
Total DDT	0.0082	Based on Log Kow regression (Travis and Arms 1988)

TABLE 5-8 REGRESSIONS USED TO ESTIMATE INVERTEBRATE AND PLANT CONCENTRATIONS FOR FOOD WEB

WORM REGRESSION (mg/kg)

Regression model: log(benthic invert)= a'+b(log(soil)) from Sample et al.. 1998

Assumptions: Dry weight basis, Invertebrates are 84% water

COPC	Sediment Conc (dw)	log(soil)	a'	b	log(invert)	Invert conc (dw)	Fraction dry	Invert conc (ww)
Metals								
Manganese	212.86	2.328099	-0.043	0.5759	1.297752305	19.84962495	0.16	3.175939992

Invert concentration (ww) = Invert conc (dw) * Fraction dry

PLANT REGRESSIONS (mg/kg)

Plant Regression model: ln(conc in plant)= BO+B1(ln(soil)) from Bechtel. 1998

Assumptions: Dry weight basis, Plants are 85% water

COPC	Soil Conc (dw)	ln(soil)	B0	B1	ln(plant)	Plant conc (dw)	Fraction dry	Plant conc (ww)
Metals								
Arsenic	10.81	2.380529	-1.992	0.564	-0.649381392	0.522368818	0.15	0.078355323
Cadmium	0.67	-0.39457	-0.476	0.546	-0.691436058	0.500856294	0.15	0.075128444
Copper	106.23	4.665618	0.669	0.394	2.507253619	12.27118239	0.15	1.840677359
Lead	73.72	4.300257	-1.328	0.561	1.084444276	2.957795644	0.15	0.443669347
Mercury	0.17	-1.75718	-0.996	0.544	-1.951904233	0.142003406	0.15	0.021300511
Nickel	22.03	3.092462	-2.224	0.748	0.089161501	1.093257204	0.15	0.163988581
Selenium	0.81	-0.20572	-0.678	1.104	-0.905112821	0.404496247	0.15	0.060674437
Zinc	216.58	5.377966	1.575	0.555	4.559771	95.56159372	0.15	14.33423906

TABLE 5-9 SUMMARY OF SLERA EXPOSURE CONCENTRATIONS

Chemical	Maximum Sediment Concentration (mg/kg) (dw)	Average Sediment Concentration (mg/kg) (dw)	Average Sediment Concentration (mg/kg) (ww)[1]	Invertebrate Concentration (mg/kg) (ww)	Vegetation Concentration (mg/kg) (ww)
Arsenic	36.60	10.81	4.9728875	0.8303	0.08
Barium	133.00	57.15	26.289	0.8230	5.6
Beryllium	1.90	1.03	0.47595625	0.0074	0.0048
Cadmium	2.40	0.67	0.310025625	0.0820	0.08
Cobalt	37.90	8.18	3.7648125	0.1598	0.04
Copper	212.00	106.23	48.866375	3.2294	1.84
Lead	154.00	73.72	33.910625	0.2359	0.44
Manganese	788.00	212.86	97.91675	3.1759	11.065
Mercury	0.38	0.17	0.079364375	0.0080	0.02
Nickel	53.80	22.03	10.134375	0.5288	0.16
Selenium	1.30	0.81	0.37446875	0.2342	0.06
Vanadium	80.90	36.37	16.7310625	0.2328	0.09
Zinc	449.00	216.58	99.627375	58.2170	14.3
Total PAH	28.14	11.962	5.502581094	0.4593	0.2
Total PCB	0.0700	0.031	0.014152667	0.009648	0.000610
Total DDT	0.0053	0.0028	0.001273625	0.001161	0.000010
Alpha-Chlordane	0.0020	0.0007	0.000310677	0.000220	0.000008
Dieldrin	0.0081	0.0019	0.000892191	0.000213	0.000081
Endosulfan Sulfate	0.0021	0.0010	0.000467886	0.002555	0.000111
Endrin Ketone	0.0016	0.0008	0.000355262	0.003880	0.000032
Gamma-Chlordane	0.0100	0.0043	0.00199295	0.021766	0.000048
Heptachlor	0.0007	0.00045	0.00020815	0.000193	0.000027

NOTE: (1) Soil (ww) based on average sediment percent moisture of 54%.

TABLE 5-10 NOAEL TOXICITY REFERENCE VALUES (TRVs) FOR USE IN THE FOOD WEB
(mg/kg-bw/day) (Based on Sample et al. 1996 unless otherwise noted)

COPC	Herring Gull	Raccoon	Comments
INORGANICS			
Arsenic	5.1	0.036	NOAEL for raccoon based on mouse exposed to arsenite. NOAEL for herring gull based on mallard exposed to sodium arsenite.
Barium	20.80	2.80	NOAEL for raccoon based on rat exposed to barium chloride NOAEL for herring gull based on 1-day old chick exposed to barium hydroxide
Beryllium	NA	.35	NOAEL for raccoon based on rat exposed to beryllium sulfate.
Cadmium	1.45	.51	NOAEL for raccoon based on rat exposed to cadmium chloride. NOAEL for herring gull based on mallard exposed to cadmium chloride.
Cobalt	5.2	42.00	NOAEL for raccoon and herring gull based on (EPA 2000)
Copper	47	8	NOAEL for raccoon based on mink NOAEL for copper sulfate. NOAEL for herring gull based on chick NOAEL exposed to copper oxide.
Lead	3.85	4.22	NOAEL for raccoon based on rat NOAEL for lead acetate. NOAEL for herring gull based on kestrel NOAEL exposed to metallic lead.
Manganese	997	46	NOAEL for raccoon based on rat NOAEL. NOAEL for herring gull based on quail NOAEL.
Mercury	0.01	0.006	NOAEL for raccoon and herring gull based on methyl mercury.
Nickel	77.4	21.12	NOAEL for raccoon based on rat NOAEL for nickel sulfate hexahydrate. NOAEL for herring gull based on mallard NOAEL exposed to nickel sulfate.
Selenium	0.5	0.106	NOAEL for raccoon based on rat NOAEL for selenate. NOAEL for herring gull based on mallard exposed to sodium selenite.
Vanadium	11.4	0.103	NOAEL for raccoon based on rat NOAEL exposed to sodium metavanadate. NOAEL for herring gull based on mallard NOAEL exposed to vanadyl sulfate.
Zinc	14.5	84.5	NOAEL for raccoon based on rat NOAEL exposed to zinc oxide. NOAEL for herring gull based on chicken NOAEL exposed to zinc sulfate.
PAH			
Total PAHs	1.0	0.29	NOAEL value for raccoon used is for benzo(a)pyrene based on mouse NOAEL (Sample et al. 1996). TRV for avian receptors based on a single oral-dose LC50 of 101 mg/kg/day for a red-winged blackbird (Schafer et al. 1983). This LC50 was divided by 100 to approximate the chronic NOAEL of 1.0 mg/kg/day.

COPC	Herring Gull	Raccoon	Comments
PCB			
Total PCBs	0.18	0.096	NOAEL for raccoon based on mouse NOAEL exposed to Aroclor 1254. Fox NOAEL based on mink exposed to Aroclor 1254. NOAEL for herring gull based on pheasant NOAEL exposed to Aroclor 1254.
PESTICIDES			
Total DDT	0.003	0.42	NOAEL for raccoon based on rat NOAEL exposed to technical DDT. NOAEL for herring gull based on brown pelican exposed to technical DDT.
Alpha-Chlordane	2.1	1.3	NOAEL for raccoon based on mouse NOAEL exposed to chlordane. NOAEL for herring gull based on red-winged blackbird NOAEL exposed to chlordane.
Dieldrin	0.077	0.011	NOAEL for raccoon based on rat NOAEL. NOAEL for herring gull based on barn owl NOAEL.
Endosulfan Sulfate	10	.08	NOAEL for raccoon based on rat exposed to endosulfan. NOARL for herring gull based on gray partridge exposure to endosulfan
Endrin Ketone (based on endrin as surrogate)	0.01	0.026	NOAEL for raccoon based on mouse NOAEL. NOAEL for herring gull based on screech owl NOAEL.
Gamma-Chlordane	2.1	1.3	NOAEL for raccoon based on mouse NOAEL exposed to chlordane. NOAEL for herring gull based on red-winged blackbird NOAEL exposed to chlordane.
Heptachlor	1.8	0.069	NOAEL for raccoon based on mink NOAEL (Sample et al. 1996). Avian TRV based on American woodcock LD50 (Stickel et al. 1965) divided by 100 to approximate NOAEL.

NOTE:
NOAEL values for the raccoon based on the red fox (same approximate size).
NA = None Available.

TABLE 5-11 LOAEL TOXICITY REFERENCE VALUES (TRVs) FOR USE IN THE TERRESTRIAL FOOD WEB
(mg/kg-bw/day) (Based on Sample et al. 1996 unless otherwise noted)

COPC	Herring Gull	Raccoon	Comments
INORGANICS			
Arsenic	7.4	0.36	LOAEL for raccoon based on mouse exposed to arsenite. LOAEL for herring gull based on mallard exposed to sodium arsenite.
Barium	41.7	10.5	LOAEL for raccoon based on rat exposed to barium chloride LOAEL for herring gull based on 1-day old chick exposed to barium hydroxide
Beryllium	NA	3.5	LOAEL for raccoon based on rat exposed to beryllium sulfate.
Cadmium	20	5.1	LOAEL for raccoon based on rat exposed to cadmium chloride. LOAEL for herring gull based on mallard exposed to cadmium chloride.
Cobalt	52	420	LOAEL for raccoon and herring gull based on (EPA 2000)
Copper	61.7	10.6	LOAEL for raccoon based on mink LOAEL for copper sulfate. LOAEL for herring gull based on chick LOAEL exposed to copper oxide.
Lead	11.3	42.3	LOAEL for raccoon based on rat LOAEL for lead acetate. LOAEL for herring gull based on kestrel LOAEL exposed to metallic lead.
Manganese	9,970	150	LOAEL for raccoon based on rat LOAEL. LOAEL for herring gull based on quail LOAEL.
Mercury	0.06	0.01	LOAEL for raccoon based on mink exposed to methyl mercury. LOAEL for herring gull based on mallard duck exposed to methyl mercury.
Nickel	107	42.25	LOAEL for raccoon based on rat LOAEL for nickel sulfate hexahydrate. LOAEL for herring gull based on mallard LOAEL exposed to nickel sulfate.
Selenium	1.0	0.174	LOAEL for raccoon based on rat LOAEL for selenate. LOAEL for herring gull based on mallard exposed to sodium selenite.
Vanadium	114	1.03	LOAEL for raccoon based on rat LOAEL exposed to sodium metavanadate. LOAEL for herring gull based on mallard LOAEL exposed to vanadyl sulfate.
Zinc	131	169	LOAEL for raccoon based on rat LOAEL exposed to zinc oxide. LOAEL for herring gull based on chicken LOAEL exposed to zinc sulfate.
PAH			
Total PAHs	10	2.9	LOAEL value for raccoon used is for benzo(a)pyrene based on mouse LOAEL (Sample et al. 1996). TRV for avian receptors based on a single oral-dose LC50 of 101 mg/kg/day for a red-winged blackbird (Schafer et al. 1983). This LC50 was divided by 100 to approximate the chronic LOAEL of 1.0 mg/kg/day.

COPC	Herring Gull	Raccoon	Comments
PCB			
Total PCBs	1.8	0.474	LOAEL for raccoon based on mouse LOAEL exposed to Aroclor 1254. Fox LOAEL based on mink exposed to Aroclor 1254. LOAEL for herring gull based on pheasant LOAEL exposed to Aroclor 1254.
PESTICIDES			
Total DDT	0.028	2.11	LOAEL for raccoon based on rat LOAEL exposed to technical DDT. LOAEL for herring gull based on brown pelican exposed to technical DDT.
Alpha-Chlordane	10.7	2.6	LOAEL for raccoon based on mouse LOAEL exposed to chlordane. LOAEL for herring gull based on red-winged blackbird LOAEL exposed to chlordane.
Dieldrin	0.77	0.106	LOAEL for raccoon based on rat LOAEL. LOAEL for herring gull based on barn owl LOAEL.
Endosulfan Sulfate	100	0.8	LOAEL for raccoon based on rat exposed to endosulfan. NOARL for herring gull based on gray partridge exposure to endosulfan
Endrin Ketone (based on endrin as surrogate)	0.1	0.26	LOAEL for raccoon based on mouse LOAEL. LOAEL for herring gull based on screech owl LOAEL.
Gamma-Chlordane	10.7	2.6	LOAEL for raccoon based on mouse LOAEL exposed to chlordane. LOAEL for herring gull based on red-winged blackbird LOAEL exposed to chlordane.
Heptachlor	18	0.69	LOAEL for raccoon based on mink LOAEL (Sample et al. 1996). Avian TRV based on American woodcock LD50 (Stickel et al. 1965) divided by 100 to approximate LOAEL.

NOTE:
LOAEL values for the raccoon based on the red fox (same approximate size).
NA = None Available.

TABLE 5-12 STEP 2 RISK CALCULATIONS FOR THE RACCOON

Raccoon
Body Weight 6.0000000 kg
Food Ingestion Rate 0.2500000 kg/kg-bw-day
Sediment Ingestion Rate 0.0235 kg/kg-bw-day

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Food Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	NOAEL HQ_n
Arsenic	36.60	36.60	10.01	0.04	**278.06**
Barium	133.00	133.00	36.38	2.80	**12.99**
Beryllium	1.90	1.90	0.52	0.35	**1.48**
Cadmium	2.40	2.40	0.66	0.51	**1.29**
Cobalt	37.90	37.90	10.37	42.00	0.25
Copper	212.00	212.00	57.98	8.00	**7.25**
Lead	154.00	154.00	42.12	4.22	**9.98**
Manganese	788.00	788.00	215.52	46.00	**4.69**
Mercury	0.38	0.38	0.10	0.01	**10.39**
Nickel	53.80	53.80	14.71	21.12	0.70
Selenium	1.30	2.34	0.61	0.11	**5.80**
Vanadium	80.90	80.90	22.13	0.10	**214.82**
Zinc	449.00	754.32	199.13	84.50	**2.36**
Total PAH	28.14	28.14	7.70	0.29	**26.54**
Total PCB	7.00E-02	1.37E-01	3.59E-02	9.60E-02	3.74E-01
Total DDT	5.30E-03	1.39E-02	3.60E-03	4.20E-01	8.56E-03
Alpha-Chlordane	2.00E-03	4.08E-03	1.07E-03	1.30E+00	8.21E-04
Dieldrin	8.10E-03	8.10E-03	2.22E-03	1.10E-02	2.01E-01
Endosulfan Sulfate	2.10E-03	3.30E-02	8.29E-03	8.00E-02	1.04E-01
Endrin Ketone	1.60E-03	5.02E-02	1.26E-02	2.60E-02	4.85E-01
Gamma-Chlordane	1.00E-02	2.04E-02	5.34E-03	1.30E+00	4.10E-03
Heptachlor	7.10E-04	1.89E-03	4.89E-04	6.90E-02	7.08E-03

NA = Not Available, HQn = Hazard Quotient based on the NOAEL
Foodweb Model Calculations:
Dose = (Dose Food + Dose Sediment + Dose Water)
Dose Food = Food Concentration x Food Ingestion Rate
(Note: Food concentration is assumed to be equal to sediment concentration)
Dose Sediment = Sediment Concentration x Incidental Sediment Ingestion Rate

TABLE 5-13 STEP 2 RISK CALCULATIONS FOR THE HERRING GULL

Herring Gull
Body Weight 0.9510000 kg
Food Ingestion Rate 0.2000000 kg/kg-bw-day
Sediment Ingestion Rate 0.0160000 kg/kg-bw-day

Ecological Contaminant of Concern	Sediment Concentration (mg/kg)	Food Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	NOAEL HQ_n
Arsenic	36.60	36.60	7.91	5.10	**1.55**
Barium	133.00	133.00	28.73	20.80	**1.38**
Beryllium	1.90	1.90	0.41	NA	NA
Cadmium	2.40	2.40	0.52	1.45	0.36
Cobalt	37.90	37.90	8.19	5.20	**1.57**
Copper	212.00	212.00	45.79	47.00	0.97
Lead	154.00	154.00	33.26	3.85	**8.64**
Manganese	788.00	788.00	170.21	997.00	0.17
Mercury	0.38	0.38	0.08	0.006	**13.68**
Nickel	53.80	53.80	11.62	77.40	0.15
Selenium	1.30	2.34	0.49	0.50	0.98
Vanadium	80.90	80.90	17.47	11.40	**1.53**
Zinc	449.00	754.32	158.05	14.50	**10.90**
Total PAH	28.14	28.14	6.08	1.00	**6.08**
Total PCB	7.00E-02	1.37E-01	2.86E-02	1.80E-01	1.59E-01
Total DDT	5.30E-03	1.39E-02	2.86E-03	3.00E-03	9.54E-01
Alpha-Chlordane	2.00E-03	4.08E-03	8.48E-04	2.10E+00	4.04E-04
Dieldrin	8.10E-03	8.10E-03	1.75E-03	7.70E-02	2.27E-02
Endosulfan Sulfate	2.10E-03	3.30E-02	6.63E-03	1.00E+01	6.63E-04
Endrin Ketone	1.60E-03	5.02E-02	1.01E-02	1.00E-02	1.01E+00
Gamma-Chlordane	1.00E-02	2.04E-02	4.24E-03	2.10E+00	2.02E-03
Heptachlor	7.10E-04	1.89E-03	3.89E-04	1.80E+00	2.16E-04

NA = Not Available, HQn = Hazard Quotient based on the NOAEL
Foodweb Model Calculations:
Dose = (Dose Food + Dose Sediment + Dose Water)
Dose Food = Food Concentration x Food Ingestion Rate
(Note: Food concentration is assumed to be equal to sediment concentration)
Dose Sediment = Sediment Concentration x Incidental Sediment Ingestion Rate.

TABLE 5-14 SUMMARY OF STEP 2 FOOD WEB RISKS

Ecological Contaminants of Concern	Raccoon NOAEL HQ_n	Herring Gull NOAEL HQ_n
Arsenic	**278.06**	**1.55**
Barium	**12.99**	**1.38**
Beryllium	**1.48**	NA
Cadmium	**1.29**	0.36
Cobalt	0.25	**1.57**
Copper	**7.25**	0.97
Lead	**9.98**	**8.64**
Manganese	**4.69**	0.17
Mercury	**10.39**	**13.68**
Nickel	0.70	0.15
Selenium	**5.80**	0.98
Vanadium	**214.82**	**1.53**
Zinc	**2.36**	**10.90**
Total PAH	**26.54**	**6.08**
Total PCB	3.74E-01	1.59E-01
Total DDT	8.56E-03	9.54E-01
Alpha-Chlordane	8.21E-04	4.04E-04
Dieldrin	2.01E-01	2.27E-02
Endosulfan Sulfate	1.04E-01	6.63E-04
Endrin Ketone	4.85E-01	1.01E+00
Gamma-Chlordane	4.10E-03	2.02E-03
Heptachlor	7.08E-03	2.16E-04

NA = Not Available HQ_n= Hazard Quotient based on the NOAEL

TABLE 5-15 STEP 3a RISK CALCULATIONS FOR THE RACCOON

Racc n

Body Weight 6.0000000 kg
Food Ingestion Weight 0.2500000 kg/kg-bw-day
Sediment Ingestion Rate 0.0235 kg/kg-bw-day
Area Use Factor 0.02083333
Fraction Diet Invertebrates 0.62
Fraction Diet Vegetation 0.38

Mean Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg) (ww)	Invertebrate Concentration (mg/kg) (ww)	Vegetation Concentration (mg/kg) (ww)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL (mg/kg/day)	LOAEL HQ_n
Arsenic	4.97	0.8303	0.08	0.0053	0.04	1.46E-01	0.36	1.46E-02
Barium	26.2	0.8230	5.60	0.027	2.80	9.50E-03	10.50	2.53E-03
Beryllium	0.47	0.0074	0.00	0.00027	0.35	7.61E-04	3.50	7.61E-05
Cadmium	0.31	0.0820	0.08	0.00057	0.51	1.11E-03	5.09	1.11E-04
Cobalt	3.76	0.1598	0.04	0.0024	42.00	5.82E-05	420.00	5.82E-06
Copper	48.8	3.2294	1.84	0.0388	8.00	4.75E-03	10.60	3.58E-03
Lead	33.9	0.2359	0.44	0.018	4.22	4.32E-03	42.25	4.32E-04
Manganese	97.9	3.1759	11.06	0.080	46.00	1.74E-03	150.00	5.34E-04
Mercury	0.079	0.0080	0.02	0.00011	0.01	1.07E-02	0.02	6.29E-03
Nickel	10.1	0.5288	0.16	0.0070	21.12	3.31E-04	42.25	1.66E-04
Selenium	0.37	0.2342	0.06	0.0011	0.11	1.00E-02	0.17	6.09E-03
Vanadium	16.7	0.2328	0.09	0.0091	0.10	8.86E-02	1.03	8.86E-03
Zinc	99.6	58.2170	14.33	0.27	84.50	3.14E-03	169.00	1.57E-03
Total PAH	5.50	0.4593	0.23	0.0046	0.29	1.60E-02	2.86	1.62E-03
Total PCB	0.014	0.0096	6.10E-04	3.93E-05	0.10	4.09E-04	0.47	8.29E-05
Total DDT	0.0012	0.0012	1.04E-05	4.39E-06	0.42	1.05E-05	2.11	2.08E-06

Ecological Contaminant of Concern	Sediment Concentration (mg/kg) (ww)	Invertebrate Concentration (mg/kg) (ww)	Vegetation Concentration (mg/kg) (ww)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL (mg/kg/day)	LOAEL HQ_n
Alpha-Chlordane	0.00031	0.0002	7.55E-06	8.79E-07	1.30	6.76E-07	2.60	3.38E-07
Dieldrin	0.00089	0.0002	8.10E-05	1.28E-06	0.01	1.17E-04	0.11	1.21E-05
Endosulfan Sulfate	0.00046	0.0026	1.11E-04	8.70E-06	0.08	1.09E-04	0.80	1.09E-05
Endrin Ketone	0.00035	0.0039	3.18E-05	1.28E-05	0.03	4.91E-04	0.26	4.85E-05
Gamma-Chlordane	0.0019	0.0218	4.85E-05	7.14E-05	1.30	5.49E-05	2.60	2.74E-05
Heptachlor	0.00020	0.0002	2.74E-05	7.78E-07	0.07	1.13E-05	0.69	1.13E-06

NA = Not Available, HQn = Hazard Quotient based on the NOAEL, HQl = Hazard Quotient based on the LOAEL
Foodweb Model Calculations:
Dose = (Dose Food + Dose Sediment + Dose Water).
Dose Food = Food Concentration x Food Ingestion Rate.
Dose Sediment = Sediment Concentration x Incidental Sediment Ingestion Rate.
Dose Water = Water Concentration x Water Ingestion Rate.

TABLE 5-16 STEP 3a RISK CALCULATIONS FOR THE HERRING GULL

Herring Gull

Body Weight	0.9510000 kg
Food Ingestion Weight	0.2000000 kg/kg-bw-day
Sediment Ingestion Rate	0.0160000 kg/kg-bw-day
Area Use Factor	0.04
Fraction Diet Invertebrates	1

Mean Concentrations

Ecological Contaminant of Concern	Sediment Concentration (mg/kg) (ww)	Invertebrate Concentration (mg/kg) (ww)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL (mg/kg/day)	LOAEL HQ_n
Arsenic	4.97	0.830	0.00982	5.10	1.93E-03	7.40	1.33E-03
Barium	26.2	0.822	0.0234	20.80	1.13E-03	41.70	5.61E-04
Beryllium	0.475	0.00744	0.000364	NA	NA	NA	NA
Cadmium	0.31	0.0819	0.000854	1.45	5.89E-04	20.00	4.27E-05
Cobalt	3.76	0.159	0.00368	5.20	7.09E-04	52.00	7.09E-05
Copper	48.8	3.22	0.0571	47.00	1.22E-03	61.70	9.26E-04
Lead	33.9	0.235	0.0235	3.85	6.13E-03	11.30	2.09E-03
Manganese	97.9	3.17	0.088	997.00	8.83E-05	9970.00	8.83E-06
Mercury	0.079	0.0080	0.000114	0.01	1.91E-02	0.06	1.79E-03
Nickel	10.1	0.52	0.0107	77.40	1.38E-04	107.00	1.00E-04
Selenium	0.37	0.234	0.00211	0.50	4.23E-03	1.00	2.11E-03
Vanadium	16.7	0.232	0.0125	11.40	1.10E-03	114.00	1.10E-04
Zinc	99.6	58.2	0.529	14.50	3.65E-02	131.00	4.04E-03
Total PAH	5.50	0.459	0.00719	1.00	7.20E-03	10.00	7.20E-04
Total PCB	0.0141	0.00964	8.62E-05	0.18	4.79E-04	1.80	4.79E-05
Total DDT	0.00127	0.00116	1.01E-05	0.00	3.37E-03	0.03	3.61E-04

Ecological Contaminant of Concern	Sediment Concentration (mg/kg) (ww)	Invertebrate Concentration (mg/kg) (ww)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	NOAEL HQ_n	LOAEL (mg/kg/day)	LOAEL HQ_n
Alpha-Chlordane	0.000310	0.000220	1.96E-06	2.10	9.34E-07	10.70	1.83E-07
Dieldrin	0.000892	0.000212	2.27E-06	0.08	2.95E-05	0.77	2.95E-06
Endosulfan Sulfate	0.000467	0.00255	2.07E-05	10.00	2.07E-06	100.00	2.07E-07
Endrin Ketone	0.000355	0.00388	3.12E-05	0.01	3.13E-03	0.10	3.13E-04
Gamma-Chlordane	0.00199	0.0217	0.000175	2.10	8.35E-05	10.70	1.64E-05
Heptachlor	0.000208	0.000192	1.67E-06	1.80	9.30E-07	18.00	9.30E-08

NA = Not Available, HQn = Hazard Quotient based on the NOAEL, HQl = Hazard Quotient based on the LOAEL

Foodweb Model Calculations:

Dose = (Dose Food + Dose Sediment + Dose Water)

Dose Food = Food Concentration x Food Ingestion Rate

Dose Sediment = Sediment Concentration x Incidental Sediment Ingestion Rate

TABLE 5-17 SUMMARY OF STEP 3a FOOD WEB RISKS

Ecological Contaminants of Concern	Raccoon		Herring Gull	
	NOAEL HQ_n	LOAEL HQ_l	NOAEL HQ_n	LOAEL HQ_l
Arsenic	1.46E-01	1.46E-02	1.93E-03	1.33E-03
Barium	9.50E-03	2.53E-03	1.13E-03	5.61E-04
Beryllium	7.61E-04	7.61E-05	NA	NA
Cadmium	1.11E-03	1.11E-04	5.89E-04	4.27E-05
Cobalt	5.82E-05	5.82E-06	7.09E-04	7.09E-05
Copper	4.75E-03	3.58E-03	1.22E-03	9.26E-04
Lead	4.32E-03	4.32E-04	6.13E-03	2.09E-03
Manganese	1.74E-03	5.34E-04	8.83E-05	8.83E-06
Mercury	1.07E-02	6.29E-03	1.91E-02	1.79E-03
Nickel	3.31E-04	1.66E-04	1.38E-04	1.00E-04
Selenium	1.00E-02	6.09E-03	4.23E-03	2.11E-03
Vanadium	8.86E-02	8.86E-03	1.10E-03	1.10E-04
Zinc	3.14E-03	1.57E-03	3.65E-02	4.04E-03
Total PAH	1.60E-02	1.62E-03	7.20E-03	7.20E-04
Total PCB	4.09E-04	8.29E-05	4.79E-04	4.79E-05
Total DDT	1.05E-05	2.08E-06	3.37E-03	3.61E-04
Alpha-Chlordane	6.76E-07	3.38E-07	9.34E-07	1.83E-07
Dieldrin	1.17E-04	1.21E-05	2.95E-05	2.95E-06
Endosulfan Sulfate	1.09E-04	1.09E-05	2.07E-06	2.07E-07
Endrin Ketone	4.91E-04	4.85E-05	3.13E-03	3.13E-04
Gamma-Chlordane	5.49E-05	2.74E-05	8.35E-05	1.64E-05
Heptachlor	1.13E-05	1.13E-06	9.30E-07	9.30E-08

TABLE 5-18 POTENTIAL HAZARD QUOTIENTS FOR BENTHIC INVERTEBRATES

Analyte	UCLM95 (mg/kg)	ER-L (mg/kg)	ER-L Hazard Quotient	ER-M (mg/kg)	ER-M Hazard Quotient
Inorganics					
ARSENIC	2.64E+01	8.2	**3.22**	70	0.38
BARIUM	7.28E+01	48	**1.52**	ND	NC
BERYLLIUM	1.29E+00	ND	NC	ND	NC
CADMIUM	9.32E-01	1.2	0.78	9.6	0.097
COBALT	1.25E+01	10	**1.25**	ND	NC
COPPER	1.36E+02	34	**4.01**	270	0.05
LEAD	8.99E+01	46.7	**1.93**	218	0.41
MANGANESE	3.41E+02	260	**1.31**	ND	NC
MERCURY	2.32E-01	0.15	**1.55**	0.71	0.33
NICKEL	2.75E+01	20.9	**1.32**	51.6	0.53
SELENIUM	9.59E-01	1	0.96	ND	NC
VANADIUM	4.67E+01	57	0.82	ND	NC
ZINC	2.72E+02	150	**1.81**	410	0.66
PAH					
2-METHYLNAPHTHALENE	1.10E-01	0.07	**1.57**	0.67	0.16
ACENAPHTHENE	2.26E-01	0.016	**14.15**	0.5	0.45
ACENAPHTHYLENE	6.03E-01	0.044	**13.71**	0.64	0.94
ANTHRACENE	4.84E-01	0.085	**5.70**	1.1	0.44
BENZO(A)ANTHRACENE	8.77E-01	0.26	**3.37**	1.6	0.54
BENZO(A)PYRENE	1.01E+00	0.43	**2.34**	1.6	0.63
BENZO(B)FLUORANTHENE	1.21E+00	0.24	**5.03**	ND	NC
BENZO[G,H,I]PERYLENE	7.49E-01	0.29	**2.58**	ND	NC
BENZO(K)FLUORANTHENE	1.16E+00	0.24	**4.82**	ND	NC
CHRYSENE	1.36E+00	0.38	**3.58**	2.8	0.49
DIBENZO(A,H)ANTHRACENE	2.26E-01	0.063	**3.59**	0.26	0.86
FLUORANTHENE	2.73E+00	0.6	**4.55**	5.1	0.54

Analyte	UCLM95 (mg/kg)	ER-L (mg/kg)	ER-L Hazard Quotient	ER-M (mg/kg)	ER-M Hazard Quotient
PAH continued					
FLUORENE	2.18E-01	0.019	**11.45**	0.54	0.40
INDENO(1,2,3-CD)PYRENE	8.46E-01	0.078	**10.85**	ND	NC
PHENANTHRENE	1.83E+00	0.24	**7.63**	1.5	**1.22**
PYRENE	2.51E+00	0.67	**3.75**	2.6	0.97
Total PAH	1.55E+01	2.9	**5.33**	44.8	0.35
PCB and Pesticides					
TOTAL PCB	3.83E-02	0.023	**1.66**	0.18	0.21
4,4'-DDD	2.20E-03	0.002	**1.10**	0.02	0.11
4,4'-DDE	2.03E-03	0.002	**1.02**	0.015	0.14
4,4'-DDT	1.16E-03	0.00158	0.73	0.0461	0.03
Total DDT metabolites	3.66E-03	0.00158	**2.32**	0.027	0.14
ALPHA-CHLORDANE	1.12E-03	0.0005	**2.24**	0.006	0.19
DIELDRIN	4.45E-03	0.00002	**222.31**	0.008	0.56
ENDRIN KETONE	9.73E-04	0.00002	**48.63**	0.045	0.02
GAMMA-CHLORDANE	6.12E-03	0.0005	**12.24**	0.006	**1.02**
HEPTACHLOR	6.00E-04	0.003	0.20	ND	NC

NOTE:
ND = No Screening data.
NC = Not Calculable.

Appendix A

2004 Allen Harbor Sediment Data

TABLE A-1 VOLATILE ORGANIC COMPOUNDS DETECTED IN SEDIMENT, MARCH 2004

Chemical Name	Unit	Location ID	AH-03	AH-06 DUP	AH-06	AH-08	AH-11 DUP	AH-11
		Sample Date	3/23/04	3/23/04	3/23/04	3/22/04	3/22/04	3/22/04
		Screening Level						
1,1,2,2-Tetrachloroethane	µg/kg	8,300	<7U	<10U	<12U	<17R	<12U	<11U
1,1,2-Trichloroethane	µg/kg	6,000	<7U	<10U	<12U	<17R	<12U	<11U
1,1-Dichloroethane	µg/kg	4,800	<7U	<10U	<12U	<17R	<12U	<11U
1,1-Dichloroethene	µg/kg		<7U	<10U	<12U	<17R	<12U	<11UJ
1,2-Dichloroethane	µg/kg	4,800	<7U	<10U	<12U	<17R	<12U	<11U
1,2-Dichloropropane	µg/kg		<7U	<10U	<12U	<17R	<12U	<11U
2-Butanone	µg/kg	2,900	7J	14J	10J	<33R	<23U	<21U
2-Hexanone	µg/kg	4,800	<14U	<20U	<24U	<33R	<23U	<21U
4-Methyl-2-Pentanone	µg/kg	4,800	<14U	<20U	<24U	<33R	<23U	<21U
Acetone	µg/kg	2,300	220	83J	390J	<210R	<150U	<110U
Benzene	µg/kg	290	<7U	<10U	<12U	<17R	<12U	<11UJ
Bromodichloromethane	µg/kg	10,000	<7U	<10U	<12U	<17R	<12U	<11U
Bromoform	µg/kg	12,000	<7U	<10U	<12U	<17R	<12U	<11U
Bromomethane	µg/kg		<7U	<10U	<12U	<17R	<12U	<11U
Carbon Disulfide	µg/kg	220	<11U	<11U	<12U	<24R	<12U	<11U
Carbon Tetrachloride	µg/kg	7,800	<7U	<10U	<12U	<17R	<12U	<11U
Chlorobenzene	µg/kg	7,200	<7U	<10U	<12U	<17R	<12U	<11UJ
Chloroethane	µg/kg	2,900	<7U	<10U	<12U	<17R	<12U	<11U
Chloroform	µg/kg	5,700	<7U	<10U	<12U	<17R	<12U	<11U
Chloromethane	µg/kg	2,100	<7U	<10U	<12U	<17R	<12U	<11U
cis-1,2-Dichloroethene	µg/kg	3,700	<7U	<10U	<12U	<17R	<12U	<11UJ
cis-1,3-Dichloropropene	µg/kg		<7U	<10U	<12U	<17R	<12U	<11U
Dibromochloromethane	µg/kg		<7U	<10U	<12U	<17R	<12U	<11U
Ethylbenzene	µg/kg	9,700	<7U	<10U	<12U	<17R	<12U	<11U
M,P-Xylenes	µg/kg	9,700	<14U	<20U	<24U	<33R	<23U	<21U
Methylene Chloride	µg/kg	2,600	<37UJ	<10UJ	<89UJ	<17R	<12UJ	<11UJ
O-Xylene	µg/kg	9,700	<7U	<10U	<12U	<17R	<12U	<11U
Styrene	µg/kg	9,100	<7U	<10U	<12U	<17R	<12U	<11U
Tetrachloroethene	µg/kg	9,200	<7U	<10U	<12U	<17R	<12U	<11U
Toluene	µg/kg	8,200	<7U	<10U	<12U	<17R	<12U	<11U
trans-1,2-Dichloroethene	µg/kg	4,800	<7U	<10U	<12U	<17R	<12U	<11UJ
trans-1,3-Dichloropropene	µg/kg		<7U	<10U	<12U	<17R	<12U	<11U
Trichloroethene	µg/kg	6,500	<7U	<10U	<12U	<17R	<12U	<11UJ
Vinyl Chloride	µg/kg		<7U	<10U	<12U	<17R	<12U	<11U

NOTE:
- µg/kg = Micrograms per kilogram.
- U = Undetected.
- R = The data areUnusable (compound may or may not be present).
- UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit.
- J = Estimated.
- * = Exceeds Project Action Level.

Chemical Name	Unit	Location ID	AH-17	AH-23	AH-26	AH-28	AH-29	AH-32
		Sample Date	3/23/04	3/24/04	3/27/04	3/25/04	3/26/04	3/26/04
		Screening Level						
1,1,2,2-Tetrachloroethane	µg/kg	8,300	<15U	<10U	<8U	<5U	<13U	<11U
1,1,2-Trichloroethane	µg/kg	6,000	<15U	<10U	<8U	<5U	<13U	<11U
1,1-Dichloroethane	µg/kg	4,800	<15U	<10U	<8U	<5U	<13U	<11U
1,1-Dichloroethene	µg/kg		<15U	<10U	<8U	<5U	<13U	<11U
1,2-Dichloroethane	µg/kg	4,800	<15U	<10U	<8U	<5U	<13U	<11U
1,2-Dichloropropane	µg/kg		<15U	<10U	<8U	<5U	<13U	<11U
2-Butanone	µg/kg	2,900	20J	<21U	<17U	<10U	<27U	17J
2-Hexanone	µg/kg	4,800	<30U	<21U	<17U	<10U	<27U	<23U
4-Methyl-2-Pentanone	µg/kg	4,800	<30U	<21U	<17U	<10U	<27U	<23U
Acetone	µg/kg	2,300	200	<210U	<67UJ	<84UJ	<93UJ	<130U
Benzene	µg/kg	290	<15U	<10U	<8U	<5U	<13U	<11U
Bromodichloromethane	µg/kg	10,000	<15U	<10U	<8U	<5U	<13U	<11U
Bromoform	µg/kg	12,000	<15U	<10U	<8U	<5U	<13U	<11U
Bromomethane	µg/kg		<15U	<10U	<8U	<5U	<13U	<11U
Carbon Disulfide	µg/kg	220	<24U	<10U	<9U	<5U	<13U	<11U
Carbon Tetrachloride	µg/kg	7,800	<15U	<10U	<8U	<5U	<13U	<11U
Chlorobenzene	µg/kg	7,200	<15U	<10U	<8U	<5U	<13U	<11U
Chloroethane	µg/kg	2,900	<15U	<10U	<8U	<5U	<13U	<11U
Chloroform	µg/kg	5,700	<15U	<10U	<8U	<5U	<13U	<11U
Chloromethane	µg/kg	2,100	<15U	<10U	<8U	<5U	<13U	<11U
cis-1,2-Dichloroethene	µg/kg	3,700	<15U	<10U	<8U	<5U	<13U	5J
cis-1,3-Dichloropropene	µg/kg		<15U	<10U	<8U	<5U	<13U	<11U
Dibromochloromethane	µg/kg		<15U	<10U	<8U	<5U	<13U	<11U
Ethylbenzene	µg/kg	9,700	<15U	<10U	<8U	<5U	<13U	<11U
M,P-Xylenes	µg/kg	9,700	<30U	<21U	<17U	<10U	<27U	<23U
Methylene Chloride	µg/kg	2,600	<15UJ	<10UJ	<8UJ	<5UJ	<13UJ	<11UJ
O-Xylene	µg/kg	9,700	<15U	<10U	<8U	<5U	<13U	<11U
Styrene	µg/kg	9,100	<15U	<10U	<8U	<5U	<13U	<11U
Tetrachloroethene	µg/kg	9,200	<15U	<10U	<8U	<5U	<13U	<11U
Toluene	µg/kg	8,200	<15U	<10U	<8U	<5U	<13U	<11U
trans-1,2-Dichloroethene	µg/kg	4,800	<15U	<10U	<8U	<5U	<13U	<11U
trans-1,3-Dichloropropene	µg/kg		<15U	<10U	<8U	<5U	<13U	<11U
Trichloroethene	µg/kg	6,500	<15U	<10U	<8U	<5U	<13U	<11U
Vinyl Chloride	µg/kg		<15U	<10U	<8U	<5U	<13U	<11U

Chemical Name	Unit	Location ID	AH-33 DUP	AH-33	AH-35	AH-40	AH-42	AH-45
		Sample Date	3/26/04	3/26/04	3/26/04	3/27/04	3/27/04	3/26/04
		Screening Level						
1,1,2,2-Tetrachloroethane	µg/kg	8,300	<10U	<10U	<12U	<5U	<5U	<12U
1,1,2-Trichloroethane	µg/kg	6,000	<10U	<10U	<12U	<5U	<5U	<12U
1,1-Dichloroethane	µg/kg	4,800	<10U	<10U	<12U	<5U	<5U	<12U
1,1-Dichloroethene	µg/kg		<10U	<10U	<12U	<5U	<5U	<12U
1,2-Dichloroethane	µg/kg	4,800	<10U	<10U	<12U	<5U	<5U	<12U
1,2-Dichloropropane	µg/kg		<10U	<10U	<12U	<5U	<5U	<12U
2-Butanone	µg/kg	2,900	23	17J	20J	8	8J	15J
2-Hexanone	µg/kg	4,800	<20U	<20U	<25U	<10U	<10U	<24U
4-Methyl-2-Pentanone	µg/kg	4,800	<20U	<20U	<25U	<10U	<10U	<24U
Acetone	µg/kg	2,300	<85U	<120U	<91U	<45U	<52UJ	<190U
Benzene	µg/kg	290	<10U	<10U	<12U	<5U	<5U	<12U
Bromodichloromethane	µg/kg	10,000	<10U	<10U	<12U	<5U	<5U	<12U
Bromoform	µg/kg	12,000	<10U	<10U	<12U	<5U	<5U	<12U
Bromomethane	µg/kg		<10U	<10U	<12U	<5U	<5U	<12U
Carbon Disulfide	µg/kg	220	<10U	<10U	<12U	<10U	<5U	<12U
Carbon Tetrachloride	µg/kg	7,800	<10U	<10U	<12U	<5U	<5U	<12U
Chlorobenzene	µg/kg	7,200	<10U	<10U	<12U	<5U	<5U	<12U
Chloroethane	µg/kg	2,900	<10U	<10U	<12U	<5U	<5U	<12U
Chloroform	µg/kg	5,700	<10U	<10U	<12U	<5U	<5U	<12U
Chloromethane	µg/kg	2,100	<10U	<10U	<12U	<5U	<5U	<12U
cis-1,2-Dichloroethene	µg/kg	3,700	<10U	6J	<12U	<5U	<5U	<12U
cis-1,3-Dichloropropene	µg/kg		<10U	<10U	<12U	<5U	<5U	<12U
Dibromochloromethane	µg/kg		<10U	<10U	<12U	<5U	<5U	<12U
Ethylbenzene	µg/kg	9,700	<10U	<10U	<12U	<5U	<5U	<12U
M,P-Xylenes	µg/kg	9,700	<20U	<20U	<25U	<10U	<10U	<24U
Methylene Chloride	µg/kg	2,600	<10UJ	<10UJ	<12UJ	<5UJ	<5UJ	<63UJ
O-Xylene	µg/kg	9,700	<10U	<10U	<12U	<5U	<5U	<12U
Styrene	µg/kg	9,100	<10U	<10U	<12U	<5U	<5U	<12U
Tetrachloroethene	µg/kg	9,200	<10U	<10U	<12U	<5U	<5U	<12U
Toluene	µg/kg	8,200	<10U	<10U	<12U	<5U	<5U	<12U
trans-1,2-Dichloroethene	µg/kg	4,800	<10U	<10U	<12U	<5U	<5U	<12U
trans-1,3-Dichloropropene	µg/kg		<10U	<10U	<12U	<5U	<5U	<12U
Trichloroethene	µg/kg	6,500	<10U	<10U	<12U	<5U	<5U	<12U
Vinyl Chloride	µg/kg		<10U	<10U	<12U	<5U	<5U	<12U

Chemical Name	Unit	Location ID / Sample Date / Screening Level	AH-47	AH-49	AH-51	CORE1-BOT	CORE1-TOP	REF1-1
		Sample Date	3/26/04	3/25/04	3/27/04	3/27/04	3/27/04	3/24/04
1,1,2,2-Tetrachloroethane	µg/kg	8,300	<5U	<5U	<11U	<5U	<5U	<5U
1,1,2-Trichloroethane	µg/kg	6,000	<5U	<5U	<11U	<5U	<5U	<5U
1,1-Dichloroethane	µg/kg	4,800	<5U	<5U	<11U	<5U	<5U	<5U
1,1-Dichloroethene	µg/kg		0.9J	<5U	<11U	<5U	<5U	<5U
1,2-Dichloroethane	µg/kg	4,800	<5U	<5U	<11U	<5U	<5U	<5U
1,2-Dichloropropane	µg/kg		<5U	<5U	<11U	<5U	<5U	<5U
2-Butanone	µg/kg	2,900	8J	<10U	16J	5J	5J	<10U
2-Hexanone	µg/kg	4,800	<10U	<10U	<22U	<10U	<10U	<10U
4-Methyl-2-Pentanone	µg/kg	4,800	<10U	<10U	<22U	<10U	<10U	<10U
Acetone	µg/kg	2,300	<72UJ	<79U	<210UJ	<65UJ	<20U	<70U
Benzene	µg/kg	290	<5U	<5U	<11U	<5U	<5U	<5U
Bromodichloromethane	µg/kg	10,000	<5U	<5U	<11U	<5U	<5U	<5U
Bromoform	µg/kg	12,000	<5U	<5U	<11U	<5U	<5U	<5U
Bromomethane	µg/kg		<5U	<5U	<11U	<5U	<5U	<5U
Carbon Disulfide	µg/kg	220	<5U	<5U	<11U	<5U	<5U	46
Carbon Tetrachloride	µg/kg	7,800	<5U	<5U	<11U	<5U	<5U	<5U
Chlorobenzene	µg/kg	7,200	<5U	<5U	<11U	<5U	<5U	<5U
Chloroethane	µg/kg	2,900	<5U	<5U	<11U	<5U	<5U	<5U
Chloroform	µg/kg	5,700	<5U	<5U	<11U	<5U	<5U	<5U
Chloromethane	µg/kg	2,100	<5U	<5U	<11U	<5U	<5U	<5U
cis-1,2-Dichloroethene	µg/kg	3,700	880	<5U	<11U	<5U	<5U	<5U
cis-1,3-Dichloropropene	µg/kg		<5U	<5U	<11U	<5U	<5U	<5U
Dibromochloromethane	µg/kg		<5U	<5U	<11U	<5U	<5U	<5U
Ethylbenzene	µg/kg	9,700	<5U	<5U	<11U	<5U	<5U	<5U
M,P-Xylenes	µg/kg	9,700	<10U	<10U	<22U	<10U	<10U	<10U
Methylene Chloride	µg/kg	2,600	<5UJ	<5UJ	<11UJ	<5UJ	<5UJ	<5UJ
O-Xylene	µg/kg	9,700	<5U	<5U	<11U	<5U	<5U	<5U
Styrene	µg/kg	9,100	<5U	<5U	<11U	<5U	<5U	<5U
Tetrachloroethene	µg/kg	9,200	<5U	<5U	<11U	<5U	<5U	<5U
Toluene	µg/kg	8,200	<5U	<5U	<11U	<5U	<5U	<5U
trans-1,2-Dichloroethene	µg/kg	4,800	3J	<5U	<11U	<5U	<5U	<5U
trans-1,3-Dichloropropene	µg/kg		<5U	<5U	<11U	<5U	<5U	<5U
Trichloroethene	µg/kg	6,500	2J	<5U	<11U	<5U	<5U	1J
Vinyl Chloride	µg/kg		<5U	<5U	<11U	<5U	<5U	<5U

Chemical Name	Unit	Location ID	REF1-2	REF1-4	REF2-1	REF2-3	REF2-5	REF3-1
		Sample Date	3/24/04	3/24/04	3/24/04	3/24/04	3/24/04	3/25/04
		Screening Level						
1,1,2,2-Tetrachloroethane	µg/kg	8,300	<5U	<7U	<8U	<6U	<5U	<8U
1,1,2-Trichloroethane	µg/kg	6,000	<5U	<7U	<8U	<6U	<5U	<8U
1,1-Dichloroethane	µg/kg	4,800	<5U	<7U	<8U	<6U	<5U	<8U
1,1-Dichloroethene	µg/kg		<5U	<7U	<8U	<6U	<5U	<8U
1,2-Dichloroethane	µg/kg	4,800	<5U	<7U	<8U	<6U	<5U	<8U
1,2-Dichloropropane	µg/kg		<5U	<7U	<8U	<6U	<5U	<8U
2-Butanone	µg/kg	2,900	<10U	38	<16U	<12U	<10U	13J
2-Hexanone	µg/kg	4,800	<10U	<14U	<16U	<12U	<10U	<16U
4-Methyl-2-Pentanone	µg/kg	4,800	<10U	<14U	<16U	<12U	<10U	<16U
Acetone	µg/kg	2,300	<52U	<200U	<140U	<74U	<65U	<150U
Benzene	µg/kg	290	<5U	<7U	<8U	<6U	<5U	<8U
Bromodichloromethane	µg/kg	10,000	<5U	<7U	<8U	<6U	<5U	<8U
Bromoform	µg/kg	12,000	<5U	<7U	<8U	<6U	<5U	<8U
Bromomethane	µg/kg		<5U	<7U	<8U	<6U	<5U	<8U
Carbon Disulfide	µg/kg	220	12	<16U	<14U	<8U	<3U	<8U
Carbon Tetrachloride	µg/kg	7,800	<5U	<7U	<8U	<6U	<5U	<8U
Chlorobenzene	µg/kg	7,200	<5U	<7U	<8U	<6U	<5U	<8U
Chloroethane	µg/kg	2,900	<5U	<7U	<8U	<6U	<5U	<8U
Chloroform	µg/kg	5,700	<5U	<7U	<8U	<6U	<5U	<8U
Chloromethane	µg/kg	2,100	<5U	<7U	<8U	<6U	<5U	<8U
cis-1,2-Dichloroethene	µg/kg	3,700	<5U	<7U	<8U	<6U	<5U	<8U
cis-1,3-Dichloropropene	µg/kg		<5U	<7U	<8U	<6U	<5U	<8U
Dibromochloromethane	µg/kg		<5U	<7U	<8U	<6U	<5U	<8U
Ethylbenzene	µg/kg	9,700	<5U	<7U	<8U	<6U	<5U	<8U
M,P-Xylenes	µg/kg	9,700	<10U	<14U	<16U	<12U	<10U	<16U
Methylene Chloride	µg/kg	2,600	<5UJ	<7UJ	<8UJ	<6UJ	<5UJ	<8UJ
O-Xylene	µg/kg	9,700	<5U	<7U	<8U	<6U	<5U	<8U
Styrene	µg/kg	9,100	<5U	<7U	<8U	<6U	<5U	<8U
Tetrachloroethene	µg/kg	9,200	<5U	<7U	<8U	<6U	<5U	<8U
Toluene	µg/kg	8,200	<5U	<7U	<8U	<6U	<5U	<8U
trans-1,2-Dichloroethene	µg/kg	4,800	<5U	<7U	<8U	<6U	<5U	<8U
trans-1,3-Dichloropropene	µg/kg		<5U	<7U	<8U	<6U	<5U	<8U
Trichloroethene	µg/kg	6,500	<5U	<7U	<8U	<6U	<5U	<8U
Vinyl Chloride	µg/kg		<5U	<7U	<8U	<6U	<5U	<8U

Chemical Name	Unit	Location ID Sample Date Screening Level	REF3-2 3/25/04	REF3-4 3/25/04
1,1,2,2-Tetrachloroethane	µg/kg	8,300	<7U	<6U
1,1,2-Trichloroethane	µg/kg	6,000	<7U	<6U
1,1-Dichloroethane	µg/kg	4,800	<7U	<6U
1,1-Dichloroethene	µg/kg		<7U	<6U
1,2-Dichloroethane	µg/kg	4,800	<7U	<6U
1,2-Dichloropropane	µg/kg		<7U	<6U
2-Butanone	µg/kg	2,900	13J	13
2-Hexanone	µg/kg	4,800	<14U	<13U
4-Methyl-2-Pentanone	µg/kg	4,800	<14U	<13U
Acetone	µg/kg	2,300	<150U	<440U
Benzene	µg/kg	290	<7U	<6U
Bromodichloromethane	µg/kg	10,000	<7U	<6U
Bromoform	µg/kg	12,000	<7U	<6U
Bromomethane	µg/kg		<7U	<6U
Carbon Disulfide	µg/kg	220	<7U	<6U
Carbon Tetrachloride	µg/kg	7,800	<7U	<6U
Chlorobenzene	µg/kg	7,200	<7U	<6U
Chloroethane	µg/kg	2,900	<7U	<6U
Chloroform	µg/kg	5,700	<7U	<6U
Chloromethane	µg/kg	2,100	<7U	<6U
cis-1,2-Dichloroethene	µg/kg	3,700	<7U	<6U
cis-1,3-Dichloropropene	µg/kg		<7U	<6U
Dibromochloromethane	µg/kg		<7U	<6U
Ethylbenzene	µg/kg	9,700	<7U	<6U
M,P-Xylenes	µg/kg	9,700	<14U	<13U
Methylene Chloride	µg/kg	2,600	<7UJ	<13UJ
O-Xylene	µg/kg	9,700	<7U	<6U
Styrene	µg/kg	9,100	<7U	<6U
Tetrachloroethene	µg/kg	9,200	<7U	<6U
Toluene	µg/kg	8,200	<7U	<6U
trans-1,2-Dichloroethene	µg/kg	4,800	<7U	<6U
trans-1,3-Dichloropropene	µg/kg		<7U	<6U
Trichloroethene	µg/kg	6,500	<7U	<6U
Vinyl Chloride	µg/kg		<7U	<6U

TABLE A-2 POLYCYCLIC AROMATIC HYDROCARBONS DETECTED IN SEDIMENT, MARCH 2004

Chemical Name	Unit	Location ID	AH-06 DUP	AH-06	AH-08	AH-11 DUP	AH-11	AH-17	AH-23	AH-26
		Sample Date	3/23/04	3/23/04	3/22/04	3/22/04	3/22/04	3/23/04	3/24/04	3/27/04
		Screening Level								
2-Methylnaphthalene	µg/kg	70	8.24 J	9.24 J	16.12 J	16.31	13.37	21.51 J	23.13	21.20 J
Acenaphthene	µg/kg	16	7.73	8.62	13.69 J	22.77*	20.33*	22.87 J*	56.52*	37.73*
Acenaphthylene	µg/kg	44	52.99 J*	58.74 J*	115.95 J*	148.52*	121.50*	171.97 J*	259.86*	285.68 J*
Anthracene	µg/kg	85	78.59	93.37*	180.96 J*	188.33*	166.67*	208.38 J*	390.41*	314.15*
Benzo(a)Anthracene	µg/kg	260	154.97	167.23	333.13 J*	326.25*	324.68*	380.61 J*	665.32*	535.47*
Benzo(a)Pyrene	µg/kg	430	194.69	213.60	386.33 J	465.48*	425.84	497.20 J*	829.48*	664.35*
Benzo(b)Fluoranthene	µg/kg	240	254.02*	280.68*	572.41 J*	584.48*	525.88 J*	641.86 J*	1,137.00*	789.32*
Benzo(k)Fluoranthene	µg/kg	240	244.66*	270.95*	518.85 J*	551.87*	500.30 J*	617.11 J*	999.91*	709.63*
Benzo[g,h,i]Perylene	µg/kg	290	152.79	173.03	309.96 J*	359.99*	326.92*	411.55 J*	605.79*	498.24*
Chrysene	µg/kg	380	252.47	292.35	615.92 J*	571.49*	549.07 J*	626.91 J*	1,110.94*	871.45*
Dibenzo(a,h)Anthracene	µg/kg	63	39.27	43.37	74.94 J*	90.56*	82.28*	100.55 J*	160.00*	137.19*
Fluoranthene	µg/kg	600	335.13	376.06	660.03 J*	746.19*	694.90 J*	1,083.67 J*	1,914.77*	1,519.36*
Fluorene	µg/kg	19	14.45	16.83	25.07 J*	33.55*	30.13*	39.43 J*	73.35*	74.23*
Indeno(1,2,3-cd)Pyrene	µg/kg	78	179.39*	204.58*	356.55 J*	411.62*	367.47 J*	462.31 J*	722.15*	572.98*
Naphthalene	µg/kg	160	16.91 J	18.32 J	29.74 J	32.90	26.77	45.09 J	46.10	36.52 J
Phenanthrene	µg/kg	240	157.03	177.09	303.89 J*	474.38*	396.25*	497.50 J*	924.53*	1,193.18*
Pyrene	µg/kg	670	368.78	406.32	1,125.23 J*	894.36*	790.88*	1,049.11 J*	1,957.11*	1,533.21*

NOTE: µg/kg = Micrograms per kilogram.
J = Estimated.
* = Exceeds Project Action Level.

Chemical Name	Unit	Location ID	AH-28	AH-29	AH-32	AH-33 DUP	AH-33	AH-35	AH-40	AH-42
		Sample Date	3/25/04	3/26/04	3/26/04	3/26/04	3/26/04	3/26/04	3/27/04	3/27/04
		Screening Level								
2-Methylnaphthalene	µg/kg	70	39.74	213.46 J*	23.61	17.83	25.49	44.83	22.22 J	16.52
Acenaphthene	µg/kg	16	56.46*	97.39*	39.09*	34.08 J*	70.70 J*	294.89*	115.80*	30.65*
Acenaphthylene	µg/kg	44	785.17*	534.97 J*	272.86*	196.76*	275.93*	231.15*	27.95 J	314.45*
Anthracene	µg/kg	85	792.27*	758.28*	308.66*	254.17*	373.96*	693.13*	203.32*	324.70*
Benzo(a)Anthracene	µg/kg	260	1,339.47*	1,187.49*	504.90*	452.28*	684.19*	1,596.69*	441.24*	700.42*
Benzo(a)Pyrene	µg/kg	430	1,623.42*	1,503.46*	702.88*	543.51*	819.88*	1,560.65*	389.82	847.16*
Benzo(b)Fluoranthene	µg/kg	240	1,745.90*	2,195.47*	850.15*	723.68*	981.63*	1,765.93*	420.58*	952.29*
Benzo(k)Fluoranthene	µg/kg	240	1,725.11*	2,033.61*	826.73*	657.52*	983.43*	1,643.93*	433.61*	931.27*
Benzo[g,h,i]Perylene	µg/kg	290	1,243.88*	1,067.85*	569.33*	426.88*	634.64*	1,000.56*	244.50	575.27*
Chrysene	µg/kg	380	2,227.35*	1,974.39*	892.57*	745.64*	1,095.87*	2,034.63*	501.01*	1,078.97*
Dibenzo(a,h)Anthracene	µg/kg	63	317.72*	288.39*	142.26*	109.07*	163.99*	292.59*	75.76*	163.45*
Fluoranthene	µg/kg	600	4,081.99*	4,751.11*	1,441.22*	1,548.52*	2,003.94*	3,720.28*	1,100.26*	1,742.77*
Fluorene	µg/kg	19	145.02*	136.72*	60.21*	50.89 J*	87.36 J*	248.78*	89.67*	82.30*
Indeno(1,2,3-cd)Pyrene	µg/kg	78	1,361.12*	1,294.80*	643.03*	500.69*	733.91*	1,233.47*	306.66*	658.06*
Naphthalene	µg/kg	160	67.83	128.42 J	47.25	33.56	51.39	91.66	45.59 J	32.19
Phenanthrene	µg/kg	240	3,316.29*	1,486.20*	981.88*	758.70*	1,169.38*	2,544.73*	763.05*	1,430.20*
Pyrene	µg/kg	670	4,143.47*	4,322.01*	1,579.40*	1,390.76*	1,904.58*	3,322.77*	904.73*	1,705.00*

Chemical Name	Unit	Location ID	AH-45	AH-47	AH-49	AH-51	CORE1-BOT	CORE1-TOP	REF1-1	REF1-2
		Sample Date	3/26/04	3/26/04	3/25/04	3/27/04	3/27/04	3/27/04	3/24/04	3/24/04
		Screening Level								
2-Methylnaphthalene	µg/kg	70	15.76 J	16.05	51.56 J	22.80 J	6.28	32.75	< 0.25 U	0.43
Acenaphthene	µg/kg	16	36.64 J*	32.71*	70.16*	33.37 J*	18.98*	213.90*	0.10 J	0.15 J
Acenaphthylene	µg/kg	44	143.74 J*	238.43*	791.31 J*	354.73 J*	33.33	54.24*	0.56	0.92
Anthracene	µg/kg	85	197.53 J*	244.43*	814.22*	358.53 J*	79.68	302.24*	0.86	1.24
Benzo(a)Anthracene	µg/kg	260	362.69 J*	502.65*	1,502.30*	530.25 J*	145.37	737.41*	2.01	2.51
Benzo(a)Pyrene	µg/kg	430	452.96 J*	549.11*	1,654.23*	739.58 J*	110.10	668.48*	2.41	3.90
Benzo(b)Fluoranthene	µg/kg	240	592.35 J*	554.41*	1,724.54*	906.18 J*	196.12	718.80*	2.52	4.76
Benzo(k)Fluoranthene	µg/kg	240	532.37 J*	568.44*	1,799.07*	876.16 J*	188.42	717.41*	2.42	4.58
Benzo[g,h,i]Perylene	µg/kg	290	359.63 J*	386.32*	1,241.54*	633.68 J*	84.54	401.58*	2.16	4.36
Chrysene	µg/kg	380	583.33 J*	738.64*	2,416.21*	981.43 J*	274.36	855.55*	2.35	3.67
Dibenzo(a,h)Anthracene	µg/kg	63	94.77 J*	100.96*	331.17*	157.21 J*	22.72	124.04*	0.44	0.92
Fluoranthene	µg/kg	600	1,018.60 J*	1,455.37*	4,872.56*	1,947.41 J*	776.86*	1,783.54*	4.73	6.22
Fluorene	µg/kg	19	43.69 J*	63.44*	230.36*	52.88 J*	16.33	155.10*	0.28	0.43
Indeno(1,2,3-cd)Pyrene	µg/kg	78	422.35 J*	433.05*	1,349.72*	689.38 J*	101.67*	506.20*	2.45	4.86
Naphthalene	µg/kg	160	30.46 J	31.40	78.46 J	39.27 J	9.45	92.86	< 0.86 U	< 1.00 U
Phenanthrene	µg/kg	240	526.04 J*	1,028.61*	4,493.70*	1,114.52 J*	134.43	1,441.84*	3.12	2.83
Pyrene	µg/kg	670	933.27 J*	1,353.15*	4,721.00*	1,780.72 J*	604.18	1,560.92*	4.15	5.76

NOTE: U = Undetected.

Chemical Name	Unit	Location ID	REF1-4	REF2-1	REF2-3	REF2-5	REF3-1	REF3-2	REF3-4	SOURCE1-1
		Sample Date	3/24/04	3/24/04	3/24/04	3/24/04	3/25/04	3/25/04	3/25/04	3/26/04
		Screening Level								
2-Methylnaphthalene	µg/kg	70	5.07 J	8.16 J	5.02	0.91	4.77	5.42 J	3.18	11.17 J
Acenaphthene	µg/kg	16	2.15	3.46	2.11	0.46	4.08	5.82	3.27	12.26
Acenaphthylene	µg/kg	44	13.02 J	18.30 J	11.84	2.32	18.54	27.11 J	12.51	159.35 J*
Anthracene	µg/kg	85	18.21	24.55	15.87	2.95	28.79	52.05	24.61	529.63*
Benzo(a)Anthracene	µg/kg	260	36.82	48.84	31.22	6.96	86.82	175.29	74.24	770.25*
Benzo(a)Pyrene	µg/kg	430	54.75	74.11	48.35	9.49	115.78	206.95	90.04	318.34
Benzo(b)Fluoranthene	µg/kg	240	68.74	92.88	57.66	10.15	120.11	203.99	89.22	1,020.86*
Benzo(k)Fluoranthene	µg/kg	240	58.71	80.25	50.46	10.00	119.13	202.15	83.62	985.73*
Benzo[g,h,i]Perylene	µg/kg	290	52.46	67.10	46.21	8.70	91.76	148.83	65.50	300.82*
Chrysene	µg/kg	380	48.48	64.66	43.40	8.54	103.70	188.13	78.42	1,297.64*
Dibenzo(a,h)Anthracene	µg/kg	63	11.73	15.10	10.59	1.89	21.04	36.27	15.99	116.24*
Fluoranthene	µg/kg	600	90.43	115.97	68.33	14.47	199.60	406.54	168.96	2,548.92*
Fluorene	µg/kg	19	5.97	8.62	5.25	1.01	9.77	16.22	7.01	42.99*
Indeno(1,2,3-cd)Pyrene	µg/kg	78	61.45	79.62*	53.12	9.98	112.25*	186.49*	79.31*	435.21*
Naphthalene	µg/kg	160	10.82 J	16.73 J	10.33	2.78	10.41	13.96 J	7.23	18.95 J
Phenanthrene	µg/kg	240	34.40	43.53	31.00	7.41	78.59	164.01	64.80	363.61*
Pyrene	µg/kg	670	78.35	104.41	64.50	13.73	172.48	345.26	143.79	2,131.25*

Chemical Name	Unit	Location ID	SOURCE1-2	SOURCE2-1	SOURCE2-2	SOURCE3-1	SOURCE3-2	SOURCE4-1
		Sample Date	3/26/04	3/26/04	3/26/04	3/26/04	3/26/04	3/24/04
		Screening Level						
2-Methylnaphthalene	µg/kg	70	50.00 J	9,428.33 J*	10,012.10 J*	4.15 J	99.56 J*	15.30 J
Acenaphthene	µg/kg	16	47.19 J*	440.58*	748.75*	4.93	64.95*	24.44*
Acenaphthylene	µg/kg	44	963.01 J*	< R	650.90 J*	11.28 J	26.26 J	172.28 J*
Anthracene	µg/kg	85	1,885.32 J*	222.68*	651.79*	20.83	66.01	211.64*
Benzo(a)Anthracene	µg/kg	260	3,812.16 J*	314.01*	1,059.88*	58.96	186.42	321.70*
Benzo(a)Pyrene	µg/kg	430	2,338.54 J*	328.14	988.67*	42.38	170.42	369.75
Benzo(b)Fluoranthene	µg/kg	240	7,235.67 J*	382.86*	1,128.68*	66.93	261.65*	494.83*
Benzo(k)Fluoranthene	µg/kg	240	6,221.25 J*	347.37*	1,029.39*	62.47	213.57	464.01*
Benzo[g,h,i]Perylene	µg/kg	290	1,904.12 J*	295.21*	875.34*	44.71	154.26	357.35*
Chrysene	µg/kg	380	6,548.95 J*	338.46	1,207.94*	67.89	213.61	636.01*
Dibenzo(a,h)Anthracene	µg/kg	63	824.90 J*	91.54*	258.74*	13.09	46.30	83.98*
Fluoranthene	µg/kg	600	6,958.00 J*	461.79	1,942.94*	136.26	329.37	1,202.09*
Fluorene	µg/kg	19	144.77 J*	677.93*	983.53*	5.49	66.46*	44.35*
Indeno(1,2,3-cd)Pyrene	µg/kg	78	2,707.70 J*	307.27*	935.45*	51.87	180.88*	362.83*
Naphthalene	µg/kg	160	121.50 J	3,366.92 J*	3,685.04 J*	13.46 J	163.29 J*	29.74 J
Phenanthrene	µg/kg	240	959.02 J*	1,563.07*	2,766.64*	92.64	235.38	916.28*
Pyrene	µg/kg	670	8,016.78 J*	491.82	1,739.83*	106.45	271.02	1,089.54*

TABLE A 3 - PESTICIDES AND PCB DETECTED IN SEDIMENT, MARCH 2004

Chemical Name	Unit	Location ID	AH-03	AH-06 DUP	AH-06	AH-08	AH-11 DUP	AH-11	AH-17	AH-23
		Sample Date	3/23/04	3/23/04	3/23/04	3/22/04	3/22/04	3/22/04	3/23/04	3/24/04
		Screening Level								
4,4'-DDD	µg/kg	2	< 1.3 U		< 1.7 U	< 1.3 R	< 1.8 U	< 1.8 U	< 1.5 U	< 1.8 U
4,4'-DDE	µg/kg	2	1.6		< 1.7 U	1.6 J	2.7 J *	< 1.8 UJ	< 1.5 U	3.4 J *
4,4'-DDT	µg/kg	1	< 1.3 U		< 1.7 U	< 1.3 R	< 1.8 U	< 1.8 U	< 1.5 U	< 1.8 U
Aldrin	µg/kg	9.5	< 0.65 U		< 0.86 U	< 0.68 R	< 0.92 U	< 0.94 U	< 0.76 U	< 0.94 U
Alpha BHC	µg/kg	3	< 0.65 U		< 0.86 U	< 0.68 R	< 0.92 U	< 0.94 U	< 0.76 U	< 0.94 U
Alpha-Chlordane	µg/kg		< 0.65 U		< 0.86 U	< 0.68 R	< 0.92 U	< 0.94 U	< 0.76 U	< 0.94 U
Beta BHC	µg/kg	3.2	< 4.2 R		< 0.86 U	< 0.68 R	< 0.92 U	< 4.8 R	< 5.3 R	< 0.94 U
Delta BHC	µg/kg	3.2	< 0.65 U		< 0.86 U	< 0.68 R	< 0.92 U	< 0.94 U	< 0.76 U	< 0.94 U
Dieldrin	µg/kg	0.02	< 1.3 U		< 1.7 U	< 1.3 R	< 1.8 U	< 1.8 U	< 1.5 U	< 9.6 R
Endosulfan I	µg/kg		< 0.65 U		< 0.86 U	< 0.68 R	< 0.92 U	< 0.94 UJ	< 0.76 U	< 0.94 U
Endosulfan II	µg/kg		< 1.3 U		< 1.7 U	< 1.3 R	< 1.8 U	< 1.8 U	< 1.5 U	< 1.8 U
Endosulfan Sulfate	µg/kg		< 1.3 U		< 1.7 U	< 1.3 R	< 1.8 U	< 1.8 U	< 1.5 U	< 1.8 U
Endrin	µg/kg	0.02	< 1.3 U		< 1.7 U	< 1.3 R	< 1.8 U	< 1.8 U	< 1.5 U	< 1.8 U
Endrin Aldehyde	µg/kg	0.02	< 1.3 U		< 1.7 U	< 1.3 R	< 1.8 U	< 1.8 U	< 1.5 U	< 1.9 R
Endrin Ketone	µg/kg	0.02	< 1.3 U		< 1.7 U	< 1.3 R	< 1.8 U	< 1.8 UJ	< 1.5 U	< 1.8 U
Gamma BHC (Lindane)	µg/kg	2.4	< 0.65 U		< 0.86 UJ	< 1.1 R	< 0.92 U	< 0.94 UJ	< 0.76 U	< 2 R
Gamma-Chlordane	µg/kg		< 0.66 R		< 0.86 U	< 0.68 R	3.4 J	1.7 J	5.3 J	10
Heptachlor	µg/kg	0.3	< 1.2 R		< 0.86 U	< 1.4 R	< 0.92 U	< 3 R	< 0.76 U	< 0.94 U
Heptachlor Epoxide	µg/kg	2.47	< 0.65 U		< 0.86 U	< 2.1 R	< 0.92 U	< 0.94 U	< 6.4 R	< 0.94 U
Methoxychlor	µg/kg	0.3	< 6.5 U		< 8.6 U	< 6.8 R	< 9.2 U	< 9.4 UJ	< 7.6 U	< 9.4 U
Toxaphene	µg/kg		< 65 U		< 86 U	< 68 R	< 92 U	< 94 U	< 76 U	< 94 U
PCB-1016	µg/kg	23	< 13 U	< 17 U	< 17 U	< 13 R	< 18 U	< 18 U	< 13 R	< 17 U
PCB-1221	µg/kg	23	< 25 U	< 34 U	< 34 U	< 27 R	< 36 U	< 37 U	< 27 R	< 34 U
PCB-1232	µg/kg	23	< 13 U	< 17 U	< 17 U	< 13 R	< 18 U	< 18 U	< 13 R	< 17 U
PCB-1242	µg/kg	23	< 13 U	< 17 U	< 17 U	< 13 R	< 18 U	< 18 U	< 13 R	< 17 U
PCB-1248	µg/kg	23	< 13 U	< 17 U	< 17 U	< 13 R	< 18 U	< 18 U	< 13 R	< 17 U
PCB-1254	µg/kg	23	< 13 U	< 17 U	< 17 U	< 13 R	< 18 U	< 18 U	< 13 R	< 17 U
PCB-1260	µg/kg	23	< 13 U	21	19 J	21 J	34*	30 J*	17 J	70*

NOTE:
- µg/kg = Micrograms per kilogram.
- U = Undetected.
- R = The data are unusable (compound may or may not be present).
- J = Estimated.
- * = Exceeds Project Action Level.
- UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit.

Chemical Name	Unit	Location ID	AH-26	AH-28	AH-29	AH-32	AH-33 DUP	AH-33	AH-35	AH-40
		Sample Date	3/27/04	3/25/04	3/26/04	3/26/04	3/26/04	3/26/04	3/26/04	3/27/04
		Screening Level								
4,4'-DDD	µg/kg	2	< 1.6 R	1.6	3.3 *	< 1.9 R	< 1.7 U	< 1.8 U	< 1.3 U	1.7
4,4'-DDE	µg/kg	2	< 1.6 R	< 1.4 R	< 1.3 U	< 1.9 R	2 J	< 2.2 R	< 1.3 U	< 0.87 U
4,4'-DDT	µg/kg	1	< 1.6 R	< 0.94 U	< 1.3 U	< 1.9 R	< 1.7 U	< 1.8 U	< 1.3 U	< 0.87 U
Aldrin	µg/kg	9.5	< 0.84 R	< 0.48 U	< 0.68 U	< 0.99 R	< 0.89 U	< 0.91 U	< 0.68 U	< 0.45 U
Alpha BHC	µg/kg	3	< 0.84 R	< 0.48 U	< 0.68 U	< 0.99 R	< 0.89 U	< 0.91 U	< 0.68 U	< 0.45 UJ
Alpha-Chlordane	µg/kg		< 0.84 R	< 2.4 R	< 0.68 U	< 0.99 R	< 0.89 U	< 0.91 U	< 0.68 U	< 0.45 U
Beta BHC	µg/kg	3.2	< 5.7 R	< 0.48 U	< 2.4 R	< 7.5 R	< 4.9 R	< 3.9 R	< 2.9 R	< 0.45 U
Delta BHC	µg/kg	3.2	< 0.84 R	< 0.48 U	< 0.68 U	< 0.99 R	< 0.89 U	< 0.91 U	< 0.68 U	0.92 J
Dieldrin	µg/kg	0.02	< 1.6 R	8.1*	< 4.2 R	< 1.9 R	< 3 R	< 1.8 U	< 1.3 U	3.7*
Endosulfan I	µg/kg		< 0.84 R	< 0.48 U	< 0.68 U	< 0.99 R	< 0.89 U	< 0.91 U	< 0.68 U	< 0.45 U
Endosulfan II	µg/kg		< 1.6 R	< 0.94 U	< 1.3 U	< 1.9 R	< 1.7 U	< 1.8 U	< 1.3 U	< 0.87 U
Endosulfan Sulfate	µg/kg		< 1.6 R	< 0.94 U	< 1.3 U	< 1.9 R	< 1.7 U	< 1.8 U	< 1.3 U	< 0.87 U
Endrin	µg/kg	0.02	< 1.6 R	< 0.94 U	< 1.3 U	< 1.9 R	< 1.7 U	< 1.8 U	< 1.3 U	< 0.87 U
Endrin Aldehyde	µg/kg	0.02	< 1.6 R	< 0.94 U	< 1.3 U	< 1.9 R	< 1.7 U	< 1.8 U	< 1.3 U	< 0.87 U
Endrin Ketone	µg/kg	0.02	< 1.6 R	< 2 R	< 1.3 U	< 1.9 R	< 1.7 U	< 1.8 U	< 1.3 U	< 0.87 U
Gamma BHC (Lindane)	µg/kg	2.4	< 0.84 R	< 0.64 R	< 0.68 U	< 0.99 R	< 0.89 U	< 0.91 U	< 0.68 U	< 0.45 UJ
Gamma-Chlordane	µg/kg		5.4 J	< 2.3 R	< 5.4 R	6.1 J	6.5 J	7.1	5.1 J	< 0.45 U
Heptachlor	µg/kg	0.3	< 0.97 R	< 0.48 U	< 0.68 U	< 2.1 R	< 2.5 R	< 1.4 R	< 9 R	< 0.45 U
Heptachlor Epoxide	µg/kg	2.47	< 0.84 R	< 0.48 U	< 8.8 R	< 0.99 R	< 0.89 U	< 0.91 U	< 0.68 U	< 0.45 U
Methoxychlor	µg/kg	0.3	< 8.4 R	< 4.8 U	< 6.8 U	< 9.9 R	< 8.9 U	< 9.1 U	< 6.8 U	< 4.5 U
Toxaphene	µg/kg		< 84 R	< 48 U	< 68 U	< 99 R	< 89 U	< 91 U	< 68 U	< 45 U
PCB-1016	µg/kg	23	< 16 U	< 9.4 U	< 13 U	< 19 U	< 17 U	< 18 U	< 13 U	< 8.7 U
PCB-1221	µg/kg	23	< 33 U	< 19 U	< 27 U	< 39 U	< 35 U	< 36 U	< 27 U	< 18 U
PCB-1232	µg/kg	23	< 16 U	< 9.4 U	< 13 U	< 19 U	< 17 U	< 18 U	< 13 U	< 8.7 U
PCB-1242	µg/kg	23	< 16 U	< 9.4 U	< 13 U	< 19 U	< 17 U	< 18 U	< 13 U	< 8.7 U
PCB-1248	µg/kg	23	< 16 U	< 9.4 U	< 13 U	< 19 U	< 17 U	< 18 U	< 13 U	< 8.7 U
PCB-1254	µg/kg	23	< 16 U	< 9.4 U	< 13 U	< 19 U	< 17 U	< 18 U	< 13 U	< 8.7 U
PCB-1260	µg/kg	23	41*	23*	22	55*	49*	37 J*	22	32 J*

Chemical Name	Unit	Location ID	AH-42	AH-45	AH-47	AH-49	AH-51	CORE1-BOT	CORE1-TOP	REF1-1
		Sample Date	3/27/04	3/26/04	3/26/04	3/25/04	3/27/04	3/27/04	3/27/04	3/24/04
		Screening Level								
4,4'-DDD	µg/kg	2	< 1.2 U	< 1.3 U	< 0.94 U	< 0.88 U	2.2 J*	1.7 J	1.7 J	< 0.83 U
4,4'-DDE	µg/kg	2	< 1.2 U	< 1.3 U	< 0.94 U	< 1.4 R	2.3 J*	< 0.79 U	< 0.84 UJ	< 0.83 U
4,4'-DDT	µg/kg	1	< 1.2 U	< 1.3 U	< 0.94 U	< 0.88 U	< 2 U	< 0.79 U	< 0.84 UJ	< 0.83 U
Aldrin	µg/kg	9.5	< 0.62 U	< 0.68 U	< 0.49 U	< 0.45 U	< 1 U	< 0.41 U	< 0.43 UJ	< 0.43 U
Alpha BHC	µg/kg	3	< 0.62 U	< 0.68 U	< 0.49 U	< 0.45 U	< 1 U	< 0.41 UJ	< 0.43 UJ	< 0.43 U
Alpha-Chlordane	µg/kg		< 0.62 U	< 0.68 U	2	< 0.45 U	< 1 U	< 0.41 U	< 0.43 UJ	< 0.43 U
Beta BHC	µg/kg	3.2	< 1.4 R	< 0.68 U	< 1.4 R	< 0.45 U	< 14 R	< 1.1 R	< 1.9 R	< 0.43 U
Delta BHC	µg/kg	3.2	< 0.62 U	< 2.2 R	< 0.49 U	< 0.45 U	< 1 U	0.53 J	2 J	< 0.43 U
Dieldrin	µg/kg	0.02	< 1.2 U	< 3.2 R	< 0.94 U	< 0.88 U	< 2.4 R	< 0.79 U	< 0.84 UJ	< 0.83 U
Endosulfan I	µg/kg		< 0.62 U	< 1.4 R	< 0.49 U	< 0.45 U	< 1 U	< 0.41 U	< 0.43 UJ	< 0.43 U
Endosulfan II	µg/kg		< 1.2 U	< 1.3 U	< 0.94 U	< 0.88 U	< 2 U	< 0.79 U	< 0.84 UJ	< 0.83 U
Endosulfan Sulfate	µg/kg		< 1.2 U	< 1.3 U	< 0.94 U	< 0.88 U	< 2 U	< 0.79 U	< 0.84 UJ	< 0.83 U
Endrin	µg/kg	0.02	< 1.2 U	< 1.3 U	< 0.94 U	< 0.88 U	< 2 U	< 0.79 U	< 0.84 UJ	< 0.83 U
Endrin Aldehyde	µg/kg	0.02	< 1.2 U	< 1.3 U	< 0.94 U	< 0.88 U	< 2 U	< 0.79 U	< 0.84 UJ	< 0.83 U
Endrin Ketone	µg/kg	0.02	< 1.2 U	< 1.3 U	< 0.94 U	< 0.88 U	< 2 U	< 0.79 U	< 0.84 UJ	< 0.83 U
Gamma BHC (Lindane)	µg/kg	2.4	< 0.62 U	< 0.68 U	< 0.49 U	< 0.45 U	< 1 U	< 0.41 UJ	< 0.43 UJ	< 0.43 U
Gamma-Chlordane	µg/kg		< 1.8 R	< 2.2 R	< 2.8 R	< 0.63 R	8.7	< 0.41 U	0.88 J	< 0.43 U
Heptachlor	µg/kg	0.3	< 0.62 U	< 0.83 R	< 1.1 R	< 0.45 U	< 1.4 R	< 0.41 U	< 0.43 UJ	< 0.43 U
Heptachlor Epoxide	µg/kg	2.47	< 0.62 U	< 20 R	< 0.49 U	< 0.45 U	< 4.5 R	< 0.41 U	< 0.43 UJ	< 0.43 U
Methoxychlor	µg/kg	0.3	< 6.2 U	< 6.8 U	< 4.9 U	< 4.5 U	< 10 U	< 4.1 U	< 4.3 UJ	< 4.3 U
Toxaphene	µg/kg		< 62 U	< 68 U	< 49 U	< 45 U	< 100 U	< 41 U	< 43 UJ	< 43 U
PCB-1016	µg/kg	23	< 12 U	< 13 U	< 9.4 U	< 8.8 U	< 20 U	< 7.8 U	< 8.4 U	< 8.4 U
PCB-1221	µg/kg	23	< 24 U	< 27 U	< 19 U	< 18 U	< 42 U	< 16 U	< 17 U	< 17 U
PCB-1232	µg/kg	23	< 12 U	< 13 U	< 9.4 U	< 8.8 U	< 20 U	< 7.8 U	< 8.4 U	< 8.4 U
PCB-1242	µg/kg	23	< 12 U	< 13 U	< 9.4 U	< 8.8 U	< 20 U	< 7.8 U	< 8.4 U	< 8.4 U
PCB-1248	µg/kg	23	< 12 U	< 13 U	< 9.4 U	< 8.8 U	< 20 U	< 7.8 U	< 8.4 U	< 8.4 U
PCB-1254	µg/kg	23	< 12 U	< 13 U	< 9.4 U	< 8.8 U	< 20 U	< 7.8 U	< 8.4 U	< 8.4 U
PCB-1260	µg/kg	23	37*	16	21	< 8.8 U	59 J*	38 J*	25 J*	< 8.4 U

Chemical Name	Unit	Location ID	REF1-2	REF1-4	REF2-1	REF2-3	REF2-5	REF3-1	REF3-2	REF3-4
		Sample Date	3/24/04	3/24/04	3/24/04	3/24/04	3/24/04	3/25/04	3/25/04	3/25/04
		Screening Level								
4,4'-DDD	µg/kg	2	< 0.81 U	< 1.1 U	< 1.3 U	< 1.2 U	< 0.81 U	< 1.5 U	< 1.5 U	< 1.1 U
4,4'-DDE	µg/kg	2	< 0.81 U	< 1.1 U	< 1.3 U	< 1.2 U	< 0.81 U	< 1.5 U	< 1.5 U	< 1.1 U
4,4'-DDT	µg/kg	1	< 0.81 U	< 1.1 U	< 1.3 U	< 1.2 U	< 0.81 U	< 1.5 U	< 1.5 U	< 1.1 U
Aldrin	µg/kg	9.5	< 0.42 U	< 0.57 U	< 0.68 U	< 0.6 U	< 0.42 U	< 0.76 U	< 0.79 U	< 0.56 U
Alpha BHC	µg/kg	3	< 0.42 U	< 0.57 U	< 0.68 U	< 0.6 U	< 0.42 U	< 0.76 U	< 0.79 U	< 0.56 U
Alpha-Chlordane	µg/kg		< 0.42 U	< 0.57 U	< 0.68 U	< 0.6 U	< 0.42 U	< 0.76 U	< 0.79 U	< 0.56 U
Beta BHC	µg/kg	3.2	< 0.42 U	< 0.57 U	< 0.68 U	< 0.6 U	< 0.42 U	< 0.76 U	< 0.79 U	< 0.56 U
Delta BHC	µg/kg	3.2	< 0.42 U	< 0.57 U	< 0.68 U	< 0.6 U	< 0.42 U	< 0.76 U	< 0.79 U	< 0.56 U
Dieldrin	µg/kg	0.02	< 0.81 U	< 1.1 U	< 1.3 U	< 1.2 U	< 0.81 U	< 1.5 U	< 1.5 U	< 1.1 U
Endosulfan I	µg/kg		< 0.42 U	< 0.57 U	< 0.68 U	< 0.6 U	< 0.42 U	< 0.76 U	< 0.79 U	< 0.56 U
Endosulfan II	µg/kg		< 0.81 U	< 1.1 U	< 1.3 U	< 1.2 U	< 0.81 U	< 1.5 U	< 1.5 U	< 1.1 U
Endosulfan Sulfate	µg/kg		< 0.81 U	< 1.1 U	< 1.3 U	< 1.2 U	< 0.81 U	< 1.5 U	< 1.5 U	< 1.1 U
Endrin	µg/kg	0.02	< 0.81 U	< 1.1 U	< 1.3 U	< 1.2 U	< 0.81 U	< 1.5 U	< 1.5 U	< 1.1 U
Endrin Aldehyde	µg/kg	0.02	< 0.81 U	< 1.1 U	< 1.3 U	< 1.2 U	< 0.81 U	< 1.5 U	< 1.5 U	< 1.1 U
Endrin Ketone	µg/kg	0.02	< 0.81 U	< 1.1 U	< 1.3 U	< 1.2 U	< 0.81 U	< 1.5 U	< 1.5 U	< 1.1 U
Gamma BHC (Lindane)	µg/kg	2.4	< 0.42 U	< 0.57 U	< 0.68 U	< 0.6 U	< 0.42 U	< 0.76 U	< 0.79 U	< 0.56 U
Gamma-Chlordane	µg/kg		< 0.42 U	< 0.57 U	< 0.68 U	< 0.6 U	< 0.42 U	< 0.76 U	< 0.79 U	< 0.56 U
Heptachlor	µg/kg	0.3	< 0.42 U	< 0.57 U	< 0.68 U	< 0.6 U	< 0.42 U	< 0.76 U	< 0.79 U	< 0.56 U
Heptachlor Epoxide	µg/kg	2.47	< 0.42 U	< 0.57 U	< 0.67 R	< 0.6 U	< 0.42 U	< 0.76 U	< 0.79 U	< 0.56 U
Methoxychlor	µg/kg	0.3	< 4.2 U	< 5.7 U	< 6.8 U	< 6 U	< 4.2 U	< 7.6 U	< 7.9 U	< 5.6 U
Toxaphene	µg/kg		< 42 U	< 57 U	< 68 U	< 60 U	< 42 U	< 76 U	< 79 U	< 56 U
PCB-1016	µg/kg	23	< 8.2 U	< 11 U	< 13 U	< 12 U	< 8.1 U	< 15 U	< 15 U	< 11 U
PCB-1221	µg/kg	23	< 17 U	< 23 U	< 27 U	< 24 U	< 16 U	< 30 U	< 31 U	< 22 U
PCB-1232	µg/kg	23	< 8.2 U	< 11 U	< 13 U	< 12 U	< 8.1 U	< 15 U	< 15 U	< 11 U
PCB-1242	µg/kg	23	< 8.2 U	< 11 U	< 13 U	< 12 U	< 8.1 U	< 15 U	< 15 U	< 11 U
PCB-1248	µg/kg	23	< 8.2 U	< 11 U	< 13 U	< 12 U	< 8.1 U	< 15 U	< 15 U	< 11 U
PCB-1254	µg/kg	23	< 8.2 U	< 11 U	< 13 U	< 12 U	< 8.1 U	< 15 U	< 15 U	< 11 U
PCB-1260	µg/kg	23	< 8.2 U	< 11 U	11 J	< 12 U	< 8.1 U	< 15 U	< 15 U	< 11 U

TABLE A-4 INORGANIC COMPOUNDS DETECTED IN SEDIMENT SAMPLES, MARCH 2004

Chemical Name	Unit	Location ID	AH-03	AH-06 DUP	AH-06	AH-08	AH-11 DUP	AH-11	AH-17	AH-23
		Sample Date	3/23/04	3/23/04	3/23/04	3/22/04	3/22/04	3/22/04	3/23/04	3/24/04
		Screening Level								
Aluminum	mg/kg	26,000	6,540	10,600	10,900	12,000	12,000	11,200	15,400	13,700
Antimony	mg/kg	9.3	<1.1R	<1.4R	<1.3R	<1.9R	<1.5R	<1.6R	<1.8R	<1.5R
Arsenic	mg/kg	8.2	7.4	7.7	7.8	10.7*	10.3*	9.5*	17*	15.4*
Barium	mg/kg	48	35.5	64.7*	62.7*	60.8*	102*	52.8*	85.1*	60.5*
Beryllium	mg/kg		0.85	1.3	1.3	1.5	1.4	1.3	1.9	1.6
Cadmium	mg/kg	1.2	0.22	0.58	0.53	0.81	0.57	0.38	2.4*	0.95
Calcium	mg/kg		22,600	<2,490U	<2,670U	<3,860U	<2,450U	<2,170U	<4,510U	<2,050U
Chromium	mg/kg	81	26.7	45.8	46.2	50.3	52.6	41.8	65.7	58.4
Cobalt	mg/kg	10	5.3	7.2	7.4	8.5	7.8	7.5	10.1*	8.8
Copper	mg/kg	34	79.6*	90.8*	87*	148*	126*	83.5*	212*	164*
Iron	mg/kg		18,400	25,700	25,200	31,100	28,000	27,100	38,800	35,700
Lead	mg/kg	46.7	60.6J*	50.1J*	48.9J*	70.1J*	64.4J*	59.9J*	96.9J*	92.9J*
Magnesium	mg/kg		4,230	6,800	6,680	7,190	7,170	6,260	7,890	6,050
Manganese	mg/kg	260	134	196	197	210	217	200	260	215
Mercury	mg/kg	0.15	0.15	0.25*	0.23*	0.29*	0.29*	0.23*	0.38*	0.34*
Nickel	mg/kg	20.9	16.6	20.3	20.2	23.6*	23.8*	19.4	30.1*	27.8*
Potassium	mg/kg		1,760J	3,040J	2,980J	3,400J	3,400J	3,040J	4,310J	3,270J
Selenium	mg/kg	1	<1.2U	<1.6U	<1.4U	<2.1U	<1.6U	<1.7U	<2U	<1.7U
Silver	mg/kg	1	<0.23U	0.41	<0.27U	0.62	0.41	0.43	<0.38U	<0.32U
Sodium	mg/kg		<11,500U	<18,100U	<16,200U	<19,800U	<18,800U	<15,600U	<18,200U	<6,960U
Thallium	mg/kg		<2U	<2.5U	<2.3U	<3.4U	<2.6U	<2.8U	<3.3U	<2.8U
Vanadium	mg/kg	57	24.2	33.7	34.3	49.7	46.7	37.4	71*	57
Zinc	mg/kg	150	217*	159*	154*	256*	193*	149	449*	246*

NOTE:
- mg/kg = Milligrams per kilogram.
- R = The data are unusable (compound may or may not be present).
- * = Exceeds Project Action Level.
- U = Undetected.
- J = Estimated.

Chemical Name	Unit	Location ID	AH-26	AH-28	AH-29	AH-32	AH-33 DUP	AH-33	AH-35	AH-40
		Sample Date	3/27/04	3/25/04	3/26/04	3/26/04	3/26/04	3/26/04	3/26/04	3/27/04
		Screening Level								
Aluminum	mg/kg	26,000	7,790	3,760	15,900	14,600	10,900	12,800	12,900	3,330
Antimony	mg/kg	9.3	<1.4U	<0.87R	<2.1U	<1.7U	<1.7U	<1.8U	<2.1U	<0.8U
Arsenic	mg/kg	8.2	8.8*	3.9	18*	13.4*	13.6*	13.7*	14.1*	3
Barium	mg/kg	48	89.9*	48.3*	66.1*	133*	78.3*	40.1	75*	18.4
Beryllium	mg/kg		1	1	1.8	1.7	1.3	1.5	1.5	0.41
Cadmium	mg/kg	1.2	0.64	0.32	1.1	0.78	0.73	0.74	0.83	<0.086U
Calcium	mg/kg		<2,300U	<1,930U	<2,590U	<2,630U	<1,930U	<2,460U	<6,840U	<710U
Chromium	mg/kg	81	32.4	32.1	66.8	59.7	48.9	54.5	51.8	7.7
Cobalt	mg/kg	10	5.8	5.6	10.2*	9.3	7.5	8.3	8.2	2.3
Copper	mg/kg	34	85.5*	118*	204*	146*	132*	142*	168*	32.7
Iron	mg/kg		21,700	11,300	38,400	33,600	29,500	35,900	34,600	12,500
Lead	mg/kg	46.7	54.8*	96.4*	101*	86.6*	75.9*	84.9*	78.1*	22
Magnesium	mg/kg		4,430	2,100	7,290	6,570	5,370	5,420	6,620	<1,430U
Manganese	mg/kg	260	156	97.4	312*	261*	215	248	229	61.1
Mercury	mg/kg	0.15	0.21*	0.066	0.3*	0.31*	0.33*	0.28*	0.3*	0.039J
Nickel	mg/kg	20.9	19.7	33.1*	31.6*	28.2*	22.4*	25.8*	23.1*	6.6
Potassium	mg/kg		2,330	<924U	4,380	3,920	2,800	3,220	3,900	<546U
Selenium	mg/kg	1	<1.5U	<0.96U	<2.3U	<1.9U	<1.9U	<2U	<2.3U	<0.88U
Silver	mg/kg	1	<0.84U	<0.33U	<1.5U	<1.3U	<0.62U	<0.87U	<0.64U	<0.17U
Sodium	mg/kg		<11,900U	<4,670U	<11,800U	<9,030U	<6,010U	<2,660U	<15,000U	<1,240U
Thallium	mg/kg		<2.4U	<1.6U	<3.7U	<3.1U	<3.1U	<3.2U	<3.8U	<1.4U
Vanadium	mg/kg	57	33	14.8	80.9*	60.1*	47.3	54.5	57.6*	13.3
Zinc	mg/kg	150	176*	427*	317*	236*	212*	224*	262*	72.2

Chemical Name	Unit	Location ID	AH-42	AH-45	AH-47	AH-49	AH-51	CORE1-BOT	CORE1-TOP	REF1-1
		Sample Date	3/27/04	3/26/04	3/26/04	3/25/04	3/27/04	3/27/04	3/27/04	3/24/04
		Screening Level								
Aluminum	mg/kg	26,000	3,830	11,800	3,670	2,410	6,670	3,600	5,430	1,920
Antimony	mg/kg	9.3	<0.9U	<2.4U	<0.77U	<0.6R	<1.5U	<0.78U	<1U	<0.73R
Arsenic	mg/kg	8.2	3.7	15*	3.1	<2.2U	6.9	2.8	4.9	<1.3U
Barium	mg/kg	48	18.1	64.2*	13.8	19.3	126*	21	37.1	<2.8U
Beryllium	mg/kg		0.49	1.4	0.51	0.29	0.99	0.44	0.68	0.14
Cadmium	mg/kg	1.2	0.23	0.7	<0.1U	<0.031U	0.54	0.19	0.39	0.044J
Calcium	mg/kg		5,110	<9,610U	<3,760U	<453U	<2,340U	6,000	9,680	<290U
Chromium	mg/kg	81	14.2	49.8	14.4	11	29.3	9.4	18.6	4.4
Cobalt	mg/kg	10	2.9	7.7	3.7	2.1	5.3	2.6	3.6	1.3
Copper	mg/kg	34	37.2*	164*	32.7	23	104*	22.8	56.9*	<3.6U
Iron	mg/kg		10,000	34,500	11,900	5,820	18,000	10,100	14,700	3,650
Lead	mg/kg	46.7	31	77.5*	36.6	53.1J*	88.9*	35.2	35.3	3.9J
Magnesium	mg/kg		2,270	5,980	1,690	<1,240U	3,120	<1,470U	2,700	<1,120U
Manganese	mg/kg	260	74.2	301*	79.9	46.2	172	72.8	99.4	45.6
Mercury	mg/kg	0.15	0.068	0.29*	0.039J	<0.023U	0.21*	0.038J	0.11	<0.024U
Nickel	mg/kg	20.9	7.9	21.2*	8.2	6.3	30.3*	7	10.3	3.3
Potassium	mg/kg		<935U	3,430	<637U	<416U	<1,620U	<685U	<1,400U	<341U
Selenium	mg/kg	1	<0.99U	<2.6U	<0.85U	<0.67U	<1.6U	<0.86U	<1.1U	<0.8U
Silver	mg/kg	1	<0.29U	<0.49U	<0.23U	<0.13U	<0.46U	<0.25U	<0.54U	<0.15U
Sodium	mg/kg		<4,970U	<7,970U	<573U	<1,780U	<6,360U	<406U	<3,750U	<2,970U
Thallium	mg/kg		<1.6U	<4.2U	<1.4U	<1.1U	<2.6U	<1.4U	<1.8U	<1.3U
Vanadium	mg/kg	57	14.3	50.7	15.6	8.6	32.1	12.1	23.7	3.6
Zinc	mg/kg	150	93.5	254*	88.2	66.9	218*	52.7	101	<13.7U

Chemical Name	Unit	Location ID	REF1-2	REF1-4	REF2-1	REF2-3	REF2-5	REF3-1	REF3-2	REF3-4
		Sample Date	3/24/04	3/24/04	3/24/04	3/24/04	3/24/04	3/25/04	3/25/04	3/25/04
		Screening Level								
Aluminum	mg/kg	26,000	3,200	4,060	10,900	9,800	6,790	9,280	9,850	6,480
Antimony	mg/kg	9.3	<0.68R	<0.82R	<1.4R	<0.91R	<0.7R	<1.4U	<1.5U	<1.1U
Arsenic	mg/kg	8.2	<1.5U	2.8	5.4	4.4	3.9	6.1	6.6	4.9
Barium	mg/kg	48	<4.3U	7.2	26.4	16.9	8.1	20.4	23.3	14.8
Beryllium	mg/kg		0.23	0.23	1	0.7	0.47	1.1	1.1	0.74
Cadmium	mg/kg	1.2	<0.035U	<0.042U	<0.16U	<0.068U	<0.036U	0.38	0.34	<0.12U
Calcium	mg/kg		<1,220U	66,800	8,170	7,900	5,700	7,530	<2,150U	<1,620U
Chromium	mg/kg	81	9	13.7	40	29.7	15.1	39.5	43.3	26.8
Cobalt	mg/kg	10	1.9	2.4	7.2	6.4	4.8	5.4	6.1	4.2
Copper	mg/kg	34	<7U	<11.9U	33.2	21.8	<8.2U	72.6*	66*	52.6*
Iron	mg/kg		5,430	8,150	22,400	19,700	13,100	19,800	21,700	13,500
Lead	mg/kg	46.7	7.9J	13.5J	45.5J	30.7J	11.7J	39.4	45	25.7
Magnesium	mg/kg		<1,690U	3,420	6,820	5,570	3,380	5,630	6,200	4,020
Manganese	mg/kg	260	71	112	204	170	105	162	175	116
Mercury	mg/kg	0.15	0.039	0.079	0.18*	0.12	0.06	0.47*	0.48*	0.21*
Nickel	mg/kg	20.9	4.7	6.5	17.9	15.3	9.6	14.8	15.8	9.9
Potassium	mg/kg		<539U	<857U	3,190J	2,160J	<876U	2,740	2,870	1,860
Selenium	mg/kg	1	<0.75U	<0.91U	<1.6U	<1U	<0.78U	<1.5U	<1.6U	<1.4U
Silver	mg/kg	1	<0.14U	0.26J	<0.3U	<0.19U	<0.15U	<0.29U	<0.31U	<0.24U
Sodium	mg/kg		<2,890U	<5,330U	<15,700U	<8,940U	<2,770U	<13,700U	<14,500U	<8,780U
Thallium	mg/kg		<1.2U	<1.5U	<2.5U	<1.6U	<1.3U	<2.5U	<2.7U	<2U
Vanadium	mg/kg	57	6.1	9.6	36.4	25.9	12.9	29.3	31.5	19.7
Zinc	mg/kg	150	<20.7U	36.1	108	81.1	41.6	106	119	73.2

TABLE A-5 INORGANIC COMPOUNDS DETECTED BY AVS IN SEDIMENT SAMPLES, MARCH 2004

Chemical Name	Unit	Location ID	AH-03	AH-06 DUP	AH-06	AH-08	AH-11 DUP	AH-11	AH-17	AH-23
		Sample Date	3/23/2004	3/23/2004	3/23/2004	3/22/2004	3/22/2004	3/22/2004	3/23/2004	3/24/2004
		Screening Level								
Cadmium	µmol/g	1.2	0.00372	0.00595	0.00549	0.00793	0.00517	0.00629	0.00795	0.00871
Copper	µmol/g	34	0.14151	0.09355	0.13881	0.04097	0.18127 J	0.0381 J	0.19542	0.56824
Lead	µmol/g	46.7	0.17892	0.14761	0.13949	0.25498	0.18045	0.20172	0.28383	0.35687
Mercury	µmol/g	0.15	< 4e-005 U	< 6e-005 U	< 6e-005 U	< 8e-005 U	< 7e-005 U	< 6e-005 U	< 8e-005 U	< 6e-005 U
Nickel	µmol/g	20.9	0.12342	< 0.04255 U	< 0.03805 U	0.08361	< 0.04449 U	< 0.04015 U	0.07549	0.05112
Zinc	µmol/g	150	2.14287	1.42476	1.34282	2.63781	1.74358	1.78542	2.89544	2.55792
Acid Volatile Sulfide	µmol/g		71.54786	69.23663	51.59663	144.49011	36.7449	40.14089	156.59328	16.3014
SEM Ratio			0.03621	0.02475	0.03216	0.02094	0.05853	0.05158	0.02208	0.21734
Sum Of SEM	µmol/g		2.59048	1.71373	1.65957	3.02538	2.15065	2.07048	3.45821	3.54292

NOTE:
µmol/g = Micromoles per gram.
J = Estimated.
U = Undetected.

Chemical Name	Unit	Location ID	AH-26	AH-28	AH-29	AH-32	AH-33 DUP	AH-33	AH-35	AH-40
		Sample Date	3/27/2004	3/25/2004	3/26/2004	3/26/2004	3/26/2004	3/26/2004	3/26/2004	3/27/2004
		Screening Level								
Cadmium	µmol/g	1.2	0.00606	0.00188	0.00885	0.00785	0.00772	0.00674	0.00681	< 0.00126 U
Copper	µmol/g	34	0.0552	0.06744	0.07783	0.35525	0.60138	0.4838	0.03971	0.16339
Lead	µmol/g	46.7	0.16246	0.3153	0.38705	0.34446	0.36666	0.3289	0.27367	0.19566
Mercury	µmol/g	0.15	< 5e-005 U	< 3e-005 U	< 7e-005 U	< 6e-005 U	< 6e-005 U	< 6e-005 U	< 7e-005 U	< 3e-005 U
Nickel	µmol/g	20.9	0.09486	0.21468	0.05951	0.05882	0.05073	< 0.04422 U	0.09162	0.03088
Zinc	µmol/g	150	2.12376	4.78514	2.84286	2.46126	2.54318	2.18632	2.62459	0.71717
Acid Volatile Sulfide	µmol/g		85.88608	18.72961	64.29311	46.84314	45.87013 J	26.11944 J	176.88774	10.16732
SEM Ratio			0.02844	0.28748	0.05251	0.0689	0.07782	0.11649	0.01717	0.10901
Sum Of SEM	µmol/g		2.44239	5.38447	3.37618	3.22769	3.56972	3.04271	3.03648	1.10839

Chemical Name	Unit	Location ID	AH-42	AH-45	AH-47	AH-49	AH-51	CORE1-BOT	CORE1-TOP	REF1-1
		Sample Date	3/27/2004	3/26/2004	3/26/2004	3/25/2004	3/27/2004	3/27/2004	3/27/2004	3/24/2004
		Screening Level								
Cadmium	µmol/g	1.2	0.00167	0.00576	< 0.00126 U	< 0.00124 U	0.00337	0.0016	0.00287	< 0.00129 U
Copper	µmol/g	34	0.31843	0.22972	0.13535	0.08715	0.04599	0.10369	< 0.01491 U	0.01674
Lead	µmol/g	46.7	0.09426	0.30733	0.09916	0.09205	0.39602	0.11935	0.12696	0.01296
Mercury	µmol/g	0.15	< 3e-005 U	< 8e-005 U	< 3e-005 U	< 3e-005 U	< 5e-005 U	< 3e-005 U	< 4e-005 U	< 3e-005 U
Nickel	µmol/g	20.9	0.22183	< 0.05604 U	0.02251	0.03203	0.04906	0.03043	0.22077	< 0.01981 U
Zinc	µmol/g	150	0.88149	2.67061	0.70586	0.71369	1.54964	0.6127	1.12393	0.10508
Acid Volatile Sulfide	µmol/g		6.17194	220.22201	10.87493	2.27189	19.25757	50.56655	70.47344	0.06698
SEM Ratio			0.2459	0.01484	0.08866	0.40767	0.10615	0.01716	0.02109	2.19143
Sum Of SEM	µmol/g		1.51771	3.26817	0.96416	0.92619	2.04413	0.86779	1.48629	0.14678

Chemical Name	Unit	Location ID	REF1-2	REF1-4	REF2-1	REF2-3	REF2-5	REF3-1	REF3-2	REF3-4
		Sample Date	3/24/2004	3/24/2004	3/24/2004	3/24/2004	3/24/2004	3/25/2004	3/25/2004	3/25/2004
		Screening Level								
Cadmium	µmol/g	1.2	< 0.00122 U	< 0.00135 U	< 0.00233 U	0.00197	< 0.00124 U	0.00363	0.00252	< 0.00177 U
Copper	µmol/g	34	0.07635	0.07008	0.25133	0.15539	0.05348	0.22713	0.16948	0.17019
Lead	µmol/g	46.7	0.03561	0.0867	0.21551	0.1409	0.04368	0.17086	0.16565	0.09782
Mercury	µmol/g	0.15	< 3e-005 U	< 3e-005 U	< 5e-005 U	< 4e-005 U	< 3e-005 U	< 5e-005 U	< 5e-005 U	< 4e-005 U
Nickel	µmol/g	20.9	< 0.01864 U	0.05015	0.08601	0.05016	0.02091	< 0.03443 U	< 0.03635 U	0.09275
Zinc	µmol/g	150	0.17386	0.45563	1.23662	0.7618	0.32121	1.22686	0.97567	0.55813
Acid Volatile Sulfide	µmol/g		< 0.02424 U	28.32699	84.21788	40.54511	1.85226	13.0193	16.55394	3.19455
SEM Ratio			12.47252	0.02344	0.02128	0.02738	0.23784	0.12699	0.08079	0.28821
Sum Of SEM	µmol/g		0.30235	0.66394	1.79185	1.11026	0.44055	1.65327	1.33743	0.92069

TABLE A-6 TOTAL ORGANIC CARBON AND GRAIN SIZE ANALYSIS OF SEDIMENT SAMPLES, MARCH 2004

Chemical Name	Location ID	AH-03	AH-06 DUP	AH-06	AH-08	AH-11 DUP	AH-11	AH-17	AH-23
	Sample Date	3/23/04	3/23/04	3/23/04	3/22/04	3/22/04	3/22/04	3/23/04	3/24/04
	Unit								
Total Organic Carbon	%	2.77	3.22	3.17	4.68	3.80	3.99	5.25	3.73
Silt & Clay	%	27.9	98.5	98.2	72.9	97.9	10.9	95.8	79.2
Sand	%	58	1.5	1.8	22.4	2.1	79.4	3.8	20.8
Gravel	%	14.1	< 0	< 0	4.8	< 0	9.7	0.4	< 0

Chemical Name	Location ID	AH-26	AH-28	AH-29	AH-32	AH-33 DUP	AH-33	AH-35	AH-40
	Sample Date	3/27/04	3/25/04	3/26/04	3/26/04	3/26/04	3/26/04	3/26/04	3/27/04
	Unit								
Total Organic Carbon	%	3.10	2.10	5.01	4.29	3.73	4.05	4.55	0.78
Silt & Clay	%	76.1	16.1	97.4	95.5	92.6	92.7	88.4	6.6
Sand	%	23.2	78.7	2.6	4.4	7.4	7.3	10.3	92
Gravel	%	0.7	5.2	< 0	< 0	< 0	< 0	1.3	1.4

Chemical Name	Location ID	AH-42	AH-45	AH-47	AH-49	AH-51	CORE1-BOT	CORE1-TOP	REF1-1
	Sample Date	3/27/04	3/26/04	3/26/04	3/25/04	3/27/04	3/27/04	3/27/04	3/24/04
	Unit								
Total Organic Carbon	%	1.13	4.97	1.60	1.36	5.05	1.18	1.27	0.18
Silt & Clay	%	8.1	75	10.1	1.4	44	19.6	14.6	1.6
Sand	%	80.5	15.9	78	97.8	54.2	59.2	79.7	98.4
Gravel	%	11.3	9.1	11.9	0.8	1.8	21.2	5.7	< 0

Chemical Name	Location ID	REF1-2	REF1-4	REF2-1	REF2-3	REF2-5	REF3-1	REF3-2	REF3-4	SOURCE3-1
	Sample Date	3/24/04	3/24/04	3/24/04	3/24/04	3/24/04	3/25/04	3/25/04	3/25/04	3/26/04
	Unit									
Total Organic Carbon	%	0.31	1.97	2.85	2.51	1.03	2.86		1.89	0.80
Silt & Clay	%	4.5	28.4	98.8	27.4	9.2	85.8	86.7	67.3	
Sand	%	95.5	57.3	1.2	62.1	87.7	12.7	13.3	32.7	
Gravel	%	< 0	14.3	< 0	10.6	3.1	1.5	< 0	< 0	

Appendix B

Environmental Forensics Report

NEWFIELDS

FINAL REPORT

ENVIRONMENTAL FORENSIC INVESTIGATION
SITE 16
(FORMER CREOSOTE DIP TANK AND FIRE FIGHTING TRAINING AREA)
NAVAL CONSTRUCTION BATTALION CENTER (NCBC)
NORTH KINGSTOWN, RHODE ISLAND

November 2004

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Executive Summary

This report presents the results of an environmental forensic study in Allen Harbor located on the western shore of Narragansett Bay in North Kingston, Rhode Island. The technical approach for this investigation followed the Navy User's Guide for Determining the Sources of Contaminants in Sediment (Stout *et al.*, 2003). This investigation was intended to assist the Navy Project team in identifying sources of PAH contamination found in Allen Harbor sediments and to determine if identified PAH sources were related to historical releases from Site 16 activities. Advanced chemical analyses were performed on samples collected from Allen Harbor, selected hydrocarbon source areas, reference areas in Narragansett Bay, and forensic reference materials representative of fire fighter training fuels. These results generated the following conclusions:

- A middle distillate petroleum signature in the former fire fighter training area generally matched the low levels of diesel range hydrocarbons in a proximal sediment sample. It was not possible to determine if these diesel range hydrocarbons originated from historical Navy or more contemporary marina activities. However, the composition of this petroleum distillate indicated that this material could not have caused the PAH distributions observed throughout Allen Harbor sediments.

- The hydrocarbon signatures of creosote and heavy residual petroleum for Site 16 soils were not observed in Allen Harbor sediments. The pyrogenic PAHs in Site 16 creosotes possessed a characteristic PAH signature that was absent in the proximal Allen Harbor sediments. Likewise, the heavy residual petroleum recovered from Site 16 differed from the sediments of Allen Harbor.

- The PAH concentrations in Allen Harbor sediments were consistent with coastal areas around the United States. Relative to the Reference Areas, the Allen Harbor sediments contained elevated levels of natural and anthropogenic organic material attributed to local land use activities (e.g., marina, vehicular, commercial activities).

- It was evident from the data in this investigation that storm water outfall draining from Allen's Harbor Road and surrounding paved parking lots conveyed hydrocarbons observed in proximal Allen harbor sediment samples. At a minimum, these hydrocarbons consisted of heavy residual petroleum (e.g., abraded petroleum asphalt and motor oils). Lower levels of diesel range hydrocarbons (e.g., marine, truck and home heating fuels) and slightly elevated PAHs (e.g., vehicular emissions and tar-based pavement) were observed in sediments that received storm water directly from this roadway.

- Samples collected next to dock pilings in the Middle and Outer Harbor contained refined tar consistent with creosote. As demonstrated in the Elizabeth River Case Study, the relative abundances of diagnostic PAHs demonstrated the direct impact of various types of creosote (Stout *et al.*, 2003). As such, it can be concluded that creosote most likely leached from the marina docks at these locations.

In summary, it was apparent from the data collected that the Allen Harbor sediment samples exhibited localized PAH impacts from dock pilings and storm water runoff. No strong evidence was found suggesting that the PAH impacts to Allen Harbor sediments were attributable to historic activities represented by the Site 16 Source Areas included in this study.

1. OBJECTIVE

The Naval Construction Battalion Center (NCBC) Site 16 resides on the western shore of Narragansett Bay in North Kingston, Rhode Island (Figure 1). Past environmental studies identified PAH concentrations in Allen Harbor sediments that exceeded the limits of a Phase I Screening Level Ecological Risk Assessment (SLERA). The present source identification study complemented a more comprehensive assessment of ecological risks in order to develop an appropriate risk managem nt decision for the site. Specifically, this study compared the hydrocarbon composition of PAH and other hydrocarbons in surficial sediment samples collected from Allen Harbor to those in upland soils from four potential hydrocarbon source areas on the NCBC site, three reference (ambient background) areas from other parts in Narragansett Bay, and multiple types of middle distillate reference materials potentially present at the NCBC's former fire fighter training areas. The primary objectives of the project were to determine 1) the relationship between the hydrocarbon composition of Allen Harbor surficial sediments and the reference areas and 2) the extent to which any data demonstrated that PAH in Allen Harbor sediments could be attributed to impacts of hydrocarbons derived from the NCBC source areas selected by the project team (EA 2004).

2. TECHNICAL APPROACH

Past assessments demonstrated that concentrations of polycyclic aromatic hydrocarbons (PAHs) in surficial sediments generally decreased from the southern to the northern reach of Allen Harbor. Two seeps from the southern shoreline of Allen Harbor raised concern that elevated PAHs were associated with the historical activities at NCBC (Figure 2). To address this concern a sampling strategy based upon the known historic and current candidate sources was developed based on the Navy User's Guide for Determining the Sources of Contaminants in Sediment (Stout *et al.*, 2003). The landside historical activities credited to NCBC-derived PAHs included wood preservation using a creosote dipping tank (Source Area 1), pole drying and storage (Source Area 2), and former fire fighting training (Source Area 3). Another potential source of PAHs included miscellaneous hydrocarbons not directly related to historical site activities (local runoff) that were distributed through a storm water catch basin (Source Area 4). Source 4 samples likely contained modern asphalt (petroleum based), old asphalt (tar blended), exhaust particulates, and vehicular lubricating oils. A final candidate source of PAHs included the use of creosote treated piers and assorted marina building materials. The marina source was indirectly represented by sediment samples collected near marina dock structures (AH-03, AH-17, and AH-29 in Figures 3 and 4).

2.1 Allen Harbor

The project team divided the Allen Harbor study area into three sections in order to efficiently identify the influence of one or more potential PAH source. At least five samples were collected throughout each of the three Allen Harbor sampling zones (Table 1). The PAH sampling intensity generally increased in proportion to the suspected complexity of PAH sources; four samples were collected in the more homogeneous Outer Harbor to the north, five samples were collected in the transitional Middle Harbor, and ten samples were collected from the most complex Inner Harbor to the south. In particular, sampling location AH-40 was intended to capture the hydrocarbon signatures of a seep (water with orange flocculent) emanating from the shoreline adjacent to Site 16 and sampling location AH-49 was intended to capture the signature of storm drain runoff from Allen's Harbor Road (Figures 2 and 3). This sampling scheme generated a spatially representative set of sediments samples capable of recognizing the potential changes in hydrocarbon composition throughout Allen Harbor.

2.2 Reference Areas

Allen Harbor sediments were compared to three reference areas intended by the project team to represent ambient conditions in sediments from other locations along Narragansett Bay (Table 1). Coggesshall Cove (Reference Area 1) was surrounded by two islands (Patience and Prudence) of the undeveloped Narragansett Bay Reserve (Figures 1 and 5). Relative to Allen Harbor, Coggesshall Cove was likely influenced to an equal or slightly greater degree by the Providence River. Jamestown Island (Reference Area 2) was a largely residential landmass in the middle of Narragansett Bay (Figures 1 and 6). Situated south of both Allen Harbor and Coggesshall Cove, it likely bracketed the background influences of the Providence River and outer reaches of Narragansett Bay. Finally, Fishing Cov (Reference Area 3) was located several miles south of Allen Harbor along the western shore of the Narragansett Bay (Figures 1 and 7). Although very shallow and surrounded by residential properties, Fishing Cove was potentially influenced by the commercial and industrial facilities of Wickford, RI.

Three representative samples were selected from each reference area by the project team based on screening data generated by the Navy. From these analyses, the variability in regional hydrocarbon patterns was established for comparison to Allen Harbor samples.

2.3 Reference Materials

Finally, samples from a forensic reference material library were added to the analysis to help compare the hydrocarbon patterns observed in Allen Harbor sediments with known sources of PAHs. These reference materials included crude oil and urban sediment (NIST 1944). In addition, former fire fighter training reference fuels composed of neat, combusted, and evaporated middle distillates (kerosene and diesel)

were added to the analysis (Table 2). These reference samples were combusted and evaporated under known conditions in the Battelle laboratory for use at fire fighter training sites all over the United States. These samples helped identify hydrocarbon signatures representative of fire fighter training activities.

2.4 Sample Selection

As mentioned previously, the project team selected the field samples for this study based on several criteria that generally included 1) rapid sediment screening of PAH concentrations by a Naval laboratory (SSC San Diego), 2) spatially diverse locations, and 3) sampling locations of known or suspected importance. The reader is referred to other project team documents for sample specific details. All samples selected for definitive measurement of PAH concentrations were measured for EPA Priority Pollutant PAHs (EPAPAHs) as regulated in the State of Rhode Island (Tables 3 and 4). The project team selected a subset of these samples for forensic hydrocarbon analyses. The forensic methods included 1) a general scan of the dominant extractable hydrocarbon types, 2) a detailed profile of approximately 75 diagnostic PAHs (Tables 3 and 4), 3) a trace scan for residual petroleum hydrocarbons, and 4) a trace scan of biomarkers. Collectively, these forensic methods revealed numerous source signatures useful in the attribution of PAH origins.

3. ANALYTICAL METHODS

The samples were prepared and analyzed in accordance with published methods (Emsbo-Mattingly *et al.*, 2003; Stout *et al.*, 2003; Stout *et al.*, 2002) as described in the Allen Harbor QAPP (EA, 2003). The samples were analyzed by several methods in order to provide a detailed description of hydrocarbons with a broad molecular weight range. In general, the high resolution hydrocarbons fingerprint painted a broad-brush picture of the dominant extractable hydrocarbons types while the mass spectrophotometric methods provided more detailed and purified profiles of the tar and petroleum (Emsbo-Mattingly *et al.*, 2003; Stout *et al.*, 2002). We used these data collectively to characterize the types of hydrocarbon materials in the study samples.

3.1 Sample Collection and Shipping

The field team collected approximately 85 split samples (Figures 2 to 7) between March 23, 2004 and March 27, 2004. Surficial sediment grab samples were collected with a Van Veen sampler to an approximate depth of 6 to 12 inches. The sediment core was collected with a 3 foot push core from which the top sample was collected between 6 and 18 inches and the bottom sample was collected between 18 and 36 inches. Soil samples were collected with a split-barrel sampler from a depth ranging between approximately 0 and 6 feet.

Samples were shipped via overnight courier and received below 6°C with one exception. One cooler containing 15 samples (Source 1-2, Source 2-1, Source 2-2, Rinse 01, Rinse 02, DUP08, AH-25, AH-29, AH-30, AH-32, AH-37, AH-38, AH-44, AH-46, and AH-47) was received at 10°C. Although the cooler temperature was warmer than planned (< 6°C), the integrity of these samples was not likely compromised given the limited time at this temperature, the age of the potential releases, and the weathered condition of hydrocarbons demonstrated in this report. In addition, several samples (Source 2-1, REF 1-1, REF 3-1, AH-15, AH-16, AH-45, and DUP03) were received with cracked caps. Secondary containment in packing material prevented exposure of these samples to cross-contamination. These caps were replaced upon receipt without compromising the sample integrity. Other information related to chain of custody and sample receipt was provided in Attachment I.

Upon receipt, Battelle stored the split samples in a freezer while the Navy laboratory screened the PAH concentrations. Based on the screening data, the project team selected a subset of 41 samples for the definitive measurement of EPAPAH concentrations. Within this group of EPAPAH samples, the project team selected a subset of 21 samples for forensic parameters. The field sample identifications, locations, collection dates, and matrices for the field samples are summarized in Table 1. Additional forensic reference materials were added the population of samples in this study for comparative purposes (Table 2). The sample ID's were abbreviated when necessary to simplify the tables and figures used for data presentation (Tables 1 and 2).

3.2 Sample Preparation

An aliquot of each solid sample (30 g wet weight) was fortified with surrogates, dried with sodium sulfate and serially shake extracted with dichloromethane (DCM). Less sample was used when high concentrations of extractable organic matter was present. The sample extracts were concentrated by Kuderna-Danish and nitrogen blow down techniques. Sulfur and polar interferences were removed with a copper powder and alumina, respectively. The non-aqueous phase liquid (NAPL) forensic reference materials (crude oil, kerosene, and diesel) were diluted to approximately 5 mg/ml in DCM. The sample extracts and diluents were split prior to analysis. The extracts were fortified with internal standards and submitted for GC/FID and GC/MS/SIM analyses (described below).

3.3 High Resolution Hydrocarbon Fingerprint and TPH

The sample extracts were analyzed using a high-resolution gas chromatograph equipped with a flame ionization detector (GC/FID). High resolution GC/FID fingerprints were generated over a broad carbon

range (approximately n-C_9 to n-C_{40}) that provided an overall assessment of the non-volatile hydrocarbons present in each sample. These fingerprints provided information on the dominant extractable hydrocarbons that might include pyrogenic PAHs, petroleum products, and detrital vegetation. The GC/FID fingerprints for each field and QC sample were placed in Attachment C.

3.4 Polycyclic Aromatic Hydrocarbons (PAH)

The sample extracts were also analyzed using a high-resolution gas chromatograph equipped with a mass spectrometer operated in the selected ion monitoring mode (GC/MS/SIM). The instrument was calibrated to allow for quantification of a broad range of 2- through 6-ring PAH, selected alkylated PAH homologues, selected sulfur-containing compounds (dibenzothiophenes), and other compounds useful for the identification of hydrocarbon sources in the environment. Tables 3 and 4 presented an inventory of the target compounds along with abbreviations used in selected figures of this report. The concentration of EPAPAHs in the field samples were presented in Attachment D and the concentrations of forensic PAHs were presented in Attachment E. The acronym EPAPAH is used in the discussion in reference to the sum of the 17 individual EPAPAH compounds (Tables 3 and 4). Collectively, the concentrations of these target compounds helped qualitatively and quantitatively compare the samples and reference materials. The concentrations of PAHs (and hopane; see below) in soil and sediment samples were reported in dry weight units. As part of the discussion, PAH histograms were constructed to summarize the most significant compositional features.

3.5 Saturated Hydrocarbon Fingerprints and Triterpane Biomarkers

Environmental forensic investigators demonstrated that the presence and/or pattern of biomark rs reveals information about the specific source(s) of petrogenic residues in the environment; e.g., petroleum or coal (Stout *et al.*, 2002). An aliquot of the GC/FID extract was solvent exchanged and fractionated on silica gel to remove the aromatic hydrocarbons that can interfere with the analyses of saturated hydrocarbons and biomarkers. This purified extract was injected into a GC/MS/SIM instrument. Saturated hydrocarbon fingerprints were generated from this analysis (Attachment F). These fingerprints helped identify the types of petroleum products in the sample and possibly the feedstock from which the tar was generated. In addition, the laboratory generated triterpane and sterane fingerprints (Attachment G). The relative abundances diagnostic biomarkers (Table 5) helped identify different types of petroleum and coal.

3.6 Total Organic Carbon (TOC)

Total organic carbon was measured according to EPA Method 9060 (Attachment H). This method entailed the removal of water and inorganic carbon prior to high temperature combustion at 900°C in a stream of oxygen. Carbon was converted to CO_2 which was scrubbed of sulfur and nitrogen containing gases prior to coulombic detection.

3.7 Visual Presentation of Data

This investigation generated a substantial quantity of chemistry data, both chromatographic and numerical. In order to present this data in a meaningful manner, we used a variety of visual and graphical techniques to display and explain the most significant features. Largely, we relied upon four methods of data visualization in this report. These include:

- Gas Chromatograms presented the raw output from analytical instruments used to characterize the hydrocarbon distributions.
- Scatter Plots depicted the two dimensional relationship between two hydrocarbon parameters in a format amenable to establishing qualitative trends or quantitative correlations.
- Principal Component Analysis Plots using multidimensional statistics to ascertain similarities or differences in chemical composition among samples.
- Histograms for graphically comparing detailed PAH data.

Whenever possible, color coding and symbols were used to illustrate the most relevant compositional features. When appropriate, we added additional samples of crude oil (Crude), urban sediment (SRM), and middle distillates (Kerosene and Diesel) to the figures for reference purposes.

4. RESULTS AND DISCUSSION

We divided the results and discussion into method-specific sections for ease of presentation. It opens with a discussion of the major hydrocarbon patterns evident in the GC/FID data. Thereafter, we present a more detailed description of the tar and petroleum materials evident in the GC/MS/SIM data. These data helped equate source identification features in the absence of compounds that might otherwise interfere with the interpretation. Herein, the PAH data proved most useful for differentiating tar in the source samples from tar in the sediment while the saturated hydrocarbons and biomarkers helped describe the petroleum materials. Finally, we concluded this section with a spatial integration of the hydrocarbon signatures discussed previously. In essence, the last section summarized the findings in horizontal, vertical, and, to a limited extent, temporal dimensions. The high resolution hydrocarbon fingerprints, EPAPAH results, forensic PAH results, saturated hydrocarbon fingerprints, biomarker fingerprints, and TOC are presented in Attachments C to I.

4.1 Dominant Hydrocarbon Signatures

High resolution hydrocarbon fingerprints (GC/FID) revealed the dominant hydrocarbon patterns in the environmental samples. The principal patterns of interest in the sediment samples included urban runoff with localized influences of low level middle distillate and tar products (e.g., creosote, paving tar, and others). This section describes the identification of these hydrocarbon materials based on characteristic assemblages of saturated and aromatic hydrocarbons eluting between n-nonane (n-C_9) and n-tetratriacontane (n-C_{40}) in the high resolution hydrocarbon fingerprints.

The samples collected from the candidate source areas served as points of comparison for the sediments collected from Allen Harbor. The Source 1-1 and Source 1-2 soils contained a tar product (e.g., creosote) as evident in the dominant presence of high molecular weight PAHs with 4- to 6-aromatic rings (Figures 8a and 8b). This signature is consistent with weathered tar products, like creosote (AWPA 2001; Emsbo-Mattingly *et al.*, 2001; Emsbo-Mattingly *et al.*, 2003). The lighter 2- and 3-ring PAHs were heavily weathered. By contrast, the dominant signatures in the Source 2-1 and Source 2-2 (Figure 8c) soils consisted of an unresolved complex mixture (UCM) eluting in the middle distillate range. The normal alkanes were biodegraded leaving numerous alkylated naphthalenes on top of the UCM. We also observed low levels of a late eluting UCM consistent with heavy residual petroleum – likely asphalt and/ or lubricating oil (Figure 8c). The Source 3-1 (Figure 8d) and Source 3-2 soils also contained middle distillate and heavy residual range petroleums as evident by the multiple UCM profiles. These patterns were consistent with hydrocarbon products found at other fire fighter training areas (Emsbo-Mattingly, 2002). Little biodegradation of these hydrocarbons was evident in the high levels of normal alkanes. The Source 4-1 soil contained multiple late eluting UCMs topped by low levels of heavy normal alkanes (n-C_{24} to n-C_{40}). We identified this material as heavy residual petroleum consistent with asphalt and/or lubricating oil.

The sediments collected from the reference areas contained a mixture of natural and anthropogenic hydrocarbons consistent with urban runoff. As widely observed in coastal sediments, the features of urban runoff included a broad late eluting UCM possibly topped by plant waxes and low level PAHs (Stout *et al.*, 2004). Plant waxes were recognized by the characteristic pattern of normal alkanes eluting between n-tricosane (n-C_{23}) and n-pentatriacontane (n-C_{35}) with a pronounced enrichment of odd (n-C_{23}, n-C_{25}, n-C_{27}, n-C_{29}, n-C_{31}, n-C_{33}, and n-C_{35}) over even (n-C_{22}, n-C_{24}, n-C_{26}, n-C_{28}, n-C_{30}, n-C_{32}, and n-C_{34}) numbered carbons per compound (see REF 1-4, REF 2-1, and REF 3-2 in Figures 8f, 8g, and 8h, respectively). A group of oxygenated hydrocarbons obscured the fluoranthene (FL0) and pyrene (PY0) peaks. On a preliminary basis, we attributed these unknown oxygenated compounds to runoff or sewage derived from anthropogenic or biogenic sources based on the tentatively identified compound data[1]

[1] The compound identity was not confirmed definitively. The spectra clearly indicated the presence of hydrocarbons and oxygen with a maximum molecular weight of 344 amu. The best match was a ketone (4-hydroxy-4-(4,6-dimethylcyclohex-3-enyl)butan-2-one). However, this compound lacked many distinctive high molecular weight ions as reflected in the poor quality of its mass

(Attachment D). We also observed lighter oxygenated hydrocarbons[2] localized to REF 3-2 (Figure 8h). A standard reference material (NIST 1944) demonstrated a typical urban background pattern from a waterway in the New York and New Jersey area (Figure 8i). Notice the presence of PAHs and the absence of n-alkanes derived from plant waxes. These differences emphasized the site specific nature of urban background discussed in Stout *et al.*, 2004.

The general signature of urban background was observed in all of the sediment samples from Allen Harbor. As observed in the Reference and SRM samples, we identified urban background as a broad late eluting UCM, sometimes topped by plant waxes and containing low levels of higher molecular weight, parent PAHs (see AH-03, AH-26, AH-29, AH-45, AH-49 in Figures 8j, 8k, 8l, 8m, and 8n, respectively). We distinguished urban background from tar products (e.g., creosote, paving tar, and others) based on multiple lines of evidence. As a general rule among the high-resolution hydrocarbon fingerprinting data for the Allen Harbor sediments, we recognized the possible presence of tar when the peak heights of selected PAHs (e.g., FL0 and PY0) exceeded the peak heights of the n-alkanes derived from plant waxes (see AH-49 in Figure 8n). In addition, we conservatively recognized the presence of tar (likely creosote) in the AH-03 sediment, where FL0 and PY0 were present at approximately equivalent levels as n-alkanes derived from plant waxes (Figure 8j). Patterns of PAHs in AH-03 and AH-49 samples more clearly indicated the presence of tar than the GC/FID fingerprints alone (see Section 4.3 below).

The unidentified oxygenated hydrocarbons eluting around FL0 and PY0 that were observed in the Reference samples appeared at varying levels in most of the sediments from Allen Harbor (AH-03, AH-26, AH-29, and AH-45 in Figures 8j, 8k, 8l, and 8m, respectively). These compounds appeared highest in the Inner Allen Harbor (AH-45 Figure 8m). Consequently, we suspected that these compounds were released from numerous local point (e.g., marina) or non-point sources (e.g., runoff or wetland) throughout Narragansett Bay as opposed to a regional distribution of material from a few points of discharge (e.g., wastewater treatment plants). Definitive identification of these compounds may better reveal their likely source(s).

4.2 Organic Carbon and Hydrocarbon Concentrations

We determined the concentrations of organic compounds with varying levels of molecular detail in order to better understand the origins of hydrocarbons within the study area. Organic carbon in coastal sediments is often a location-specific mixture of organisms (e.g., bacteria, plants, and sewage), fugitive petroleum (e.g., fuels, motor oil, and asphalt), and partially combusted organic matter (e.g., exhaust, soot, and tar). In terms of the environmental chemistry method used for this study, total organic carbon (TOC) was determined as the bulk organic content of particulates in the size range of sand, silt, and clay. Total PAHs (TPAHs) was a subset of TOC that consisted of parent and alkylated PAHs and dibenzothiophenes used by environmental forensic investigators to identify the presence of petroleum (petrogenic PAHs), partially combusted organic matter (pyrogenic PAHs), and partially decayed vegetation (diagenetic PAHs). EPAPAHs comprised a subset of TPAHs in sediment commonly derived from the partial combustion of organic matter and, to a lesser extent, fugitive petroleum. These compounds served as the benchmark of this study because 1) they were likely to drive much of the ecological risk and 2) they were measured in many of the study samples (whereas TOC, TPAH, and other forensic analytes were not). Finally, the biomarker hopane served as a conservative measure of petroleum-derived organic matter. The relationships among these various carbon measurements revealed important information about the general nature and extent of hydrocarbons in the study area.

At the outset, we recognized many differences between samples collected from Allen Harbor and the Reference areas. For example, the maximum concentration of TOC in Allen Harbor sediments exceeded

spectral match. If significant, we recommend revisiting these spectra with additional resources to be discussed later with the project team.

[2] Three of these peaks were positively identified as ketones (2-methyl-3-nonanone at 17.56 minutes), siloxanes (decamethylcycopentasiloxane at 17.86 minutes), and alcohols (decanol at 18.25 minutes). Others were likely unknown hydrocarbons (19.61, 19.68, and 20.00 minutes), ketones (19.47 minutes), and alcohols (18.05, 20.29, and 20.55 minutes) (Attachment D).

sediments from the Reference areas by an approximate factor of two (Table 7). Indeed, the highest concentration of TOC in the Reference area sediments was approximately equivalent to the lowest TOC concentrations in Outer and Middle Allen Harbor sediments. In other words, Allen Harbor contained greater concentrations of organic carbon possibly attributable to its commercial and industrial history, surrounding vegetation, or hydrodynamic properties (e.g., water circulation, sediment flushing, and particulate residence time). Many of the highest concentrations of TOC were observed around the dock structures (AH-08, AH-17, AH-29) or shoreline wetland (AH-51). The lowest levels of TOC were proximal to Seep 16-01 (AH-40) and Seep 16-02 (AH-47 and AH-49). In addition, the TOC concentrations of soils in the Source Areas were lower than the Inner Allen Harbor levels; therefore, assuming the Source Area soils were representative, they appeared to be an unlikely source for the bulk organic material in Allen Harbor sediments. Finally, the correlation between TOC and EPAPAH concentrations was very poor (R^2=0.0794) indicating that higher loading of TOC did not consistently correspond to higher inputs from sources of EPAPAHs (Figure 9a). These observations suggested that the bulk of the organic matter likely originated from non-NCBC sources. We suspected that most of the TOC in Allen Harbor sediments was associated with local inputs of vegetation runoff (and possibly marina operations) that were distinct or elevated relative to the Reference areas. As aforementioned, the seemingly restricted circulation in Allen Harbor, which may tend to concentrate vegetable debris, may be largely responsible for its mostly higher TOC concentrations relative to the Reference sites.

Most sediment samples from Allen Harbor contained total EPAPAH concentrations near or below 20 mg/kg (Table 6). These levels were consistent with urban waterways (Stout *et al.*, 2004). However, the maximum concentration of EPAPAHs in the Reference area sediments was only 2.38 mg/kg (Table 7). As discussed previously, the Reference areas did not appear comparable to Allen Harbor based on the distinctly higher levels of organic carbon and PAHs observed in the Allen Harbor sediment samples[3]. This may be due to different proportions of organic and inorganic sedimentation, the latter being somewhat higher in the Reference sites. Twelve samples (AH-03, AH-06, AH-07, AH-08, AH-11, AH-17, AH-23, AH-26, AH-32, AH-33, AH-45, and AH-51) located throughout Allen Harbor contained EPAPAHs between 5 mg/kg and 15 mg/kg and TOC between 25,000 mg/kg and 55,000 mg/kg (see Allen Harbor sample grouping in upper left of Figure 9a). We considered these concentration ranges "normal" for Allen Harbor due to the consistency in concentrations over a wide spatial area. Two samples (AH-29 and AH-35) contained high levels of both TOC and EPAPAHs (upper right of Figure 9a). These samples were roughly comparable to the "normal" Allen Harbor sediments, because the increased TOC concentrations roughly accounted for the increased EPAPAH concentrations. Such differences may simply be related to the grain size of the sediments. However, seven samples (AH-28, AH-40, AH-42, AH-47, AH-49, Core-1 Bottom, and Core 1 Top) contained high levels of EPAPAHs and low levels of TOC (bottom of Figure 9a) relative to the "normal" values for Allen Harbor. These samples contained higher levels of EPAPAHs than the typical Allen Harbor sediment samples and all of these samples were located in the Middle and Inner Harbors. We considered these seven samples most likely to exhibit impacts of combustion and creosoting at the NCBC site. This possibility is addressed further below.

The concentration of total EPAPAHs generally overlapped among sediment samples from the Inner, Middle, and Outer Allen Harbor (Figure 9b). The difference between the Allen Harbor and Reference Area sediments was statistically significant (no overlap in mean or standard deviation). However, the difference in concentration from Inner to Outer Harbor locations was largely attributed to variance about the mean. The highest total EPAPAH concentrations in sediment were observed around the storm sewer, north marina, and south marina. The declining EPAPAH concentration gradient from these sources suggested that the storm sewer and marinas were credible sources of elevated PAHs in Allen Harbor. Selected Source Area soils contained relatively high levels of EPAPAHs were possible sources of PAHs, but the contamination pathway was not direct. More detailed hydrocarbon fingerprinting results were required to determine the compositional relationships between the Source Area soils, storm sewer discharges, and marina leachate.

[3] The comparability with the study area might have improved if the selection process for a reference location included the presence of a similar marina and approximate level of organics.

The concentration of EPAPAHs generally correlated with increases in TPAH (R^2 = 0.61 in Figure 9c). Although the absolute concentrations differed by sample, the basic ratio of EPAPAHs/TPAHs was fairly similar throughout Allen Harbor and the Reference areas with three exceptions. Samples Source 2-1, Source 2-2, and the Crude oil reference material contained elevated levels of petroleum as indicated by the high levels of TPAHs relative to EPAPAHs (see Figure 9c). These data suggested that differences in the PAH composition of the remaining Allen Harbor sediment samples were subtle and unlikely associated with elevated levels of petroleum. Instead, the PAH composition in most Allen Harbor sediments likely reflected the minor components of mixtures dominated by the native organic composition. This opinion was influenced by the discussion of PAH composition (see Section 4.3).

The relationship between EPAPAHs and hopane demonstrated differences in the relative amounts of residual petroleum (Source 2-2 and Source 4-1 in upper right of Figure 9d) and partially combusted organic matter (Source 1-1, Source 1-2, and Source 2-1 in lower right of Figure 9d). Most sediments from Allen Harbor contained higher levels of petroleum and EPAPAHs than the Reference Areas (see AH06, AH40, AH-45, AH17, and AH29 in Figure 9d). This difference between the Reference Area and Allen Harbor sediments may have simply reflected the higher levels of organics in Allen Harbor. Soil samples from Source Area 3 fell in the general range of Reference Area and AH06 sediments. The remaining Source Area soils did not overlap with the Reference Area and Allen Harbor sediments. Despite the lack of single-source distinction, we surmised that AH-29 contained slightly elevated levels of residual petroleum while AH-03, AH-28, and AH-49 contained slightly elevated levels of partially combusted organic material (Figure 9d).

4.3 Petrogenic and Pyrogenic PAH Patterns

The concentration and distribution of polycyclic aromatic hydrocarbons (PAHs) provided greater detail and specificity about the type of petroleum, tar, and urban background in the field samples. At the outset, some basic terminology must be clarified. Petroleum possesses a petrogenic PAH pattern consisting of low parent PAH abundance relative to the alkylated PAHs; e.g., C0 < C1 < C2. By contrast, pyrogenic PAHs form during the partial combustion or pyrolysis of organic matter. A pyrogenic PAH pattern exhibits high abundance of parent PAHs relative to the alkylated PAHs; e.g., C0 > C1 > C2, before weathering. Finally, diagenetic PAHs, like retene and perylene, form naturally in sediments containing specific types of decayed vegetation. Forensic scientists study the distribution and relative abundances of diagnostic PAH assemblages to help identify the presence of PAHs from these various sources (Stout *et al.*, 2004; Emsbo-Mattingly *et al.*, 2003; Stout *et al.*, 2003; Emsbo-Mattingly *et al.*, 2003; Stout *et al.*, 2002). The reader should bear in mind that that these quantitative PAH concentrations are more reliable source indicators than the peak heights used in the simpler hydrocarbon fingerprinting due, in part, to the potential presence of interferences (e.g., unknown oxygenated hydrocarbons, QC compounds, phthalates, halogenated organics, and others) and subtle chromatographic changes (peak widening) that can occur in the GC/FID fingerprints. Consequently, we used the more reliable PAH data for our definitive source characterization.

As evident in the hydrocarbon fingerprinting data (Section 4.1), many field samples exhibited a pyrogenic PAH pattern (Figure 10). We grouped the samples by their compositional similarity for ease of discussion. Specifically, the relative abundances of FL0 and PY0 were used for this purpose, because the FL0/PY0 ratio maintains a reasonable degree of source specific character for lightly, moderately, and heavily weathered pyrogenic PAHs (Emsbo-Mattingly *et al.*, 2003).

Among the samples with relative abundances of FL0 greater than PY0, clear differences arose between pyrogenic signatures in the Source Areas and Allen Harbor. Most significantly, Source 1-1 contained elevated concentrations of anthracene (A0) relative to phenanthrene (P0) (Figure 10a). The high ratio of A0/P0 was particularly significant, because A0 was normally less than P0 in most pyrogenic substances. Tar refining was required to alter this ratio (Rhodes, 1945). Consequently, a high ratio of A0/P0 clearly indicated the presence of specially refined tar products, like creosote. To be clear, the elevated level of A0 did not always occur during the manufacture of creosote; rather, it was simply an easily recognized signature of some form of tar refining. Indeed, the use of the A0/P0 ratio was also used for differentiating

multiple sources of creosote in the Elizabeth River Case Study (Stout *et al.*, 2003). In contrast to the creosote used at Source Area 1, some creosote products contained lower abundances of A0 relative to P0. For the purposes of this study, low ratios of A0/P0 indicated a different pyrogenic PAH origin than the creosote in the Source Area 1 (see Source 4-1, REF 3-2, AH-40, and AH-49 in Figures 10b, 10c, 10d, 10e, respectively).

Other differences in the pyrogenic PAH patterns existed as well. For example, the soil from Source 4-1 contained higher levels of alkylated 3- and 4-ring PAHs (Figure 10b) and the sediment from REF 3-2 exhibited low levels of benzo(e)pyrene (BEP) relative to benzo(a)pyrene (BAP) (Figure 10c). The PAH pattern for the sediment from AH-40 largely resembled REF 3-2 (Figures 10d and 10c, respectively) whereas the PAH pattern for the sediment from AH-49 resembled REF 3-2 with slightly higher levels of BEP relative to BAP (Figure 10e). In short, the PAH pattern in soils from the Source Area 1 was compositionally distinct from those present in the Allen Harbor sediments. By contrast, the PAH pattern in Allen Harbor sediments most closely resembled those of the Reference Area sediments.

Samples with relative abundances of FL0 less than or to equal to PY0 yielded similar results. The PAH pattern in soil from Source 1-2 clearly differed from the Allen Harbor sediment samples based on the high ratio of A0/P0 (Figure 10f). Sediment from AH-03 contained a slightly elevated ratio of A0/P0 (Figure 10g). This sampling location was separated from Source Area 1 by many samples with low A0/P0 ratios over a wide area; thus, we attributed this signature to creosote leaching from marina structures in the Outer Allen Harbor (rather than from Source Area 1). By contrast, AH-26 and AH-28 exhibited a weathered pyrogenic PAH pattern with a low ratio of A0/P0 equal to approximately 0.2 to 0.3 (Figures 10h and 10i, respectively). Using the EPAPAH data, these samples matched REF 1-2, 2-3, and 2-5 fairly well. In summary, the PAH composition of Allen Harbor sediments most closely resembled sediments from the Reference Areas as opposed to soils from the Source Areas.

We used Principal Components Analysis[4] (PCA) to further demonstrate these compositional features more quantitatively. As a rule of thumb, samples that plot closely together on the PCA scores plots (Figures 11a and 11b) were compositionally similar and the degree of separation among samples was proportional to the compositional differences. These PCA results illustrated large compositional differences among the Source Area soil samples. Source 1-1 and 1-2 plotted in the lower right of the scores plot (Figure 11a). This location corresponded to higher levels of 4- to 6-ring PAHs plus A0, as revealed by the corresponding PCA loading plot (Figure 11c). Likewise, Source 2-1 and 2-2 plotted in th middle left of the scores plot (Figure 11a) which corresponded to higher levels of alkylated naphthalenes and fluorenes (Figure 11c). Adding the Reference Materials to the PCA model demonstrated that the enrichment of these 2- and 3-Ring PAHs closely resembled moderately combusted or highly evaporated kerosene (Figure 11b). Finally, Source 3-1, 3-2, and 4-1 plotted in the upper right (Figure 11a) which corresponded to elevated levels of alkylated 3- and 4-ring PAHs plus pyrogenic 5- and 6-ring PAHs (Figure 11c). Most of the Allen Harbor sediment samples, however, plotted to the middle left of the PCA scores plot (Figure 11a) which indicated a dominant 4- to 6-ring pyrogenic PAH pattern that was low in A0 (Figure 11c). The PAH composition of these sediment samples was consistent and well within the expected range of the Reference Area samples, which plotted in the same area (Figure 11a). One of the benefits of PCA was its ability to minimize the influence of concentration when exploring compositional features. Samples with higher PAH concentrations, like AH-49 (EPAPAH = 28 mg/kg) plotted next to AH-40 (EPAPAH = 6 mg/kg); thus, despite concentration differences little compositional differences existed among the study area sediments with two exceptions. Interestingly, the PAH compositions in the two

[4] Principal Component Analysis (PCA; Pirouette, Version 3.02, Infometrix, Seattle, WA) is a factor analysis method that generates new independent variables (i.e. factors) that are linear combinations of the original input variables (e.g., PAH concentrations). This method reduces the dimensionality of the data to a few important "principal components" (axes) that best describe variations in the data. The first axis (1st PC) demonstrates the most prominent trend and successive axes (2nd PC, 3rd PC, etc.) demonstrate additional trends in decreasing order of importance. Prior to PCA, the PAH concentration input data are log-transformed to reduce the effect of widely varying concentrations between samples and between individual analytes. The primary objective of the PCA conducted for this study was to aid in the classification of field samples based on their chemical similarities or differences, without any pre-classification as to their nature/source(s). In this report, the results of a PCA are presented using 2-dimensional factor score and loading plots.

samples located immediately next to marina structures (AH-03 and AH-29) most closely resembled the compositions in soils from Source 1-1 and Source 1-2, which were shown to be consistent with weathered creosote (Figures 8a, 8b, 10a, and 10f). We concluded that the PAH in the AH-03 and AH-29 sediments were impacted by creosote. Given their distance from Source Area 1, and proximity to the marina, the source of the creosote in these sediments was most likely from the marina structures.

4.4 Fugitive Petroleum and Plant Waxes

The saturated hydrocarbon fingerprints revealed the purified profile of fossil fuels (e.g., petroleum and coal) and plant waxes in the absence of aromatic interferences (e.g., PAHs). As described previously, most of the sediment samples contained varying proportions of heavy residual petroleum and plant waxes. However, the saturated hydrocarbons comprised a very small fraction of the hydrocarbons in tar-dominated samples (e.g., Source 1-1 and Source 1-2). These saturated hydrocarbons helped identify the hydrocarbon feedstock used to generate the tar material. In order to equitably compare the saturated fraction of the petroleum- and tar-dominated samples, respectively, the saturated fraction of each sample required careful isolation in the laboratory.

The pattern of saturated hydrocarbons in the soils containing tar from Source Area 1 contained late eluting normal alkanes consistent with coal feedstock (Figure 12a). The low level of tar-derived saturated hydrocarbons with this pattern was not observed in the sediment samples. The soil from Source 1-2 also contained normal alkanes with enriched odd-numbered carbons relative to even-numbered carbons eluting between n-tricosane (n-C_{23}) and n-pentatriacontane (n-C_{35}), a feature consistent with plant waxes. These hydrocarbons likely originated from leaf detritus derived from local plants and were widely observed throughout the study area. By contrast, the soil from Source 2-1 contained saturated hydrocarbons consistent with a light middle distillate with elevated levels of isoprenoids that indicated biodegradation (Figure 12b). High levels of early relative to later eluting isoprenoids were consistent with GC/FID and PAH data that matched this material with the weathered kerosene reference material. The saturated hydrocarbons in the soil from Source 3-1 contained a heavier middle distillate with a pronounced loss of lighter alkanes, a feature consistent with combustion (compare Figures 12c and 12d). This sample also contained heavier normal alkanes identified as a mixture of plant waxes and residual petroleum. The saturated hydrocarbons in the soil from Source 4-1 contained heavy residual petroleum indicated by a later eluting UCM and normal alkanes plus some plant waxes (Figure 12e).

As was evident in the total extractable hydrocarbons described previously, the saturated hydrocarbons in the Allen Harbor and Reference Site sediment samples were dominated by heavy residual petroleum and plant waxes. The heavy residual petroleum was identified as a late eluting UCM and plant waxes were recognized by the characteristic pattern of heavy alkanes (see REF 1-4, REF 3-2, AH-03, AH-40, and AH-49 in Figures 12f, 12g, 12h, 12i, and 12j, respectively). The dominant signatures in all of these samples were similar and consistent with urban runoff (e.g., asphalt and lubricating oil) mixed with vegetation debris.

A few sediment samples from Allen Harbor exhibited evidence for the presence of a middle distillate petroleum. The sediment from AH-40 contained the most clear middle distillate pattern comprised of normal alkanes eluting between n-undecane (n-C_{11}) and approximately pentacosane (n-C_{25}) (Figure 12i). The moderately lower abundances of isoprenoids relative to normal alkanes suggested only a moderate degree of biodegradation. AH-28 and AH-49 (Figure 12e) contained lower levels of a similar petroleum material. This material was heavier than the middle distillate observed in soils from Source 2-1 and Source 2-2 (Figure 12b). It was also lighter than the middle distillate present in soil from Source 3-1, which exhibited a slightly heavier normal alkane profile likely due to combustion during fire fighter training exercises (Figure 12c). While the possible presence of a middle distillate derived from Source Area 3 in the AH-40 sediment cannot be completely ruled out, the presence of low levels of a middle distillate in AH-49 and AH-28 also could be attributed to urban runoff of truck diesel or heating fuel from activities around Allen's Harbor Road and adjacent parking lots (Figure 2).

4.5 Genetic Origins of Heavy Hydrocarbons

Triterpane biomarkers reside in the heavy molecular weight fraction of crude oil and coal. The relative abundances of specific biomarkers help identify the conditions and region where the crude oil and coal were formed (Peters and Moldowan, 1993). The term, genetic signature, refers to the relationship between the molecular architecture of preserved organic matter to the organisms and geochemical processes controlling or influencing the formation of fossil fuel. Having survived millennia under heated and pressurized conditions, selected biomarkers (e.g., triterpanes and steranes) resist the degradation processes that occur in most coastal sediment environments. These biomarkers are capable of differentiating the origins of heavy hydrocarbons even when most of the more labile compounds degrade.

Triterpane biomarkers were detected in the field samples. As expected, samples with late eluting UCMs, indicating the presence of residual petroleum (Sections 4.1 and 4.4), contained higher levels of triterpane biomarkers. Importantly, most of the sediment samples exhibited a common triterpane fingerprint and suggested a possible common origin. This fingerprint (Pattern A) consisted of approximately equal levels of Ts and Tm plus low levels of NH relative to hopane H and low levels of triterpanes relative to Tm (see REF 3-2, AH-03, and AH-45 in Figures 13a, 13b, and 13c, respectively). Pattern A was observed in sediments throughout all areas of Allen Harbor and the Reference Area 3. We considered Pattern A the predominant shoreline signature of runoff from the roadways in the North Kingstown-Wickford area. By contrast, the triterpane fingerprint in sediments from Reference Areas 1 and 2 (Pattern B) differed slightly in the lower abundance of Ts relative to Tm (e.g., Figure 13d). As such, we considered Pattern B the regional pattern of central Narragansett Bay. Pattern B was also observed in soils from Source Areas 1 and 3 which indicated that products from this type of crude oil enjoyed widespread applications in the Narragansett Bay area (Figures 13e and 13f, respectively).

Three sediment samples in Allen Harbor exhibited triterpane fingerprints that differed from the shoreline (Pattern A) and regional (Pattern B) fingerprints. The sediment from AH-40 was the only sample with high levels of Ts relative to Tm plus low levels of triterpanes relative to Tm (Pattern D) (Figure 13g). This pattern reflected a unique residual petroleum release. AH-49 contained high levels of NH relative to H and a slightly greater abundance of C35-homohopanes, which are features consistent with particular crude oils or coals. (Pattern E) (Figure 13i). Pattern E also existed in Source 4-1 and helped connect the hydrocarbon patterns in AH-49 with the proximal storm sewer (Figure 13h). AH-28 exhibited a mixed signature of Patterns A and E (Figure 13j). This mixed pattern suggested that either 1) effluent from th storm drain preferentially circulated along the eastern shoreline of Allen Harbor or 2) drainage from Allen's Harbor Road entered the Harbor at multiple locations. Interestingly, the unique features of Pattern E failed to extend further into the Harbor. We speculated that Pattern E represented recent paving maintenance, new roadway construction, or seasonal change in the use of industrial heating oil.

The triterpane patterns in soils from Source Areas 1 to 3 largely differed from those in the Allen Harbor sediments. Soils from Source 1-1, Source 1-2, Source 3-1, and Source 3-2 contained triterpanes that exhibited Pattern B (Figure 13e and 13f). Although Pattern B was also present in REF 1-4 and 2-1, thes locations were spatially distinct and separated by numerous samples containing triterpanes exhibiting Pattern A. Therefore, we concluded that the petroleum in these Source and Reference Areas constituted independent releases of heavy residual petroleum with little or no significant relation to sediment impacts in Allen Harbor. Likewise, soil from Source 2-1 contained a unique triterpane fingerprint with high levels of Ts and triterpanes relative to Tm (Pattern C). The absence of Patterns B and C in Allen Harbor sediments indicated that heavy hydrocarbons from these Source areas did not migrate to the proximal surficial sediments.

4.6 Horizontal and Vertical Hydrocarbon Distribution

The previous discussion laid the groundwork for understanding the chemical compositions of the hydrocarbons occurring in samples collected throughout the study area. In this section, we evaluated the spatial relationships among soil and sediment samples in simplified horizontal and vertical terms. Herein, we drew together the most significant hydrocarbon features in spatial terms.

The general concentrations (~20 mg/kg) and patterns (pyrogenic 4- to 6-ring) of EPAPAHs in Allen Harbor were consistent with the background sediments collected in many coastal locations throughout the United States. In a recent sediment background study, the total EPAPAH concentration at the upper 96th percentile limit was approximately 20 mg/kg (Stout *et al.*, 2004). Clearly, the PAH concentration in Allen Harbor (20 mg/kg) compared well with literature values for background sediments (20 mg/kg). This statistic is relevant because, unlike the Reference Area samples, the sediment samples in Allen Harbor and the Stout *et al.* (2004) publication were likely exposed to a wide diversity of background inputs including truck emissions, industry, and large marinas. In addition, this background study included 41 samples from Rhode Island Sound.

The concentrations of PAHs in Allen Harbor sediments (2.80 mg/kg to 28.1 mg/kg) were elevated relative to the Reference Areas (0.03 mg/kg to 2.38 mg/kg) (Table 7). Interestingly, the PAH pattern of Allen Harbor and Reference Area sediments matched closely (Figures 10 and 11). Therefore, the difference between PAH concentrations in Allen Harbor and the Reference Area locations was attributed to the degree of impact by a similar type of partially combusted organic material. The NCBC source soils exhibited many differences in PAH composition relative to the study area sediments. Consequently, we largely attributed the PAHs in Allen Harbor sediments to an unspecific pyrogenic source consistent with urban areas (e.g., exhaust from automobiles, trucks, and furnaces plus tar-based paving or building materials). The higher concentration of PAH in Allen Harbor sediments, compared to the Reference Area sediments, may simply reflect 1) the higher density of commercial and industrial activities, 2) higher density of paved areas, and 3) differences in the sedimentation and circulation properties. Collectively, one or more of these factors likely led to greater accumulation of urban background-derived PAH in Allen Harbor sediments.

The general patterns of TOC, plant waxes, and heavy residual petroleum supported the attribution of PAHs to regional urban and natural background sources. Like the PAH concentrations, the loading of TOC (natural and anthropogenic organic material) and hopane (heavy residual petroleum) was greater in Allen Harbor than in the Reference Areas (Figure 9). Like the PAH fingerprints, the signatures of plant waxes and triterpane biomarkers varied little among the Allen Harbor and Reference Areas (Figures 8, 12, and 13). We noted that the Core 1 samples contained approximately equal levels of TOC, but more than double the level of EPAPAHs in the surficial sediments (see C1B and C2B in Figure 9a). Assuming the deeper sediments were deposited before the surficial sediments, this observation implied that recent loading of PAHs were more significant on a concentration basis than historical loadings. In short, as stated above, Allen Harbor sediments simply contained higher levels of runoff than the Reference Areas. The cause of this higher loading was likely caused by a greater degree of local industrial, vehicular, and roadway activities possibly in combination with Allen Harbor's apparently more restricted water circulation, which tends to reduce flushing of all forms of organic matter (natural and anthropogenic) entering the harbor.

We observed several local hydrocarbon impacts that appeared to varying degrees with the regional hydrocarbon patterns. The sediment from sampling location AH-40 contained low levels of diesel range hydrocarbons (Figure 12i) and distinct heavy residual petroleum (Figure 13g). However, the PAH concentration at this location was not particularly high (EPAPAH = 6.1 mg/kg) and the PAH pattern matched none of the soil samples from Source Areas 1, 2, or 3 (Figures 10 and 11).

We also observed low levels of middle distillate (Figure 12j) and distinct heavy residual petroleum in AH-28 and AH-49 (Figures 13j and 13i, respectively). The PAH concentrations at these locations (EPAPAH = 25.0 mg/kg and 28.1 mg/kg, respectively) were the highest of all the sediment samples (Table 6). However, the PAH patterns at AH-28 and AH-49 matched none of the soil samples collected from Source Areas 1, 2, and 3 (Figures 10 and 11). Like AH-40, the PAH pattern in AH-28 and AH-49 most closely matched that of the Reference Area samples. Unlike AH-40, the heavy residual petroleum in AH-28 and AH-49 clearly originated from the sources found in the storm sewer (Source 4-1) (Table 6 and Figures 13j and 13i, respectively) where it mixed with Allen Harbor sediment (see enrichment of plant waxes from Figure 12e to 12j). We concluded that the heavy residual petroleum and elevated PAHs in the AH-28 and AH-49 sediments wer most closely associated with runoff from the Allen's Harbor Road area along the

eastern shoreline. It was also possible that the middle distillate observed in AH-28 and AH-49 originated from marine fuels associated with the marina. Regardless, these sediments were not impacted by Source Areas 1, 2, and 3.

Relative to the Reference Areas, the remaining samples collected in Middle and Outer Allen Harbor that exhibited slightly elevated concentrations of PAHs were attributed to creosote treated docking materials. AH-03 (EPAPAH = 11.6 mg/kg) was collected proximal to a dock structure in the Outer Harbor (Figure 4). This dilute tar product was clearly refined as evidenced by the elevated levels of anthracene (A0) (Figures 10g and 11a). AH-29 (EPAPAH = 24 mg/kg) was collected proximal to a dock structure in the Middle Harbor (Figure 3). This dilute tar also contained slightly elevated A0 (Figure 11a). Other samples in this region that were not analyzed for forensic parameters, like AH-35 (EPAPAH = 22.3 mg/kg), were located near dock structures and marina facilities (Figure 3). We suspected that the cause for elevated PAHs at these locations was, at least in part, attributable to some type of creosote sourced from the marina structures.

Samples collected in the NCBC Source Areas contained a wide range of hydrocarbon materials. In summarizing these hydrocarbon patterns, we recapitulated the extent of these signatures in the Allen Harbor study area. Source 1-1 and Source 1-2 (EPAPAH from 11.1 to 50.7 mg/kg) contained two different types of refined tar as indicated by the ratios of FL0/PY0 and A0/P0 (Figure 10a and 11a). We observed low levels of heavy hydrocarbons consistent with coal and residual range petroleum in these samples (Figure 12a) with a triterpane fingerprint (Figure 13e) that was absent in the Allen Harbor sediment samples. Soils from Source 2-1 and Source 2-2 (EPAPAH from 19.1 to 30.7 mg/kg) contained predominantly weathered kerosene (Figures 8c, 11b, and 12b) that was also not observed in Allen Harbor sediments.

Soils from Source 3-1 and Source 3-2 (EPAPAH from 0.80 to 2.75 mg/kg) contained partially combusted diesel and heavy residual petroleum (Figures 8d, 11a, and 12c). Low levels of diesel range hydrocarbons were detected proximal to SEEP 16-01 at location AH-40. However, the heavy residual petroleum at AH-40 differed from that in the soil from Source 3-2 based on the triterpane fingerprints (Figures 13g and 13f, respectively). Consequently, we concluded that while the middle distillate may have migrated from Source Area 3, the heavy residual petroleum did not. With levels of EPAPAHs equivalent to the Reference Area samples and lower than occur in Allen Harbor sediments, the potential for Source 3 samples to cause PAH contamination greater than background was highly unlikely.

Finally, the soil from Source 4-1 contained a mixture of petrogenic and pyrogenic PAHs (Figure 11a). The low levels of PAHs in the storm sewer sample (Source 4-1 EPAPAH = 0.65 mg/kg) compared poorly with sediments collected at the outfall (AH-49 EPAPAH = 28.1 mg/kg). This discrepancy suggested that the PAH enriched particles in the storm sewer may have been washed into the Harbor. Indeed, the planned proximal sampling location at Core 2 was cancelled because the fine sediments were scoured from this location. Nevertheless, the heavy residual petroleum in Source 4-1 (Figures 12e and 13h) matched the sampling locations proximal to outfalls (see AH-49 and AH-28 in Figures 12j, 131 and 13j) that drained Allen's Harbor Road. Drainage from this road, surrounding paved parking area, and possibly marina fuels likely explained the low levels of diesel that also appeared in AH-28 and AH-49.

5. SUMMARY

A limited environmental forensic study was conducted at the Naval Construction Battalion Center (NCBC) Site 16 located on the western shore of Narragansett Bay in North Kingston, Rhode Island. The technical approach for this investigation followed the Navy User's Guide for Determining the Sources of Contaminants in Sediment (Stout *et al.*, 2003). This investigation was intended to assist the Navy Project team in identifying sources of PAH contamination found in Allen Harbor sediments and to determine if identified PAH sources were related to historical releases from Site 16 activities. In order to address the project objectives, advanced chemical analyses were performed on seven Source Area soils, three Reference Area sediments from other areas in Narragansett Bay, and eleven Allen Harbor sediments. Additional samples were analyzed for EPA Priority Pollutant PAHs and TOC in order to determine the representativeness of any conclusions derived from the advanced chemical analyses. The results of these analyses generated the following conclusions:

- A middle distillate petroleum signature in the former fire fighter training area (Source 3-2) was observed that generally matched the low levels of diesel range hydrocarbons in proximal sediment from sampling location AH-40. It was not possible to determine if these diesel range hydrocarbons originated from historical Navy or more contemporary marina activities. Considering the type of hydrocarbons (middle distillates contain primarily petrogenic 2- and 3-ring PAHs), soils or activities from this area could not have caused direct PAH impacts to Allen Harbor sediments (pyrogenic 4- to 6-ring PAHs).
- The hydrocarbon signatures of creosote and heavy residual petroleum in soils from the former creosote dipping tank and pole drying/storage areas at Site 16 were not observed in Allen Harbor sediments. The pyrogenic PAHs in Source Area 1 creosotes shared a distinctive enrichment of anthracene that was absent in the proximal Allen Harbor sediments. Likewise, the g netic signature of triterpanes in the heavy residual petroleum differed from the sediments of Allen Harbor.
- Although the Priority Pollutant PAH concentrations in Allen Harbor sediments (EPAPAH averaged 12 mg/kg and ranged from 2.51 mg/kg to 28.1 mg/kg) matched many other coastal areas around the United States (EPAPAH ~ 20 mg/kg at the upper 96th percentile), they were elevated relative to sediments from the three Reference Areas (EPAPAH averaged 0.8 mg/kg and range from 0.03 mg/kg to 2.38 mg/kg). However, the concentrations of TOC (included natural and anthropogenic organic matter) and hopane (a marker for heavy petroleum) indicated that the loading of all organic material in Allen Harbor was elevated. Consequently, the high level of PAHs in Allen Harbor relative to the Reference Areas was likely explained by one or more of the following factors: 1) the higher density of commercial and industrial activities, 2) higher density of paved areas, and 3) potential flushing restrictions at the mouth of Allen Harbor.
- Some hydrocarbon impacts to sediments arising from the drainage of Allen's Harbor Road have been demonstrated. Specifically, sediment samples collected proximate to drains from this road (AH-49 and AH-28) exhibited elevated PAHs (EPAPAHs from 25.0 mg/kg to 28.1 mg/kg). The heavy residual petroleum in sediments from the storm drain associated with Allen's Harbor Road (Source 4-1) matched that found in the outfall (AH-49) and neighboring (AH-28) sediments. The source of this heavy residual petroleum was attributed to typical components of urban runoff (e.g., abraded petroleum asphalt and motor oils). Although not observed in the storm drain sample, low levels of diesel range hydrocarbons in AH-28 and AH-49 were consistent with runoff from streets and parking lots.
- Two Allen Harbor sediment samples (EPAPAH = 11.6 mg/kg in AH-03 and EPAPAH = 24.0 mg/kg in AH-29) collected adjacent to marina dock pilings throughout Allen Harbor contained refined tar consistent with creosote. As demonstrated in the Elizabeth River Case Study, the relative abundances of diagnostic PAHs demonstrated the direct impact of various types of creosote (Stout *et al.*, 2003). As such, it can be concluded that creosote likely leached from the marina docks at these locations. Although not selected for advanced chemical analyses, sample AH-35 (EPAPAH = 22.3 mg/kg) was located next to a dock piling and may have also experienced localized creosote leaching.

In summary, the Allen Harbor sediment samples exhibited localized PAH impacts from dock pilings and roadway runoff. There was no evidence suggesting that the PAH impacts to Allen Harbor sediments were attributable to historic activities represented by the Site 16 Source Areas studied.

6. REFERENCES

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Attachment A
Tables

Table 1. Field Samples

Client Sample ID	Abbrev.	Sample Location	Battelle Sample ID	Date Collected	Date Received	Matrix	PAH (GC/MS) EPAPAH	PAH (GC/MS) TPAH	Biomarker and Saturate Fingerprints (GC/MS)	High Resolution Hydrocarbon Fingerprint (GC/FID)	Total Orgnaic Carbon (TOC)
Source 1-1	S1-1	Source	S1483	03/26/04	04/06/04	Soil	X	X	X	X	X
Source 1-2	S1-2	Source	S1485	03/26/04	04/06/04	Soil	X	X	X	X	X
Source 2-1	S2-1	Source	S1484	03/26/04	04/06/04	Soil	X	X	X	X	X
Source 2-2	S2-2	Source	S1486	03/26/04	04/06/04	Soil	X	X	X	X	X
Source 3-1	S3-1	Source	S1481	03/26/04	04/06/04	Soil	X	X	X	X	X
Source 3-2	S3-2	Source	S1482	03/26/04	04/06/04	Soil	X	X	X	X	X
Source 4-1	S4-1	Source	S1457	03/24/04	04/06/04	Soil	X	X	X	X	X
REF 1-1	R1-1	Reference	S1442	03/24/04	04/05/04	Sediment	X				
REF 1-2	R1-2	Reference	S1443	03/24/04	04/05/04	Sediment	X				
REF 1-4	R1-4	Reference	S1445	03/24/04	04/06/04	Sediment	X	X	X	X	X
REF 2-1	R2-1	Reference	S1447	03/24/04	04/06/04	Sediment	X	X	X	X	X
REF 2-3	R2-3	Reference	S1449	03/24/04	04/05/04	Sediment	X				
REF 2-5	R2-5	Reference	S1451	03/24/04	04/05/04	Sediment	X				
REF 3-1	R3-1	Reference	S1467	03/25/04	04/05/04	Sediment	X				
REF 3-2	R3-2	Reference	S1466	03/25/04	04/06/04	Sediment	X	X	X	X	X
REF 3-4	R3-4	Reference	S1464	03/25/04	04/05/04	Sediment	X				
AH-03	AH03	Outer Harbor	S1438	03/23/04	04/06/04	Sediment	X	X	X	X	X
AH-06	AH06	Outer Harbor	S1432	03/23/04	04/06/04	Sediment	X	X	X	X	X
DUP-03	DUP03	Outer Harbor	S1430		04/06/04	Sediment	X	X	X	X	X
AH-08	AH08	Outer Harbor	S1421	03/22/04	04/05/04	Sediment	X				
AH-11	AH11	Outer Harbor	S1424	03/22/04	04/05/04	Sediment	X				
DUP-01	DUP01	Outer Harbor	S1426	03/22/04	04/05/04	Sediment	X				
AH-17	AH17	Middle Harbor	S1435	03/23/04	04/06/04	Sediment	X	X	X	X	X
AH-23	AH23	Middle Harbor	S1452	03/24/04	04/05/04	Sediment	X				
AH-26	AH26	Middle Harbor	S1505	03/27/04	04/06/04	Sediment	X	X	X	X	X
AH-28	AH28	Middle Harbor	S1468	03/25/04	04/07/04	Sediment	X	X	X	X	X
AH-29	AH29	Middle Harbor	S1491	03/26/04	04/06/04	Sediment	X	X	X	X	X
AH-32	AH32	Inner Harbor	S1490	03/26/04	04/05/04	Sediment	X				
AH-33	AH33	Inner Harbor	S1476	03/26/04	04/05/04	Sediment	X				
DUP-07	DUP07	Inner Harbor	S1473		04/05/04	Sediment	X				
AH-35	AH35	Inner Harbor	S1479	03/26/04	04/05/04	Sediment	X				
AH-40	AH40	Inner Harbor	S1509	03/27/04	04/06/04	Sediment	X	X	X	X	X
AH-42	AH42	Inner Harbor	S1507	03/27/04	04/05/04	Sediment	X				
AH-45	AH45	Inner Harbor	S1474	03/26/04	04/06/04	Sediment	X	X	X	X	X
AH-47	AH47	Inner Harbor	S1494	03/26/04	04/05/04	Sediment	X	X	X	X	X
AH-49	AH49	Inner Harbor	S1471	03/25/04	04/06/04	Sediment	X	X	X	X	X
AH-51	AH51	Outer Harbor	S1502	03/27/04	04/05/04	Sediment	X				
Core 1-Top	C1-T	Inner Harbor	S1510	03/27/04	04/05/04	Sediment	X				
Core 1-Bot	C1-B	Inner Harbor	S1511	03/27/04	04/05/04	Sediment	X				
Rins-01	R01	QC	S1487	03/26/04	03/31/04	Water	X				
Rins-02	R02	QC	S1489	03/26/04	03/31/04	Water	X				
Total					41		41	21	21	21	21

Samples were analyzed for the EPA Priority Pollutant PAHs (EPAPAH) or the more extensive list of Total PAHs (TPAH). The specific analytes in each group are described in Tables 3 and 4.

Table 2. Forensic Reference Materials

Client Sample ID	Abbrev.	Sample ID Type	Battelle Sample ID	Approximate Date Collected	Approximate Date Analyzed	Matrix	PAH (GC/MS) EPAPAH	PAH (GC/MS) TPAH	Biomarker and Saturate Fingerprints (GC/MS)	High Resolution Hydrocarbon Fingerprint (GC/FID)	Total Orgnaic Carbon (TOC)
Crude Oil	Crude	Forensic Reference Material	BE####NSC	NA	Apr-04	Product	X	X	X	X	
Urban Sediment	SRM	NIST Standard Reference Material	BE###SRM	NA	Apr-04	Sediment	X	X	X	X	
Kerosene Unaltered	K	Forensic Reference Material	ZR36IC	Oct-01	Jan-02	Product		X	X	X	
Kerosene 50% Combusted	K50C	Forensic Reference Material	W7748-C50	Oct-01	Nov-01	Product		X	X	X	
Kerosene 100% Combusted	K100C	Forensic Reference Material	W7748-C100	Oct-01	Nov-01	Product		X	X	X	
Kerosene 50% Evaporated	K50E	Forensic Reference Material	W7748-E50	Oct-01	Nov-01	Product		X	X	X	
Kerosene 100% Evaporated	K100E	Forensic Reference Material	W7748-E100	Oct-01	Nov-01	Product		X	X	X	
Diesel Unaltered	D	Forensic Reference Material	ZM25IC3	Oct-01	Jan-02	Product		X	X	X	
Diesel 50% Combusted	D50C	Forensic Reference Material	W7747-C50	Oct-01	Nov-01	Product		X	X	X	
Diesel 100% Combusted	D100C	Forensic Reference Material	W7747-C100	Oct-01	Nov-01	Product		X	X	X	
Diesel 50% Evaporated	D50E	Forensic Reference Material	W7747-E50	Oct-01	Nov-01	Product		X	X	X	
Diesel 100% Evaporated	D100E	Forensic Reference Material	W7747-E100	Oct-01	Nov-01	Product		X	X	X	
Total					12		2	12	12	12	0

The analytical reference materials were added to the study from Forensic Reference Materials Library at Battelle. The Crude Oil and Urban Sediment samples were analyzed as quality control (QC) samples with the Davisville field samples. At the request of the Navy, kerosene and diesel forensic reference samples were acquired, prepared, and analyzed by the Battelle Laboratory in Duxbury, MA These samples were initially refined according to applicable ASTM standards and secondarily weathered under known laboratory conditions in order to help identify hydrocarbon fuels used at fire fighter training sites (Emsbo-Mattingly, 2002). These data were added to the study by request of the Navy.

Table 3. Primary PAH Analytes

Analyte	Abbreviation	Aromatic Ring Number	Total PAH (TPAH)	EPA Priority Pollutant PAH (EPAPAH)
Naphthalene	NO	2	X	X
C1-Naphthalenes	N1	2	X	
C2-Naphthalenes	N2	2	X	
C3-Naphthalenes	N3	2	X	
C4-Naphthalenes	N4	2	X	
Biphenyl	B	2	X	
Acenaphthylene	AY	3	X	X
Acenaphthene	AE	3	X	X
Dibenzofuran	DF	3	X	
Fluorene	FO	3	X	X
C1-Fluorenes	F1	3	X	
C2-Fluorenes	F2	3	X	
C3-Fluorenes	F3	3	X	
Anthracene	A0	3	X	X
Phenanthrene	P0	3	X	X
C1-Phenanthrenes/Anthracenes	PA1	3	X	
C2-Phenanthrenes/Anthracenes	PA2	3	X	
C3-Phenanthrenes/Anthracenes	PA3	3	X	
C4-Phenanthrenes/Anthracenes	PA4	3	X	
Dibenzothiophene	DBT0	3	X	
C1-Dibenzothiophenes	DBT1	3	X	
C2-Dibenzothiophenes	DBT2	3	X	
C3-Dibenzothiophenes	DBT3	3	X	
C4-Dibenzothiophenes	DBT4	3	X	
Benzo(b)fluorene	BF	4	X	
Fluoranthene	FL0	4	X	X
Pyrene	PY0	4	X	X
C1-Fluoranthenes/Pyrenes	FP1	4	X	
C2-Fluoranthenes/Pyrenes	FP2	4	X	
C3-Fluoranthenes/Pyrenes	FP3	4	X	
Benzo(a)anthracene	BA0	4	X	X
Chrysene	C0	4	X	X
C1-Chrysenes	BC1	4	X	
C2-Chrysenes	BC2	4	X	
C3-Chrysenes	BC3	4	X	
C4-Chrysenes	BC4	4	X	
Benzo(b)fluoranthene	BB	5	X	X
Benzo(j/k)fluoranthene	BJK	5	X	X
Benzo(a)fluoranthene	BB	5	X	
Benzo(e)pyrene	BEP	5	X	
Benzo(a)pyrene	BAP	5	X	X
Perylene	PER	5	X	
Indeno(1,2,3-c,d)pyrene	IND	6	X	X
Dibenz(a,h)anthracene	DA	5	X	X
Benzo(g,h,i)perylene	GHI	6	X	X

Table 4. Selected PAH Isomer Analytes

Analyte	Abbreviation	Aromatic Ring Number	Total PAH (TPAH)	EPA Priority Pollutant PAH (EPAPAH)
2-Methylnaphthalene	2MN	2	X	X
1-Methynaphthalene	1MN	2	X	
2-Ethylnaphthalene	2EN	2	X	
1-Ethylnaphthalene	1EN	2	X	
2,6-dimethylnaphthalene	26DMN	2	X	
1,5-Dimethylnaphthalene	15DMN	2	X	
2-Methylfluorene	2MF	3	X	
1-Methylfluorene	1MF	3	X	
4-Methyldibenzothiophene	4MDBT	3	X	
2/3-Methyldibenzothiophene	2/3MDBT	3	X	
1-Methyldibenzothiophene	1MDBT	3	X	
3-Methylphenanthrene	3MP	3	X	
2/4-Methylphenanthrene	2/4MP	3	X	
2-Methylanthracene	2MA	3	X	
9-Methylphenanthrene	9MP	3	X	
1-Methylphenanthrene	1MP	3	X	
2,7-Dimethylphenanthrene	27DMP	3	X	
1,7-Dimethylphenanthrene	17DMP	3	X	
Cadalene	CAD	2	X	
Dehydroabietin(e)	DHA	1	X	
Retene	RET	3	X	
C1-Benzo(b)naphthothiophenes	BNT0	4	X	
C1-Benzo(b)naphthothiophenes	BNT1	4	X	
C2-Benzo(b)naphthothiophenes	BNT2	4	X	
C3-Benzo(b)naphthothiophenes	BNT3	4	X	
C4-Benzo(b)naphthothiophenes	BNT4	4	X	

Table 5. Biomarker Analytes

Observed Analyte	Abbreviation	Saturated Ring Number
17α(H),21β(H)-Hopane (Hopane)	H	5
18α(H)-28,29,30-Trisnorhopane	Ts	5
17α(H)-28,29,30-Trisnorhopane	Tm	5
17α(H),21β(H)-30-Norhopane	NH	5

Table 6. Summary of Hydrocarbon Chemistry.

Client ID	Type	EPAPAH (mg/kg)	TPAH (mg/kg)	Hopane (mg/kg)	TOC (mg/kg)	Saturates & Biomarkers KR	DR	RR	PW	TT	Dominant Anthropogenic Hydrocarbon Pattern
Source 1-1	Source	11.1	16.1	0.01			X	X		B	Heavily Weathered Creosote
Source 1-2	Source	50.7	77.1	0.07				X		B	Heavily Weathered Creosote
Source 2-1	Source	19.1	106	0.04			X			C	Weathered Middle Distillate (Kerosene by PAHs)
Source 2-2	Source	30.7	167	0.89			X	X		A	Weathered Middle Distillate (Kerosene by PAHs)
Source 3-1	Source	0.80	1.32	0.06	8,000		X	X		B	Low Diesel Range and Residual Petroleum
Source 3-2	Source	2.75	5.00	0.14			X	X		B	Residual Petroleum
Source 4-1	Source	6.80	12.1	1.05				X		E	Lube and Residual Petroleum
REF 1-1	Reference	0.03			1,800						
REF 1-2	Reference	0.05			3,100						
REF 1-4	Reference	0.65	1.16	0.09	19,700			X	X	B	Weathered Heavy Residual Petroleum
REF 2-1	Reference	0.87	1.59	0.11	28,500			X	X	B	Weathered Heavy Residual Petroleum
REF 2-3	Reference	0.56			25,100						
REF 2-5	Reference	0.11			10,300						
REF 3-1	Reference	1.30			28,600						
REF 3-2	Reference	2.38	3.57	0.10				X	X	A	Weathered Heavy Residual Petroleum with Low PAHs
REF 3-4	Reference	1.01			18,900						
AH-03	Outer Harbor	11.6	17.6	0.10	27,700			X	X	A	Weathered Heavy Residual Petroleum with Heavily Weathered Creosote
AH-06	Outer Harbor	2.81	4.56	0.21	31,700			X	X	A	Weathered Heavy Residual Petroleum
AH-08	Outer Harbor	5.64			46,800						
AH-11	Outer Harbor	5.36			39,900						
AH-17	Middle Harbor	6.88	11.2	0.41	52,500			X	X	A	Weathered Heavy Residual Petroleum
AH-23	Middle Harbor	11.9			37,300						
AH-26	Middle Harbor	9.79	16.2	0.21	31,000			X	X	A	Weathered Heavy Residual Petroleum and Low PAHs
AH-26D	Middle Harbor	8.88	14.7	0.20				X	X	A	Weathered Heavy Residual Petroleum and Low PAHs
AH-28	Middle Harbor	25.0	42.0	0.18	21,000		X	X	X	A/E	Weathered Heavy Residual Petroleum with Tar
AH-29	Middle Harbor	24.0	38.9	0.62	50,100			X	X	A	Weathered Heavy Residual Petroleum with Heavily Weathered Creosote
AH-32	Inner Harbor	9.89			42,900						
AH-33	Inner Harbor	12.1			40,500						
AH-35	Inner Harbor	22.3			45,500						
AH-40	Inner Harbor	6.09	8.94	0.25	7,800		X	X	X	D	Weathered Heavy Residual Petroleum and Low PAHs
AH-42	Inner Harbor	11.6			11,300						
AH-45	Inner Harbor	6.35	10.2	0.33	49,700			X	X	A	Weathered Heavy Residual Petroleum
AH-47	Inner Harbor	8.30			16,000						
AH-49	Inner Harbor	28.1	46.9	0.20	13,600		X	X	X	E	Weathered Heavy Residual Petroleum with Tar
AH-51	Outer Harbor	11.2			50,500						
Core 1-Top	Inner Harbor	10.4			11,800						
Core 1-Bot	Inner Harbor	2.80			12,700						
Core 1-BotD	Inner Harbor	12.5									
DUP-01	Outer Harbor	5.92			38,000						
DUP-03	Outer Harbor	2.51	4.08	0.20	32,200			X	X	A	Weathered Heavy Residual Petroleum
DUP-07	Inner Harbor	8.44			37,300						
Rins-01	QC	0.08									
Rins-02	QC	0.01									
Crude	QC	1.90									
Crude	QC	1.98	12.1	0.15		X	X	X			Unweathered Crude Petroleum
SRM	QC	50.6									
SRM	QC	50.7	108					X			Weathered Heavy Residual Petroleum and Low PAHs

Key:
AH Allen Harbor
Saturated Hydrocarbon Fingerprint Categories: KR kerosene range, MR middle distillate range, PW plant wax and RR residual range
Triterpane (TT) Biomarker Patterns: A Ts ~ Tm, B Ts < Tm, C Ts > Tm with high triterpanes, D Ts > Tm, E NH > H (Section 4.5)

Table 7. Ranges of Hydrocarbons by Sampling Location.

Sampling Location	TOC (mg/kg) Min - Max	EPAPAHs (mg/kg) Min - Max	TPAHs (mg/kg) Min - Max	Hopane (mg/kg) Min - Max
Source Areas	8,000 - 8,000	0.80 - 50.7	1.32 - 167	0.01 - 1.05
Reference Areas	1,800 - 28,600	0.03 - 2.38	1.16 - 3.57	0.09 - 0.11
Outer Allen Harbor	27,700 - 50,500	2.81 - 11.6	4.08 - 17.6	0.10 - 0.21
Middle Allen Harbor	21,000 - 52,500	6.88 - 25.0	11.2 - 42.0	0.18 - 0.62
Inner Allen Harbor	7,800 - 49,700	2.80 - 28.1	8.94 - 46.9	0.20 - 0.33

Attachment B
Figures

Figure 1. Site and Reference Areas in Narragansett Bay, Rhode Island

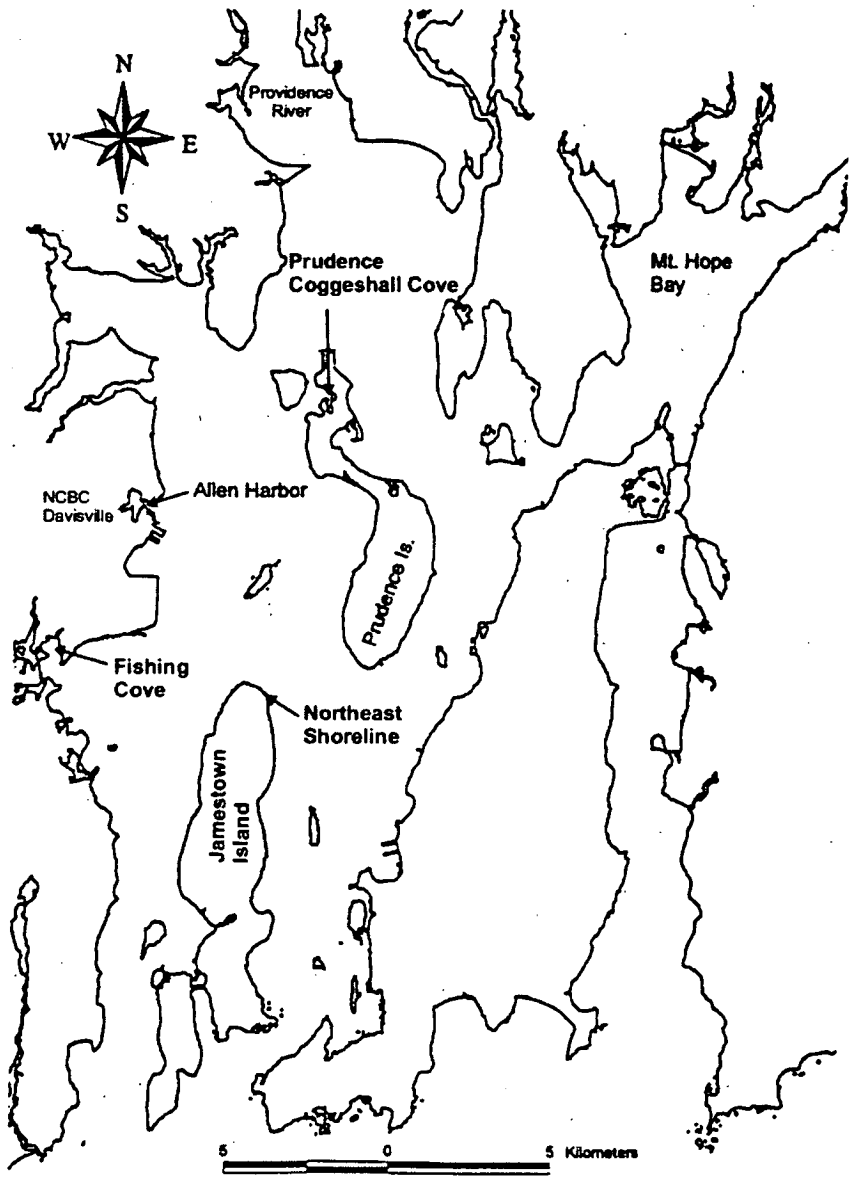
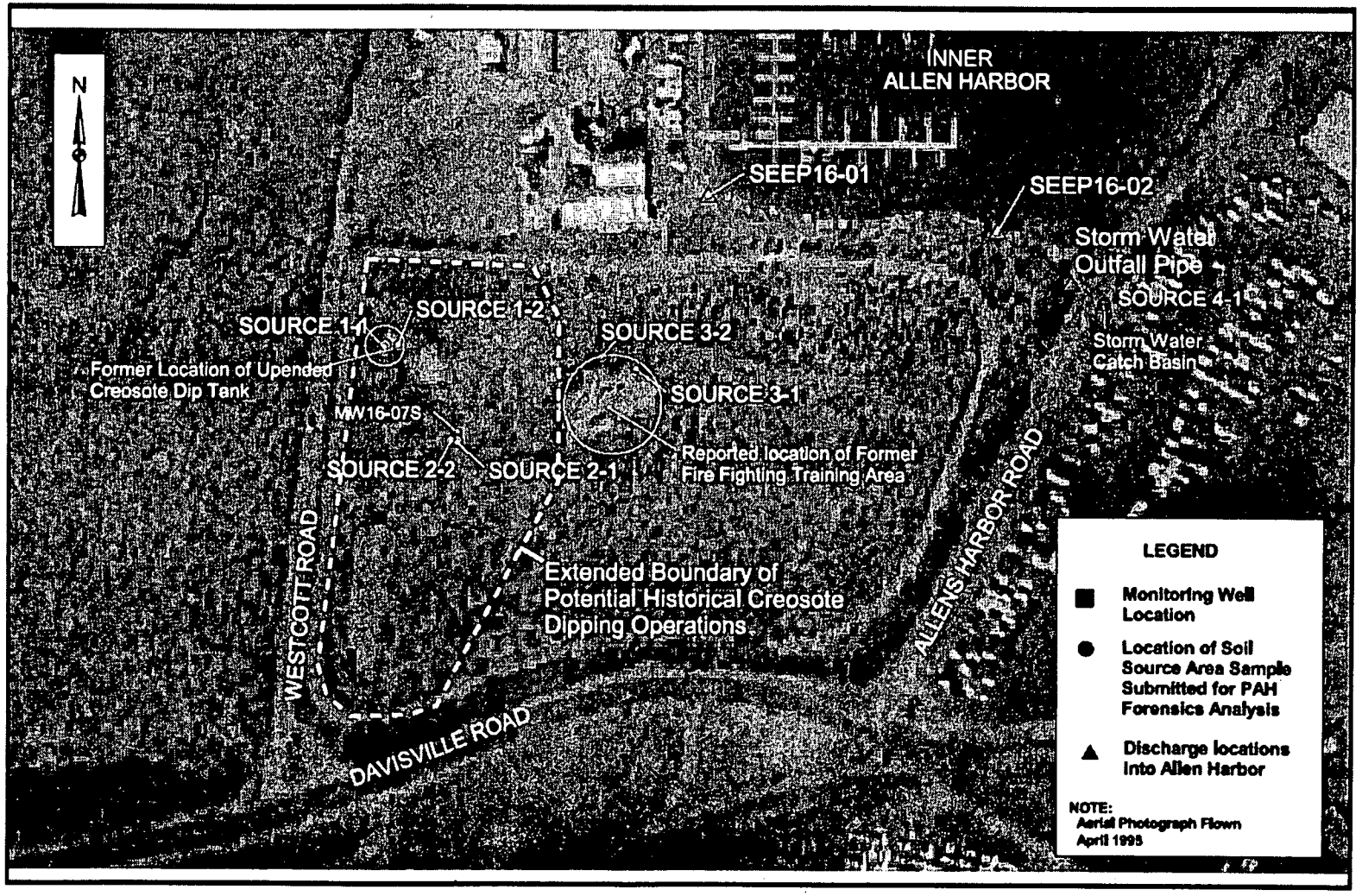


Figure 2-1. Allen Harbor and Reference Locations in Narragansett Bay.

P:\Projects\Federal\DOD\Navy\Projects\2960097\SedimentSampleWP\DraftQAPPAddendum\Figures\RefLocMap.cdr

Figure 2. Source Sampling Area



EA ENGINEERING, SCIENCE, AND TECHNOLOGY

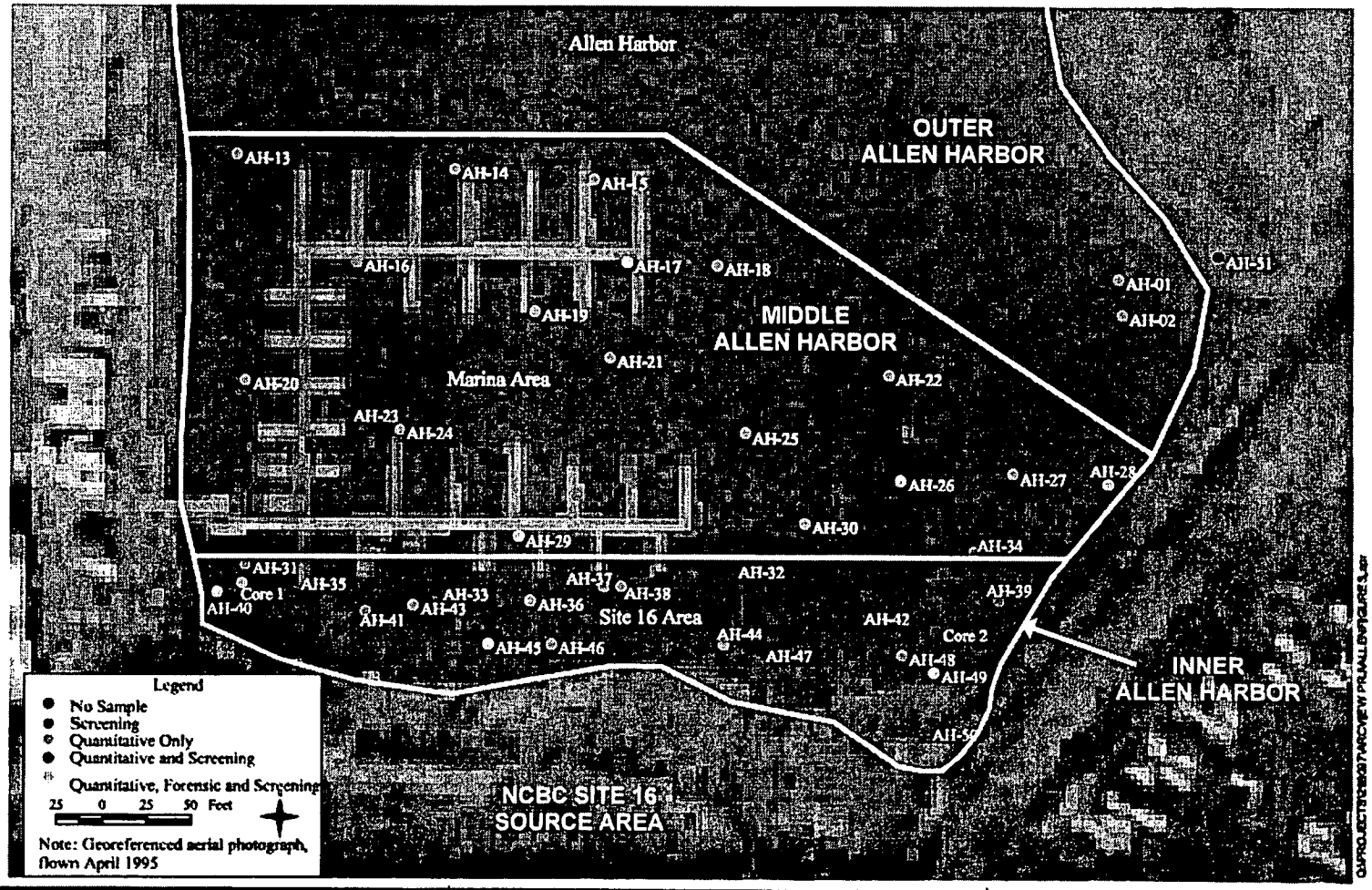
100 0 100 Feet

EFANE
IR Program Site 16
Phase 2 Screening Level Ecological Risk Assessment
Former NCBC Davisville Facility
North Kingstown, Rhode Island

POTENTIAL SOIL SOURCE AREA SAMPLE LOCATIONS

FIGURE 1-2

Figure 3. Southern Allen Harbor Sampling Locations.



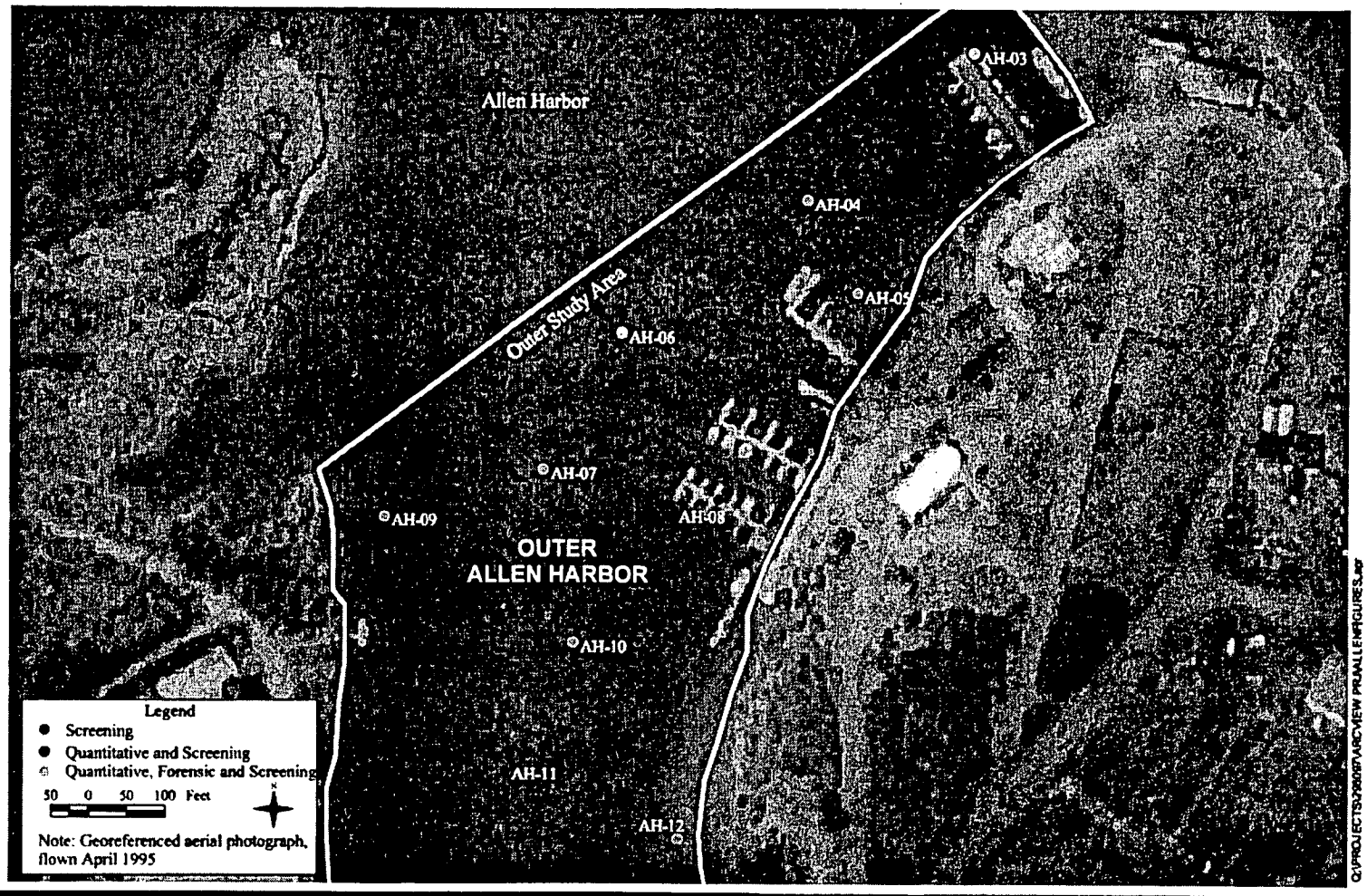
EA Engineering, Science, and Technology, Inc.

EFANE
IR Program Site 16 Phase 2
Screening Level Ecological Risk Assessment,
Former NCBC Davisville Facility
North Kingstown, Rhode Island

Sediment Sample Locations
Inner Harbor

FIGURE X-X

Figure 4. Northern Allen Harbor Sampling Locations.



EA Engineering, Science, and Technology, Inc.

EFANE
IR Program Site 16 Phase 2
Screening Level Ecological Risk Assessment,
Former NCBC Davisville Facility
North Kingstown, Rhode Island

Sediment Sample Locations
Outer Harbor

FIGURE X.X

Figure 5. Reference Sampling Location 1: Coggeshall Cove.

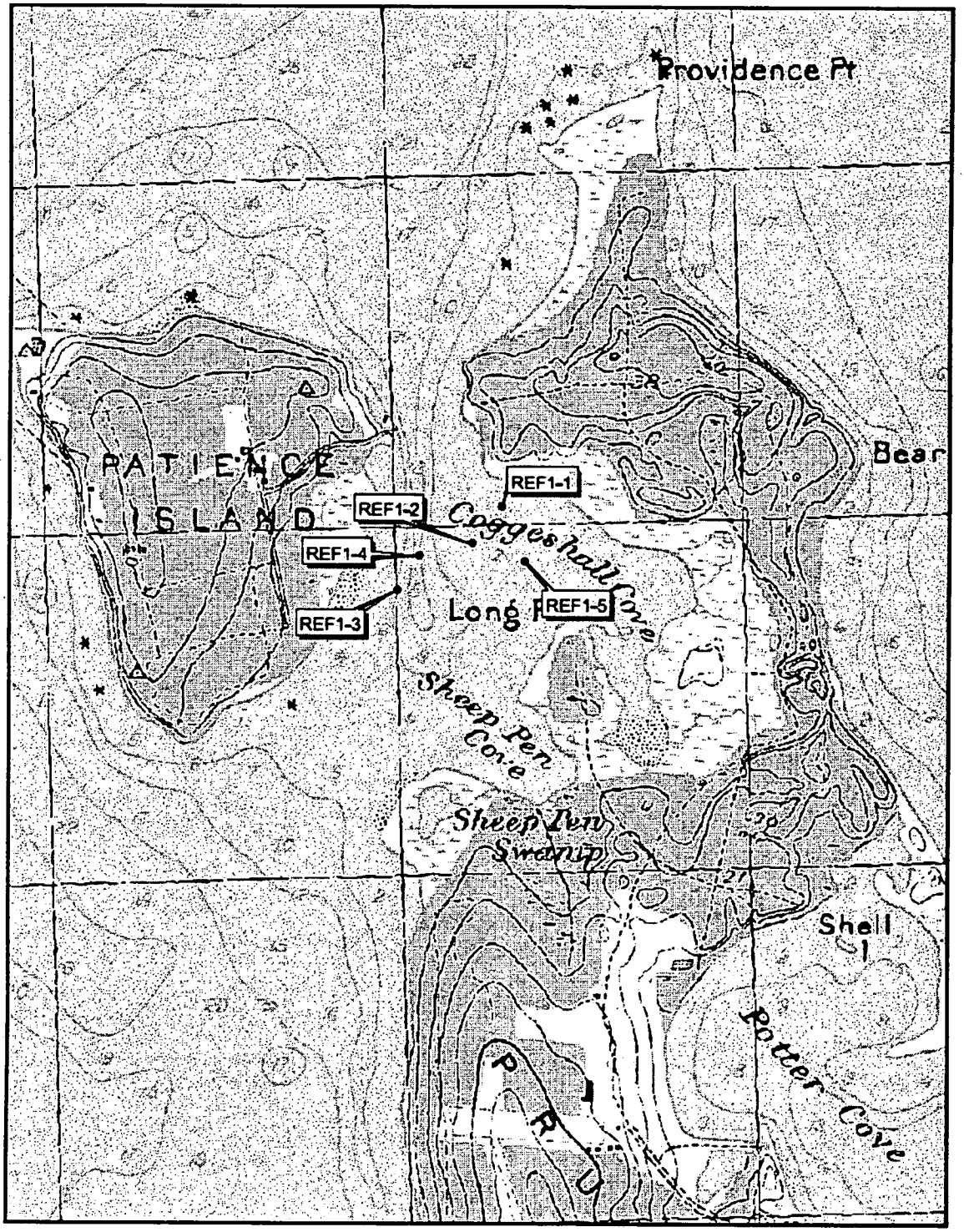


Figure 6. Reference Sampling Location 2: Jamestown Island.

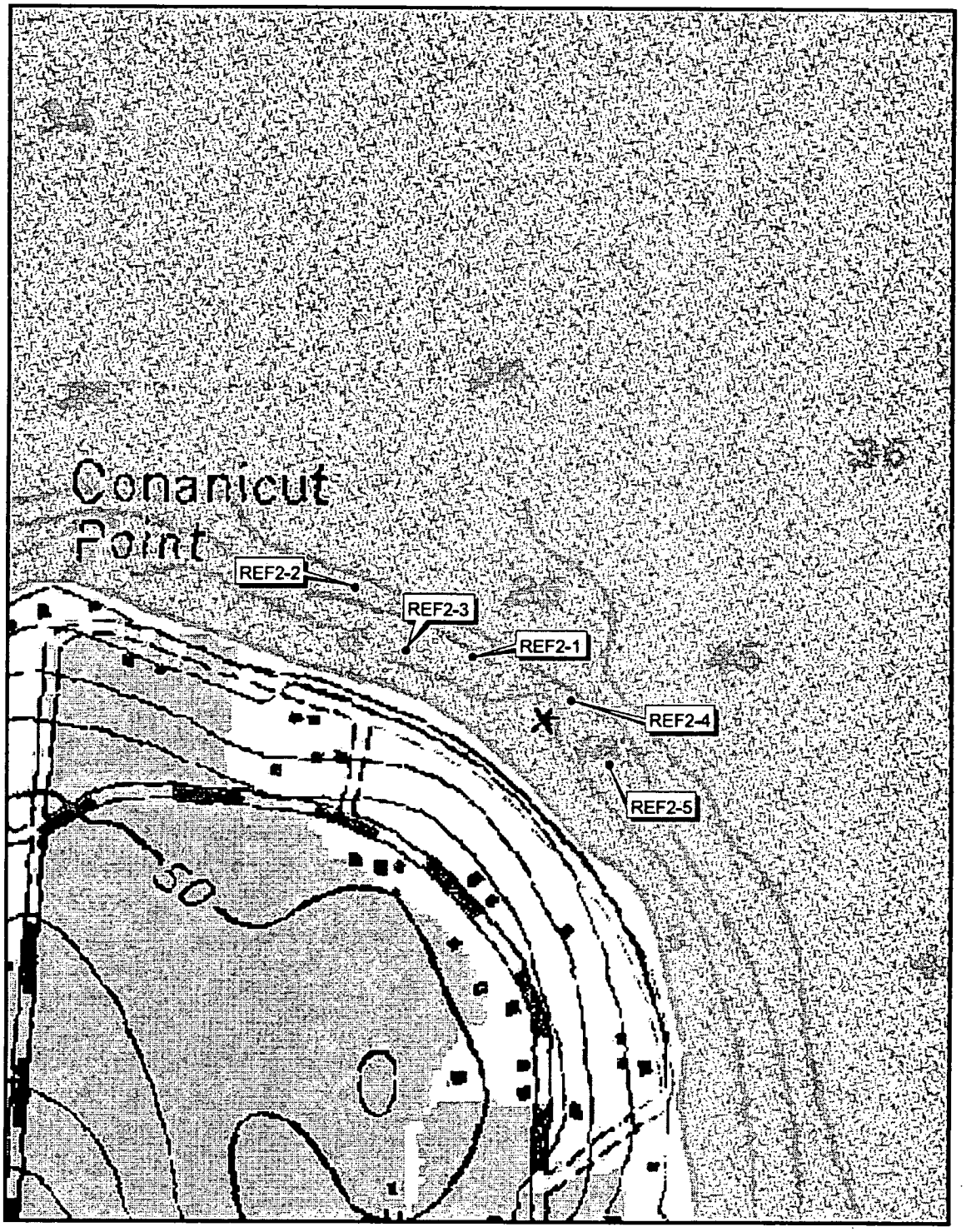


Figure 7. Reference Sampling Location 3: Fishing Cove.

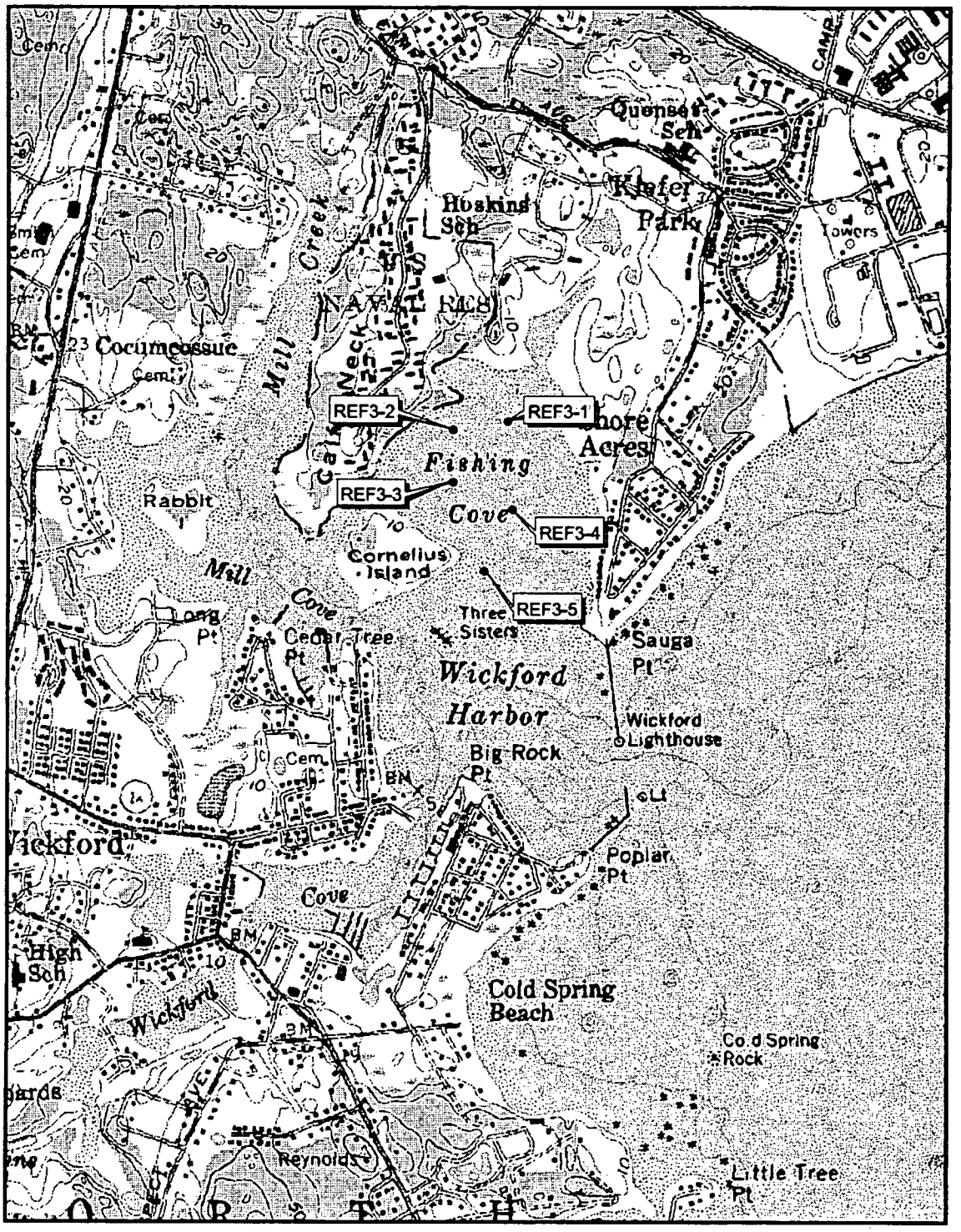
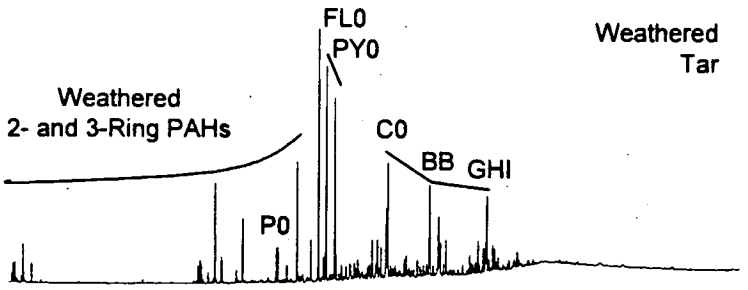
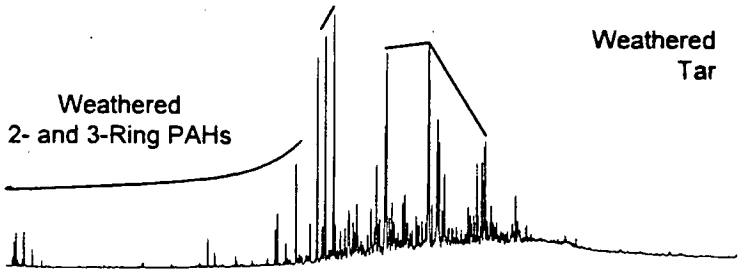


Figure 8. Selected High Resolution Hydrocarbon Fingerprints (GC/FID)

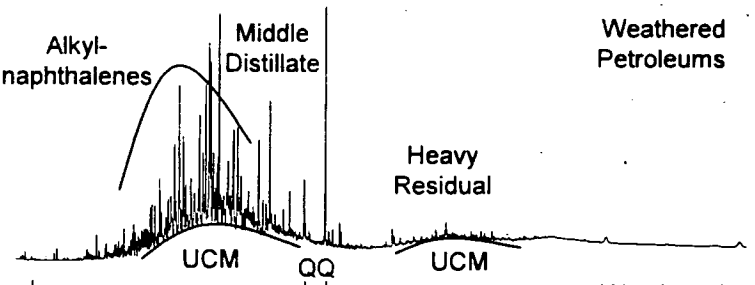
a. Source 1-1
Weathered tar is indicated by the dominant pattern of parent PAHs. Weathering likely caused the loss of 2- and 3-Ring PAHs. This material could also be pitch.



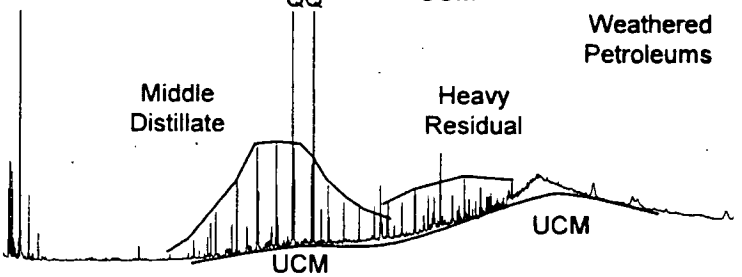
b. Source 1-2
Weathered tar is indicated by the dominant pattern of parent PAHs. Weathering likely caused the loss of 2- and 3-Ring PAHs. The lower abundance of FL0 relative to PY0 may be due to weathering or different type of source tar. This material could also be pitch.



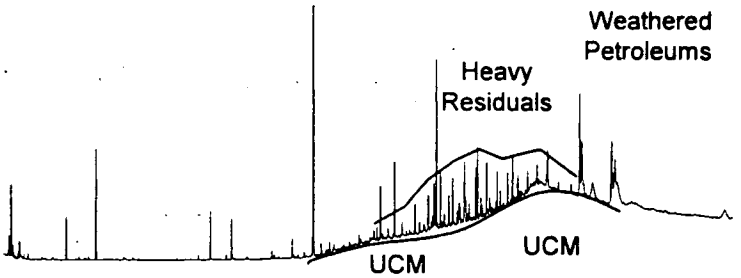
c. Source 2-2
Middle distillate UCM topped by alkylated naphthalenes. Low levels of heavy residual petroleum also evident as a late eluting UCM.



d. Source 3-1
Heavy middle distillate range UCM and normal alkanes show little evidence of biodegradation. Heavy residual range petroleum indicated by normal alkanes plus late eluting UCM may indicate the presence of lubricating oil and/ or asphalt.



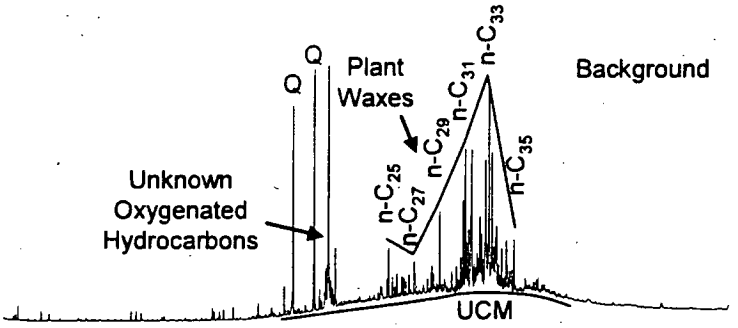
e. Source 4-1
Two late eluting UCMs topped by heavy normal alkanes may indicate the presence of lubricating oil and/ or asphalt.



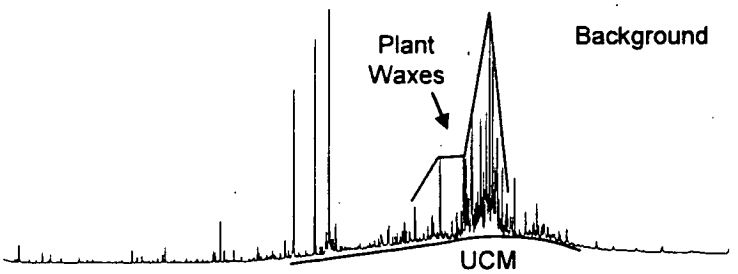
P0 phenanthrene, FL0 fluoranthene, PY0 pyrene, C0 chrysene, BB benzo(b)fluoranthene, and GHI benzo(ghi)perylene (Table 2)
Q quality control compounds include surrogates and internal standards
UCM unresolved complex mixture

Figure 8. Selected High Resolution Hydrocarbon Fingerprints (GC/FID) (cont.)

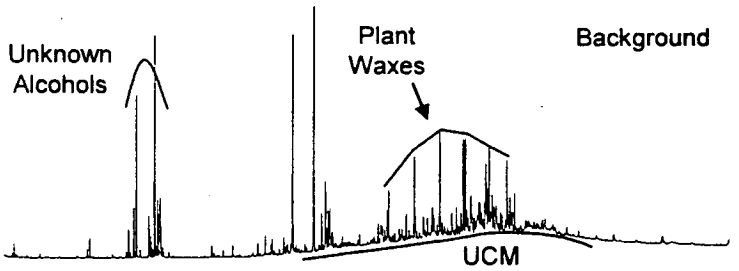
f. Reference 1-4
Late eluting UCM indicates residual range petroleum. Odd-carbon numbered normal alkanes (n-C_{25} to n-C_{35} identified with jagged line) indicate plant waxes. Unknown oxygenated hydrocarbons from unknown origin.



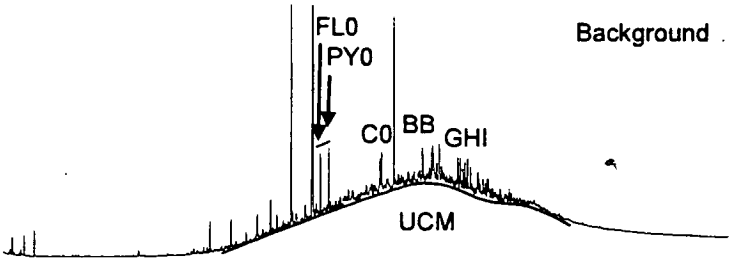
g. Reference 2-1
Very similar to Reference 1-4.



h. Reference 3-2
Residual range petroleum topped by plant waxes (odd-carbon numbered normal alkanes) of a different type than in Reference 1-4. Early eluting unknown alcohols from unknown origin.



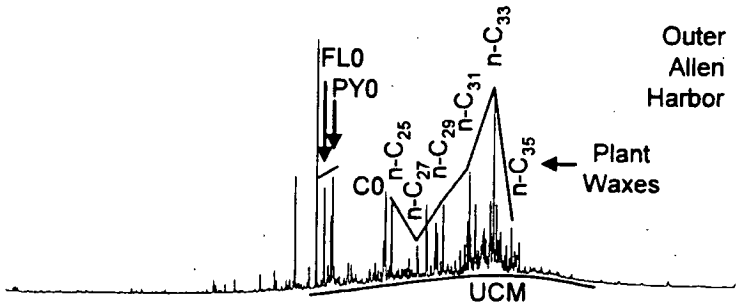
i. SRM
NIST standard reference material of sediment from an urban waterway. Late eluting UCMs indicate residual range petroleum. PAHs likely from runoff and atmospheric particles.



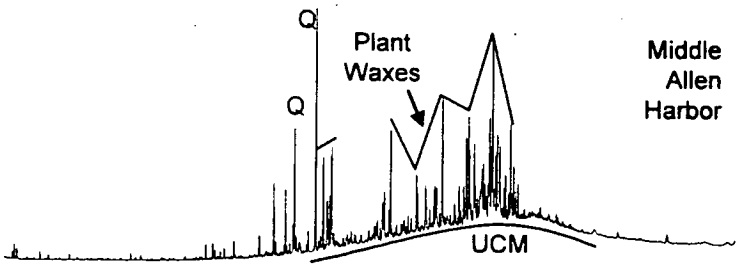
P0 phenanthrene, FL0 fluoranthene, PY0 pyrene, C0 chrysene, BB benzo(b)fluoranthene, and GHI benzo(ghi)perylene (Table 2)
Q quality control compounds include surrogates and internal standards
UCM unresolved complex mixture

Figure 8. Selected High Resolution Hydrocarbon Fingerprints (GC/FID) (cont.)

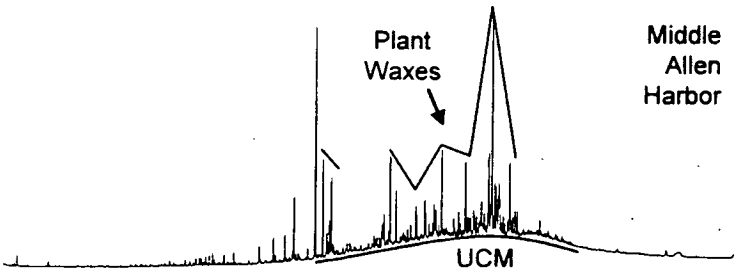
j. AH-03
Late eluting UCM indicates residual range petroleum. Odd-carbon numbered normal alkanes (n-C_{25} to n-C_{35} identified with jagged line) indicate plant waxes like Reference 1-4. Low level PAHs possibly from treated wood docking structures or background.



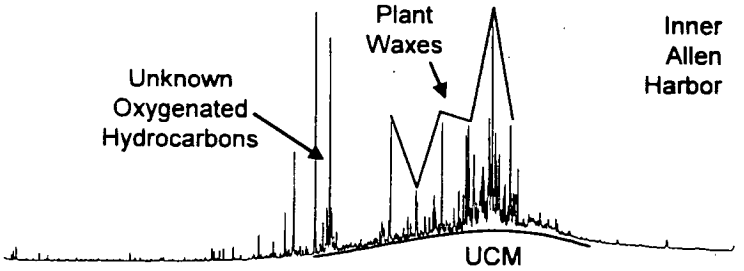
k. AH-26
Residual range petroleum (UCM) and PAHs were similar to AH-03. Plant wax pattern (odd-carbon numbered normal alkanes) slightly different possibly due to different combination of detrital vegetation.



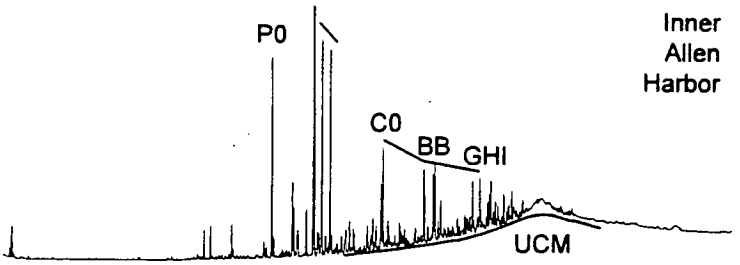
l. AH-29
Very similar to AH-26. The higher abundance of FL0 relative to PY0 may indicate a different type of urban runoff or trace level creosote.



m. AH-45
Residual range petroleum (UCM) and plant waxes (odd-carbon numbered normal alkanes) similar to AH-26 and AH-29. Unknown oxygenated hydrocarbons consistent with background (see Reference Samples 1-4 and 2-1).



n. AH-49
Heavily weathered tar plus residual range petroleum (UCM). The higher abundance of FL0 relative to PY0 may indicate a coal tar product, like creosote or paving tar.



P0 phenanthrene, FL0 fluoranthene, PY0 pyrene, C0 chrysene, BB benzo(b)fluoranthene, and GHI benzo(ghi)perylene (Table 2)
Q quality control compounds include surrogates and internal standards
UCM unresolved complex mixture

Figure 9. Relationships among Bulk Hydrocarbon Measurements.

a. EPAPAH v TOC.
The quantities of TOC and total EPAPAHs were basically independent in the study area. Therefore, TOC was not a leading indicator of tar or pyrogenic PAHs. Additionally, the levels of TOC and EPAPAHs in Allen Harbor were frequently higher than the Reference Areas. Therefore, the organic loading in Allen Harbor is greater than in the Reference Areas. Samples with low levels of TOC and high levels of EPAPAHs were leading candidates for detecting residues of combustion.

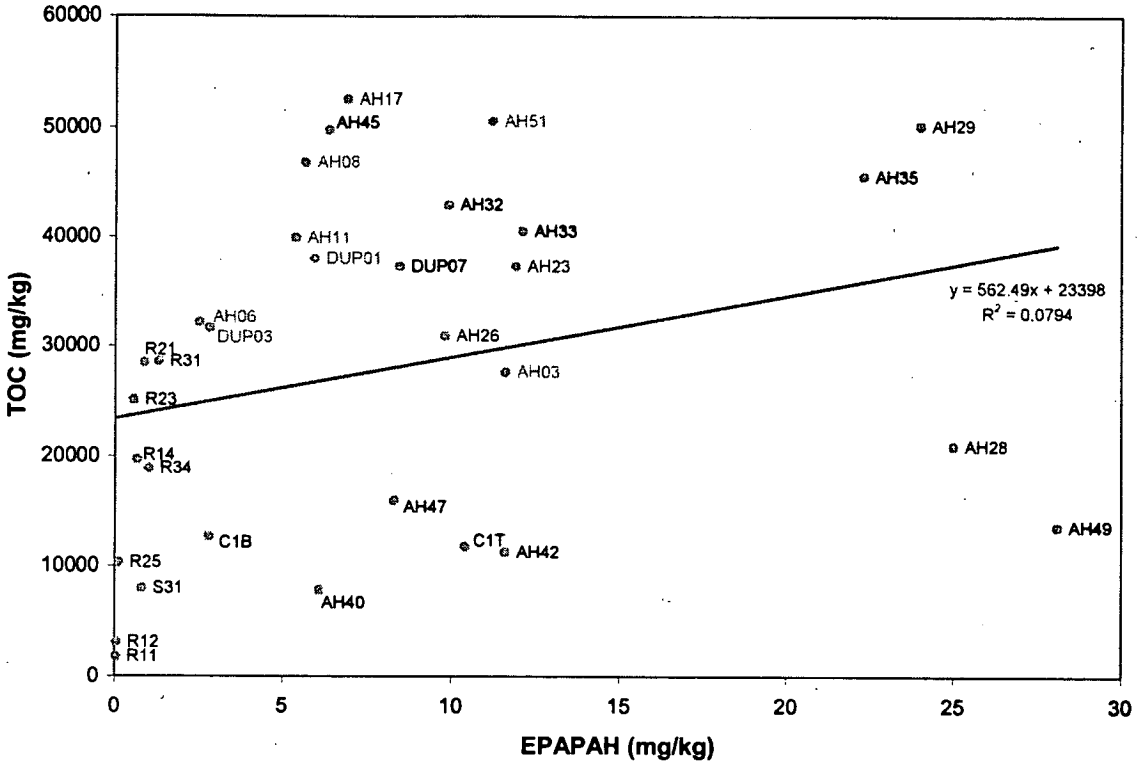
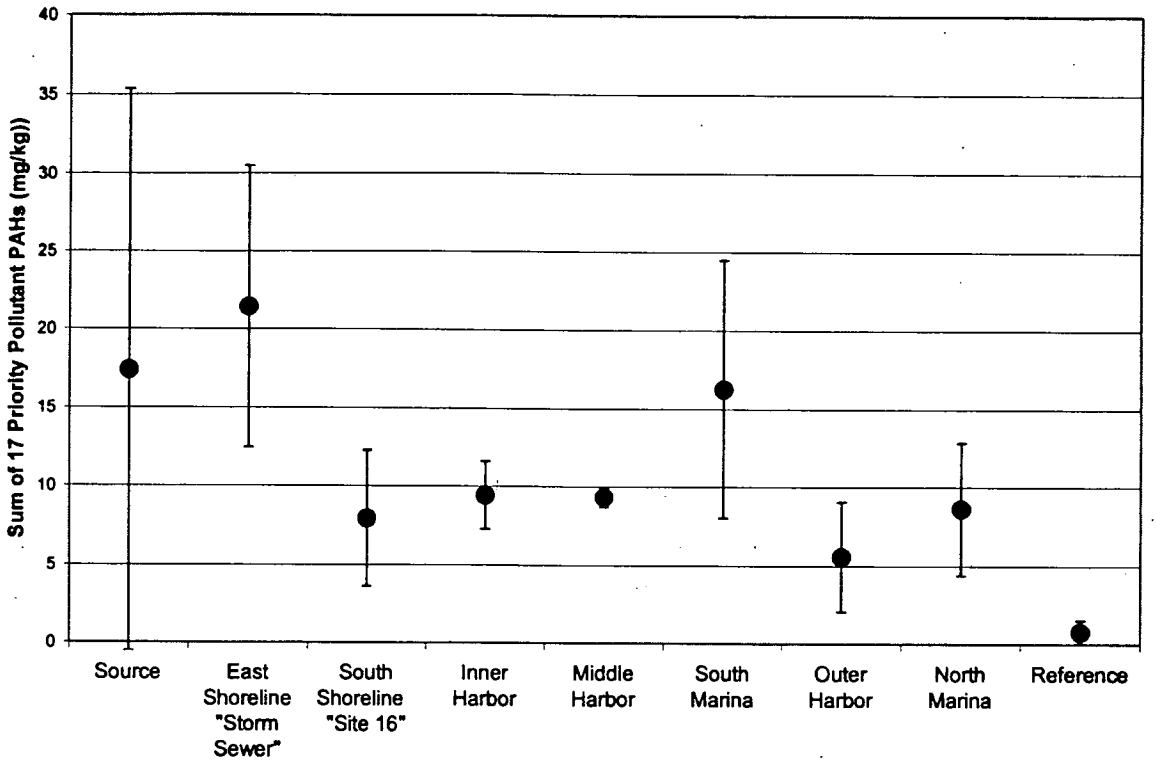


Figure 9. Relationships among Bulk Hydrocarbon Measurements (cont).

b. EPAPAH by Study Area Location.
The total EPAPAH concentrations in the Inner, Middle, and Outer Allen Harbor overlapped (error bars represent +/- 1 standard deviation around the mean). The highest PAH concentrations in sediment samples were observed near the storm sewer outfall and marina structures.



Client ID	Location	Client ID	Location	Client ID	Location
Source 1-1	Source	AH-32	Inner Allen Harbor	AH-17	South Marina
Source 1-2	Source	AH-33	Inner Allen Harbor	AH-23	South Marina
Source 2-1	Source	AH-33 (DUP-07)	Inner Allen Harbor	AH-29	South Marina
Source 2-2	Source	AH-42	Inner Allen Harbor	AH-35	South Marina
Source 3-1	Source	AH-45	Inner Allen Harbor	AH-03	North Marina
Source 3-2	Source	AH-47	Inner Allen Harbor	AH-08	North Marina
Source 4-1	Source	AH-26	Middle Allen Harbor	REF 1-1	Reference
AH-40	South Shoreline	AH-26	Middle Allen Harbor	REF 1-2	Reference
Core 1-Bot	South Shoreline	AH-06	Outer Harbor	REF 1-4	Reference
Core 1-Bot	South Shoreline	AH-06 (DUP-03)	Outer Harbor	REF 2-1	Reference
Core 1-Top	South Shoreline	AH-11	Outer Harbor	REF 2-3	Reference
AH-28	East Shoreline	AH-11 (DUP-01)	Outer Harbor	REF 2-5	Reference
AH-49	East Shoreline	AH-51	Outer Harbor	REF 3-1	Reference
				REF 3-2	Reference
				REF 3-4	Reference

Figure 9. Relationships among Bulk Hydrocarbon Measurements (cont).

c. EPAPAH v TPAH.
TPAHs include EPAPAHs plus numerous alkylated PAHs and dibenzothiophenes. Samples with elevated higher levels of TPAH relative to EPAPAH often contain elevated petroleum and samples with lower levels of TPAH contained combustion byproducts. A fair correlation existed between the concentrations of EPAPAH and TPAH. Using this general rule, samples S21 and S22 likely contained petroleum. The remaining samples were reasonably consistent with the variable loading of background PAHs.

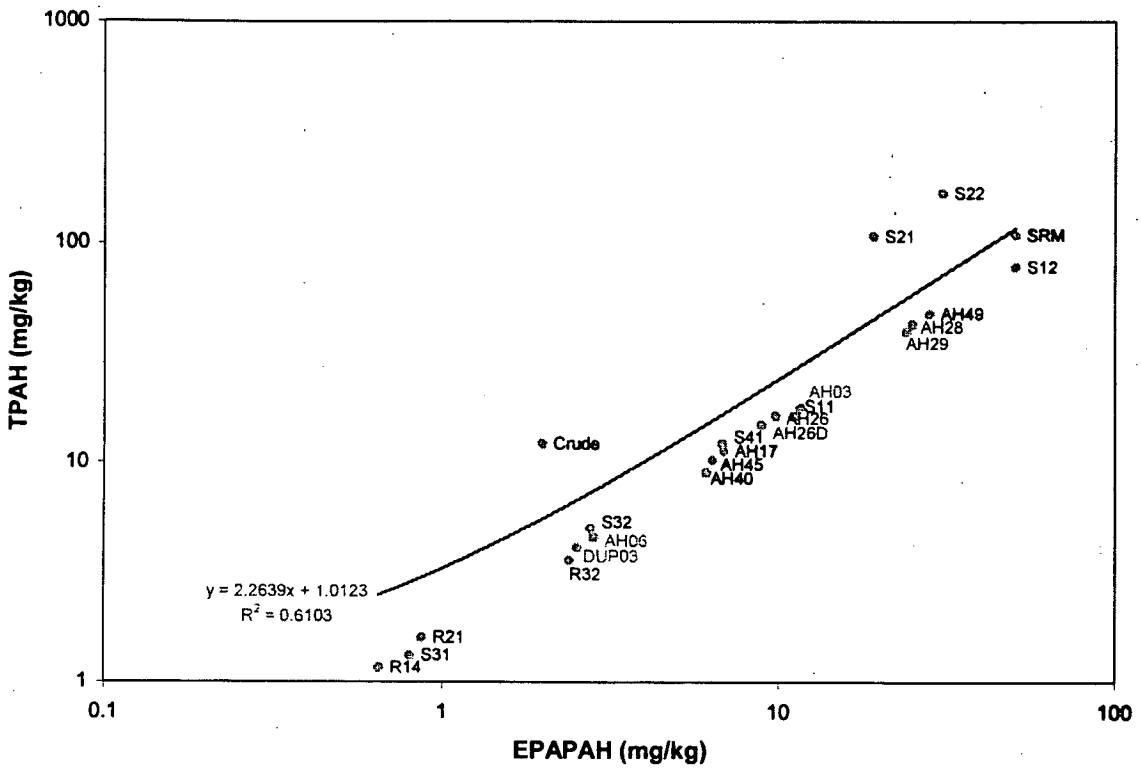


Figure 9. Relationships among Bulk Hydrocarbon Measurements (cont).

d. EPAPAH v Hopane.
Hopane is a conservative marker for heavy petroleum range material – high levels of hopane indicate high levels of residual range petroleum. Although a very poor correlation existed between EPAPAH and hopane, we observed relatively high levels of hopane in S41. Low relative concentrations of hopane were consistent with combustion byproducts and tar. Samples with low levels of hopane relative to EPAPAHs included S11, S12, and S21.

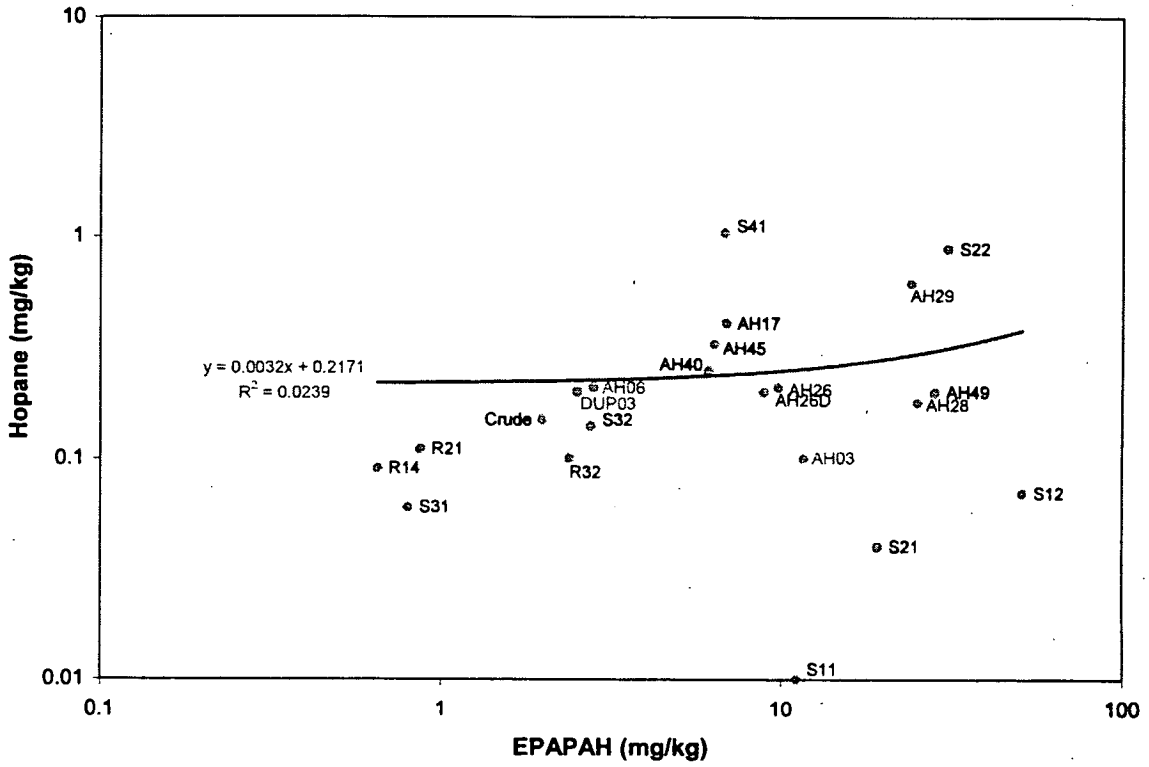


Figure 10. Selected PAH Histograms.

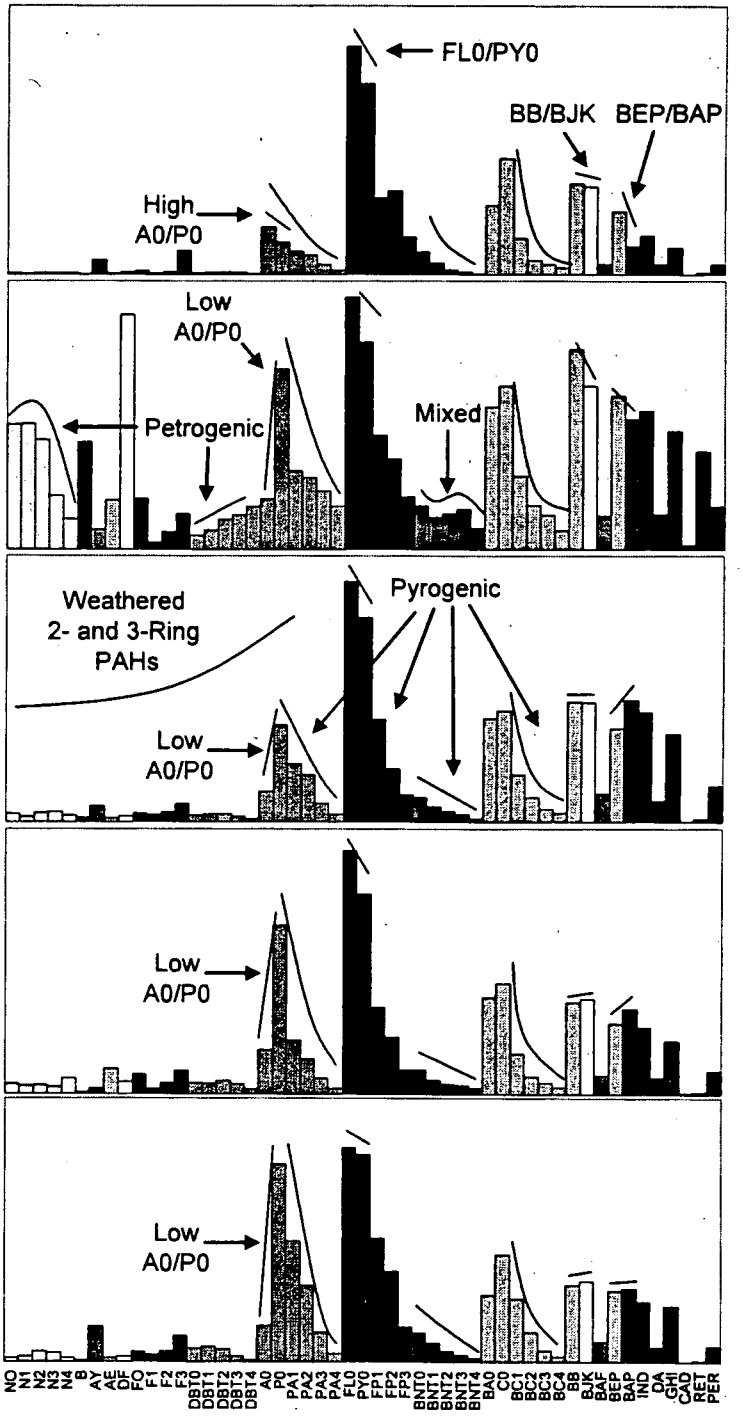
a. Source 1-1
Pyrogenic 3- to 6 Ring PAHs illustrated by downwardly sloping homologue pattern. This creosote was distinctive in its high A0 relative to P0. Heavy tar weathering was evident in the low levels of 2- to 3-Ring PAHs.

b. Source 3-2
The 4- to 6-Ring pyrogenic PAHs exhibited low levels of A0 relative to P0. Petrogenic naphthalenes, DBTs and NBTs identify middle and heavy petroleum.

c. REF 3-2
Pyrogenic 3- to 6-Ring PAHs differed from Source 1-1 in the low levels of A0 relative to P0. Other diagnostic ratios (BB/BJK and BEP/BAP) were also lower. Heavy weathering was evident in the low levels of P0 relative to PY0.

d. AH-40
Heavily weathered PAH pattern resembled REF 3-2.

e. AH-49
Heavily weathered PAH pattern similar to AH-40 an REF 3-2 with two slight differences. The levels of FL0 relative PY0 and BB relative to BJK were slightly lower.



PAH abbreviations on Table 3.

Figure 10. Selected PAH Histograms.

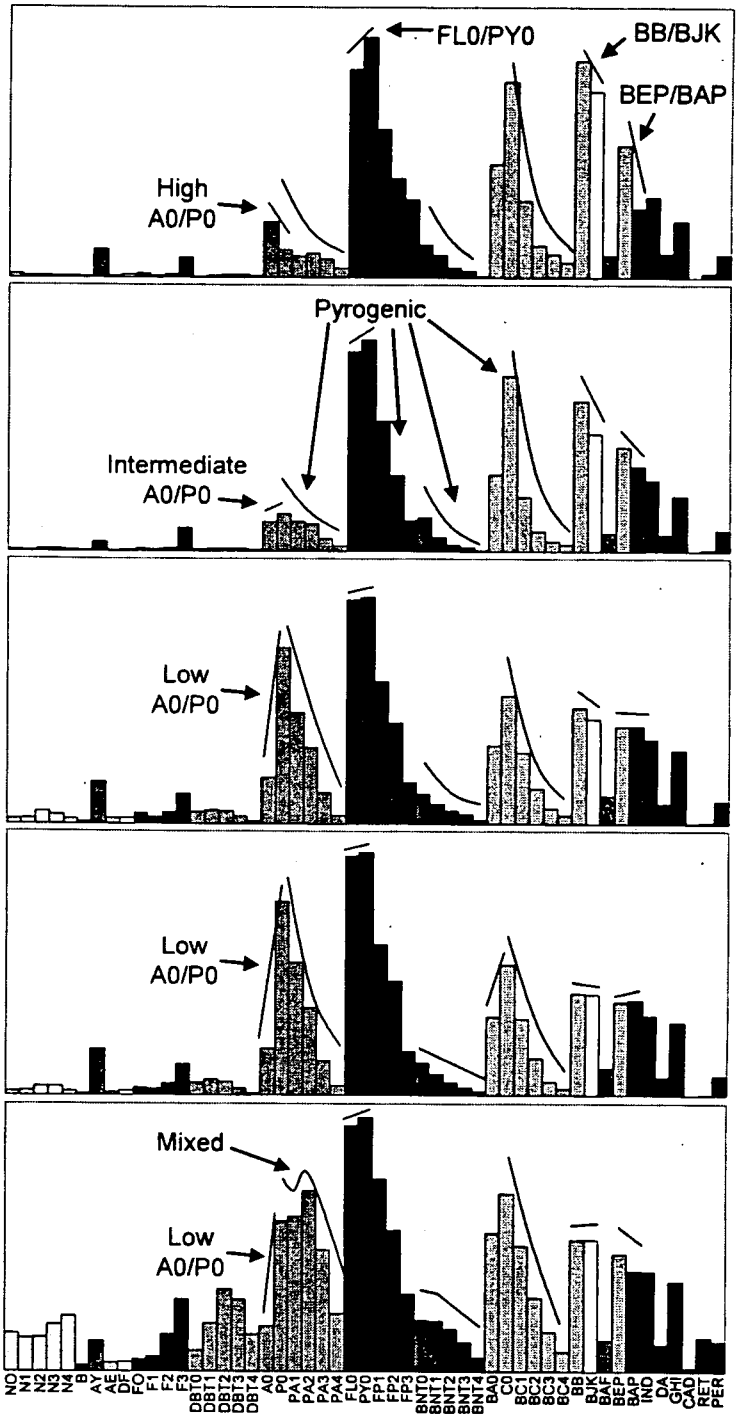
f. Source 1-2
Dominant pattern of 4- to 6-Ring parent PAHs likely caused heavy weathering of the 2- and 3-Ring PAHs. Like Source 1-1 (Figure 9a) the high levels of A0 relative to P0, were distinctive.

g. AH-03
Heavily weathered pyrogenic 3- to 6-Ring PAHs differed from Source 1-2 in the low levels of A0 relative to P0. Other diagnostic ratios (FL0/PY0, BB/BJK and BEP/BAP) exhibited other minor differences.

h. AH-26
Heavily weathered pyrogenic 3- to 6-Ring PAHs differed from AH-03 in the low levels of A0 relative to P0 and BEP relative to BAP. It also contained slightly higher levels of FL0/PY0.

i. AH-28
Resembled AH-26 with slightly lower levels of BEP relative to BAP.

j. SRM
Higher levels of alkylated PAHs indicated higher levels of petroleum.



PAH abbreviations on Table 3.

Figure 11. Principal Components Analysis of PAH Analytes in Field and Reference Samples.

a. Sample Groupings (PCA Scores Plot).
Middle distillates consistent with fire training activities plotted on the left. Heavier molecular weight petroleum materials (like asphalt and heavy petroleum) plotted in the upper right. Pyrogenic materials (like soot, weathered tar/creosote, and pitch) plotted in the lower right. Allen Harbor samples plotted in between the source samples representative of heavy petroleum and pyrogenic derived PAHs. Most Allen Harbor plotted near samples from Reference locations R3-2 and R4-1. One sample from the Outer Harbor (AH-03) plotted very close to the samples from the creosote impacted source area.

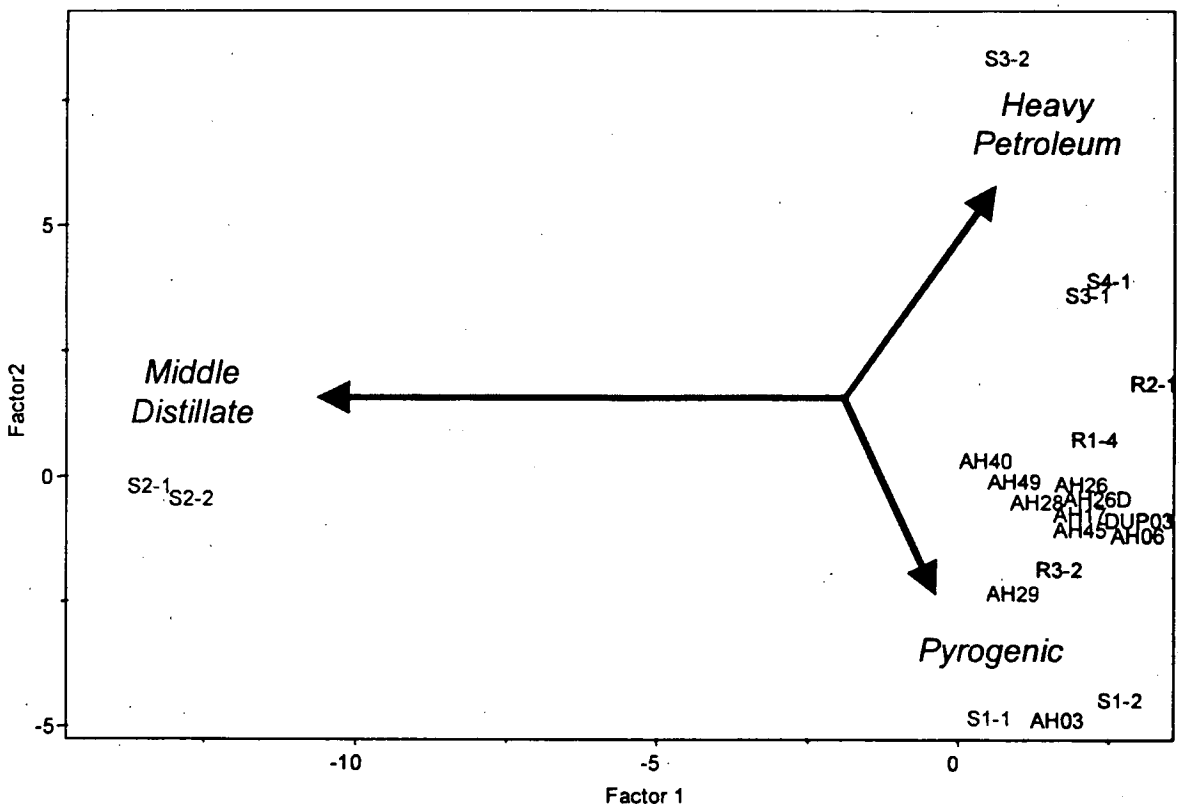


Figure 11. Principal Components Analysis of PAH Analytes in Field and Reference Samples (cont).

b. Sample Groupings (PCA Scores Plot Modified).
Plot 10a redrawn with reference samples of kerosene, diesel, crude oil, and urban sediment. These samples helped identify the origin of hydrocarbons in Source 2-1 and 2-2 as weathered kerosene. While Source 3-1 and 3-2 contained some diesel, the PAH composition of these samples was clearly influenced by the presence of pyrogenic PAHs. The middle distillates (kerosene and diesel) were not a dominant feature of the Allen Harbor samples.

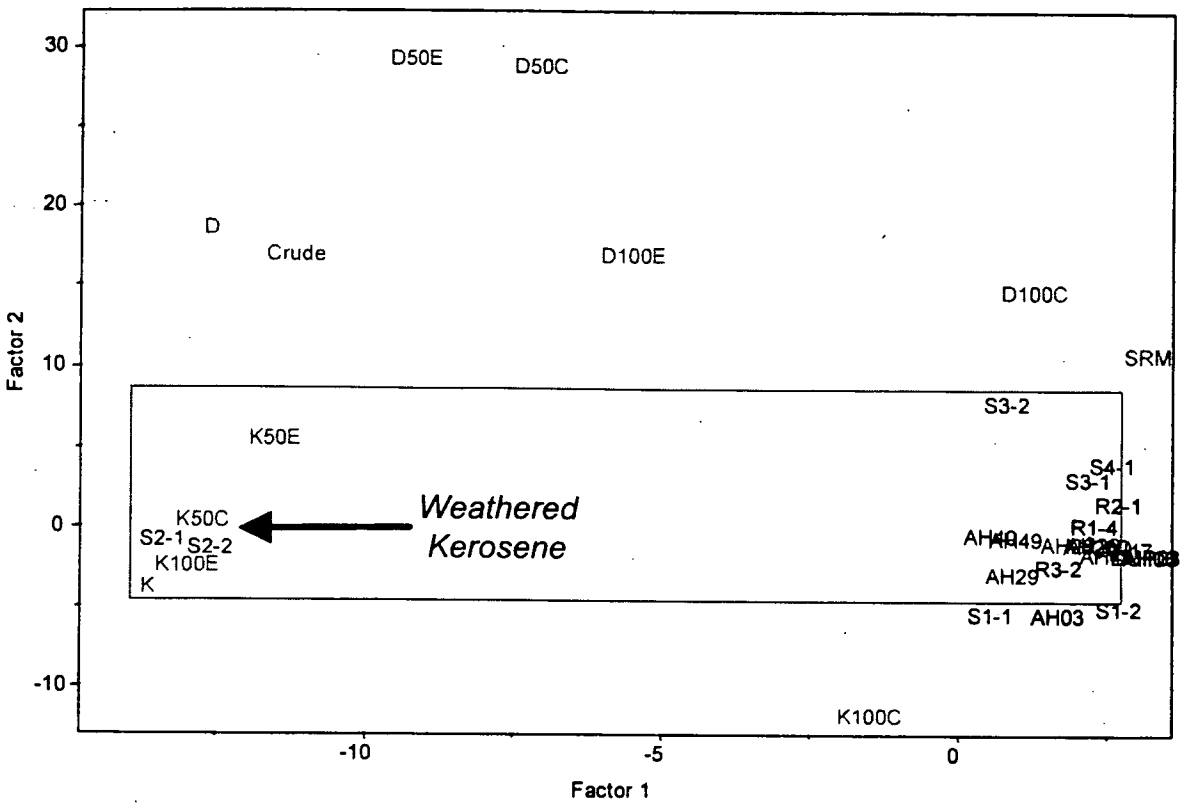


Figure 11. Principal Components Analysis of PAH Analytes in Field and Reference Samples (cont).

c. Analyte Groupings (PCA Loading Plot).
Principal components 1 (x-axis) and 2 (y-axis) contained 47% and 20% of the variability, respectively. The PAH concentration data illustrate the primary compositional features that differentiated the samples: light distillates enriched in 2-Ring petrogenic PAHs, heavy petroleum residuals enriched in 4-Ring petrogenic PAHs, and 3- to 6-Ring pyrogenic PAHs.

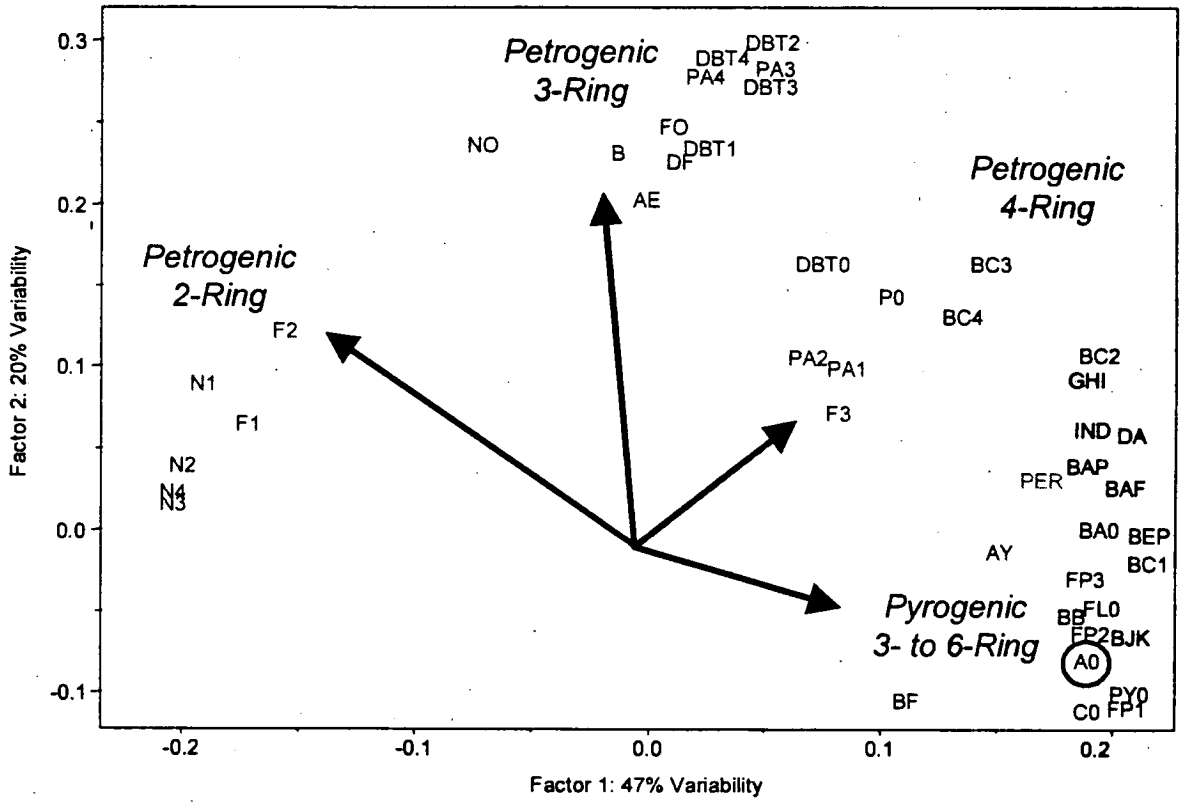


Figure 12. Saturated Hydrocarbon Fingerprints (GC/MS/SIM).

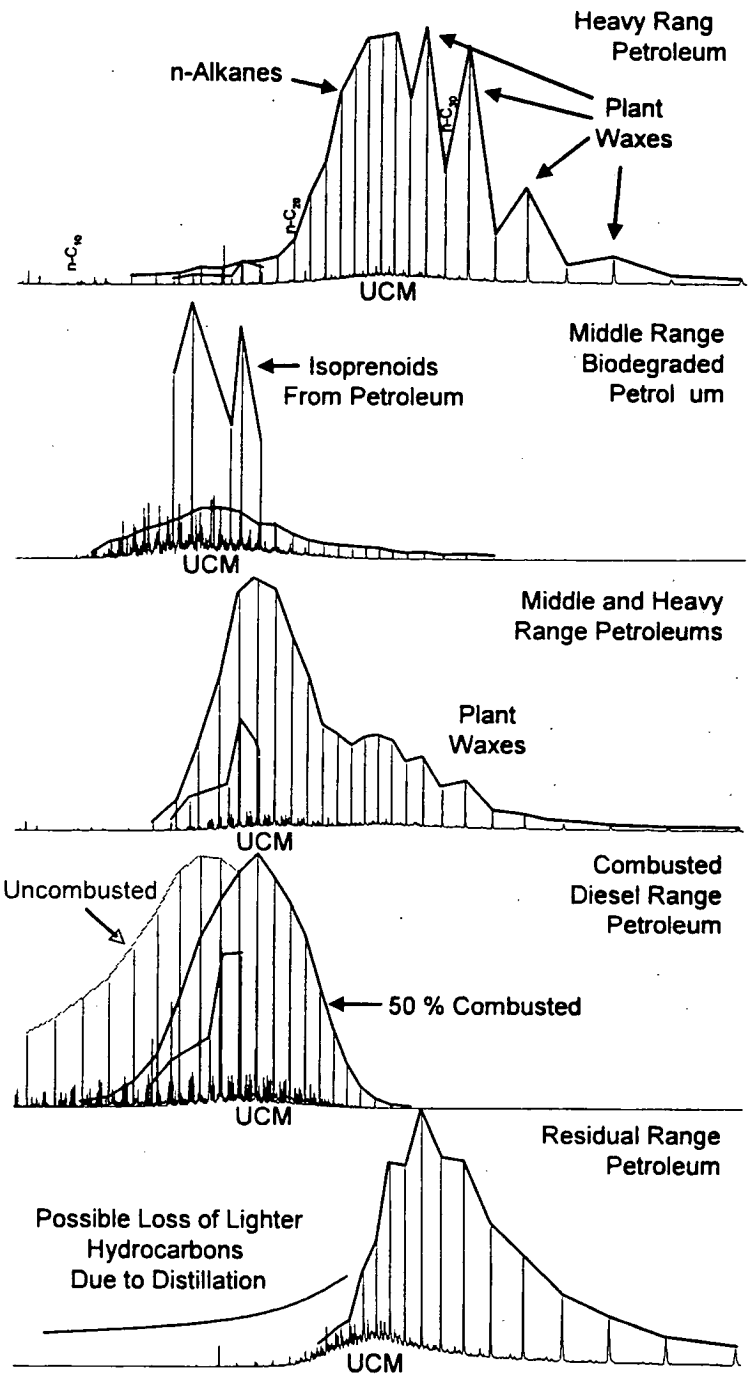
a. Source 1-2
Late eluting UCM topped by normal alkanes indicated heavy petroleum hydrocarbons. Enriched odd-numbered normal alkanes (n-C_{29} to n-C_{35}) compared to adjacent even-numbered normal alkanes indicated plant waxes.

b. Source 2-1
Light middle distillate with high levels of isoprenoids relative to normal alkanes that indicated biodegradation. Normal alkanes eluting after n-C_{20} were consistent with the heavy petroleum in Source 1-2.

c. Source 3-1
Altered middle distillate evident in the UCM and normal alkanes eluting between n-C_{13} to n-C_{25}. This pattern compared well with combusted diesel (Fig 12d). Later eluting hydrocarbons were associated with residual range petroleum and plant waxes.

d. Combusted Diesel
During combustion, the lighter hydrocarbons oxidize leaving a steeply sloped front end.

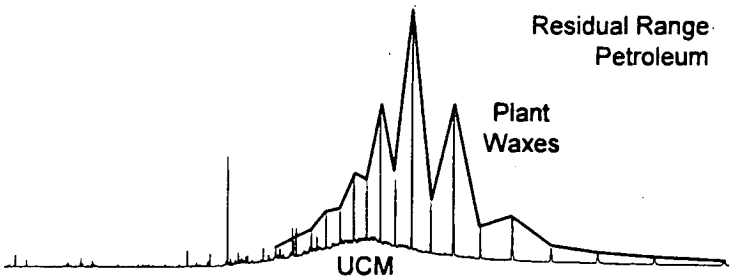
e. Source 4-1
Late eluting UCM and normal alkanes (n-C_{21} to n-C_{37}) were consistent with asphalt generated from distillation residuals. Low levels of plant material observed in the slight enrichment of n-C_{23} to n-C_{31} odd-carbon numbered normal alkanes.



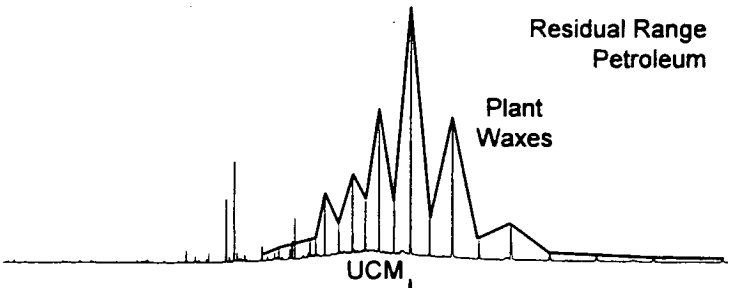
UCM unresolved complex mixture

Figure 12. Saturated Hydrocarbon Fingerprints (GC/MS/SIM) (continued).

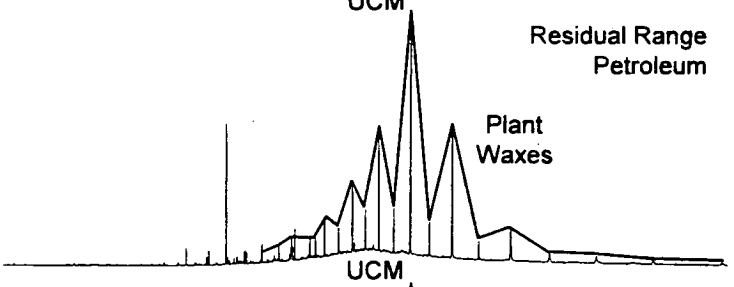
f. REF 1-4
Late eluting hydrocarbons (n-C_{19} to n-C_{37}) consistent with degraded petroleum or asphalt. Enriched odd-numbered normal alkanes (n-C_{29} to n-C_{35}) indicated plant waxes.



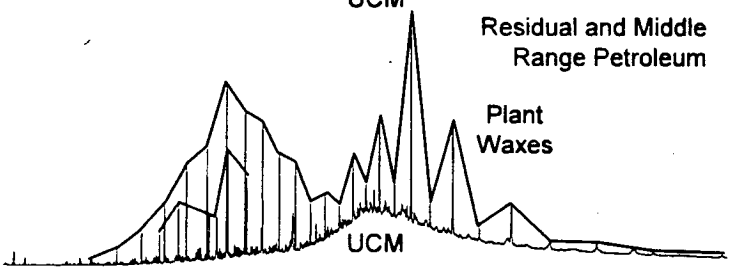
g. REF 3-2
Very similar to REF 1-4. REF 2-1 (not shown) is the same.



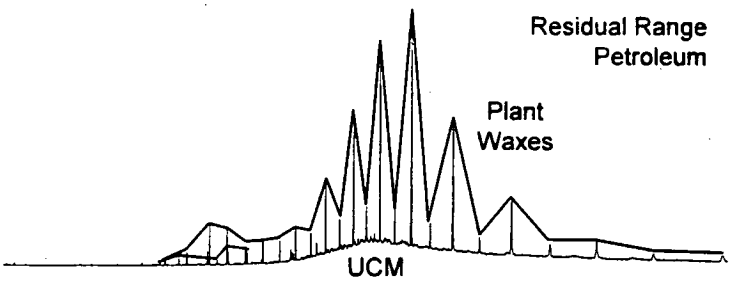
h. AH-03
Very similar to REF samples.



i. AH-40
Middle distillate range hydrocarbons eluting from (n-C_{11} to n-C_{25}). This material was consistent middle distillates, like Source 3-1 or marine fuels. Residual hydrocarbon range similar to REF samples.



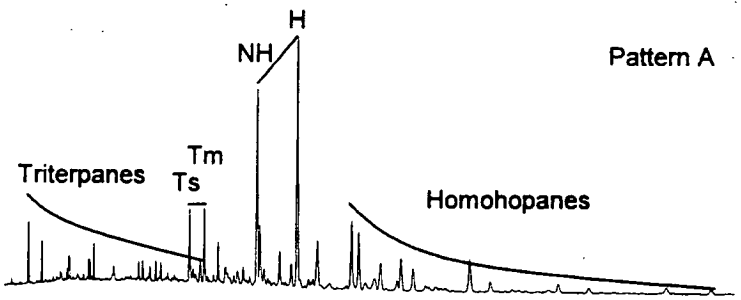
j. AH-49
Trace levels of middle distillate consistent with diesel range hydrocarbons. Residual hydrocarbon range similar to REF samples.



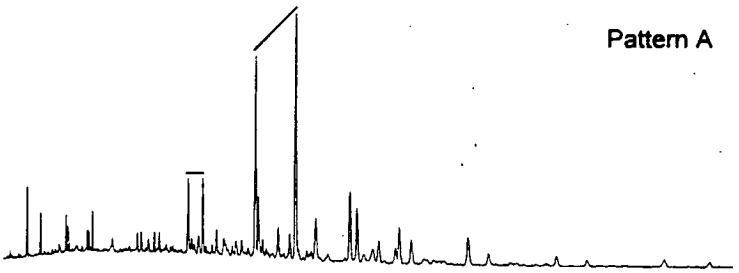
UCM unresolved complex mixture

Figure 13. Triterpane Biomarker Patterns (GC/MS/SIM).

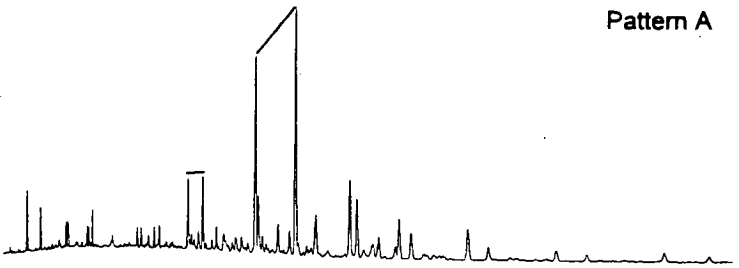
a. REF 3-2
This pattern was observed in all but two Allen Harbor Samples. These samples exhibited Ts ~ Tm, NH < H, and Triterpanes < Tm.



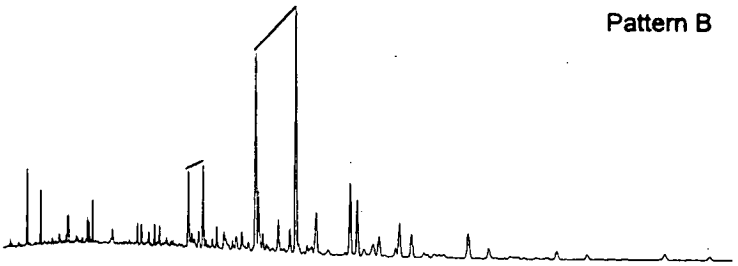
b. AH-03
As described above, Patten A appeared in most of the Allen Harbor samples.



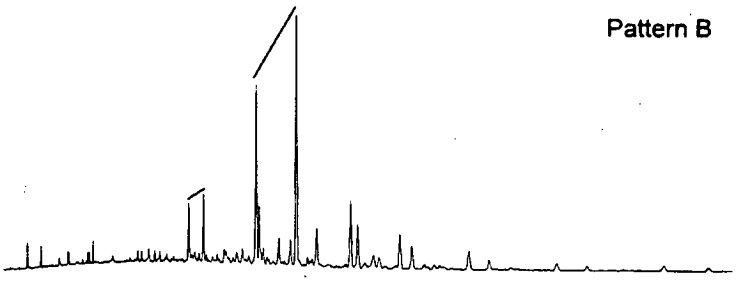
c. AH-45
As described above, Patten A appeared in most of the Allen Harbor samples.



d. REF 1-4
This pattern was observed in reference areas 1 and 2 plus source areas 1,3, and 4. These samples had Ts < Tm and NH < H.



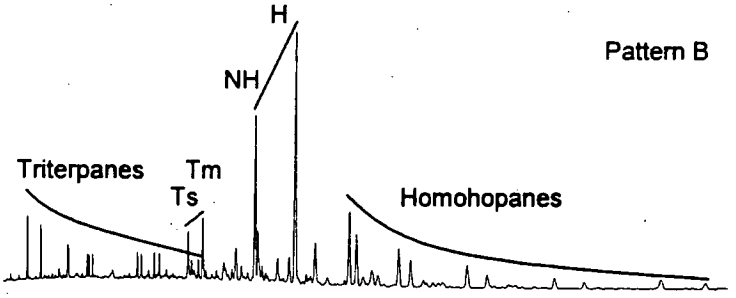
e. Source 1-2
Similar origin to petroleum in REF 1-4.



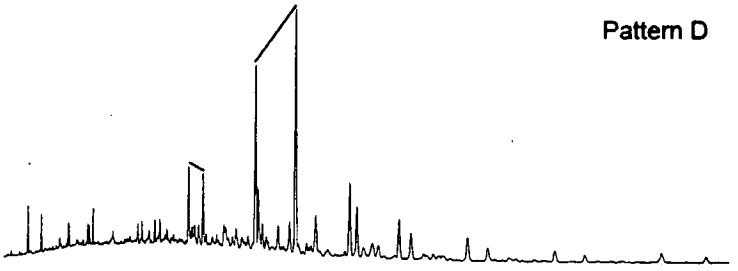
Ts 18α(H)-22,29,30-Trisnorneohopane
Tm 17α(H)-22,29,30-Trisnorhopane
NH 30-Norhopane
H Hopane

Figure 13. Triterpane Biomarker Patterns (GC/MS/SIM) (continued).

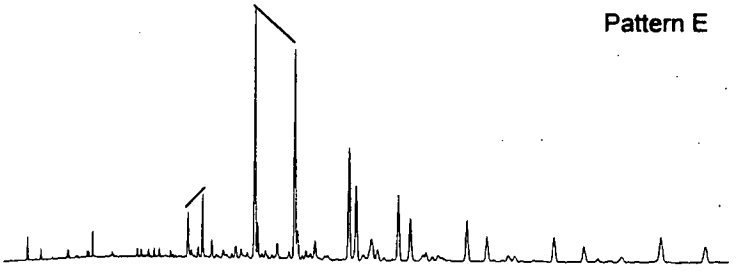
f. Source 3-2
Similar origin to petroleum in REF 1-4.



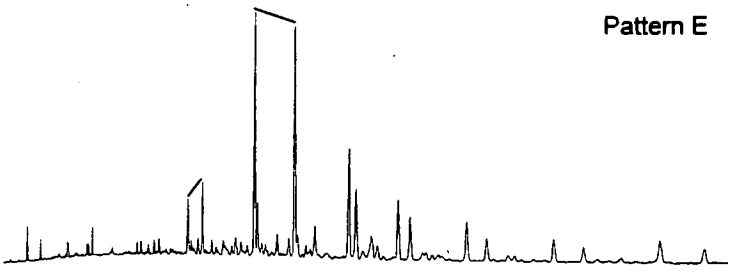
g. AH-40
This pattern was unique and characterized by the following relative abundances: Ts < Tm and NH < H.



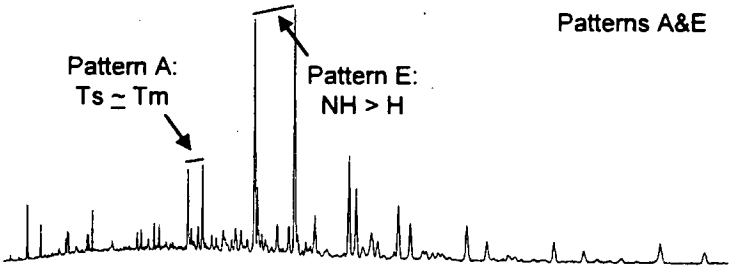
h. Source 4-1
This pattern was characterized by the following relative abundances: Ts < Tm and NH > H.



i. AH-49
This pattern was localized to the eastern shore of Allen Harbor proximal to Allen's Harbor Road. Pattern E was characterized by the following relative abundances: Ts < Tm and NH > H.



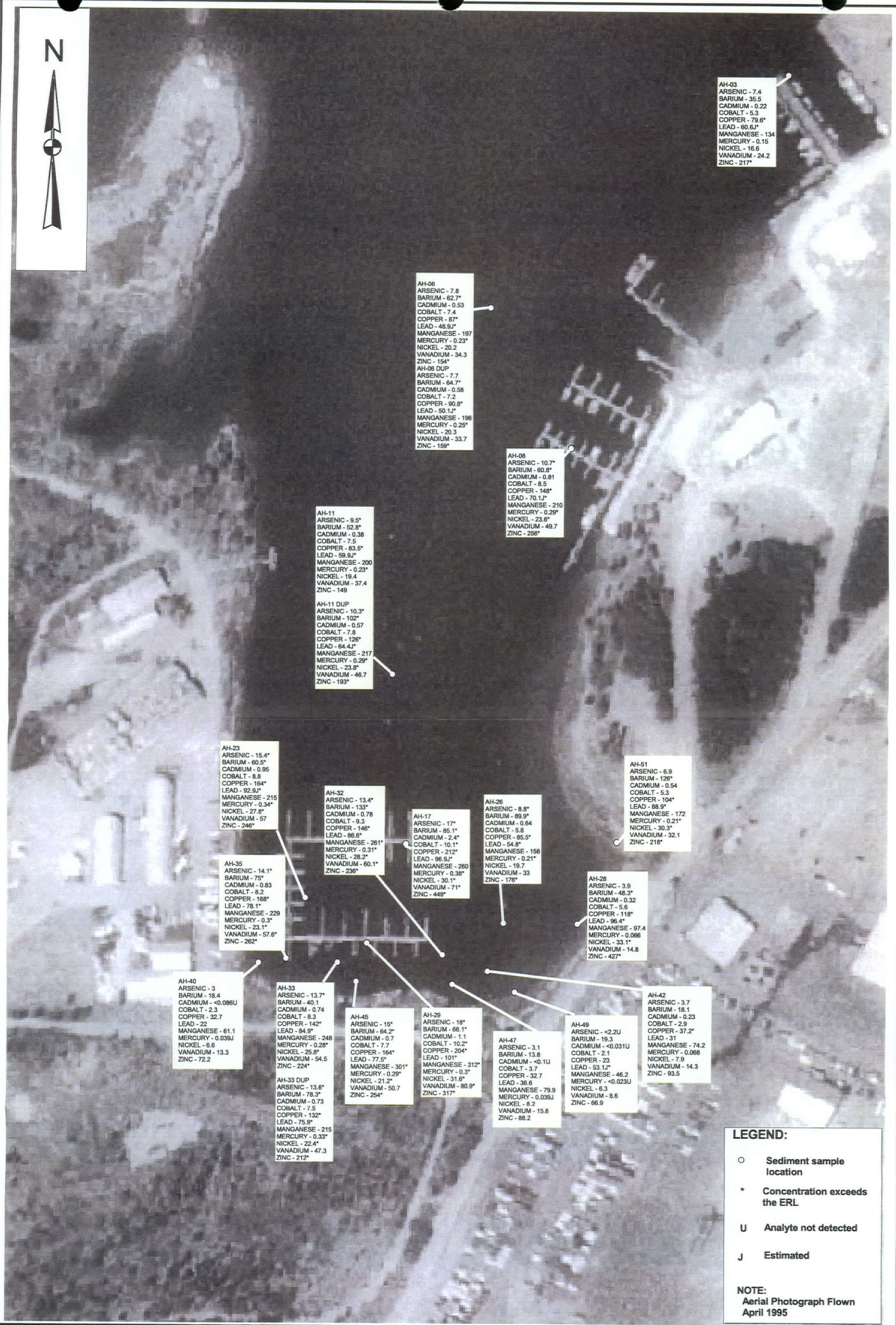
j. AH-28
This fingerprint exhibited mixed features of Patterns A and E with approximately equal abundances of Ts and Tm plus intermediate relative abundances of NH and H.



Ts 18α(H)-22,29,30-Trisnorneohopane
Tm 17α(H)-22,29,30-Trisnorhopane
NH 30-Norhopane
H Hopane

Appendix C

2004 Allen Harbor Sediment Data Concentration "Tag" Maps



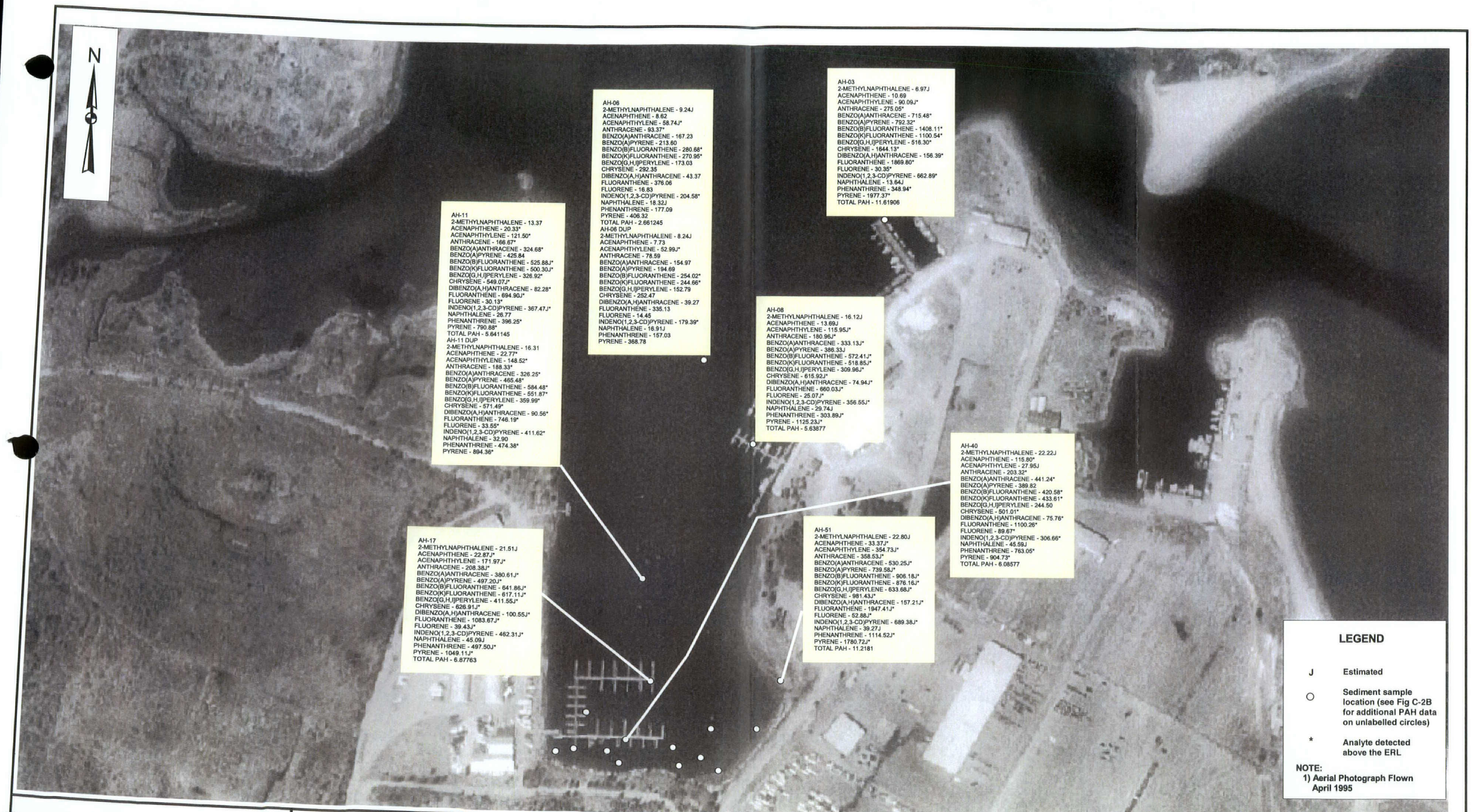
EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
IR Program Site 16
Phase 2 Screening Level
Ecological Risk Assessment
Former NCBC Davisville Facility
North Kingstown, Rhode Island

METALS (MG/KG) DETECTED ABOVE THE ERL IN SEDIMENT SAMPLES MARCH 2004

FIGURE C-1



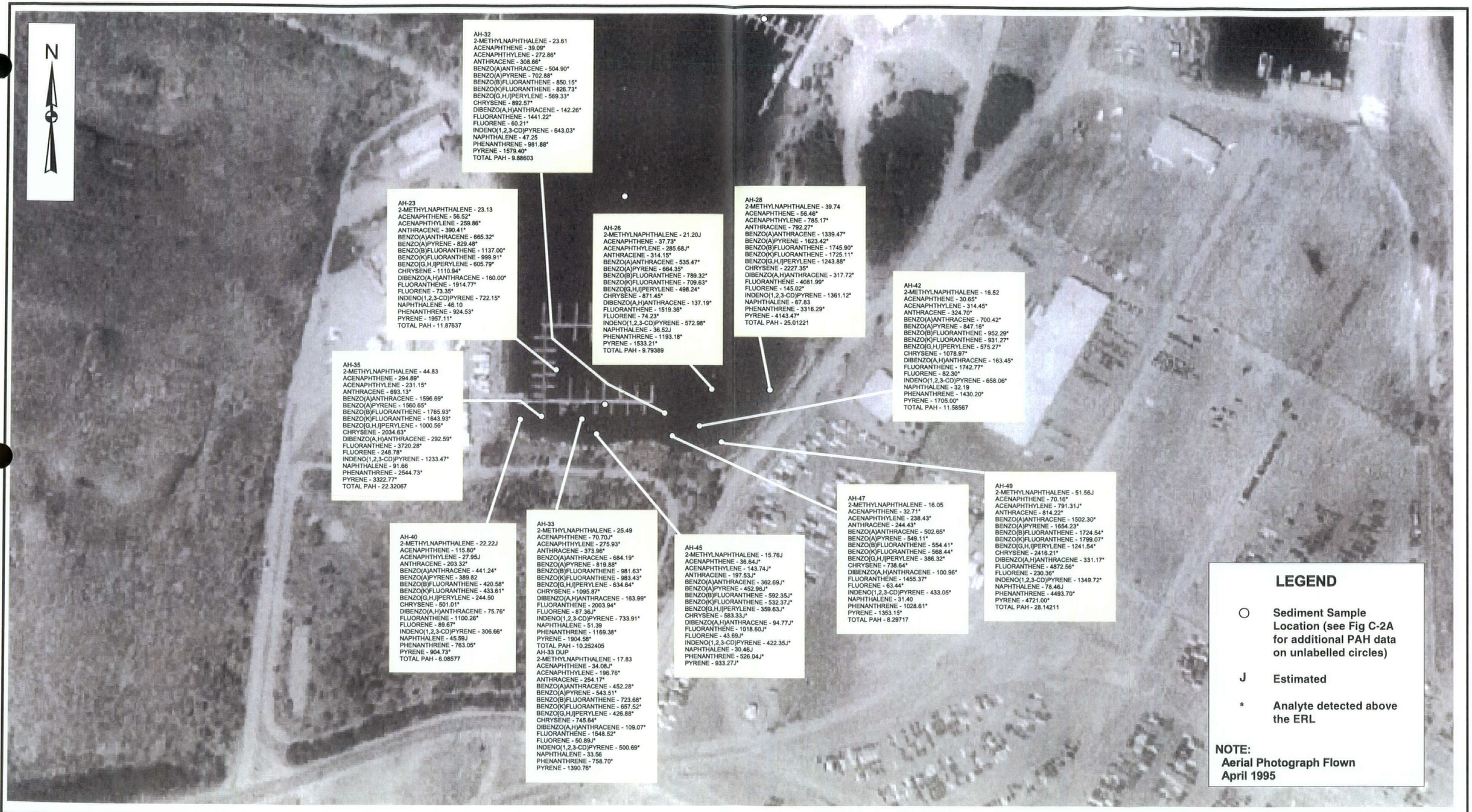
EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 400 Feet

EFANE
IR Program Site 16
Phase 2 Screening Level Ecological Risk Assessment
Former NCBC Davisville Facility
North Kingstown, Rhode Island

POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)
DETECTED ABOVE THE ERL
IN SEDIMENT SAMPLES
MARCH 2004

FIGURE C-2A



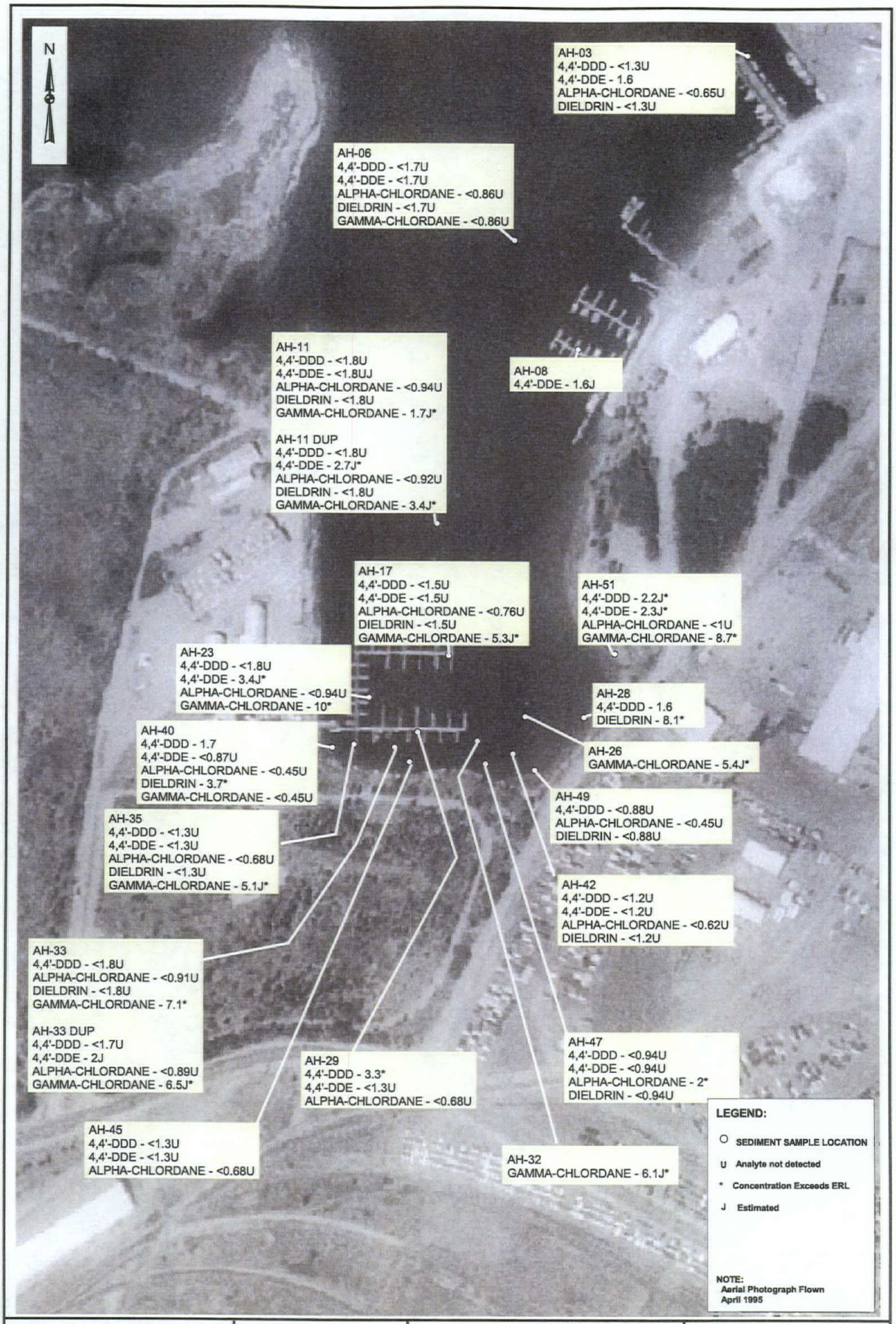
EA ENGINEERING, SCIENCE, AND TECHNOLOGY

100 0 100 200 Feet

EFANE
IR Program Site 16
Phase 2 Screening Level Ecological Risk Assessment
Former NCBC Davisville Facility
North Kingstown, Rhode Island

POLYCYCLIC AROMATIC HYDROCARBONS (ug/kg) DETECTED ABOVE THE ERL IN SEDIMENT SAMPLES MARCH 2004

FIGURE C-2E



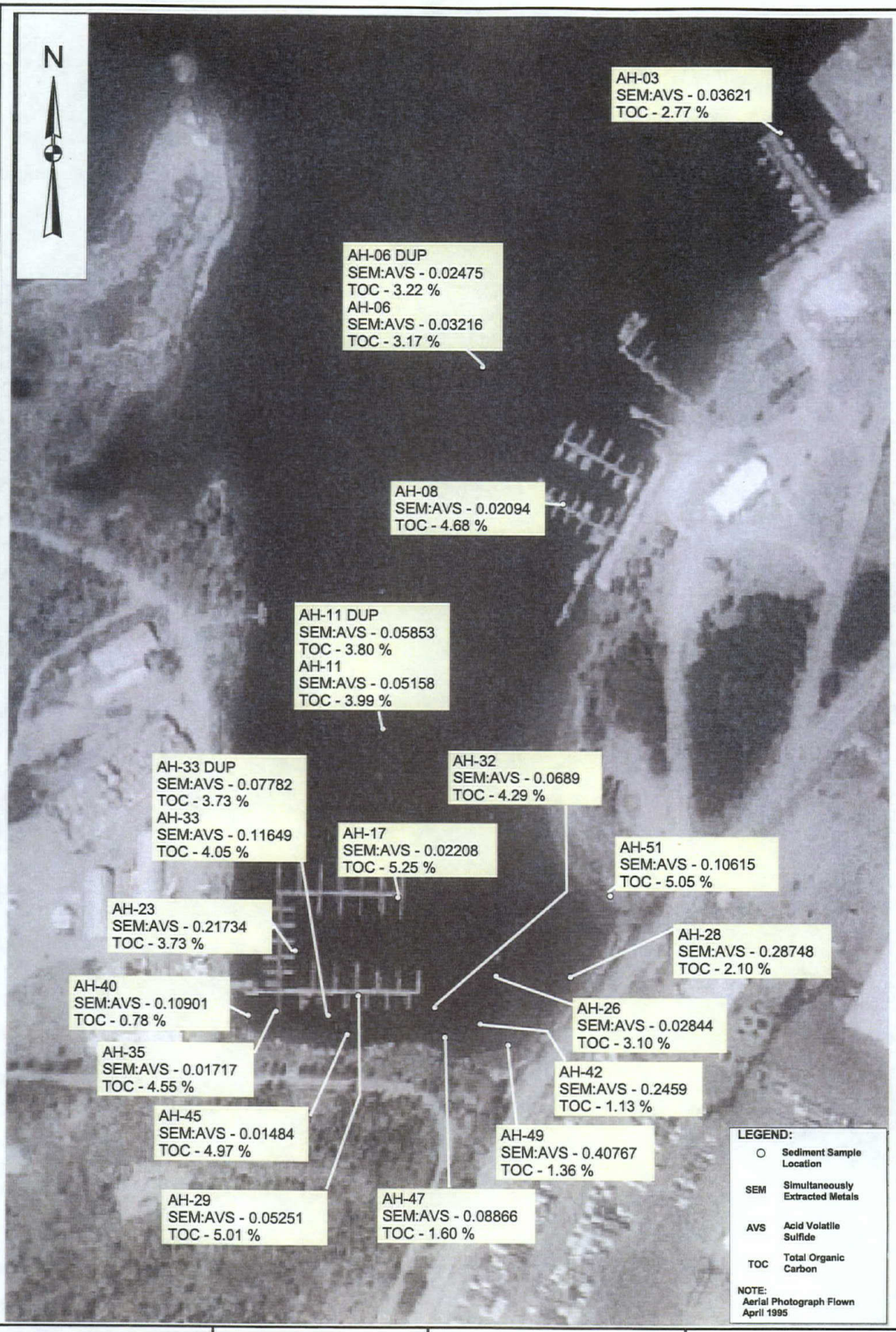
EA ENGINEERING, SCIENCE, AND TECHNOLOGY

300 0 300 Feet

EFANE
IR PROGRAM SITE 16
PHASE 2 SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT
FORMER NCBC DAVISVILLE FACILITY
NORTH KINGSTOWN, RHODE ISLAND

PESTICIDES (ug/kg) DETECTED
ABOVE THE ERL IN SEDIMENT SAMPLES
MARCH 2004

FIGURE C-3



EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
IR PROGRAM SITE 16
PHASE 2 SCREENING LEVEL
ECOLOGICAL RISK ASSESSMENT
FORMER NCBC DAVISVILLE FACILITY
NORTH KINGSTOWN, RHODE ISLAND

RATIO OF SEM:AVS AND TOC (%) IN SEDIMENT SAMPLES
MARCH 2004

FIGURE C-4

Appendix D

2001 Allen Harbor Sediment Data

TABLE D-1 VOLATILE ORGANIC COMPOUNDS IN SEDIMENT, MARCH 2001

Chemical Name	Unit	Location ID	OPSED16-01	SED16-01	SED16-02
		Sample Date	3/22/2001	3/21/2001	3/26/2001
		Screening Level			
1,1,1-TRICHLOROETHANE	mg/kg	0.33	0.003 UJ	0.00425 U	0.01 U
1,1,2,2-TETRACHLOROETHANE	mg/kg	8.3	0.003 UJ	0.00425 U	0.01 U
1,1,2-TRICHLOROETHANE	mg/kg	6.0	0.003 UJ	0.00425 U	0.01 U
1,1-DICHLOROETHANE	mg/kg	4.8	0.003 UJ	0.00425 U	0.01 U
1,1-DICHLOROETHENE	mg/kg		0.003 UJ	0.00425 U	0.01 U
1,2-DICHLOROETHANE	mg/kg	4.8	0.003 UJ	0.00425 U	0.01 U
1,2-DICHLOROPROPANE	mg/kg		0.003 UJ	0.00425 U	0.01 U
2-BUTANONE	mg/kg	2.9	0.0065 UJ	0.0085 UJ	0.0205 UJ
2-HEXANONE	mg/kg	4.8	0.0065 UJ	0.0085 U	0.0205 U
4-METHYL-2-PENTANONE	mg/kg	4.8	0.0065 UJ	0.0085 U	0.0205 U
ACETONE	mg/kg	2.3	0.089 J	0.057 J	0.12 J
BENZENE	mg/kg	0.29	0.003 UJ	0.00425 U	0.01 U
BROMODICHLOROMETHANE	mg/kg	10	0.003 UJ	0.00425 U	0.01 U
BROMOFORM	mg/kg	12	0.003 UJ	0.00425 U	0.01 U
BROMOMETHANE	mg/kg		0.003 UJ	0.00425 U	0.01 U
CARBON DISULFIDE	mg/kg	0.22	0.003 UJ	0.0275 J	0.012
CARBON TETRACHLORIDE	mg/kg	7.8	0.003 UJ	0.00425 U	0.01 U
CHLOROBENZENE	mg/kg	7.2	0.003 UJ	0.00425 U	0.01 U
CHLOROETHANE	mg/kg	2.9	0.003 UJ	0.00425 U	0.01 U
CHLOROFORM	mg/kg	5.7	0.003 UJ	0.00425 U	0.01 U
CHLOROMETHANE	mg/kg	2.1	0.003 UJ	0.00425 U	0.01 U
CIS-1,2-DICHLOROETHENE	mg/kg	3.7	0.003 UJ	0.00425 U	0.01 U
CIS-1,3-DICHLOROPROPENE	mg/kg		0.003 UJ	0.00425 U	0.01 U
DIBROMOCHLOROMETHANE	mg/kg		0.003 UJ	0.00425 U	0.01 U
ETHYLBENZENE	mg/kg	9.7	0.003 UJ	0.00425 U	0.01 U
M,P-XYLENES	mg/kg	2.6	0.003 UJ	0.00425 U	0.01 U
METHYLENE CHLORIDE	mg/kg	9.1	0.003 UJ	0.00425 UJ / U	0.01 U
O-XYLENE	mg/kg	9.2	0.003 UJ	0.00425 U	0.01 U
STYRENE	mg/kg	8.2	0.003 UJ	0.00425 U	0.01 U
TETRACHLOROETHENE	mg/kg	4.8	0.003 UJ	0.00425 U	0.01 U
TOLUENE	mg/kg	4.8	0.003 UJ	0.00425 U	0.01 U
TOTAL 1,2-DICHLOROETHENE	mg/kg		0.003 UJ	0.00425 U	0.01 U
TRANS-1,2-DICHLOROETHENE	mg/kg	6.5	0.003 UJ	0.00425 U	0.01 U
TRANS-1,3-DICHLOROPROPENE	mg/kg		0.003 UJ	0.00425 U	0.01 U

Note: mg/kg = milligrams per kilogram
J = Estimated
U = Undetected

TABLE D-2 POLYCYCLIC AROMATIC HYDROCARBONS IN SEDIMENT, MARCH 2001

Chemical Name	Unit	Location ID	OPSED16-01	SED16-01	SED16-02
		Sample Date	3/22/2001	3/21/2001	3/26/2001
		Screening Level			
2-METHYLNAPHTHALENE	mg/kg	0.07	0.24 UJ	0.31 UJ / U	0.039 U
ACENAPHTHENE	mg/kg	0.16	0.24 U	0.905 J / _	0.039 U
ACENAPHTHYLENE	mg/kg	0.044	0.11 J	0.31 UJ / U	0.039 U
ANTHRACENE	mg/kg	0.085	0.24 UJ	0.26 UJ / _	0.039 U
BENZO(A)ANTHRACENE	mg/kg	0.260	0.2	0.13 _ / J	0.02
BENZO(A)PYRENE	mg/kg	0.430	0.3	0.31 U	0.039 U
BENZO(B)FLUORANTHENE	mg/kg	0.240	0.48 J	0.25 U / J	0.041
BENZO(K)FLUORANTHENE	mg/kg	0.240	0.34	0.31 U	0.039 U
BENZO[G,H,I]PERYLENE	mg/kg	0.290	0.38	0.31 U	0.023
CHRYSENE	mg/kg	0.380	0.45	0.16 _ / J	0.034
DIBENZO(A,H)ANTHRACENE	mg/kg	0.063	0.24 U	0.31 U	0.039 UJ
FLUORANTHENE	mg/kg	0.6	1.7 J*	1.8 _ / J*	0.064*
FLUORENE	mg/kg	0.019	0.24 UJ	0.58 J*	0.039 U
INDENO(1,2,3-CD)PYRENE	mg/kg	0.078	0.25*	0.31 U	0.039 UJ
NAPHTHALENE	mg/kg	0.160	0.24 UJ	0.31 UJ / U	0.039 U
PHENANTHRENE	mg/kg	0.240	0.79 J*	0.37 J / _ *	0.044*
PYRENE	mg/kg	0.670	0.34	0.855 _ / J*	0.068*

Note: mg/kg = milligrams per kilogram
J = Estimated
U = Undetected
* = Exceeds screening level

TABLE D-3 PESTICIDES AND PCB IN SEDIMENT, MARCH 2001

Chemical Name	Unit	Location ID / Sample Date / Screening Level	OPSED16-01 3/22/2001	SED16-01 3/21/2001	SED16-02 3/26/2001
4,4'-DDD	mg/kg	0.001	0.002 U	0.00345 J	0.002 J
4,4'-DDE	mg/kg	0.001	0.0017*	0.002025 U	0.0015 J*
4,4'-DDT	mg/kg	0.001	0.0014 J*	0.002025 U	0.0018 J*
ALDRIN	mg/kg	0.0095	0.001 U	0.00105 U	0.00165 U
ALPHA BHC	mg/kg	0.003	0.001 U	0.00105 U	0.00165 U
ALPHA-CHLORDANE	mg/kg		0.001 U	0.00105 U	0.00165 U
BETA BHC	mg/kg	0.0032	0.001 U	0.00105 U	0.00165 U
DELTA BHC	mg/kg	0.0032	0.0015	0.00105 U	0.00165 U
DIELDRIN	mg/kg	0.00002	0.002 U	0.002025 U	0.0017 J*
ENDOSULFAN I	mg/kg		0.001 U	0.00105 U	0.00165 U
ENDOSULFAN II	mg/kg		0.002 U	0.002025 U	0.00325 U
ENDOSULFAN SULFATE	mg/kg		0.002 U	0.0021 J / U	0.00325 U
ENDRIN	mg/kg	0.00002	0.002 U	0.002025 U	0.00325 U
ENDRIN ALDEHYDE	mg/kg	0.00002	0.002 U	0.002025 U	0.00325 U
ENDRIN KETONE	mg/kg	0.00002	0.0016 *	0.00138 J / U	0.00064 J*
GAMMA BHC	mg/kg	0.0024	0.001 U	0.00105 U	0.00165 U
GAMMA-CHLORDANE	mg/kg		0.0017	0.00105 U	0.00165 U
HEPTACHLOR	mg/kg	0.0003	0.001 U	0.000625 J / *	0.00071
HEPTACHLOR EPOXIDE	mg/kg	0.00247	0.0012 J	0.00105 U	0.00165 U
METHOXYCHLOR	mg/kg		0.01 U	0.0105 U	0.0165 UJ
Total DDT metabolites	mg/kg	0.0003	0.0014 *	0.00345*	0.0053*
TOXAPHENE	mg/kg		0.02 U	0.02025 U	0.0325 U
PCB-1016	mg/kg		0.01 U	0.0105 U	0.0165 U
PCB-1221	mg/kg		0.01 U	0.0105 U	0.0165 U
PCB-1232	mg/kg		0.01 U	0.0105 U	0.0165 U
PCB-1242	mg/kg		0.01 U	0.0105 U	0.0165 U
PCB-1248	mg/kg		0.01 U	0.0105 U	0.0165 U
PCB-1254	mg/kg		0.01 U	0.0105 U	0.0165 U
PCB-1260	mg/kg		0.01 U	0.036	0.0165 U

Note: mg/kg = milligrams per kilogram
J = Estimated
U = Undetected
* = Exceeds screening level

TABLE D-4 INORGANIC COMPOUNDS IN SEDIMENT SAMPLES, MARCH 2001

Chemical Name	Unit	Location ID	OPSED16-01	SED16-01	SED16-02
		Sample Date	3/22/2001	3/21/2001	3/26/2001
		Screening Level			
ALUMINUM	mg/kg	26000	2370	5530	5670
ANTIMONY	mg/kg	9.3	0.5 J	1.35 UJ / J	1.2 J
ARSENIC	mg/kg	8.2	0.97	5.25	36.6*
BARIUM	mg/kg	48	23.5	110.1*	29.9
BERYLLIUM	mg/kg		0.33	0.905	0.32
CADMIUM	mg/kg	1.2	0.475 U	1.325 U	0.19
CALCIUM	mg/kg		1380	1815	1660 J
CHROMIUM	mg/kg	81	33.5	22.75	11.7
COBALT	mg/kg	10	2.4	6.05	37.9*
COPPER	mg/kg	34	35.2 J	127 J*	13.4 J
IRON	mg/kg		6400	63350	40900
LEAD	mg/kg	46.7	154 J*	106.8 J*	11.4
MAGNESIUM	mg/kg		994 J	1575 J	2020 J
MANGANESE	mg/kg	260	89 J	204.5 J	788*
NICKEL	mg/kg	20.9	11.5	53.8*	19.3
POTASSIUM	mg/kg		599	652.5	916
SELENIUM	mg/kg	1	0.475 U	1.3 U /	0.95 U
SILVER	mg/kg	1	0.7 U	0.8 U	1.4 U
SODIUM	mg/kg		47.5 U	239.5	95 U
THALLIUM	mg/kg		0.7 U	1.975 U	1.4 U
VANADIUM	mg/kg	57	15.8	15.45	22.9
ZINC	mg/kg	150	163*	346	50.5
MERCURY	mg/kg		0.02 U	0.055	0.027 UJ

Note: mg/kg = milligrams per kilogram
J = Estimated
U = Undetected
* = Exceeds screening level

TABLE D-5 SEMIVOLATILE ORGANIC COMPOUNDS IN SEDIMENT, MARCH 2001

Chemical Name	Location ID Sample Date Unit	OPSED16-01 3/22/2001	SED16-01 3/21/2001	SED16-02 3/26/2001
1,2,4-TRICHLOROBENZENE	mg/kg	0.8 U	0.5 U	0.65 UJ
1,2-DICHLOROBENZENE	mg/kg	0.8 U	0.5 U	0.65 UJ
1,3-DICHLOROBENZENE	mg/kg	0.8 U	0.5 U	0.65 UJ
1,4-DICHLOROBENZENE	mg/kg	0.8 U	0.5 U	0.65 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	mg/kg	0.8 U	0.5 U	0.65 UJ
2,4,5-TRICHLOROPHENOL	mg/kg	1.95 U	1.27 U	1.6 UJ
2,4,6-TRICHLOROPHENOL	mg/kg	0.8 U	0.5 U	0.65 UJ
2,4-DICHLOROPHENOL	mg/kg	0.8 U	0.5 U	0.65 UJ
2,4-DIMETHYLPHENOL	mg/kg	0.8 U	0.5 U	0.65 UJ
2,4-DINITROPHENOL	mg/kg	1.95 UJ	1.27 UJ	1.6 UJ
2,4-DINITROTOLUENE	mg/kg	0.8 U	0.5 U	0.65 UJ
2,6-DINITROTOLUENE	mg/kg	0.8 U	0.5 U	0.65 UJ
2-CHLORONAPHTHALENE	mg/kg	0.8 U	0.5 U	0.65 UJ
2-CHLOROPHENOL	mg/kg	0.8 U	0.5 U	0.65 UJ
2-METHYLPHENOL	mg/kg	0.8 U	0.5 U	0.65 UJ
2-NITROANILINE	mg/kg	1.95 U	1.27 U	1.6 UJ
2-NITROPHENOL	mg/kg	0.8 U	0.5 U	0.65 UJ
3,3'-DICHLOROBENZIDINE	mg/kg	0.8 UJ	0.5 UJ	0.65 UJ
3-NITROANILINE	mg/kg	1.95 U	1.27 U	1.6 UJ
4,6-DINITRO-2-METHYLPHENOL	mg/kg	1.95 U	1.27 U	1.6 UJ
4-BROMOPHENYL PHENYL ETHER	mg/kg	0.8 U	0.5 U	0.65 UJ
4-CHLORO-3-METHYLPHENOL	mg/kg	0.8 U	0.5 U	0.65 UJ
4-CHLOROANILINE	mg/kg	0.8 UJ	0.5 UJ	0.65 UJ
4-CHLOROPHENYL PHENYL ETHER	mg/kg	0.8 U	0.5 U	0.65 UJ
4-METHYLPHENOL	mg/kg	0.8 U	0.5 U	0.65 UJ
4-NITROANILINE	mg/kg	1.95 U	1.27 U	1.6 UJ
4-NITROPHENOL	mg/kg	1.95 U	1.27 U	1.6 UJ
BIS(2-CHLOROETHOXY) METHANE	mg/kg	0.8 U	0.5 U	0.65 UJ
BIS(2-CHLOROETHYL) ETHER	mg/kg	0.8 U	0.5 U	0.65 UJ
BIS(2-ETHYLHEXYL) PHTHALATE	mg/kg	3.6	0.32	0.6 J
BUTYL BENZYL PHTHALATE	mg/kg	0.8 U	0.5 U	0.65 UJ
CARBAZOLE	mg/kg	0.8 U	0.5 U	0.65 UJ
DIBENZOFURAN	mg/kg	0.8 U	0.255	0.65 UJ
DIETHYL PHTHALATE	mg/kg	0.8 U	0.5 U	0.65 UJ
DIMETHYL PHTHALATE	mg/kg	0.8 U	0.5 U	0.65 UJ
DI-N-BUTYL PHTHALATE	mg/kg	0.8 U	0.5 U	0.65 UJ
DI-N-OCTYLPHTHALATE	mg/kg	0.55	0.5 U	0.65 UJ
HEXACHLOROBENZENE	mg/kg	0.8 U	0.5 U	0.65 UJ
HEXACHLOROBUTADIENE	mg/kg	0.8 U	0.5 U	0.65 UJ
HEXACHLOROCYCLOPENTADIENE	mg/kg	0.8 U	0.5 U	0.65 UJ
HEXACHLOROETHANE	mg/kg	0.8 U	0.5 U	0.65 UJ
ISOPHORONE	mg/kg	0.8 U	0.5 U	0.65 UJ
NITROBENZENE	mg/kg	0.8 U	0.5 U	0.65 UJ
N-NITROSO-DI-N-PROPYLAMINE	mg/kg	0.8 U	0.5 U	0.65 UJ
N-NITROSODIPHENYLAMINE	mg/kg	0.8 U	0.5 U	0.65 UJ
PENTACHLOROPHENOL	mg/kg	1.95 U	1.27 U	1.6 UJ
PHENOL	mg/kg	0.8 U	0.5 U	0.65 UJ

Appendix E

Comment Responses to the Draft August 2004 SLERA from USEPA Region 1, RIDEM, and NOAA

RESPONSES TO EPA COMMENTS DATED SEPTEMBER 24,2004 ON THE DRAFT PHASE II SLERA OF IR PROGRAM SITE 16 DATED AUGUST 2004 NCBC DAVISVILLE, NORTH KINGSTOWN, RHODE ISLAND

GENERAL COMMENTS

Comment 1: The Navy's interpretation that there is no apparent forensic correlation with the PAH compounds detected in the harbor and those in the soil at Site 16 in the area of the former creosote dipping tanks and therefore, the PAH compounds detected in the harbor are not related to past Site 16 operations is problematic. EPA does not concur with that assessment.

Response— The Navy believes that many lines of evidence support its conclusions as discussed below.

Comment 1a Although no detailed analysis was made by EPA it is not clear that a lack of forensic correlation of PAH compounds in Site 16 soils and Allen Harbor sediment implies no correlation of PAH compounds in Allen Harbor with past or present contribution from Site 16. The first concern is the limited number of Site 16 soil samples.

Response— The Navy collected samples that adequately represented the hydrocarbon signatures of the historical wood treating and fire training activities within the Site 16 Source Area. Interviews with former Navy personnel revealed the primary locations of the creosote dipping tank (Source Area 1), pole drying and storage (Source Area 2), and former fire fighter training (Source Area 3). Multiple samples from each of these areas were collected to ensure that signatures from these activities were represented in the forensic analysis. The elevated concentrations of hydrocarbons plus the compositional fingerprints confirmed that residues from these activities were recovered by the sampling team. For example, creosote was observed in Source Area 1, middle distillates were observed in Source Areas 2 and 3, and heavy residual petroleum was observed in Source Area 3. The Navy does not share the assessment that too few samples were collected because the sampling plan clearly achieved the objectives of the forensic investigation and demonstrated signatures of historical site activities associated with suspected PAH contamination from Site 16. In short, PAH residues were observed in Site 16 soils; however, these Site 16 soils were not a significant source of PAHs in Allen Harbor as evident in the forensic analysis.

Comment 1b Second, the Site 16 area clearly had a major creosote dipping operation that would potentially exceed PAH contribution to Allen Harbor compared to loss from creosote preserved wood pilings in the marina area as interpreted by the Navy.

Response— The Navy is unaware of any evidence that revealed the dimensions of the creosote dipping operation such that these activities could be described as "major." Most large operations are readily observed in fly over maps for many decades. The Navy does not posses any maps that reveal the creosote dipping equipment. Rather, it has aerial photographs from 1952, 1962, and 1972 that all fail to characterize the creosote dipping operation. The identification of the creosote and fire training areas was based on interviews with former Navy personnel. Consequently, it can be concluded that the creosote operation was relatively small or de minimus compared to commercial wood preservers.

In addition, it is important to note that the concentration of total EPA Priority Pollutant PAHs in sediments proximal to major creosoting operations can exceed 2,500 mg/kg (Stout, S.A., Leather, J.M, and Corl, W.E., III (March 2004) Characterization of PAH in sediments using rapid sediment screening and chemical fingerprinting – Elizabeth River, Virginia. Int. Conf. Contaminated Soils, Sediments and Water, 14th Annual Mtg., San Diego, CA. and McCormick and Baxter. 2004. http://yosemite.epa.gov/r10/ cleanup.nsf/0/5b51fb13cffbfb008825651a005e0c66?OpenDocument). By contrast, the Allen Harbor sediments proximal to Site 16 vary between approximately 2.5 mg/kg and 25 mg/kg. In short, Allen Harbor sediments are 2 to 3 orders of magnitude less than observed concentrations near large wood treating operations. Indeed, the low level of PAHs in Allen Harbor sediments was hardly consistent with a major dipping operation at all.

Comment 1c Third, it should be noted that while a chemical or finger print correlation was not made, the Site 16 samples (relatively few in number) were indicative of PAH compounds exposed and weathered in a relatively dry, aerobic soil environment. The harbor sediment samples were collected from a wet, likely anaerobic, marine environment. Therefore, any PAH compounds at those two locations may have undergone different physical, chemical, biological transformations with potentially significant alterations of their chemical structure.

Response— This comment is similar to RIDEM's Comment 15. The forensic analysis considered all of the available hydrocarbon data. Some of the hydrocarbon patterns were affected by weathering (primarily biodegradation, evaporation and dissolution) on environmental time scales (see biodegradation of normal alkanes v. isoprenoids in Source 2-1 of Figure 12b found in the Environmental Forensics Report, Appendix B). However, the overwhelming majority of samples exhibited weathering that was limited to normal alkanes in the n-decane (n-C_{10}) to n-eicosane (n-C_{20}) range. Many published weathering indices demonstrate that the partial loss of normal alkanes constitutes "moderate" (Figures 1 and 2) to "light" (Figure 3) weathering depending on the scale used. For both scales, this degree of weathering leaves much of the chemical fingerprint intact.

The maximum degree of weathering exhibited by samples from the study area failed to alter the primary source signatures of creosote related material; i.e., 4- to 6-ring PAHs, thiophenes, heavy normal alkanes, alkylcyclohexanes, isoprenoids, triterpanes, and others. The tar presented in Figure 1 is directly analogous to tar derived creosote (American Wood Preservers Association, *Standard Methods for Analysis of Creosote and Oil-Type Preservatives*, 2001; and Emsbo-Mattingly, S.D., A.D. Uhler, S.A. Stout, K.J. McCarthy. *Identifying Creosote at Contaminated Sites: An Environmental Forensics Overview*, Contaminated Soil Sediment and Water, Feb 2001). In short, weathering presented little difficulty for this forensic investigation regardless of the biogeochemical origin because many recalcitrant source patterns were clearly observed in the study area samples. There is no basis for concluding that weathering effects could change the conclusions about the origin of the PAHs in Allen Harbor.

Figure 1. Examples of Tar Weathering and Progressive Loss of Reactive Constituents
(Emsbo-Mattingly, S.D., Boehm, P.D., Coleman, A. *2003 Identifying PAHs from Manufactured Gas Plant Sites*. EPRI Technical Report 1005289, Palo Alto, CA.).

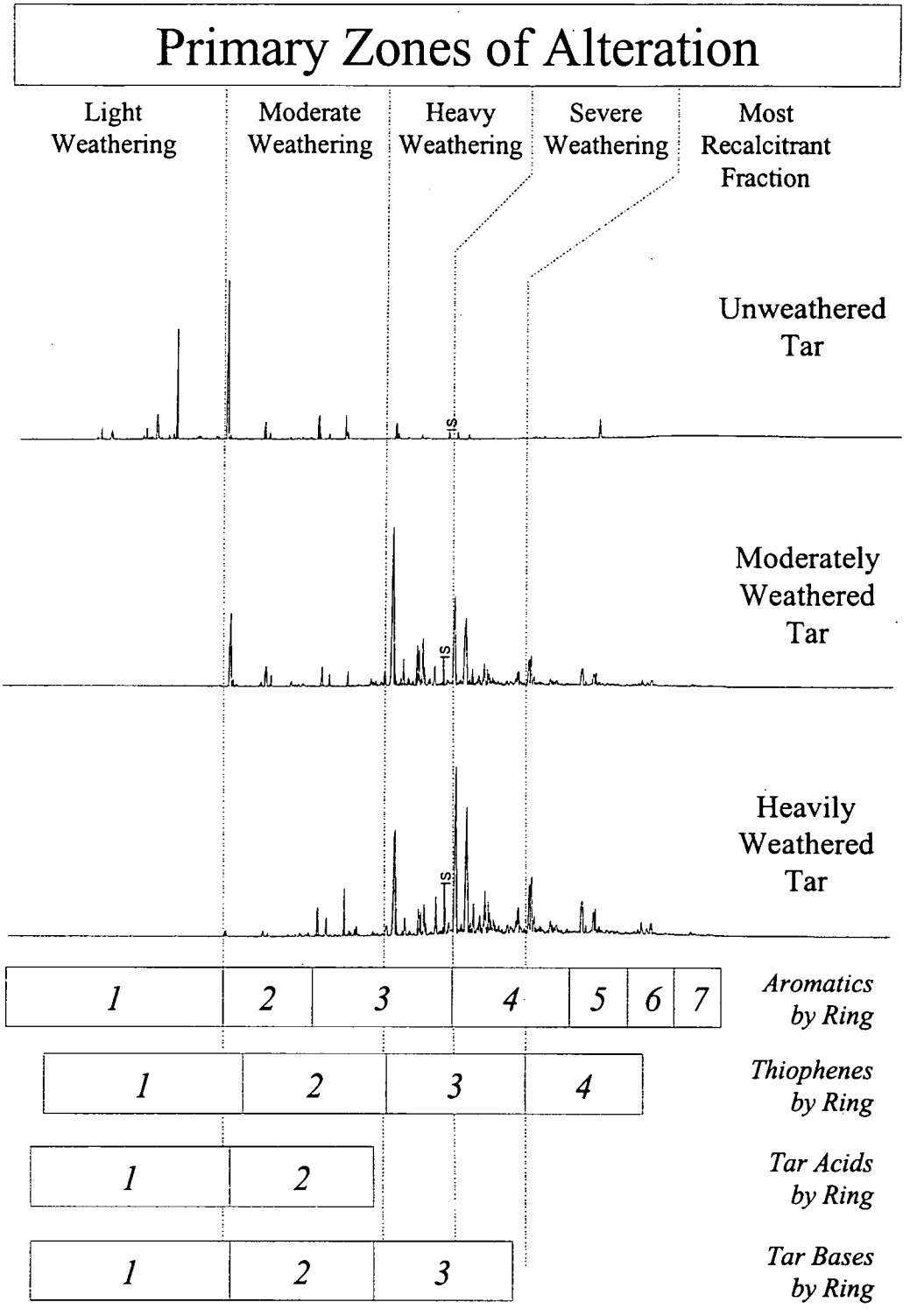


Figure 2. Examples of MGP Feedstocks and Progressive Loss of Reactive Constitutents
(Emsbo-Mattingly, S.D., Boehm, P.D., Coleman, A. 2003 *Identifying PAHs from Manufactured Gas Plant Sites*. EPRI Technical Report 1005289, Palo Alto, CA.).

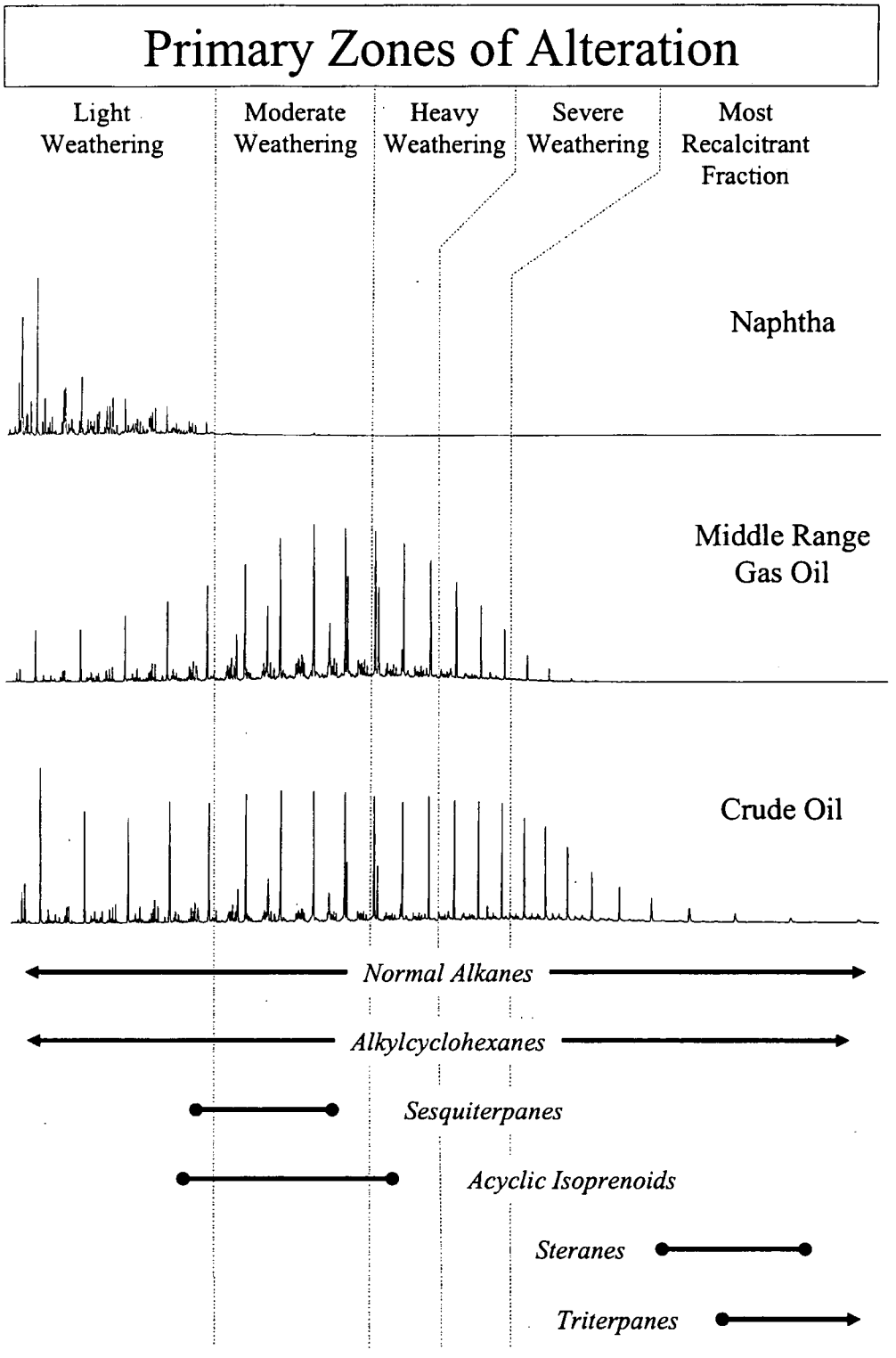
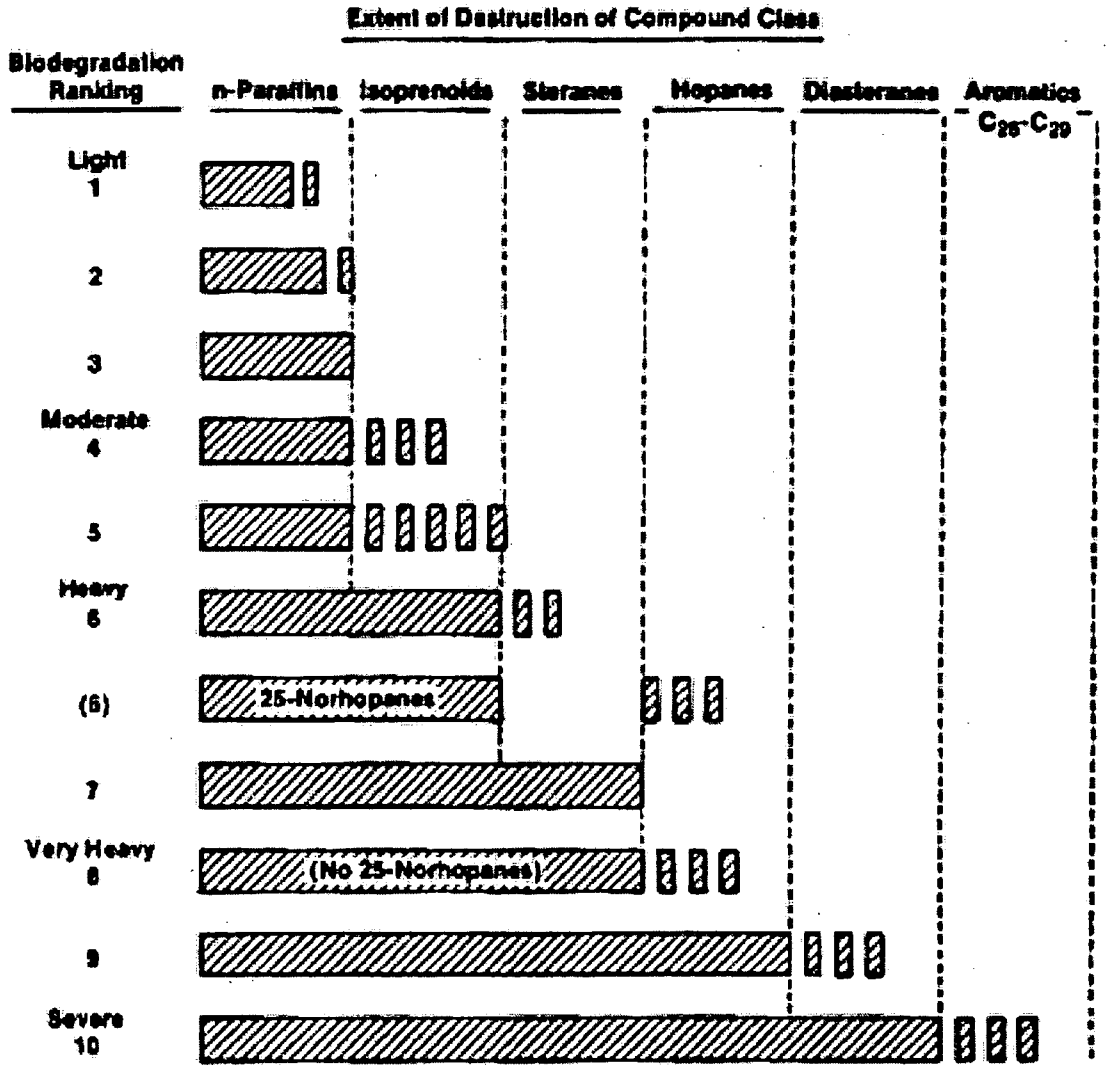


Figure 3. Effects of Various Levels of Biodegradation on Typical Mature Oil
(Peters, K.E. and J.M. Moldowan. 1993. *The Biomarker Guide*. Prentice Hall, EnglewoodCliffs, New Jersey, 363 p.).



1 = Lower homologs of n-paraffins depleted.
2 = General depletion of n-paraffins.
3 = Only traces of n-paraffins remain.
4 = No n-paraffins, acyclic isoprenoids intact.
5 = Acyclic isoprenoids absent.
6 = Steranes partly degraded.
7 = Steranes degraded, diasteranes intact.
8 = Hopanes partly degraded.
9 = Hopanes absent, diasteranes attacked.
10 = C_{26}-C_{29} aromatic steroids attacked.

Figure 3.62 Effects of various levels of biodegradation on a typical mature oil. The figure can be used to rank the extent of biodegradation on a scale of 1 to 10. Biodegradation of petroleum is quasi-sequential in that "more resistant" compound classes can be attacked prior to complete destruction of a "less resistant" class.

Comment 1d Nonetheless, review of Figure 4-4, even with the reduced PAH concentrations (i.e. the "predicted" concentrations) the distribution of PAH concentrations does not follow a pattern that would suggest contribution primarily by any creosote preserved wood pilings in the Marina Area. The concentrations of PAH are clearly highest nearest the shore line and in particular, Site 16. Inspection of sediment sample PAH concentrations for locations immediately adjacent to the Marina Area also shows that while there may be locations with elevated PAH compounds there are also many locations with significantly lower PAH compounds. If creosote preserved wood pilings were the predominant contributor of PAH compounds to Allen Harbor, it would be expected that the concentrations of PAH would be greatest around all of the Marina Area docks. Figure 4-4 shows that sediment around the dock to the north is markedly lower in PAH concentrations than the sediment for the south dock, which is adjacent to the Site 16 shoreline.

Response— See the response to RIDEM comment 3. It is assumed that the figure referred to in this comment is Figure 4-8, Predicted Total-PAH Concentration Contours, instead of Figure 4-4. Please note that the text associated with this figure notes the association of higher PAH concentrations with vicinity to the shoreline "Total PAH concentration contours are higher the closer one is to the shoreline (Figure 4-8). This would indicate that there were land-based PAH sources, including Site 16, for this contaminant. It is known that there were historical sources (and there are current sources) of PAH into this end of Allen Harbor; consequently, the pattern of contamination for total PAH shown in Figure 4-8 is expected. As can be seen in these figures, there is no apparent trend for any of these potential contaminants relative to the vicinity to Site 16. Since no evident concentration gradient exists, this suggests that Site 16 is not a significant source of metals (lead, copper, and zinc) or total PAH to Allen Harbor." This figure shows higher concentrations near the shoreline, but there is no evidence that it is higher adjacent to Site 16, particularly when compared to concentrations both immediately east (towards the storm drain) and west (towards the marina) of Site 16. For example, shoreline concentrations adjacent the the marina (14-18 mg/kg) are slightly higher than those found adjacent to Site 16 (4-16 mg/kg), at the most southernmost part of Allen Harbor in Figure 4-8. That being stated, there is no significant difference in these concentrations. It is agreed that concentrations in the marina area do decrease as the distance from shoreline increases. However, the apparent decrease in concentrations is not surprising given that direct loading of PAHs to Allen Harbor likely diminishes with physical difference from shoreline (e.g., stormwater) and marina sources. As supported by the total EPAPAH results shown in Figure 4 (See response to Comment 1e), the variability within one standard deviation of the mean EPAPAH concentration in the inner and middle harbor sediment overlapped with the outer harbor sediment. Consequently, much of the perceived concentration gradient is not statistically

significant. However, outer harbor could be explained by the marina pilings and storm water distribution of PAH fingerprints.

Comment 1e The document also states that while the PAH concentrations at Allen Harbor are higher than the background Reference Site locations this is due to lack of circulation of the inner harbor. This statement is subjective and not supported. Nonetheless, review of the background locations shows that this does not appear to be the case. In particular, Reference Site #3, which has the highest background PAH concentrations of all three reference areas, appears to be relatively sheltered thereby subject to potentially "limiting circulation." Additionally, this site (Fishing Cove) is in an area that is relatively highly developed with roads and housing adjacent that would potentially contribute PAH compounds. Yet, the average concentrations of PAH in the five reference samples is approximately 5.5 milligrams per kilogram (mg/Kg) (unadjusted screening concentrations) while the Allen Harbor sediment have PAH concentrations that generally range from approximately 30 to 45 mg/Kg (unadjusted screening concentrations) in the Inner Area adjacent to Site 16. The Marina area PAH concentrations ranged from near 40 mg/Kg for the south docks immediately adjacent to the Site 16 shoreline to approximately10 to 20 mg/Kg for the northern docks further away from the Site 16 shoreline. In the Outer Area of the Harbor, the unadjusted PAH concentrations are approximately 10 mg/Kg.

Response— Fishing Cove, chosen as Reference Site #3, is very dissimilar from Allen Harbor. Fishing Cove and is shown in Figure 2-6. The cove is considerably smaller than Allen Harbor, and has over a quarter mile of open access to Wickford Cove. Alternatively Allen Harbor is much larger than Fishing Cove and has an entrance that is approximately 250 feet wide. A further difference is that the discharge from Fishing Cove runs along one whole side of the cove (see Figure 2-6) while the exit from Allen Harbor is approximately a third of a mile from Site 16. As shown in Figure 2-6, there are some roads and houses located on Sauga Point and Calf Neck adjacent to Fishing Cove. There are no marinas in Fishing Cove, primarily as it is too shallow. Much of the cove is exposed a low tide, and it was necessary to obtain these samples by running in at high tide and chasing the tide out. While it is expected that there are storm drains that discharge into Fishing Cove, there are none that rival the storm drain found in Allen Harbor that drains over ten acres of the large parking area to the west of Site 16 and Allen Harbor.

It is agreed that concentrations of PAH in Allen Harbor were significantly higher than those found in the reference areas. The definitive measurement of EPAPAHs (sum of 16 EPA Priority Pollutant PAHs plus 2-methylnaphthalene) indicates that sediments proximal to the northern boundary of Site 16 were consistent with sediments collected from the Inner, Middle, and Outer Allen Harbor sampling areas (Figure 4). In short, there is no gradient of declining EPAPAH concentration from Site 16 through the Middle of Allen Harbor once the variability of these concentrations are taken into account. Rather, the

background EPAPAH concentrations ranged from about 2.5 mg/kg to 13 mg/kg based on one standard deviation around the mean for sediments in these areas. More importantly, notice how the higher levels of EPAPAHs in sediments collected within 25 feet of the Southern Marina compare with lower levels of EPAPAHs in the Middle Harbor. This trend is repeated in the higher levels of EPAPAHs around the Northern Marina relative to the Outer Harbor sediments. This trend suggests that sediments around creosote preserved marina pilings consistently exhibited a higher range of EPAPAH concentrations than more distal sediment samples. Figure 4 will be incorporated into the final report to clarify this point.

Figure 4. Total PAH Concentration by Study Area Location. Error bars represent +/- 1 standard deviation around the mean. (See Table 1 for specific sample grouping)

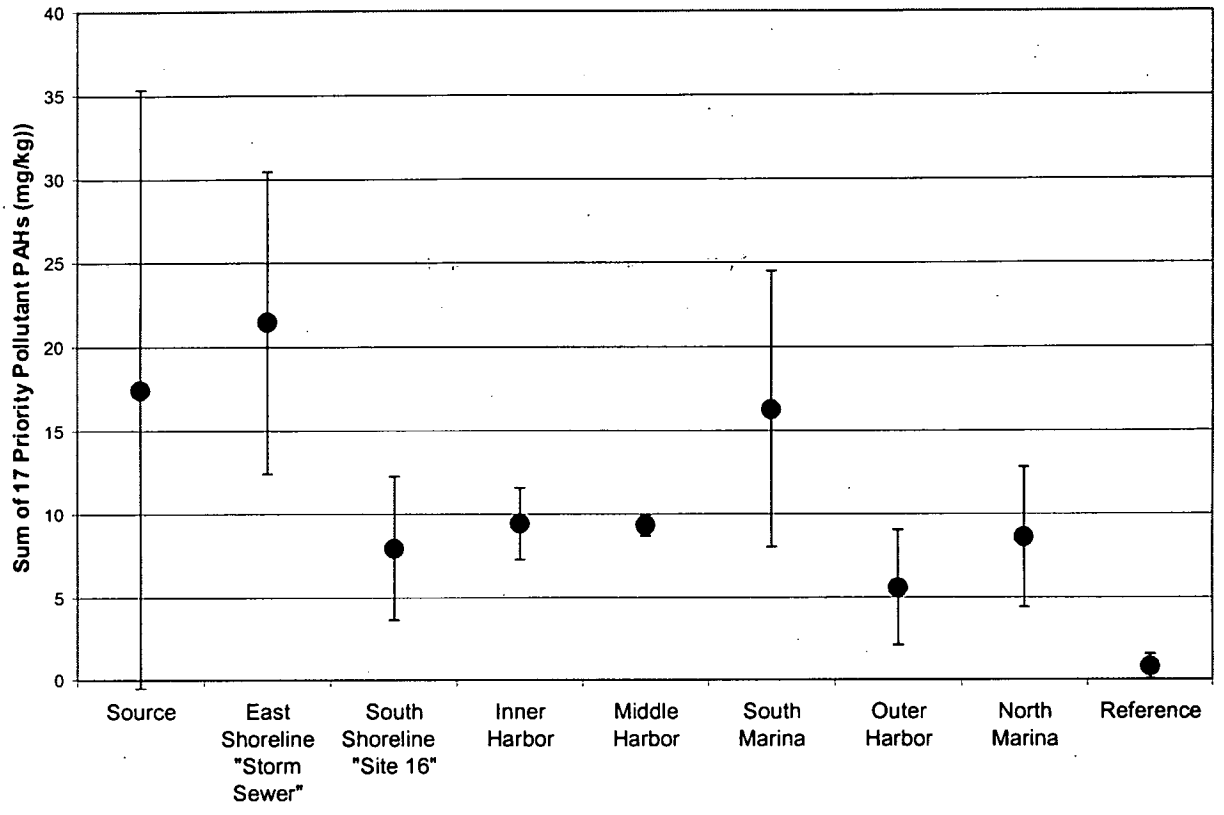


Table 1. Samples associated with each Study Location

Client ID	Location	Client ID	Location	Client ID	Location
Source 1-1	Source	AH-32	Inner Allen Harbor	AH-17	South Marina
Source 1-2	Source	AH-33	Inner Allen Harbor	AH-23	South Marina
Source 2-1	Source	AH-33 (DUP-07)	Inner Allen Harbor	AH-29	South Marina
Source 2-2	Source	AH-42	Inner Allen Harbor	AH-35	South Marina
Source 3-1	Source	AH-45	Inner Allen Harbor	AH-03	North Marina
Source 3-2	Source	AH-47	Inner Allen Harbor	AH-08	North Marina
Source 4-1	Source	AH-26	Middle Allen Harbor	REF 1-1	Reference
AH-40	South Shoreline	AH-26	Middle Allen Harbor	REF 1-2	Reference
Core 1-Bot	South Shoreline	AH-06	Outer Harbor	REF 1-4	Reference
Core 1-Bot	South Shoreline	AH-06 (DUP-03)	Outer Harbor	REF 2-1	Reference
Core 1-Top	South Shoreline	AH-11	Outer Harbor	REF 2-3	Reference
AH-28	East Shoreline	AH-11 (DUP-01)	Outer Harbor	REF 2-5	Reference
AH-49	East Shoreline	AH-51	Outer Harbor	REF 3-1	Reference
				REF 3-2	Reference
				REF 3-4	Reference

The concentrations measured in these near shore areas were consistent with those found in urban waterways (Stout, S.A., A.D. Uhler, and S.D. Emsbo-Mattingly. 2004. Comparative Evaluation of Background Anthropogenic Hydrocarbons in Surficial Sediments from Nine Urban Waterways. *Environ. Sci. Technol.* 38:2987-2994.). The urban sediments described in this citation were largely derived from storm water runoff. The similarity between Allen Harbor samples to other urban sediments suggests that the concentrations Allen Harbor were within the range of expected concentrations for localized urban runoff.

Finally, the concentrations were sufficiently low as to represent a low level of risk for all receptors.

Comment 2: Based upon the data presented in this report, EPA does not concur that it has been demonstrated that Site 16 has not contributed significantly to PAH concentrations in Allen Harbor. Also, the presence of PAH compounds in the harbor does not appear to be primarily due to the Marina Area pilings. Further, while storm water runoff would contribute PAH to the harbor, the highest concentrations of PAH in sediment are along the Site 16 shoreline away from the expected flow path for discharging storm water through the storm water system.

Response— The report acknowledges a slight elevation in PAH concentration in the Inner and Middle harbor. Examination of Figure 4-8 shows fairly uniform PAHs in these areas with slight elevations in the stormwater discharge locations, the marina area, and Site 16 area in the near shore environment. It is noted that some of the PAH found in Allen Harbor may have originated from Site 16, but no evidence was found that the operations at Site 16 significantly contributed to PAHs in the harbor. Indeed, the most likely sources of elevated PAHs in Allen Harbor were the Marinas and the storm sewers (See Comment 1e for additional discussion).

Comment 3: The SLERA format generally followed that of the QAPP and adhered to EPA guidance. The selection of receptors, assessment and measurement endpoints, COPC screening, exposure estimation, and risk characterization were all conducted appropriately except as noted in the following comments. The sediment ecological benchmarks, exposure assumptions, toxicity values, etc. are acceptable except as noted in the following comments. The HQ calculations were conducted accurately, although some of the input parameters need to be reviewed or more fully explained. The SLERA concludes that risk to mammals and birds represented by the raccoon and risk to benthic invertebrates is minimal. Based on the calculated HQs, this conclusion is probably valid. Full acceptance of this conclusion is contingent on acceptable resolution of the following comments.

Response— Comment noted.

Comment 4: The high HQs for benthic invertebrates for gamma-chlordane (12), endrin ketone (48), and dieldrin (222) should be discussed. While the SLERA concludes that risk to ecological receptors in Allen Harbor is not significant, these significant HQs remain unexplained. Without providing rationale for why the HQ for dieldrin especially does not equate to site risk, the conclusion of no significant risk is not supported. Please also provide a table showing the comparison between site data and NOAA ER-M benchmarks.

Response— High HQs for these pesticides when compared to NOAA ER-Ls are briefly mentioned in Section 5.5.2 and are shown in Table 5-18. In the uncertainty section (Section 5.6) a bullet is included that addresses the issue of comparison to NOAA ER-Ms, and the interpretation of the results based on Long and MacDonald's paper on recommended uses for these comparisons. For example, while the HQ for dieldrin when compared to the ER-L is 222, when compared to the ER-M (8 ppb), the HQ is less than 1.0 at 0.55. As discussed in this bullet from the uncertainty section, only two chemicals showed exceedance of ER-M values, specifically phenanthrene (HQ = 1.22) and gamma-chlordane (HQ = 1.02). Based on Long and MacDonald's criteria, these sediments are in a range they term "medium-low priority", indicating that there may be impacts to benthic organisms, but they are likely to be marginal. Table 5-18 will be modified to show ER-M values, and the resultant hazard for median effects to benthic organisms.

Comment 5: The Step 2 risk calculations assumed bioaccumulation factors (BAF) of 1.0 for all COPC. While this is a conservative approach for most chemicals, it is not the most conservative approach for chemicals with BAF greater than one (e.g., zinc, PCBs, most pesticides). To be adequately protective and to ensure that all COPC are carried through as needed to the Step 3a evaluation, the Step 2 risk calculations should be conducted with the actual BAF or a value of 1.0, whichever is higher.

Response— The Step 2 risk calculations will be changed to reflect BAFs as requested, however, it is important to note that Step 2 results were not used to determine which chemicals were characterized in the Step 3a risk calculations. All chemicals identified as COPC were carried through the entire risk assessment. Consequently this change will have no effect on what COPC are assessed in the Step 3a risk assessment as all COPC have been assessed.

Comment 6: The Rapid Sediment Characterization (RSC) data presented in Table 2-1 are for copper and zinc only, with a small number of results for nickel. While the RSC discussions in Section 2.3 and Section 4.1 indicate that lead was included in the screening evaluation, no lead data are evident in Table 2-1. Please clarify why the data were not included in the table. Without the lead data, the use of the RSC results to choose the locations for full analytical analyses relies entirely on copper and zinc RSC data. Using data from only these two metals lessens the certainty that inorganics in general have been adequately covered. Please discuss the confidence, or lack thereof, in the likelihood that areas with the most elevated concentrations of arsenic, copper, mercury, etc. have been evaluated. This comment does not necessarily preclude acceptance of sample coverage, particularly in the inner harbor, where it is noted that the coverage of sediment samples for full analysis is probably adequate. A discussion of the limitations of the RSC program can be included in the Uncertainties.

Response— There was an error in the column titles of Table 2-1. The third from last column labeled "Q" is actually lead concentrations in ppm. This column title will be corrected. This study was designed to focus on those areas immediately adjacent to Site 16, and in the vicinity of the marina. Consequently the number of quantitative samples was increased in these areas when compared to what is termed the "Outer Harbor" in the document. A bullet discussing the uncertainty associated with using RSC to select quantitative samples will be added to the uncertainty section (Section 5.6).

SPECIFIC COMMENTS

Comment 7: **Table 2-1:** It appears that the header for "lead results" has been misidentified. The third column from the right is listed as "Q", but I believe that this column is actually the lead results. Please clarify.

Response— The commenter is correct (See General Comment 6 above). The table will be corrected.

Comment 8: **Table 5-3:** It is noted that the sediment concentration of cis-1,2-DCE is 880 ppb at location AH-47. This concentration is more than an order of magnitude higher than the highest sediment concentration found for this particular chemical

at the NCBC NPL Calf Pasture Point (OU-8) site 7 area of concern (31 ppb). Currently the discharge location of the plume is being determined at OU-8 due to a possible risk to swimmers and waders. What is the Navy's plan for determining the discharge location of the OU-9, (Creosote Dip Tank and Fire Fighting Training Area-site 16) TCE plume and it's associated risk to human health and the environment?

Response— There were three measurements of cis-1,2-DCE in Allen Harbor sediment adjacent to Site 16, 880 ppb at AH-47, 6 ppb at AH-33, and 5 ppb at AH-32. All other samples were below the detection limit. Further, the next highest concentration chlorinated volatile organic chemical was the cis-1,2-DCE at AH-33 of 6 ppb. There is the potential that there has been a discharge of volatile organics from Site 16 groundwater; however, in all samples that surround AH-47 (AH-32, AH-42, and AH-49) all volatile organics were below the detection limit. Further, outside of the 880 ppb of cis-1,2-dicloroethene, the only other chlorinated organics measured in that sample were trans-1,2-dichloroethene (3J), and trichloroethene (2J). The 880 ppb measurement of cis-1,2-DCE at AH-47 appears to be an aberration, and if it represents a release into Allen Harbor, is not representative of a wide discharge.

Comment 9: **Table 5-9:** Please clarify how the invertebrate and vegetation concentrations were calculated. Apparently, the mean dry weight sediment concentrations were multiplied by the BAFs and a dry weight to wet weight conversion factor. Using this method, some of the values could not be replicated by the reviewer. Please clarify the % solids used for both invertebrates and plants. For BAFs which were based on a regression, were the values for mean sediment concentrations different than those presented in Table 5-6 and 5-7? Please provide the extra information to this table to more clearly explain how the concentrations were derived.

Response— The methods used for the calculation of COPC concentrations is discussed on page 19 of the document in Section 5.3.2. There is one typographical error on this page, specifically that the text states that the fraction solids for macroinvertebrates was 0.13, when the value used was 0.16. Example calculations were not provided in the draft, but will be provided in the revised document. The following are example calculations:

Metals for Macroinvertebrates (arsenic as example)
BAF = 0.48 (Table 5-6)
Dry wt concentration in sediment 10.8 mg/kg (Table 5-9)
Fraction Solids = 0.16 (see text above)

$$C_{f\ dry\ wt.} = C_{s\ dry\ wt.} \times BAF$$
$$C_{f\ dry\ wt.} = 10.8\ mg/kg \times 0.48 = 5.184\ mg/kg\ dry$$

This dry weight concentration is then converted to a wet weight basis as follows:

$$C_{f\ wet\ wt.} = C_{f\ dry\ wt.} \times fx\ dry$$
$$C_{f\ wet\ wt.} = 5.184\ mg/kg\ dry. \times 0.16 = 0.83\ mg/kg\ wet$$

This concentration for benthic macroinvertebrates is shown in Table 5-9.

Organics for Macroinvertebrates (Heptachlor as example)
BSAF = 2.66 (Table 5-6)
Dry wt concentration in sediment 0.00045 mg/kg (Table 5-9)
Fraction Solids = 0.16 (see text above)
Fraction lipids in organism = 0.02 (see text, page 20)
Fraction organic carbon in sediment = 0.02 (see text, page 20)

$$C_{f\ dry\ wt.} = fl \times BSAF \times \frac{C_{s\ dry\ wt.}}{f_{oc}}$$

$$C_{f\ dry\ wt.} = 0.02 \times 2.66 \times \frac{0.00045\ mg/kg\ dry.}{0.02} = 0.00133\ mg/kg\ wet$$

This dry weight concentration is then converted to a wet weight basis as follows:

$$C_{f\ wet\ wt.} = C_{f\ dry\ wt.} \times fx\ dry$$
$$C_{f\ wet\ wt.} = 0.00133\ mg/kg\ dry. \times 0.16 = 0.00021\ mg/kg\ wet$$

This concentration for benthic macroinvertebrates is shown in Table 5-9.

The calculation of COPC concentrations in plants are similar to the BAF calculations show above for metals, with the only difference being that BAFs are found in Table 5-7 of the document, and the fraction dry for plants is assumed to be 0.15 (Exposure Factors, EPA 1993).

The text will be changed to include these sample calculations.

The calculation of food concentrations when regressions were applied is shown in Table 5-8. This table complete and shows the entire derivation, including the average concentration (dry weight) applied to the regression equation. We believe that the extra information you are looking for is found in this table. Table 5-9 is designed to be a summary table showing the resulting concentrations for all food items as well as soil concentrations.

Comment 10: **Table 5-12 and 5-13:** The NOAEL and LOAEL TRVs for mercury do not match those listed in Tables 5-10 and 5-11. Please review and clarify as needed. If the TRVs for methylmercury were used, please indicate this.

Response— The NOAEL and LOAEL TRVs shown for mercury on Tables 5-10 and 5-11 are for inorganic mercury respectively, while the TRVs shown in Tables 5-12 and 5-13 are for methyl mercury. TRVs shown in Tables 5-10 and 5-11 will e changed to reflect methyl mercury TRVs.

Comment 11: **Table 5-15 and 5-16:** The "Dose" column presents results in mg/kg/day (ww). As the dose is not presented on a wet or dry weight basis, but on a body weight basis, the "ww" designation is confusing and should be deleted.

Response— Comment noted. The "ww" designation will be removed from Tables 5-15 and 5-16.

Comment 12: **Table 5-18:** Please add the units for the UCLM95 and the benchmarks.

Response— Units (mg/kg) will be added to Table 5-18.

RESPONSES TO NOAA COMMENTS DATED 14 SEPTEMBER 2004 ON THE DRAFT PHASE II SLERA OF IR PROGRAM SITE 16 DATED AUGUST 2004 NCBC DAVISVILLE, NORTH KINGSTOWN, RHODE ISLAND

Thank you for the Phase II Screening Level Risk Assessment of IR Program Site 16, NCBC Davisville, RI dated August 2004. NOAA's interest at this site pertains to the marine/estuarine environment of Allen Harbor. We did not examine the risk calculations for the raccoon and herring gull. NOAA was pleasantly surprised to learn of the lower than expected sediment concentrations found in the lab-analyzed samples, particularly for total PAH. From our examination of the Risk Assessment Pilot Study (RAPS) and the RSC PAH results received earlier this year, we had expected greater PAH concentrations given the three potential sources – the Fire Fighting Training Area, the former creosote tanks used for dipping wood pilings, and the storm drain that connects to a large parking lot. NOAA agrees that the results of the benthic invertebrate risk assessment indicate a low potential effect. Nevertheless we have three comments.

Comment 1: Despite the Fixed Lab and RSC concentrations mostly falling between the confidence limits (Figures 4-1 to 4-4), NOAA was disappointed with the results of the RSC. We believe that the PAH concentrations approximately 250% greater than their actual (laboratory) concentration results in considerable doubt for future use. Similarly, the metal data, 35-41% under-predicting the metals are also too great. We urge further discussion and experimentation.

Response— We appreciate your interest in further discussion of screening methodology, as the sampling design and interpretations in these types of studies are constantly being optimized. We disagree, however, with your comment that these study results should be cause for "considerable doubt for future use". As stated in Section 4.1, any over- or under-prediction by the screening techniques was expected and "does not impact the ability of these RSC results to be used for the sample selection process because of the significant relationship between RSC and fixed laboratory results". The good relationship between screening and lab data allows all the screening values to be transformed onto the lab scale to derive the contouring maps (Figures 4-5 through 4-8). Screening data always requires some amount (10-25%) of lab confirmation to do this transformation and put all the data on the same lab scale. The raw screening values can be compared in a relative sense, but they should not be used as an absolute magnitude without lab confirmation. The PAH immunoassay was only run with a pure phenanthrene standard, and the mixture of PAHs at the site was a complex mixture of parent and alkylated forms that each show varying response to the immunoassay. The metals XRF data are from wet samples where some attenuation of the fluorescence signal was expected. Again, these differences from lab scale values were expected and do not negatively impact the manner in which the data were used for this report, but the screening values should not be considered absolute without transformation onto a lab scale. The EPA method

for XRF analysis of metals (USEPA. 1998. Method 6200 Field portable X-ray fluorescence spectrometry for the determination of elemental concentrations in soil and sediment) notes that correlations greater than 70% are adequate as screening data, and that when correlations greater than 90% are achieved and that inferential statistics can be applied, these data can potentially meet definitive level data criteria. Correlation coefficients for these samples ranged from 0.76 to 0.88 (Figures 4-1 through 4-4), qualifying these results as screening level quality. This is exactly how these data were used, first to assist in the selection process for both quantitative samples and forensic samples, and secondly to produce regression equations relating quantitative results to screening results thereby allowing production of concentration isopleths (Figures 4-5 through 4-8). While there is greater uncertainty associated with the figures because they are generated based on screening results relative to having quantitative results for all these samples, they do provide a reasonable representation of sediment concentrations for these elements and chemicals. Significant cost savings and reduction in spatial uncertainty have been realized through effective planning and utilization of, rapid sediment screening techniques.

Comment 2: Section 4.3 compares sediment data from this study to that collected previously. I am unclear if the two stations from the RAPS are from Phase 1 (AH-7 and AH-8) or Phase 2 (AH-7 and SN). The text is unclear but I assume the high total PAH concentration of 150-200 mg/kg is from the SN sample that is in the vicinity of AH-49. NOAA recommends that the Navy clarify the text and provide a better comparison of the samples collected during Phase 1 and Phase 2 of the RAPS with the current sampling results.

Response— It is stated in Section 4.3 that a sample taken as part of the RAPS report was "...located close to the outfall in the vicinity of 2004 sample AH-49." It was not clearly noted in the text that this was Sample SN discussed in your comment. The text will be modified to reflect that the sample discussed was specifically sample SN from the RAPS report. Section 4.3 will be modified to clarify the text.

Comment 3: At least twice, the Navy states that the PAH concentrations are consistent with coastal areas of the United States. But they do not provide data supporting this assertion. It appears as a very defensive comment. More importantly, the sediment data shows concentrations that indicate a low potential for benthic community disruption. And the data points to several minor source areas apart from Site 16. These two results point to a very limited ecological risk.

Response— The comment is noted. The source for consistency of PAH concentrations with coastal areas of the Untied States is found in Stout, S.A., A.D. Uhler, and S.D. Emsbo-Mattingly. 2004. Comparative Evaluation of Background Anthropogenic Hydrocarbons in Surficial Sediments from Nine Urban

Waterways. *Environ. Sci. Technol.* 38:2987-2994. This discussion will be expanded in the document. A comparison to other coastal waterways was introduced to demonstrate that the concentrations in Allen Harbor are well within the range of other sediments impacted by stormwater runoff near shorelines with more intense vehicular traffic. This purpose will be clarified in the final report.

Comment 4 Lastly, because sediment concentrations do exceed the ER-L, some may insist that the Navy move forward with a BERA. NOAA is ambivalent on this potential request. Rather, we believe that given the nature and extent of the PAH contamination and the mostly low metal concentrations and high AVS, the public would be better served if the Navy puts their environmental clean-up efforts elsewhere.

Response— The comment is noted.

RESPONSES TO RIDEM COMMENTS DATED 6 OCTOBER 2004 ON THE DRAFT PHASE II SLERA OF IR PROGRAM SITE 16 DATED AUGUST 2004 NCBC DAVISVILLE, NORTH KINGSTOWN, RHODE ISLAND

Comment 1: Executive Summary; Page ES-1, Second Paragraph.

Based on the Step 3a food web, risks to surrogate mammal (raccoon) and the surrogate avian species (herring gull) were found to be acceptable.

Risks are based on the raccoon and herring gull. In previous analyses the mink was used even though they were not found on the site. Please state how it was determined that these were the most sensitive species for this type of analysis.

Response— The receptors of concern chosen for the risk assessment were presented in Appendix D of the study QAPP (EA. 2004. *Quality Assurance Project Plan Addendum for Additional Sediment Sampling and Characterization, Phase II Remedial Investigation IR Program Site 16.* February), in which the raccoon and herring gull were proposed as receptors of concern. At the time of comment/response for the QAPP, no discussion was made about including a mink as a receptor. The SLERA followed the approved final QAPP with minor modifications as discussed in Section 2.1 of the SLERA none of which included changes in receptors of concern. The risk assessment followed the presentation found in Appendix D of the QAPP with no exceptions. Regardless of following the approved SLERA format presented in the QAPP, the use of the raccoon as a surrogate mammal is conservative. The raccoon consumes food at a higher rate compared to a mink (0.25 g/g/day for the raccoon, 0.14 g/g/day for the mink, USEPA. 1993. *Wildlife Exposure Factors Handbook. Volume I of II.* U.S. EPA, Office of Research and Development, Washington, D.C. Report No. EPA/600/R-93/187a. December.). In addition the mink range is larger (700 ha, USEPA 193) than the range of the raccoon (108 ha, USEPA 1993). Finally, the raccoon, while it still consumes fish, consumes fish at a much smaller proportion than the mink. For these reasons, the raccoon represents a more conservative receptor than the mink.

Comment 2: Executive Summary; Page ES-1, Third Paragraph.

Concentrations of all classes of chemical were found to be higher in Allen Harbor compared to reference areas; however, Allen Harbor has restricted flow with Narragansett Bay, as well as intensive use compared to any of the reference areas.

This sentence notes that the use of Allen Harbor is more intense than at any of the other reference locations. Please explain what is meant by intense, i.e. commercial/industrial activity, marine traffic, time of use, etc. and what information would lead that conclusion.

Response— This sentence will be changed to:

"Concentrations of all classes of chemical were found to be higher in Allen Harbor compared to reference areas; however, Allen Harbor has restricted flow with Narragansett Bay, as well as intensive use (marine traffic and commercial/industrial activity) compared to any of the reference areas."

Comment 3: Executive Summary; Page ES-1, Fourth Paragraph.

There was evidence that shoreline areas, including Site 16, had higher PAH concentrations than those areas outside of the shoreline areas; however this may represent PAH sources such as vehicular emissions and storm drain runoff.

Please explain how this was determined. It is possible the non-shoreline areas are lower in concentration due to dilution from deeper water, yet this was not mentioned. Please expound.

Response— Please see the response to EPA Comment 1d. PAHs are hydrophobic, and are typically associated with particles carried out into the water column of Allen harbor. Sources of PAH to Allen Harbor include storm drain runoff and overland flow. The further one is from a shoreline the less these sources impact sediment. In the middle of Allen Harbor primary sources would be atmospheric deposition of PAHs, a process that would also impact shore locations. Because there are more sources close to the shoreline, it would be expected that PAH concentrations would be higher in this area relative to areas further from shorelines. Dilution from deeper water is not expected to be a significant influence on deeper sediment concentrations of PAH, rather, the decrease in sources in sediment farther from the shoreline is considered to be the primary mechanism for these observations.

The sentence noted in the comment will be modified to:
"There was evidence that shoreline areas, including Site 16, had higher PAH concentrations than those areas outside of the shoreline areas; however this may represent PAH sources associated with adjacent land such as storm drain runoff and overland flow."

Comment 4: Executive Summary; Page ES-2, First Bullet.

A middle distillate petroleum signature in the former fire fighting training area generally matched the low levels of diesel range hydrocarbons in a proximal sediment sample. It was not possible to determine if these diesel range hydrocarbons originated from historical Navy or more contemporary marina activities. However, the composition of this

petroleum distillate indicated that this material could not have caused the PAH distributions observed throughout Allen Harbor sediments.

Paragraph 4 on Page ES-1 notes that concentrations of chemicals found in Allen Harbor are homogeneous. Please state whether this petroleum signature is in the harbor or not.

Response— In general the hydrocarbon patterns within the study area were fairly similar. While higher concentrations of PAHs were measured in Allen Harbor relative to the reference areas, the composition was similar. Subtle differences in the hydrocarbon chemistry suggested that PAHs from storm water and marina pilings were very likely sources of elevated PAHs. Inputs from these sources appeared to build up over time due to restricted exchange with Narragansett Bay. Inputs from Site 16 were possible, but minimal relative to the PAH contributions that we demonstrated.

The petroleum distillate we observed in the Allen Harbor sediments was limited to sample AH-40 and its origin was not clear. In terms of PAHs, this material largely contained 2- to 4-ring petrogenic PAHs (Figure 1a and 1b). By contrast, the pervasive PAH pattern in the remaining sediment samples was composed of 4- to 6 ring pyrogenic PAHs (Figure 1c and 1d). Indeed, 2- to 4-ring petrogenic PAHs were not evident in any sediment samples. In addition, the concentration of PAHs at sampling location AH-40 fell below the applicable ecological risk benchmark (e.g., Total PAHs less than 25 % of the ERM). In other words, this sample shows a low potential to cause significant benthic community effects. Consequently, this distillate could not possibly have caused the PAH impacts observed in the remaining Allen Harbor samples.

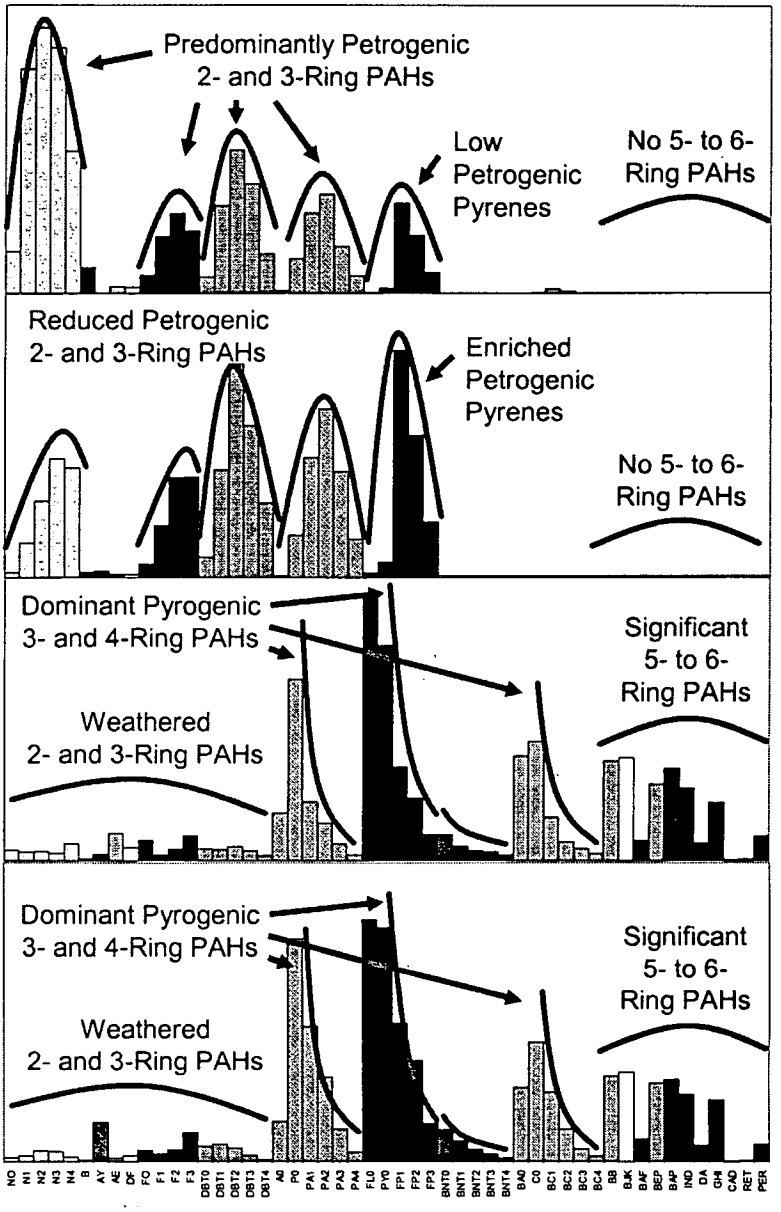
Figure 1. PAH Composition of Middle Distillate Compared to Selected Sediment Samples.

a. Middle Distillate Diesel (Uncombusted). Contained 2- to 4-ring petrogenic PAHs.

b. Middle Distillate Diesel (50% Combusted). Contained 2- to 4-ring petrogenic PAHs. Combustion reduced the 2- and 3-ring PAHs.

c. Sediment with low level Middle Distillate (AH-40). Dominated by 3- to 6-ring pyrogenic PAHs. Petrogenic 2- to 4-ring PAHs are not evident.

d. Typical Allen Harbor Sediment (AH-25). Dominated by 3- to 6-ring pyrogenic PAHs. Petrogenic 2- to 4-ring PAHs are not evident. Close match to AH-40.



Full analyte identities in Table 3 of Forensics Report.
More detailed discussion of petrogenic and pyrogenic PAHs in Section 4.3 of Forensics Report.

Comment 5: Executive Summary; Page ES-2, Third Bullet 3.

Please remove this bullet as we are studying Site 16 and not the coastal areas of the United States. The issue here is whether Site 16 has caused contamination in Allen Harbor. This has no bearing on other coastal areas, including those in Rhode Island.

Response— This statement is relevant for the investigation for two reasons. First, the land use proximal to Allen Harbor differs from the reference areas. The land use proximal to Reference Area 1 is limited to a nature preserve. The land use proximal to Reference Areas 2 and 3 is largely residential. The land use proximal to Allen Harbor is industrial with high vehicular activity (dripping vehicles, exhaust, roadway particulates). In addition, the water use in Allen Harbor differed from the reference areas due to the presence of multiple marinas that experienced seasonal spikes during the summer in fuel combustion and mooring activity. Consequently, the land use near Allen Harbor is best understood within the spectrum of background sediment environments with a range of inputs from natural, residential, and urban environments. The literature citation (Stout, S.A., A.D. Uhler, and S.D. Emsbo-Mattingly. 2004. Comparative Evaluation of Background Anthropogenic Hydrocarbons in Surficial Sediments from Nine Urban Waterways. *Environ. Sci. Technol.* 38:2987-2994.) provides a more objective representation of the complex local background conditions present in many coastal systems, like those around Narragansett Bay. Sediments in this study were very likely exposed to vehicular exhaust byproducts, industry, and large marinas. In addition, the literature citation included 41 samples from RI Sound. In short, the literature values help better represent the spectrum of background conditions present in complex coastal waterways like Allen Harbor.

Comment 6: Section 2.2: Field Investigation; Page 3 of 26, Fifth paragraph.

For this reason, Wickford Cove, located south of Allen harbor (see Figure 2-1), was originally proposed as a reference location because of its marina and industrial activity.

It is not that RIDEM objected to the use of Wickford Cove, rather the Navy stated they wanted a reference location that was similar to Allen Harbor. RIDEM pointed out that Wickford Cove had industrial activity, which was not present in Allen Harbor. Instead, RIDEM suggested the use of Fishing Cove which has similar characteristics as Allen Harbor and is adjacent to Wickford Cove. Please revise this sentence to reflect this.

Response— Based on RIDEM's comment no.4 dated February 2004 on the Third set of comments on the SLERA QAPP the Navy agreed to relocate the reference area to Fishing Cove.

The purpose of the paragraph in question was to note that, based on observations during the sampling effort, it was found that Fishing Cove was quite dissimilar from Allen Harbor. The cove is considerably smaller than Allen Harbor, and has over a quarter mile of open access to Wickford Cove. Alternatively Allen Harbor is much larger than Fishing Cove and has an entrance that is approximately 250 feet wide. A further difference is that the discharge from Fishing Cove runs along one whole side of the cove (see Figure 2-6) while the exit from Allen Harbor is approximately a third of a mile from Site 16. As shown in Figure 2-6, there are some roads and houses located on Sauga Point and Calf Neck adjacent to Fishing Cove. There are no marinas in Fishing Cove, primarily because it is too shallow. Much of the cove is exposed a low tide, and it was necessary to obtain these samples by running in at high tide and chasing the tide out. While it is expected that there are storm drains that discharge into Fishing Cove, there are none that rival the storm drain found in Allen Harbor that drains the large parking area.

Based on RIDEM's current comment, the paragraph will be revised to:

"One of the purposes of the selection of reference locations was to determine PAH chemical signatures appropriate for sources similar to, but not associated with, Navy activities. It was hoped that Fishing Cove, located adjacent to Wickford Harbor (Figure 2-6), would serve as a good reference. While it was found that the PAH forensic signature at Fishing Cove was similar to that found in Allen Harbor, PAH concentrations were significantly smaller in the cove relative to Allen Harbor. Physically Fishing Cove proved very shallow and exposed during low tide. The site was accessible only during high tide, and samples were taken at the most inland site at high tide, and further out as the tide receded. Alternatively Allen Harbor is considerably deeper, and has a restricted hydrodynamic flux. While the original design for this reference area was to capture non-Navy marina influences, Fishing Cove failed to satisfy this objective due to the shallowness of the cove.

Comment 7: **Section 2.2: Field Investigation; Page 3 of 26, Fifth Paragraph, Sentences 6 and 7.**

While the original design for this reference area was to capture marina influences, Fishing Cove failed to satisfy this objective.

Please state why Fishing Cove failed to satisfy this objective since it and Allen Harbor both have boat moorings with no upland activity (e.g. boat repair and maintenance facilities).

Response— There are some small docks located in Fishing Cove, however they are not usable for boats of any size. As discussed in the response to Comment 6, the cove is very shallow, and is largely exposed during low tide, providing residents the opportunity to clam in the flats. Hydrodyamically Fishing Cove is dissimilar to

Allen Harbor due to the restricted flow into and out of Allen Harbor compared to the almost complete flux of water into and out of Fishing Cove. There are no marinas located in Fishing Cove, and Allen Harbor contains several. These factors may account for the smaller concentrations of PAHs found in Fishing Cove as compared to Allen Harbor. Please see the modification to this paragraph in Comment 6.

Comment 8: **Table 2-1: Screening Metals RSC Results, General Comment.**

Please include the lead results within this data table.

Response— The headers were transposed in Table 2-1, and will be corrected.

Comment 9: **Section 3: Physical Characteristics of the Study Area, Page 6 of 26, Second Paragraph, General Comment.**

This paragraph makes statements regarding scour and depositional areas within Allen Harbor. These statements should be removed or fortified by referencing applicable study data. Please revise.

Response— No formal scour and depositional area study has been performed for this study. The discussion related to deposition and scouring referred to the large variability of sediment characteristics found adjacent to Site 16 (Gravel 4.2±5.5%, Sand 49±39%, and silt/clay 47±41%; Table 3-2). This variability is larger than that found in most of the other areas. It was an attempt at explaining why there may have been a greater variability in the area adjacent to Site 16. The large flux of water out of the storm drain during rain events clearly has an impact on suspension, deposition, and re-suspension of sediment particles, as evidenced by the absence of sediment at the attempted core position. It was not possible to collect a sediment core in the vicinity of the storm outfall because the samples consisted of sand, gravel, and detritus characteristic of a nearshore erosional area. There is no reason to remove this text as it was supported by the inability to obtain the core, and the variability of gravel, sand, and silt/clay.

Comment 10: **Section 4.1: Comparison of RSC Results with Quantitative Results; Page 7 of 26, Second Paragraph.**

As can be seen, R^2 values for all three regressions are acceptable at 0.88, 0.81, and 0.76, respectively.

R^2 values of 0.9 or higher are strived for when performing a regression analysis, though 0.85 would be considered the lower end of acceptability. Please revise this paragraph accordingly.

Response— Please refer to the response to NOAA Comment 1 regarding the acceptability of RSC data for screening purposes. SW-846 Method 6200, titled "Field Portable X-Ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment" which is the method used to determine concentrations of copper, lead and zinc, states on page 13 "The results of the confirmatory analysis and FPXRF analyses should be evaluated with a least squares linear regression analysis. If the measured concentrations span more than one order of magnitude, the data should be log transformed to standardize variance which is proportional to the magnitude of the measurement. The correlation coefficient (r^2) for the results should be 0.7 or greater for the FPSRF data to be considered screening level data. If the r^2 is 0.9 or greater and inferential statistics indicated the FPXRF data and the confirmatory data are statistically equivalent at a 99 percent confidence level, the data could potentially meet definitive level data criteria." These data were used as screening data for the selection of samples for quantitative and forensics analysis, consequently the data meet acceptable criteria for that purpose.

Comment 11: Figure 4.3: Comparison of ICP and XRF Zinc Concentration Data.

Figure 4.3 data points clearly show that a power function ($y = ab^x$, where a and b are constants) would most likely be the best fit for the data. Please explain why a power function was not considered.

Response— There is one zinc observed data point at approximately 400 mg/kg (on both ICP and XRF scales, Figure 4-3) that is driving the linear regression, and if this potential outlier is removed a better linear fit is possible. However, no outlier tests were run to justify outlier removal, and all data are presented in the report for this initial interpretation of the confirmatory regression relationship. Previous comparisons between lab confirmatory and screening data occasionally show some outliers that can be attributed to sample heterogeneity since lab and screening samples come from different sample jars. A better fit (higher r-squared values) for the confirmatory regression relationship is possible if the same exact sample is first run for screening and then sent onto the lab for confirmatory analysis, but that was not done here due to the time constraints of the project. There is no reason to expect that this regression would follow a power function, especially considering the linear fits of previous datasets we have produced as well as those produced by the EPA SITE program that originally validated the XRF screening method. Further, as noted in the response to Comment 10, two potential regressions are recommended in Method 6200, a standard linear regression as was shown for zinc in Figure 4-3, or "If the measured concentrations span more than one order of magnitude, the data should be log transformed to standardize variance which is proportional to the magnitude of the measurement." There is a observed data point at approximately 400 mg/kg that is driving the linear regression. There is no reason to expect that this regression would follow a power function. Further, as stated earlier, the RSC data were used as a screening tool for the selection of appropriate samples for quantitative and forensics

analysis, and as a predictive tool for deriving concentration isopleths in Figures 4-5 through 4-8. Expansion of additional possible functions to explain the regression should not be required for these uses.

Comment 12: Section 4.1: Comparison of RSC Results with Quantitative Results; Page 7 of 26, Fourth Paragraph.

However, the under-prediction does not impact the ability of these RSC results to be used for the sample selection process because of the significant relationship between RSC and fixed laboratory results.

Please explain what statistical analyses were performed, besides regression, to demonstrate the "significant relationship" between the RSC and fixed laboratory results.

Response— As discussed in the response to Comment 10, a linear regression is the best method for evaluation of RSC performance for predicting fixed laboratory results. Therefore, additional testing was not necessary.

Comment 13: Section 4.2: Nature, Extent, Fate, and Transport of Contaminants in Allen Harbor; Page 8 of 26, Second Paragraph 2, General Comment.

For lead, zinc, and PAH the statement is made that there is no evidence that Site 16 was responsible for the patterns of constituent shown. Surface soils have not been fully investigated for this site, therefore it may be possible that soil erosion and/or sediments from the drainage system could partially account for the contamination currently being seen in Allen Harbor. Until all media of this site are fully evaluated it is premature to eliminate an area as not being "responsible" for the contamination. Please revise this paragraph to reflect this.

Response— It is certainly possible that soil erosion from Site 16 could partially account for the chemicals found in Allen Harbor. Historically the site has had less vegetation than it presently has. Currently vegetation on the site would be expected to curtail most of the overland flow. It is stated in this paragraph "Total PAH concentration contours are higher the closer one is to the shoreline (Figure 4-8). This would indicate that there were land-based PAH sources, including Site 16, for this contaminant. It is known that there were historical sources (and there are current sources) of PAH into this end of Allen Harbor; consequently, the pattern of contamination for total PAH shown in Figure 4-8 is expected." The sentences in question reads "As can be seen in these figures, there is no apparent trend for any of these potential contaminants relative to the vicinity to Site 16. Since no evident concentration gradient exists, this suggests that Site 16 is not a potential source of metals (lead, copper, and zinc) or total PAH to Allen Harbor." This last statement is supported by the absence of obvious higher concentrations of metals adjacent to Site 16 as shown in Figures 4-5, 4-6, and 4-7 for lead, copper, and zinc respectively. There was evidence of higher copper concentrations in the vicinity

of the marina, possibly indicative of copper-based antifouling paint used on recreational vessels. There is a relatively high lead concentration shown at the discharge location of the storm outfall, but that is likely attributed to storm discharge rather than Site 16. However, there is an inconsistency regarding Site 16 as a potential source of PAH to Allen Harbor in these two exerts from Section 4.2. It is not possible to clearly rule out Site 16 as a historical source of total PAH to Allen Harbor adjacent to Site 16. Consequently the last two sentences will be changed to: "As can be seen in Figures 4-5, 4-6, and 4-7, there is no apparent trend for lead, copper or zinc relative to the vicinity to Site 16. Since no evident concentration gradient exists, this suggests that Site 16 is not a potential source of these metals. Total PAH concentrations tend to exhibit higher concentrations close to the shoreline, including the shoreline adjacent to Site 16. This would indicate that there is a potential for Site 16 having been a source of total PAH to Allen Harbor, either historically or currently. However this tendency is not limited to just the shoreline adjacent to Site 16 but rather all shoreline areas, suggesting that the higher PAH concentrations found in shoreline areas are associated with ubiquitous PAH sources such as storm runoff."

Comment 14: Section 5.1.2: Assessment and Measurement Endpoints; Page 14 of 26, Three ROC Bullets, General Comment.

Please state if the herring gull and raccoon represent the most sensitive receptors of concern. If they are not we may be underestimating the ecological risk at this site. In previous studies at NCBC, for example, the mink was chosen as a receptor of concern.

Response— Please see the response to Comment 1. Exposure parameters for the mink are less conservative than those for the raccoon. These receptors appear to be appropriate.

Comment 15: Appendix B: Environmental Forensics Report, General Comment.

Much explanation is provided on the equipment used to determine the makeup of the samples. Please explain how the samples were "aged" to represent the up to 60 years of being at the site. Please provide a comparison to new and weathered oils delineating their differences.

Response— For the record, the forensic report does not discuss age. It discusses weathering. This comment is the same as that from USEPA in their Comment 1. Please see the response to Comment 1c from USEPA.

Comment 16: Appendix B, Environmental Forensics Report, Section 2.3: Reference Materials, Page 4-5, First Paragraph.

In addition, the former fire fighter training reference fuels composed of neat, compusted, and evaporated middle distillates (kerosene and diesel)

were added to the analysis from a similar study conducted for the Navy at the former fire training area in Cutler, Maine.

It is not stated what fuels were used at the fire fighter training area in Cutler, Maine and whether they aged in the same manner as at Site 16. Therefore, RIDEM does not agree with the use of the Cutler, Maine site as an acceptable reference area.

Response— As mentioned in the response to EPA Comment 1c, the forensic report did not attempt to determine the age of the release. Rather, it relied on recalcitrant hydrocarbons to determine the origin of PAHs in various stages of weathering.

It is acknowledged that the reference to the Cutler, ME project should be reworded in the report. The reference samples were not collected in Maine at all. These freshly dispensed kerosene and diesel materials were collected at fueling facilities near the Battelle Laboratory in Duxbury, MA. These reference samples were combusted and evaporated under known conditions in the laboratory for use at fire fighter training sites all over the United States. These reference samples were simply reported for the first time in the Cutler, ME report. Consequently, this report was referenced without adequate clarification. Since all of the reference sample data are included, the Allen Harbor forensic study will have all references to the Cutler report removed from the final version of the report.

For the record, the primary fuels used at Navy fire fighter training facilities were kerosene and diesel. These middle distillates were generated by refineries throughout the United States in strict accordance with ASTM standards. These middle distillates can be recognized with the forensic hydrocarbon methods employed by this study. NewFields is very familiar and widely published on the forensic signatures that help identify these materials in the environment. In addition, NewFields used the evaporated and combusted reference materials to quantitatively demonstrate the changes in kerosene and diesel composition when used to fuel open fires. In the absence of these reference samples, the identification of partially combusted fuels would be qualitative, less rigorous, and potentially confused with refinery intermediates. Contrary to the opinion in Comment 16, the kerosene and diesel reference materials used at Cutler, ME were relevant and applicable for the identification of petroleum distillates used in North Kingston, RI.

Comment 17: General Comment.

In future revisions of this document, please show constituent concentrations on the maps/figures. This would be helpful in interpreting and analyzing the data.

Response— During document production it was considered to present Figures 4-5 through 4-8 (predicted concentration isopleths for lead, copper, zinc, and total PAH) showing

the concentrations as "tags" adjacent to the samples rather then using concentration contours. These figures were so "busy" as to be unusable for the purpose for which they are presented, to determine if there are concentration trends of these chemicals in Allen Harbor. The figures as presented allow for a better method to interpret and analyze these trends.

Appendix F

Laboratory Data Reports, Validation Report, and Environmental Forensics Attachments (Available on enclosed CD)

Project Name:	Davisville Naval Sediment Study
Project Number:	EA Davisville
Analysis:	PAH & Biomarker by GCMS
Batch #:	04-0117
Client:	EA Engineering, Science, and Technology
Matrix:	Sediment

Battelle

The Business *of* Innovation

Battelle

The Business *of* Innovation

Chemistry Data Report Package

for
EA Engineering, Science, and Technology

Davisville Naval Sediment Study

EA Davisville
PAH & Biomarker by GCMS

04-0117
Sediment

Analyst:		Date:	4-30-04
Laboratory Supervisor:		Date:	4.30.04
Project Manager:		Date:	5/7/04

PAH QA/QC SUMMARY
QC Batch 04-0117

PROJECT: Davisville Naval Sediment Study

PARAMETER: PAH

LABORATORY: Battelle, Duxbury, MA

MATRIX: Sediment

SAMPLE CUSTODY: 85 Sediment samples were collected in the field between March 22 and March 27, 2004. Samples arrived at Battelle Duxbury in multiple shipments between March 23 and March 29, 2004. Cooler temperatures ranged from 2 to 10 °C upon receipt. All samples were received in good condition. Samples were stored frozen after login. 19 samples were identified for quantitative PAH analysis, and 20 samples were identified for forensic PAH analysis.

Batch 04-0117 contains 20 soil samples (forensic PAH analysis)

QA/QC MEASUREMENT PERFORMANCE CRITERIA:

	Reference Method	Blank	Surrogate Recovery	LCS/MS Recovery	SRM % Diff.	MS/MSD Replicate Relative Precision	ICC Precision
PAH	Battelle SOP 5-157	<ssMDL[a]	40-120% Recovery	40-120% Recovery [b]	<30% PD [c]	≤30% RPD [b]	<15% PD

[a] Or analyte concentrations in associated samples >5 × blank values.
[b] For 80% of analytes in MS/MSD; Analyte concentration in MS/MSD must be >5× background to be used for data quality assessment
[c] From a range of certified values; using surrogate corrected data; certified values in SRM must be >5× the detection limit to be used for data quality assessment.

METHOD: Sediment samples were prepared and analyzed for PAHs and hopane following Battelle's Standard Operating Procedures (SOP). Briefly,

Sediment Sample Preparation – Sediment samples were extracted for PAHs and hopane following Battelle Duxbury SOP 5-203, *Extraction of Soil/Sediment Samples for Petroleum Analysis*. Briefly, approximately 30 g of wet sediment material was weighed into an extraction vessel and spiked with the surrogate internal standard (SIS) compounds. Next, the sample was extracted three times with 100 mL dichloromethane (DCM) using shaker techniques. The combined extract was dried over sodium sulfate, concentrated to approximately 2 to 3 mL using Kuderna-Danish and nitrogen evaporation techniques. Sample extracts were treated with activated copper to remove elemental sulfur. The extract was then processed through an alumina cleanup column. Gravimetric analysis was performed for both pre-column and post-column extracts to estimate the dilution factor for the sample extracts. The concentrated extract was quantitatively split, one split was fortified with recovery internal standard (RIS) compounds that are used for quantification, and split for TPH/alkanes/isoprenoids and PAHs analyses by GC/FID and GC/MS, respectively. The other split of the extract was further fractionated on a silica gel column, and concentrated, spiked with RIS for biomarker analysis.

GC/MS Analysis – PAHs/hopane were analyzed by GC/MS (Hewlett Packard 6890) using a 60-m DB5 column and helium as the carrier gas. A minimum of a five-point calibration curve was used for PAH/hopane analysis, ranging from approximately 0.01 to 10.0 µg/mL. Concentrations of PAH/hopane were determined by the method of internal standards, using the RIS. All sediment results were reported in a microgram per kilogram dry-weight concentration basis (µg/kg).

PAH QA/QC SUMMARY
QC Batch 04-0117

HOLDING TIMES:

Samples were prepared for analysis in one analytical batch. Samples were extracted and analyzed within holding times. Sediment samples were held frozen and in the dark until extraction.

Batch	Extraction Date	Analysis Date
04-0117	4/06/2004	4/20–4/24/2004

DETECTION LIMITS:

PAHs results are reported relative to the sample-specific reporting limits for that compound. The sample-specific RL is based on the low calibration standard and adjusted for sample specific processing factors and volumes, as follow:

RL = (Concentration in Low Std. × final extract volume × dilution factors)/ Sample size

Where,
Concentration in Low Std. = 0.010 µg/mL for PAHs
Final Extract Volume = 1000 µL
Dilution Factor = ~ 2.0
Sample Size = amount sediment extracted

- Non-detects are reported as "null" and U flagged.
- Compounds detected at a concentration below the ssRL are reported and J flagged.

BLANKS:

A laboratory procedural blank (PB) was prepared with each analytical batch. Blanks are analyzed to ensure that the sample extraction and analysis methods were free of contamination.

04-0117 – All PAH analytes were recovered within control limits with the exception of 2-Methylnaphthalene and 1-methylnaphthalene, Indeno(1,2,3-cd)pyrene, and Benzo(g,h,i)perylene which were found at a level greater than 5 times the ssMDL..

Corrective Action –All samples have concentrations greater than 5 times the PB, meeting secondary criteria. No further action taken.

LABORATORY CONTROL SAMPLE

One laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of PAH's were calculated to measure data quality in terms of accuracy.

04-0117 – Six PAH analytes including Naphthalene, 2-Methylnaphthalene, 1-Methylnaphthalene, 2,6-Dimethylnaphthalene, Biphenyl and Acenaphthylene were recovered below the control limits specified in the QAPP.

LCS recoveries ranged from:

	PAH
04-0117	5-90%

Corrective Action – Under recovery was possibly due to improper nitrogen blow-down. This is likely an isolated case since SRM, MS/MSD and NSC recoveries for the six compounds were good, so the data does not appear to be compromised.

PAH QA/QC SUMMARY
QC Batch 04-0117

MATRIX SPIKE AND MATRIX SPIKE DUPLICATES: One pair of matrix spike (MS) and matrix spike duplicate (MSD) samples was prepared with the sediment batch to measure data quality in terms of accuracy and precision. The MS/MSD were fortified with PAHs to monitor data quality in terms of accuracy and precision.

04-0117 –Three analytes were recovered outside accuracy control limits specified in the QAPP. 2,6-Dimethylnaphthalene was recovered at 38% in S1432MS. S1432MSD recovered 1-Methylnaphthalene at 39% and 2,6-Dimethylnaphthalene at 38%.

Recoveries and RPDs ranged from:

	Recovery	Precision
04-0117	38% – 101%	0%–15.4%

Corrective Action – No corrective action was taken because these analyte were quantified using the naphthalene response factor. At equal concentrations, these compounds have an area roughly 60% of naphthalene. Secondary criteria of 80% passing analytes were met so no further action was necessary.

SURROGATES: Three PAH surrogate compounds were added to each sample prior to extraction, including Naphthalene-d8, Phenanthrene-d10, and Chrysene-d12. One biomarker surrogate compound was added to selected samples prior to silica gel fractionation. Recovery data were calculated to measure data quality in terms of accuracy (extraction and fractionation efficiency).

04-0117 – Five PAH surrogates were recovered outside control limits. Naphthelene-d10 in sample BE162LCS at 7% and in Sample S1457-P at 137%. Also for Sample S1485-P Naphthalene-d8 at 156%, Phenanthrene-d10 at 180%, and Chrysene-d12 at 208%. All biomarker surrogates were recovered within QC limits.

Corrective Action – LCSs low recovery of Naphthelene-d10 is most likely due to improper nitrogen blow-down. High recovery of Naphthelene-d10 in Sample S1457-P due to contribution from Naphthalene, magnified by a high dilution factor (64.231). Sample S1485-P appears to have been double spiked causing high recoveries – this was confirmed by the prep task leader.

DUPLICATES: A laboratory duplicate was prepared with the batch. The relative percent difference (RPDs) between laboratory duplicate analyses for PAHs and hopane were calculated to measure data quality in terms of precision.

04-0117 – All analytes met QC limits.

RPDs ranged from 4.4 to 18.6%.

Corrective Action - None

CONTROL OIL: A North Slope Crude oil was prepared with the batch. The percent difference (PD) between measured and historical values was calculated to measure data quality in terms of accuracy.

04-0117 – All compounds met the QC criteria.

PDs ranged from 0.2 to 25.9%.

PAH QA/QC SUMMARY
QC Batch 04-0117

SRM: A standard reference material (SRM, NIST 1944) was prepared with the sediment analytical batch. The PD between detected concentrations and *certified values* was calculated to measure data quality in terms of accuracy. ***Note*** – Data qualified using PD is > 30% plus a 95% confidence level. Also note that the SRM is certified for only 15 of the target compounds.

04-0117 – No exceedances.

PDs ranged from:

	PAH
BE163SRM-P	1.3 – 30.6%

INSTRUMENT CHECK STANDARD: An instrument check standard was run with each analytical sequence. The PDs against the laboratory consensus values were calculated to measure data quality in terms of precision.

04-0117 – PDs ranged from 0.1 to 11.6%.

Corrective Action – None.

REFERENCES:

EA 2004. *Quality Assurance Project Plan Addendum for Additional Sampling and Characterization Phase II Remedial Investigation IR Program Site 16, Naval Construction Battalion Center Davisville North Kingstown, Rhode Island.* Delivery Order No. 0097. February 2004.

Workplan

REVIEWED BY:
(For QAU use only)

BATTELLE DUXBURY OPERATIONS
QUALITY ASSURANCE WORKPLAN/QAPP REVISION FORM

PROJECT TITLE: **Davisville Naval Sediment Study**

Internal distribution:
Mark Guilmain
Bob Lizotte
James Roush
Brian Massa

PROJECT NUMBER:

CLIENT: EA Engineering, Science, and Technology
175 Middlesex Turnpike, 3rd Floor
Bedford, MA 01730
Contact Mr. Jim Shultz
Phone: 508-485-2982

PROJECT MANAGER: Jeffery Hardenstine

PROJECT INITIATION DATE: October 1, 2002

REVISION NUMBER: 2

PROJECT STANDING: √NEW ONGOING (check one)

REVISION APPROVAL: Project Manager:_____ Date: 4/12/04

Please detail any Workplan/QAPP modifications cited by the Project Team or Client during the initial kickoff meeting or throughout the duration of the project. Please check the box beside the section number and insert a complete description of the modification. Once the Project Manager approves the revisions, a copy of the form must be provided to the Project Team and each individual on the distribution list. The revision form should then be filed with the appropriate documentation (i.e. original Workplan/QAPP). If significant modifications are required, please submit a new version of the original Workplan/QAPP rather than using this revision form.

☐ Section 1.0

x Section 2.0 - Objective and General Information:

Another sample (sample ID: AH28, Battelle ID: S1468) was identified by Dr. Dan Hinckley on 4/7/04 for quantitative PAH analysis and TOC analysis. Per client direction, S1468 was extracted/grouped with the Forensic analysis batch 04-0117, within 24 hrs of the initiation of the first extraction, with no additional QC samples.

The TOC split for S1468 was sent to AMS on 4/7/04.

BATTELLE DUXBURY OPERATIONS
QUALITY ASSURANCE WORK-PLAN/QAPP ADDENDUM FORM

- ☐ Section 3.0 – Quality:
- ☐ Section 4.0 – Organization and Communication:
- ☐ Section 5.0 – Schedule: (required for ongoing projects)
- ☐ Section 6.0 – Budget:
- ☐ Section 7.0 – Staff Development:
- ☐ Attachments:

8

REVIEWED BY:
(For QAU use only)

BATTELLE DUXBURY OPERATIONS
QUALITY ASSURANCE WORKPLAN/QAPP REVISION FORM

PROJECT TITLE: Davisville Naval Sediment Study

PROJECT NUMBER:

CLIENT: EA Engineering, Science, and Technology
175 Middlesex Turnpike, 3rd Floor
Bedford, MA 01730
Contact Mr. Jim Shultz
Phone: 508-485-2982

PROJECT MANAGER: Jeffery Hardenstine

PROJECT INITIATION DATE: October 1, 2002

REVISION NUMBER: 1

PROJECT STANDING: √NEW ONGOING (check one)

REVISION APPROVAL: Project Manager: Jeffery Hardenstine Date: 4-6-04

Please detail any Workplan/QAPP modifications cited by the Project Team or Client during the initial kickoff meeting or throughout the duration of the project. Please check the box beside the section number and insert a complete description of the modification. Once the Project Manager approves the revisions, a copy of the form must be provided to the Project Team and each individual on the distribution list. The revision form should then be filed with the appropriate documentation (i.e. original Workplan/QAPP). If significant modifications are required, please submit a new version of the original Workplan/QAPP rather than using this revision form.

☐ Section 1.0

x Section 2.0 - Objective and General Information:

Preparation and Analysis of Soil and Sediment– semi-volatile analysis

Samples will be weighed, spiked, extracted, concentrated and a gravimetric weight performed as per workplan dated October 1, 2002. Process approximately 50 mg of sample extract, if possible, based on the gravimetric weight through an alumina column. Sample extract will be concentrated, treated with activated copper and a post column weight taken. A minimum of a one half split will be performed and archived for possible biomarker fraction. The remaining extract will be concentrated or split to achieve a 3-5 mg/mL concentration, and spiked with RIS as per table 4. The post RIS extract

will be split and submitted for target compound list PAHs by GC/MS (Attachment 1), and the remainder will be archived for possible GC/FID analysis. A sample list is provided as Attachment 3.

Based on the target compound list PAHs, selected samples will be identified for detailed forensics analysis and will consist of detailed PAH quantification (PAH Tier 1, Tier 3 and Attachment 2), FID chromatogram and biomarker fractionation and analysis per original workplan dated October 1, 2002.

Biomarker Fractionation – The post alumina archive will be spiked with 5B-Cholane as per table 3 and fractionated using silica gel per Battelle SOP 5-293-01 *Total Petroleum Hydrocarbons (TPH) and Fraction-specific Hydrocarbons (FSH) by Gas Chromatography/ Mass Spectrometry.* Only the F1 fraction containing biomarkers will be collected, concentrated, spiked with RIS per table 4 and submitted at a 3-5 mg/mL concentration.

Preparation and Analysis of Rinsate Water Blanks– semi-volatile analysis

Water Sample Extraction. The water samples will be extracted per Battelle SOP 5-200-03 "Water Extraction For Trace Level Semi-Volatile Organic Contaminant Analysis". Water samples will be analyzed for the target compound list PAHs only (Attachment 1). Each water sample consists of 1 liter and will be spiked at the low level with PAH surrogates as listed in table 3. The water samples will be extracted, concentrated and split in half. One half will be archived and the other half will be spiked with PAH RIS as stated in table 4 and submitted for analysis at a 500 uL PIV. The QC samples will include a PB, LCS.

BATTELLE DUXBURY OPERATIONS
QUALITY ASSURANCE WORK-PLAN/QAPP ADDENDUM FORM

QC Type

Table 2: Quality Control Samples

QC Type	QC Name	QC Description	Frequency	Comments
PB	Procedural Blank	Laboratory Control Reagent blank	1 per batch	Pre-extracted Sigma-Aldrich Silicon dioxide (Soil/Sediment)
LCS	Laboratory control spike	Blank spike recovery sample	1 per batch	Pre-extracted Sigma-Aldrich Silicon dioxide (Soil/Sediment)
MS/MSD	Matrix Spike/Matrix spike duplicate	Field sample fortified with target compounds	1 per batch	1 Soil/Sediment to be designated by EA field team
Duplicate	Lab Duplicate	Duplicate extraction and analysis of a field sample	1 per batch	1 Soil/Sediment to be designated by Battelle Project Manager
SRM	Standard Reference Material	NIST 1944 with one soil/sediment batch	1 per batch	Calculate % Rec using NIST reference values for all applicable analytes with acceptable recovery range +/- 25% Rec (see attached)
NSC	North Slope Crude	Reference Oil (5 mg/mL) with historic values	1 per batch	Use during GC analysis only – not required for prep. Compare v. historical average +/- 25% Rec (for internal Battelle use only)

x Section 3.0 – Quality:

Table 5. Data Quality Objectives

QC Type/Parameter	DQO Targets	Comment/Corrective Action
Procedural Blank	Less than five times MDL (,5xMDL), or associated samples must be greater than five times the blank concentration (>5xPB)	Review with Project Manager; re-analyze or justify results in project records
Laboratory Control Sample	Recovery values 40-120% for at least 80% of the analytes	Review with project manager; re-analyze or justify reporting the results in project records
Standard Reference Material Accuracy	Organics Percent Difference less than 30% from a range of certified values on average	Analyte concentration must be greater than five times the Method Detection Limit (>5xMDL).
Matrix Spike/Matrix Spike Duplicate	Recovery values 40-120% for at least 80% of the analytes. 30% Relative Percent Difference (RPD)	Analyte concentration in MS must be greater thatn five times reported background concentration. Review with project manager; re-analyze or justify reporting the results in project records
Surrogate Compound Recovery	Recovery results between 40% and 120%	Review with project manager; re-analyze or justify reporting the results in project records
Analytical Duplicate Precision	Organics results less than 30% Relative percent Difference (RPD)	Review with project manager; re-analyze or justify reporting the results in project records
Independent Calibration Check Solution	Less than fifteen percent difference from true value (<15%PD)	Review with Project Manager; re-analyze or justify in project records.

☐ Section 4.0 – Organization and Communication:

☐ Section 5.0 – Schedule: (required for ongoing projects)

☐ Section 6.0 – Budget:

☐ Section 7.0 – Staff Development:

x Attachments:

Attachment 1

Target Compound List PAHs

Analyte/Analyte Groups	Analyte/Analyte Groups
Naphthalene	Benz(a)anthracene
2-methylnaphthalene	Chrysene
Acenaphthylene	Benzo(b)fluoranthene
Acenaphthene	Benzo(k)fluoranthene
Fluorene	Benzo(a)pyrene
Anthracene	Indeno(1,2,3-c,d)pyrene
Phenanthrene	Dibenz(a,h)anthracene
Fluoranthene	Benzo(g,h,i)perylene
Pyrene	
	TPAH = sum N through GHI

Attachment 2

Additional Detailed Forensic PAH Analytes

Analyte/Analyte Groups
Benzo(b)naphtho(2,1-d)thiophene
C1-Benzo(b)naphtho(2,1-d)thiophene
C2-Benzo(b)naphtho(2,1-d)thiophene
C3-Benzo(b)naphtho(2,1-d)thiophene

REVIEWED BY:
(For QAU use only)

Attachment 3. Sample List

Area	Station ID	DATE COMPLETED	Battelle ID	Comments	Quantitative Analysis?	Forensic Analysis ?	TOC
	AH-03	3/23/2004	S1438	external marina	Yes	Yes	Yes
	AH-06	3/23/2004	S1432	MS/MSD and duplicate	Yes	Yes	Yes
	AH-08	3/22/2004	S1421	external marina	Yes		Yes
	AH-11	3/22/2004	S1424	MS/MSD and duplicate	Yes		Yes
	AH-17	3/23/2004	S1435	internal marina, 23 ppm PAH	Yes	Yes	Yes
	AH-23	3/24/2004	S1452	Inner Marina (23 ppm)	Yes		Yes
	AH-26	3/27/2004	S1505	Gradation from Outfall and Marina	Yes	Yes	Yes
	AH-29	3/26/2004	S1491	Inner Marina (48 ppm PAH)	Yes	Yes	Yes
	AH-32	3/26/2004	S1490	Inner Marina (19 ppm PAH) and Site 16	Yes		Yes
	AH-33	3/26/2004	A1476	Both marina and Site 16	Yes		Yes
	AH-35	3/26/2004	S1479	Gradation from seep	Yes		Yes
	AH-40	3/27/2004	S1509	Seep sample	Yes	Yes	Yes
	AH-42	3/27/2004	S1507	Gradation from Outfall	Yes		Yes
	AH-45	3/26/2004	S1474	Close to Site 16, but not seep or outfall	Yes	Yes	Yes
	AH-47	3/26/2004	S1494	Capture second seep	Yes		Yes
	AH-49	3/25/2004	S1471	Closest to outfall	Yes	Yes	Yes
	AH-51	3/27/2004	S1502	Black Beauty	Yes		Yes
Coggeshall Cove-Prudence Is.	REF1-1	3/24/2004	S1442	<1 ppm PAH	Yes		Yes
	REF1-2	3/24/2004	S1443	1.1 ppm PAH	Yes		Yes
	REF1-4	3/24/2004	S1445	3 ppm PAH	Yes	Yes	Yes
Northeast Shoreline-Jamestown Is.	REF2-1	3/24/2004	S1447	4.4 ppm PAH	Yes	Yes	Yes
	REF2-3	3/24/2004	S1449	2.2 ppm PAH	Yes		Yes
	REF2-5	3/24/2004	S1451	1.1 ppm PAH	Yes		Yes
Fishing Cove	REF3-1	3/25/2004	S1467	6.5 ppm PAH	Yes		Yes
	REF3-2	3/25/2004	S1481	7.3 ppm PAH	Yes	Yes	Yes
	REF3-4	3/25/2004	S1464	4.7 ppm PAH	Yes		Yes

BATTELLE DUXBURY OPERATIONS
QUALITY ASSURANCE WORK-PLAN/QAPP ADDENDUM FORM

Area	Station ID	DATE COMPLETED	Battelle ID	Comments	Quantitative Analysis?	Forensic Analysis ?	TOC
Field duplicate-	DUP-01	3/22/2004	S1426	dup of AH-11	Yes		Yes
Field duplicate-	DUP-03	3/23/2004	S1430	dup of AH-6	Yes	Yes	Yes
Field duplicate-	DUP-07	3/26/2004	S1473	dup of AH-33	Yes		Yes
Matrix Spike/M.S. Duplicate-indicate station location	AH-11-MS/MSD	3/23/2004	S1424		Yes		
	AH-06-MS/MSD	3/23/2004	S1432		Yes		
Rinsate Blanks	RINS-01	X	S1487		Yes		
	RINS-02	X	S1489		Yes		
Seep-core sample Top	Core 1-top	3/27/2004	S1510		Yes		Yes
Seep-core sample Bottom	Core 1- bot	3/27/2004	S1511		Yes		Yes
Source 1 - Dip Tank Area	SOURCE1-1	3/26/2004	S1483			Yes	
	SOURCE1-2	3/26/2004	S1485			Yes	
Source 2 - MW16-07S area	SOURCE2-1	3/26/2004	S1484			Yes	
	SOURCE2-2	3/26/2004	S1486			Yes	
Source 3 - FFFTA	SOURCE3-1	3/26/2004	S1481			Yes	
	SOURCE3-2	3/26/2004	S1482			Yes	
Source 4 - SW Catch Basin	SOURCE4-1		S1457			Yes	

Battelle

The Business of Innovation

ShpNo SHP-040323-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 2960097.3203 Client: EA Engineering

Received by: Newell, Jeffrey Date/Time Received: Tuesday, March 23, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier Tracking Number: 845049959704

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	2.0	8

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer BDO IDs Assigned: S1420 - S1427

Samples logged in by: Newell, Jeffrey Date/Time: 03/23/2004 10:30 AM

Approved By: Fahey, Jessica Approved On: 3/29/2004 9:09:

Authorized By: Authorized On:

2.0 Temp Blank

Battelle
. . . Putting Technology To Work

Chain of Custody

Proj. No: 29605097.3203
Proj. Name: Allen Harbor Sediment Sampling

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3.22.04	1035	51420	AH-07	Sediment				X				X			2
3.22.04	1540	51421	AH-08	Sediment				X				X			2
3.22.04	1450	51422	AH-09	Sediment				X				X			2
3.22.04	1410	51423	AH-10	Sediment				X				X			2
3.22.04	1215	51424	AH-11	Sediment				X				X			2
3.22.04	1215 51424	51425①	AH-11 MS/MSD	Sediment				X				X			4
3.22.04	—	51426	AH-DUP01	Sediment				X				X			2
3.22.04	—	51427	AH-DUP02	Sediment				X				X			2

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	03/22/04	1900	[signature]	3/23/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments: ① Sample given same ID as background sample per PM's request 4/5/04 JMF.
All 6 jars have ID 51424

ORIGINAL

Battelle

The Business of Innovation

ShpNo SHP-040323-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑

Project Number: 2960097.3203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Tuesday, March 23, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1420	AH-07	03/22/04 16:35	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1421	AH-08	03/22/04 15:40	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1422	AH-09	03/22/04 14:50	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1423	AH-10	03/22/04 14:10	03/23/04 13:56	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1424	AH-11	03/22/04 12:15	03/23/04 13:56	6	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	Jars 1 & 2 are AH-11, J
S1426	AH-DUP 01	03/22/04 0:00	03/23/04 13:58	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1427	AH-DUP 02	03/22/04 0:00	03/23/04 13:58	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	

Total Samples: 7

Battelle

The Business of Innovation

ShpNo SHP-040324-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Wednesday, March 24, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959645

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	5.4	13

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☐ Sample containers intact
☑ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 5.4 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1428 - S1440

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/24/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:30:0

Authorized By: **Authorized On:**

Battelle

The Business of Innovation

ShpNo: SHP-040324-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No. 1 of 1

Approved:

COC Client: EA Engineering

COC Project: Allen Harbor Sediment Sampling

COC Date: 3/24/2004 10:38:00 AM

	Description of Problem:	Explanation:
Sample Container Integrity	Cap broken	Several samples received with damaged caps: AH-16 (S1436, 1of2), AH-15 (S1437, 2of2), Dup3 (S1430)

Documentation of project manager notification

Sample Custodian Newell, Jeffrey **Date:** 3/24/2004 11:31:00 A

Laboratory Manager: Peven-McCarthy, Carole **Date:** 4/1/2004 10:50:00 AM

Project Manager: Hardenstine, Jeffery **Date:** 3/26/2004 1:03:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Sent e-mail to Dan Hinkley of EA Engineering on 3-26-04 notifing of samples with cracked caps. Note sample intergrity is not compromised. Caps are replaced

Date this form was received back to the custodian: _____

Reference Number: _____

Battelle
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Chain of Custody

Proj. No: 9600173203

Proj. Name: ~~Allen Harbor~~ Sediment Sampling

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION		Battelle ID #	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3/23/04	0930	~~AH-12~~	AH-12	Sediment		S1428				X				X			2
3/23/04	1005		AH-06 MS	Sediment	S1432	~~S1429~~ ①				X				X			2
			DUP 3	Sediment		S1430				X				X			2
3/23/04	1005		AH-06 MSD	Sediment	S1432	~~S1431~~ ①				X				X			2
3/23/04	1005		AH-06	Sediment		S1432				X				X			2
3/23/04	1123		AH-05	Sediment		S1433				X				X			2
~~3/23/04~~	~~1555~~		Temp Blank														
3/23/04	1555		AH-19	Sediment		S1434				X				X			2
3/23/04	1625		AH-17	Sed		S1435				X				X			2
3/23/04	1530		AH-16	Sed		S1436				X				X			2
3/23/04	1505		AH-15	Sed		S1437				X				X			2
3/23/04	1350		AH03	Sed		S1438				X				X			2
3/23/04	1325		AH-04	Sed		S1439				X				X			2
3/23/04	1430		AH-14	Sed		S1440				X				X			2

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/23/04	18:00	[signature]	3/24/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

① samples were given same ID as background sample. all 6 jars are now logged in as S1432 per PM's request. JMF 4/5/04

ORIGINAL

Battelle
The Business of Innovation

ShpNo SHP-040324-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Wednesday, March 24, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1428	AH-12	03/23/04 9:30	03/24/04 11:12	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1430	Dup3		03/24/04 11:13	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1432	AH-06	03/23/04 10:05	03/24/04 11:15	6	SEDIMENT	5.4	NA	NA	NA	29 Freezer			Jars 1 & 2 are AH06, Ja
S1433	AH-05	03/23/04 11:25	03/24/04 11:16	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1434	AH-19	03/23/04 15:55	03/24/04 11:17	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1435	AH-17	03/23/04 16:25	03/24/04 11:19	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1436	AH-16	03/23/04 15:30	03/24/04 11:21	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1437	AH-15	03/23/04 15:05	03/24/04 11:22	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1438	AH-03	03/23/04 13:50	03/24/04 11:23	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1439	AH-04	03/23/04 13:25	03/24/04 11:24	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1440	AH-14	03/23/04 14:30	03/24/04 11:24	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			

Total Samples: 11

Battelle

The Business of Innovation

ShpNo SHP-040325-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 Client: EA Engineering

Received by: Newell, Jeffrey Date/Time Received: Thursday, March 25, 2004 10:00 AM

No. of Shipping Containers: 2

SHIPMENT

Method of Delivery: Commercial Carrier Tracking Number: 845049959634

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 2	Cooler	Tape	Intact	Intact	0.8	7
2 of 2	Cooler	Tape	Intact	Intact	2.3	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2.3 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1442 - S1457

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/25/2004 10:00 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:50:0

Authorized By: **Authorized On:**

Battelle

The Business of Innovation

ShpNo: SHP-040325-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No. 1 of 1

Approved:

COC Client: EA Engineering

COC Project: AH Sediment Sampling

COC Date: 3/25/2004 10:21:00 AM

	Description of Problem:	Explanation:
Sample Container Integrity	Cap broken	SAMPLE REF 1-1(S1442) BOTTLE 2 OF 2 CAP BROKEN; NO SAMPLE LOST

Documentation of project manager notification

Sample Custodian	Newell, Jeffrey	**Date:**	3/25/2004 12:00:00 PM
Laboratory Manager:	Peven-McCarthy, Carole	**Date:**	4/1/2004 10:43:00 AM
Project Manager:	Hardenstine, Jeffery	**Date:**	3/26/2004 1:13:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Sent Dan Hinkley of EA Engineering an e-mail on 3-26-04 notifing of samples received with broken cap. Note, sample integrity is not compromised. The cap is replaced.

Date this form was received back to the custodian: _____

Reference Number: _____

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Chain of Custody

Proj. No: 29600973303
Proj. Name: AH Sed. Sampling
SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3/24/04	0840	51442	REF 1-1 1					X				X			2
3/24/04	0900	51443	REF 1-2 1					X				X			2
3/24/04	0925	51444	REF 1-3 1					X				X			2
3/24/04	1005	51445	REF 1-4 1					X				X			2
3/24/04	1030	51446	REF 1-5 1					X				X			2
3/24/04	1150	51447	REF 2-1 1					X				X			2
3/24/04	1215	51448	REF 2-2 1					X				X			2
3/24/04	1235	51449	REF 2-3 1					X				X			2
3/24/04	1305	51450	REF 2-4 1					X				X			2
3/24/04	1325	51451	REF 2-5 1					X				X			2
3/24/04	1530	51452	AH-23 1					X				X			2
3/24/04	1615	51453	AH-21 1					X				X			2
3/24/04	1600	51454	AH-24 1					X				X			2
			Temp blank					~~X~~ RC				~~X~~ RC			1
3/24/04	1635	51455	AH-18 1					X				X			2
		51456	DUP04 1					X				X			2
3/24/04	1715	51457	SD Source 1					X				X			2

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/24/04	18:08	[signature]	3/25/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

Battelle

The Business of Innovation

ShpNo SHP-040325-01

Battelle Project No:

Sample Receipt Form Details

Approved:

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Thursday, March 25, 2004 10:00 AM

No. of Shipping Containers: 2

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1442	REF 1-1	03/24/04 8:40	03/25/04 11:01	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1443	REF 1-2	03/24/04 9:00	03/25/04 11:01	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1444	REF 1-3	03/24/04 9:25	03/25/04 11:02	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1445	REF 1-4	03/24/04 10:05	03/25/04 11:09	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1446	REF 1-5	03/24/04 10:30	03/25/04 11:10	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1447	REF 2-1	03/24/04 11:50	03/25/04 11:15	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1448	REF 2-2	03/24/04 12:15	03/25/04 11:16	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1449	REF 2-3	03/24/04 12:35	03/25/04 11:20	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1450	REF 2-4	03/24/04 13:05	03/25/04 11:21	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1451	REF 2-5	03/24/04 13:25	03/25/04 11:24	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1452	AH-23	03/24/04 15:30	03/25/04 11:25	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1453	AH-21	03/24/04 16:15	03/25/04 11:26	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1454	AH-24	03/24/04 16:00	03/25/04 11:27	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1455	AH-18	03/24/04 16:35	03/25/04 11:27	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1456	Dup-04		03/25/04 11:29	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1457	SID Source 4-1	03/24/04 17:15	03/25/04 11:30	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			

Total Samples: 16

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ShpNo SHP-040326-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 Client: EA Engineering

Received by: Newell, Jeffrey Date/Time Received: Friday, March 26, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier Tracking Number: 845049959601

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	1.5	15

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☐ Sample containers intact
☑ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 1.5 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1458 - S1472

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/26/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:41:0

Authorized By: **Authorized On:**

Battelle

The Business of Innovation

ShpNo: SHP-040326-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved: ☑

COC Client: EA Engineering

COC Project: AH Sediment Sampling

COC Date: 3/26/2004 10:25:00 AM

	Description of Problem:	Explanation:
Custody	Jars and C-O-C do not match for time/date	JARS FOR SAMPLE AH-39 (S1469) LIST COLLECTION TIME AS 15:35; COC LISTS TIME AS 15:39
Sample Container Integrity	Cap broken	SAMPLE REF 3-1 (S1467) JAR 2OF2 CAP BROKEN; NO SAMPLE LOST

Documentation of project manager notification

Sample Custodian Newell, Jeffrey **Date:** 3/26/2004 11:10:00 A

Laboratory Manager: Peven-McCarthy, Carole **Date:** 4/1/2004 10:45:00 AM

Project Manager: Hardenstine, Jeffery **Date:** 3/26/2004 1:17:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinckley, Daniel **at** EA Engineering, Science, and Technology

Results of communication with client (Describe any corrective action directed by the client):

Sent Dan e-mail. Corrective action for sample lids is to replace with clean lid. Correct collection time for sample AH-39 is 15:35

Date this form was received back to the custodian: _____

Reference Number: _____

TB

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Chain of Custody

Proj. No: 29600973203
Proj. Name: AH Sediment Sampl

SAMPLERS: Signature: [signature]

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
												TOC			
3/25/04	1135	S1458	AH-20					✓				✓			2
		S1459	DUP05					✓				✓			2
3/25/04	1215	S1460	AH-13					✓				✓			2
3/25/04	1250	S1461	AH-02					✓				✓			2
3/25/04	1315	S1462	AH-01					✓				✓			2
3/25/04	1005	S1463	REF 3-5					✓				✓			2
3/25/04	0940	S1464	REF 3-4					✓				✓			2
3/25/04	0920	S1465	REF 3-3					✓				✓			2
3/25/04	0855	S1466	REF 3-2					✓				✓			2
3/25/04	0825*	S1467	REF 3-1					✓				✓			2
3/25/04	1500	S1468	AH-28					✓				✓			2
3/25/04	1539*	S1469	AH-39					✓				✓			2
		S1470	DUP06					✓				✓			2
3/25/04	1645	S1471	AH-49					✓				✓			2
3/25/04	1670	S1472	AH-50					✓				✓			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	03/25/04 1750	[signature]	3/26/04 10:30
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Hold till further notice

ORIGINAL

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Battelle
The Business of Innovation

ShpNo SHP-040326-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Friday, March 26, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1458	AH-20	03/25/04 11:35	03/26/04 10:56	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1459	DUP 05		03/26/04 10:56	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1460	AH-13	03/25/04 12:15	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1461	AH-02	03/25/04 12:50	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1462	AH-01	03/25/04 13:15	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1463	REF 3-5	03/25/04 10:05	03/26/04 10:59	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1464	REF 3-4	03/25/04 9:40	03/26/04 11:00	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1465	REF 3-3	03/25/04 9:20	03/26/04 11:01	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1466	REF 3-2	03/25/04 8:55	03/26/04 11:01	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1467	REF 3-1	03/25/04 8:25	03/26/04 11:02	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1468	AH-28	03/25/04 15:00	03/26/04 11:03	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1469	AH-39	03/25/04 15:35	03/26/04 11:04	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1470	DUP 06		03/26/04 11:04	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1471	AH-49	03/25/04 16:45	03/26/04 11:05	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1472	AH-50	03/25/04 16:20	03/26/04 11:07	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			

Total Samples: 15

Battelle

The Business of Innovation

ShpNo SHP-040327-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑ ☑

Project Number: 29600973203 Client: EA Engineering

Received by: Newell, Jeffrey Date/Time Received: Saturday, March 27, 2004 12:15 PM

No. of Shipping Containers: 2

SHIPMENT

Method of Delivery: Commercial Carrier Tracking Number: Not Recorded

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 2	Cooler	Tape	Intact	Intact	3.6	11
2 of 2	Cooler	None	Not Applicable	Intact	10.0	15

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 10 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1473 - S1498

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/27/2004 12:15 PM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 12:1

Authorized By: Hardenstine, Jeffery **Authorized On:** 3/31/2004 10:04:0

Battelle

The Business of Innovation

ShpNo: SHP-040327-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved: ☑

COC Client: EA Engineering

COC Project: Allen Harbor

COC Date: 3/27/2004 1:22:00 PM

	Description of Problem:	Explanation:
Client Id	Extra samples not listed on the C-O-C	Extra samples Source 1-1 3/26/04 10:15
	Missing samples listed on the C-O-C	Missing sample Source 1-2 3/26/04 10:15
Sample Container Integrity	Cap broken	Lid cracked for sample Source 2-1 (S1484 1of2)
	Cap broken	Lid cracked for sample AH-45 (S1474 1of2)
Temperature and Preservation	Receipt temperature outside of acceptability	Cooler 2 had a temperature of 10.0 which is out of the acceptable range. The spout was open and their was no tape sealing the cooler shut.

Documentation of project manager notification

Sample Custodian Fahey, Jessica **Date:** 3/27/2004 1:26:00 PM

Laboratory Manager: Peven-McCarthy, Carole **Date:** 4/1/2004 10:47:00 AM

Project Manager: Hardenstine, Jeffery **Date:** 4/1/2004 8:29:00 AM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 30-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Note cooler temp, proceed with analysis. Source 1-1 is listed on COC twice with same date and different collection times. Source 1-1 collected at 10:15 should be Source 1-2 collected 1/26/04 at 10:15. Per client request please ammend COC. Note cracked lid

Date this form was received back to the custodian: _____

Reference Number: _____

Battelle
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Chain of Custody

Proj. No: 29600973203
Proj. Name: AH Sed Sample

SAMPLERS: Signature: JGm

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
												TOC			
		S1473	DUP07	Sediment				✓				✓			2
3-26-04	1140	S1474	AH-45	Sediment				✓				✓			2
3-26-04	1200	S1475	AH-36	Sediment				✓				✓			2
3-26-04	1105	S1476	AH-33	Sediment				✓				✓			2
3-26-04	1045	S1477	AH-43	Sediment				✓				✓			2
3-26-04	1015	S1478	AH-41	Sediment				✓				✓			2
3-26-04	0940	S1479	AH-35	Sediment				✓				✓			2
3-26-04	0900	S1480	AH-31	Sediment				✓				✓			2
3-26-04	1220	S1481	Source 3-1	Sediment				✓				✓			2
3-26-04	1155	S1482	Source 3-2	Sediment				✓				✓			2
3-26-04	0930	S1483	Source 1-1	Sediment				✓				✓			2
3-26-04	0900	S1484	Source 2-1	Sediment				✓				✓			2
3-26-04	1015	~~S1485~~ ①	Source 1-~~X~~2 ②	Sediment				✓				✓			2
3-26-04	0920	S1486	Source 2-2	Sediment				✓				✓			2
3-26-04	1230	S1487	RINS01	Water Sediment Unless - Forensic				✓							1
3-26-04	—	S1488	DUP08	Sediment				✓				✓			2
3-26-04	1000	S1489	RINS02	Water Split Spoon Source Forensic				✓							1

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/26/04	1150	[signature]	3/27/04	12:15 pm
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments: Hold Until Further Notice

① WL 3/29/04 JMF

② change per client's request. Please see corrective action JMF 4/1/04 S1485

ORIGINAL

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Chain of Custody

Proj. No: 29600973203
Proj. Name: AH Sed. Sample
SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
												TOC			
3-26-04	1515	S1490	AH-32	Sediment				✓				✓			2
-26-04	1445	S1491	AH-29					✓				✓			2
-26-04	1550	S1492	AH-25					✓				✓			2
-26-04	1535	S1493	AH-30					✓				✓			2
-26-04	1350	S1494	AH-47					✓				✓			2
-26-04	1305	S1495	AH-46					✓				✓			2
-26-04	1330	S1496	AH-44					✓				✓			2
-26-04	1420	S1497	AH-38					✓				✓			2
-26-04	1410	S1498	AH-37					✓				✓			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	3/26/04 1650	[signature]	3/27/04 12 15 pm
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

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Chain of Custody

Proj. No	Proj. Name
	Allen Harbor

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3·26·04	10:15	S1485	Source 1-2	Sediment											2

Relinquished by:	Date/Time	Received by:	Date/Time
		[signature]	3-27-04 12:15 pm

Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Extra Sample not on original COC.

ORIGINAL

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Battelle
The Business of Innovation

ShpNo SHP-040327-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Saturday, March 27, 2004 12:15 PM

No. of Shipping Containers: 2

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1473	DUP 07		03/29/04 8:58	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1474	AH-45	03/26/04 11:40	03/29/04 8:58	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1475	AH-36	03/26/04 12:00	03/29/04 8:59	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1476	AH-33	03/26/04 11:05	03/29/04 9:01	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1477	AH-43	03/26/04 10:45	03/29/04 9:02	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1478	AH-41	03/26/04 10:15	03/29/04 9:03	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1479	AH-35	03/26/04 9:40	03/29/04 9:04	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1480	AH-31	03/26/04 9:00	03/29/04 9:05	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1481	Source 3-1	03/26/04 12:20	03/29/04 9:06	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1482	Source 3-2	03/26/04 11:55	03/29/04 9:09	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1483	Source 1-1	03/26/04 9:50	03/29/04 9:10	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1484	Source 2-1	03/26/04 9:00	03/29/04 9:13	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1485	Source 1-2	03/26/04 10:15	03/29/04 9:15	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1486	Source 2-2	03/26/04 9:20	03/29/04 9:21	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1487	Rins01	03/26/04 12:30	03/29/04 9:40	1	WATER	10	NA	NA	NA	29 Freezer			
S1488	Dup08	03/26/04 0:00	03/29/04 9:40	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1489	Rins02	03/26/04 10:00	03/29/04 9:41	1	WATER	10	NA	NA	NA	29 Freezer			
S1490	AH-32	03/26/04 15:15	03/29/04 9:41	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1491	AH-29	03/26/04 14:45	03/29/04 9:43	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1492	AH-25	03/26/04 15:50	03/29/04 9:44	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1493	AH-30	03/26/04 15:35	03/29/04 9:45	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1494	AH-47	03/26/04 13:50	03/29/04 9:46	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1495	AH-46	03/26/04 13:05	03/29/04 9:48	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1496	AH-44	03/26/04 13:30	03/29/04 9:57	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1497	AH-38	03/26/04 14:20	03/29/04 9:58	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1498	AH-37	03/26/04 14:10	03/29/04 9:58	2	SEDIMENT	10	NA	NA	NA	29 Freezer			

Total Samples: 26

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Battelle

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ShpNo SHP-040329-01

Battelle Project No:

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Monday, March 29, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959520

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	2.8	10

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2.8 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1502 - S1511

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/29/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 12:2

Authorized By: **Authorized On:**

Battelle
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ShpNo: SHP-040329-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved: ☑

COC Client: EA Engineering
COC Project: AH Sediment Sampling
COC Date: 3/29/2004 10:22:

	Description of Problem:	Explanation:
Custody	Jars and C-O-C do not match for time/date	Jars list collection time for sample AH-51 (S1502) as 13:45; COC states time as 13:15

Documentation of project manager notification

Sample Custodian Newell, Jeffrey **Date:** 3/29/2004 11:24:00 A
Laboratory Manager: Peven-McCarthy, Carole **Date:** 4/1/2004 10:48:00 AM
Project Manager: Hardenstine, Jeffery **Date:** 4/1/2004 12:16:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 30-Mar-04 **I contacted** Hinckley, Daniel **at** EA Engineering, Science, and Technology

Results of communication with client (Describe any corrective action directed by the client):

Correct collection time is 13:45

Date this form was received back to the custodian: _____
Reference Number: _____

2.8

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Chain of Custody

1 OF 1

Proj. No	Proj. Name
2960097 3203	AH Sedi Sampling

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3-27-04	1315	51502	AH-51	Sediment				✓				✓			2
	1245	51503	AH-48					✓				✓			2
	0750	51504	AH-22					✓				✓			2
	0820	51505	AH-26					✓				✓			2
	0900	51506	AH-27					✓				✓			2
	0920	51507	AH-42					✓				✓			2
	0940	51508	AH-34					✓				✓			2
	1030	51509	AH-40					✓				✓			2
	1200	51510	Core 1-Top					✓				✓			2
	1200	51511	Core 1-Bot					✓				✓			2
			Temp Blank												1

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/27/04	1745	[signature]	3/29/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

Hold until further notice.

ORIGINAL

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00

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ShpNo SHP-040329-01

Battelle Project No:: A Davisville

Sample Receipt Form Details

Approved: ☑ ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Monday, March 29, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1502	AH-51	03/27/04 13:45	03/29/04 11:09	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1503	AH-48	03/27/04 12:45	03/29/04 11:10	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1504	AH-22	03/27/04 7:50	03/29/04 11:11	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1505	AH-26	03/27/04 8:20	03/29/04 11:13	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1506	AH-27	03/27/04 9:00	03/29/04 11:14	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1507	AH-42	03/27/04 9:20	03/29/04 11:15	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1508	AH-34	03/27/04 9:40	03/29/04 11:16	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1509	AH-40	03/27/04 10:30	03/29/04 11:19	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1510	Core 1-Top	03/27/04 12:00	03/29/04 11:21	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1511	Core 1-Bot	03/27/04 12:00	03/29/04 11:22	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			

Total Samples: 10

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Work/Quality Assurance Project Plan

Approved: ■ Authorized ■

Workplan Title:	Davisville Naval Sediment Study
Project Number:	EADavisville
Client:	EA Engineering, Science, and Technology 175 Middlesex Turnpike, 3rd Floor Bedford, MA 01730 Contact:Mr. Jim Shultz Phone: 5084852982
QAPP Effective Date:	October 1, 2002
Version Number:	2
Project Manager:	Stephen Emsbo-Mattingly
Prepared By:	Stephen Emsbo-Mattingly
Prepared Date:	October 18, 2002
Reviewed By:	
Reviewed Date:	
Deliverable Due Date:	October 30, 2002

Scope of Work

Technical Approach

Sample Receipt, Storage and Handling:

Refer to EA QAPP Table 9-1

Table 1: Sample Storage and Holding Times

Sample Type	Storage	Applies to	Holding Times
Soil/Sediment	Refrigerated	BIOMARKER_TIER_1	14 days
		FID_TRACES	14 days
		PAH_TIER_3	14 days
		PAH_TIER_1	14 days

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Work/Quality Assurance Project Plan Approved: Authorized:

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

Spiking Levels:

Table 3. SIS, LCS/MS/ICC Spiking Levels

Standard Type	Standard Contents	Spike Amount (ng)	Standard ID (or equivalent)	Volume (uL)	Comments
SIS			FU81	200 uL	
	O-Terphenyl	~ 40000 ng	200 ug/mL stock		All Matrices
	Naphthalene-d8, Phananthrene-d10, Chrysene-d12	~ 1000 ng	12 ug/mL stock		
SIS			FV29	100 uL	
	5B-Cholane	~ 1 ng	10 ug/mL stock		All Matrices
LCS/MS			FW67	100 uL	
	Selected PAH Analytes	~ 100 ng	10 ug/mL stock		All Matrices

Table 4. RIS Spiking Levels

Standard Type	Standard Contents	Spike Amount (ng)	Standard ID (or equivalent)	Volume (uL)	Comments
RIS			FU82	200 uL	
	5a-Androstane	~ 40000 ng	200 ug/mL stock		All Matrices
	Acenaphthene-d10, Fluorene-d10, Benzo(a)pyrene-d12	~ 2000 ng	10 ug/mL stock		

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Work/Quality Assurance Project Plan Approved: Authorized:

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

Documentation and Reporting

Deliverables:

Miscellaneous Documentation:
Narrative for performance anomalies should be prepared for Project Manager's review.

Sample Preparation:
Print sample prep sheets for Project Manager's review.

Independent Instrument Checks:
Run after every ICal and report for Project Manager's review.

North Slope Crude:
Report comparison to mean and +/- 25%D window for Project Manager's review

Final Report:
Battelle Project Manager will compile data and produce a forensic interpretation within 3 months of the last sample reciept date.

Archive:
Battelle will dispose of all samples after 1 year, sample extracts after 40 days from sample extraction, data after 5 years from date reported.

Refer to EA QAPP Table 17-1.

Table 6. Project Deliverables

Name	Type/Format	Description	Reviews	Date Due
Chromatograms	Analytical Data/Data Package	Triterpanes and Steranes (stacked), Normal Alkanes and Alkylcyclohexanes (stacked), Sesquiterpanes (for internal use only), Use NSC RT windows.	Supervisor plus Project Manager, Frequence = 1/batch	
Electronic Data Tables	Electronic Data Deliverable/Microsoft Excel Tables	Electronic version of hardcopy	Project Manager, Frequency = 1/batch	
Hardcopy Data Tables	Analytical Data/Microsoft Excel Tables	Samples in columns, Analytes in rows, Surrogates on bottom	Supervisor plus Project Manager, Frequency = 1/batch	

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Work/Quality Assurance Project Plan Approved: Authorized

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

Schedule

Schedule:

Table 8. Project Schedule

Activity	Start Date	End Date
Sample Preparation		
Sample Analysis		
Sample Collection		
Data Review and Finalization		

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Work/Quality Assurance Project Plan Approved: Authorized

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

TestCodes:

High resolution hydrocarbon fingerprinting method (5-202-05) resembles EPA 8015 with additional QC. PAH and Biomarker method (5-157-07) resembles EPA 8270C using GC/MS in selected ion monitoring mode with additional QC. However, the Battelle procedure does not use the SPCC, CCC, RT check, and internal standard monitoring and other specifications of EPA 8270. PAH measurements are definitive. See EA QAPP Table 7-1 and 12-2.

Table 11. Project Test Codes

Test Code: BIOMARKER_TIER_1

Analyte	Type	RIS	SIS
Hopane	T	Chrysene-d12	5b(H)-Cholane
5b(H)-Cholane	SIS	Chrysene-d12	
Naphthalene-d8	SIS	Chrysene-d12	
Phenanthrene-d10	SIS	Chrysene-d12	
Chrysene-d12	SIS	Chrysene-d12	
Acenaphthene-d10	RIS		
Fluorene-d10	RIS		
Benzo(a)pyrene-d12	RIS		

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Work/Quality Assurance Project Plan

Approved: ■ Authorized ■

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

Test Code: PAH_TIER_1

Analyte	Type	RIS	SIS
Naphthalene	T	Acenaphthene-d10	Naphthalene-d8
C1-Naphthalenes	T	Acenaphthene-d10	Naphthalene-d8
C2-Naphthalenes	T	Acenaphthene-d10	Phenanthrene-d10
C3-Naphthalenes	T	Acenaphthene-d10	Phenanthrene-d10
C4-Naphthalenes	T	Acenaphthene-d10	Phenanthrene-d10
Biphenyl	T	Acenaphthene-d10	Phenanthrene-d10
Acenaphthylene	T	Acenaphthene-d10	Phenanthrene-d10
Acenaphthene	T	Acenaphthene-d10	Phenanthrene-d10
Dibenzofuran	T	Acenaphthene-d10	Phenanthrene-d10
Fluorene	T	Acenaphthene-d10	Phenanthrene-d10
C1-Fluorenes	T	Acenaphthene-d10	Phenanthrene-d10
C2-Fluorenes	T	Acenaphthene-d10	Phenanthrene-d10
C3-Fluorenes	T	Acenaphthene-d10	Phenanthrene-d10
Anthracene	T	Acenaphthene-d10	Phenanthrene-d10
Phenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
C1-Phenanthrenes/Anthracenes	T	Acenaphthene-d10	Phenanthrene-d10
C2-Phenanthrenes/Anthracenes	T	Acenaphthene-d10	Phenanthrene-d10
C3-Phenanthrenes/Anthracenes	T	Acenaphthene-d10	Phenanthrene-d10
C4-Phenanthrenes/Anthracenes	T	Acenaphthene-d10	Phenanthrene-d10
Dibenzothiophene	T	Acenaphthene-d10	Phenanthrene-d10
C1-Dibenzothiophenes	T	Acenaphthene-d10	Phenanthrene-d10
C2-Dibenzothiophenes	T	Acenaphthene-d10	Phenanthrene-d10
C3-Dibenzothiophenes	T	Acenaphthene-d10	Phenanthrene-d10
C4-Dibenzothiophenes	T	Acenaphthene-d10	Phenanthrene-d10
Fluoranthene	T	Acenaphthene-d10	Phenanthrene-d10
Benzo(b)fluorene	T	Acenaphthene-d10	Phenanthrene-d10
Pyrene	T	Acenaphthene-d10	Phenanthrene-d10
C1-Fluoranthenes/Pyrenes	T	Acenaphthene-d10	Phenanthrene-d10
C2-Fluoranthenes/Pyrenes	T	Acenaphthene-d10	Phenanthrene-d10
C3-Fluoranthenes/Pyrenes	T	Acenaphthene-d10	Phenanthrene-d10
Benzo(a)anthracene	T	Benzo(a)pyrene-d12	Chrysene-d12
Chrysene	T	Benzo(a)pyrene-d12	Chrysene-d12
C1-Chrysenes	T	Benzo(a)pyrene-d12	Chrysene-d12
C2-Chrysenes	T	Benzo(a)pyrene-d12	Chrysene-d12
C3-Chrysenes	T	Benzo(a)pyrene-d12	Chrysene-d12
C4-Chrysenes	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(b)fluoranthene	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(j/k)fluoranthene	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(a)fluoranthene	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(e)pyrene	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(a)pyrene	T	Benzo(a)pyrene-d12	Chrysene-d12
Perylene	T	Benzo(a)pyrene-d12	Chrysene-d12
Indeno(1,2,3-cd)pyrene	T	Benzo(a)pyrene-d12	Chrysene-d12
Dibenz(a,h)anthracene	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(g,h,i)perylene	T	Benzo(a)pyrene-d12	Chrysene-d12

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Work/Quality Assurance Project Plan

Approved: ☐ Authorized ☐

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

Test Code: PAH_TIER_3

Analyte	Type	RIS	SIS
1,7-Dimethylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
Cadalene	T	Acenaphthene-d10	Phenanthrene-d10
Retene	T	Acenaphthene-d10	Phenanthrene-d10
Dehydroabietin(e)	T	Acenaphthene-d10	Phenanthrene-d10
4-Methyldibenzothiophene	T	Acenaphthene-d10	Phenanthrene-d10
2/3-Methyldibenzothiophene	T	Acenaphthene-d10	Phenanthrene-d10
1-Methyldibenzothiophene	T	Acenaphthene-d10	Phenanthrene-d10
Naphthalene-d8	SIS	Acenaphthene-d10	
Phenanthrene-d10	SIS	Acenaphthene-d10	
Chrysene-d12	SIS	Benzo(a)pyrene-d12	
Acenaphthene-d10	RIS		
Fluorene-d10	RIS		
Benzo(a)pyrene-d12	RIS		
3-Methylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
2/4-Methylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
2-Methylanthracene	T	Acenaphthene-d10	Phenanthrene-d10
9-Methylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
1-Methylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
2-Methylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
1-Methylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
2,7-Dimethylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
2,6-dimethylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
1,5-Dimethylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
2-Ethylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
1-Ethylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
2-Methylfluorene	T	Acenaphthene-d10	Phenanthrene-d10
1-Methylfluorene	T	Acenaphthene-d10	Phenanthrene-d10
2,7-Dimethylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10

BENZONAPHTHOTHIOPHENES

Tables

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Procedural Blank
Battelle ID	BE161PB-P
Sample Type	PB
Collection Date	04/06/2004
Extraction Date	04/06/2004
Analysis Date	04/20/2004
Analytical Instrument	MS
% Moisture	37.21
% Lipid	NA
Matrix	SEDIMENT
Sample Size	18.44
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

Naphthalene	0.20 J
C1-Naphthalenes	0.36 J
C2-Naphthalenes	U
C3-Naphthalenes	U
C4-Naphthalenes	U
Biphenyl	0.22 J
Acenaphthylene	0.09 J
Acenaphthene	U
Dibenzofuran	U
Fluorene	0.16 J
C1-Fluorenes	U
C2-Fluorenes	U
C3-Fluorenes	U
Dibenzothiophene	U
C1-Dibenzothiophenes	U
C2-Dibenzothiophenes	U
C3-Dibenzothiophenes	U
C4-Dibenzothiophenes	U
Anthracene	U
Phenanthrene	0.20 J
C1-Phenanthrenes/Anthracenes	U
C2-Phenanthrenes/Anthracenes	U
C3-Phenanthrenes/Anthracenes	U
C4-Phenanthrenes/Anthracenes	U
Benzo(b)fluorene	0.12 J
Fluoranthene	0.07 J
Pyrene	0.10 J
C1-Fluoranthenes/Pyrenes	0.50 J
C2-Fluoranthenes/Pyrenes	U
C3-Fluoranthenes/Pyrenes	U
Benzo(b)naphtho(1,2-d)thiophene	U
Benzo(b)naphtho(2,1-d)thiophene	U
Benzo(b)naphtho(2,3-d)thiophene	U
C1-benzo(b)naphthothiophenes	U
C2-benzo(b)naphthothiophenes	U
C3-benzo(b)naphthothiophenes	U
C4-benzo(b)naphthothiophenes	U

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Procedural Blank
Battelle ID	BE161PB-P
Sample Type	PB
Collection Date	04/06/2004
Extraction Date	04/06/2004
Analysis Date	04/20/2004
Analytical Instrument	MS
% Moisture	37.21
% Lipid	NA
Matrix	SEDIMENT
Sample Size	18.44
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

Benzo(a)anthracene	0.08 J
Chrysene	0.11 J
C1-Chrysenes	U
C2-Chrysenes	U
C3-Chrysenes	U
C4-Chrysenes	U
Benzo(b)fluoranthene	U
Benzo(j/k)fluoranthene	U
Benzo(a)fluoranthene	U
Benzo(e)pyrene	U
Benzo(a)pyrene	U
Perylene	U
Indeno(1,2,3-cd)pyrene	0.60 N
Dibenz(a,h)anthracene	0.86 N
Benzo(g,h,i)perylene	0.52 N
2-Methylnaphthalene	0.18 N
1-Methynaphthalene	0.17 J
2,6-dimethylnaphthalene	U
2-Ethylnaphthalene	U
1-Ethylnaphthalene	U
1,5-Dimethylnaphthalene	U
2-Methylfluorene	U
1-Methylfluorene	U
1-Methylphenanthrene	U
4-Methyldibenzothiophene	U
2/3-Methyldibenzothiophene	U
3-Methylphenanthrene	U
1-Methyldibenzothiophene	U
2/4-Methylphenanthrene	U
2-Methylanthracene	U
9-Methylphenanthrene/1-Methylanthracene	U
2,7-Dimethylphenanthrene	U
1,7-Dimethylphenanthrene	U
Cadalene	U
Dehydroabietin(e)	U
Retene	U
Hopane	U

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Procedural Blank
Battelle ID	BE161PB-P
Sample Type	PB
Collection Date	04/06/2004
Extraction Date	04/06/2004
Analysis Date	04/20/2004
Analytical Instrument	MS
% Moisture	37.21
% Lipid	NA
Matrix	SEDIMENT
Sample Size	18.44
Size Unit-Basis	G_DRY
Units	UG/KG_DRY
Surrogate Recoveries (%)	
Naphthalene-d8	81
Phenanthrene-d10	89
Chrysene-d12	83
5b(H)-Cholane	98

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Laboratory Control Sample			
Battelle ID	BE162LCS-P			
Sample Type	LCS			
Collection Date	04/06/2004			
Extraction Date	04/06/2004			
Analysis Date	04/20/2004			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	NA			
Size Unit-Basis	NA			
Units	NG	**Target**	**% REC**	**Qual**
Naphthalene	50.64	1000.55	5	N
C1-Naphthalenes	U			
C2-Naphthalenes	U			
C3-Naphthalenes	U			
C4-Naphthalenes	U			
Biphenyl	262.23	1003.00	26	N
Acenaphthylene	361.63	1000.40	36	N
Acenaphthene	423.80	1000.40	42	
Dibenzofuran	U			
Fluorene	619.43	1000.50	62	
C1-Fluorenes	U			
C2-Fluorenes	U			
C3-Fluorenes	U			
Dibenzothiophene	U			
C1-Dibenzothiophenes	U			
C2-Dibenzothiophenes	U			
C3-Dibenzothiophenes	U			
C4-Dibenzothiophenes	U			
Anthracene	803.61	1000.40	80	
Phenanthrene	775.60	1000.45	78	
C1-Phenanthrenes/Anthracenes	U			
C2-Phenanthrenes/Anthracenes	U			
C3-Phenanthrenes/Anthracenes	U			
C4-Phenanthrenes/Anthracenes	U			
Benzo(b)fluorene	U			
Fluoranthene	888.51	1000.40	89	
Pyrene	897.93	1000.40	90	
C1-Fluoranthenes/Pyrenes	U			
C2-Fluoranthenes/Pyrenes	U			
C3-Fluoranthenes/Pyrenes	U			
Benzo(b)naphtho(1,2-d)thiophene	U			
Benzo(b)naphtho(2,1-d)thiophene	U			
Benzo(b)naphtho(2,3-d)thiophene	U			
C1-benzo(b)naphthothiophenes	U			
C2-benzo(b)naphthothiophenes	U			
C3-benzo(b)naphthothiophenes	U			
C4-benzo(b)naphthothiophenes	U			

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Laboratory Control Sample			
Battelle ID	BE162LCS-P			
Sample Type	LCS			
Collection Date	04/06/2004			
Extraction Date	04/06/2004			
Analysis Date	04/20/2004			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	NA			
Size Unit-Basis	NA			
Units	NG	**Target**	**% REC**	**Qual**
Benzo(a)anthracene	855.24	1000.55	85	
Chrysene	870.23	1000.50	87	
C1-Chrysenes	U			
C2-Chrysenes	U			
C3-Chrysenes	U			
C4-Chrysenes	U			
Benzo(b)fluoranthene	835.00	1000.50	83	
Benzo(j/k)fluoranthene	882.79	1000.35	88	
Benzo(a)fluoranthene	U			
Benzo(e)pyrene	815.41	997.60	82	
Benzo(a)pyrene	758.80	1000.55	76	
Perylene	698.89	1000.20	70	
Indeno(1,2,3-cd)pyrene	710.37	1000.60	71	
Dibenz(a,h)anthracene	725.53	1000.40	73	
Benzo(g,h,i)perylene	729.92	1000.50	73	
2-Methylnaphthalene	78.18	1000.50	8	N
1-Methynaphthalene	83.10	1002.50	8	N
2,6-dimethylnaphthalene	151.56	1001.00	15	N
2-Ethylnaphthalene	U			
1-Ethylnaphthalene	U			
1,5-Dimethylnaphthalene	U			
2-Methylfluorene	U			
1-Methylfluorene	U			
1-Methylphenanthrene	583.42	1000.30	58	
4-Methyldibenzothiophene	U			
2/3-Methyldibenzothiophene	U			
3-Methylphenanthrene	U			
1-Methyldibenzothiophene	U			
2/4-Methylphenanthrene	U			
2-Methylanthracene	U			
9-Methylphenanthrene/1-Methylanthracene	U			
2,7-Dimethylphenanthrene	U			
1,7-Dimethylphenanthrene	U			
Cadalene	U			
Dehydroabietin(e)	U			
Retene	U			
Hopane	U			

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Laboratory Control Sample			
Battelle ID	BE162LCS-P			
Sample Type	LCS			
Collection Date	04/06/2004			
Extraction Date	04/06/2004			
Analysis Date	04/20/2004			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	NA			
Size Unit-Basis	NA			
Units	NG	**Target**	**% REC**	**Qual**
Surrogate Recoveries (%)				
Naphthalene-d8	7		N	
Phenanthrene-d10	78			
Chrysene-d12	79			
5b(H)-Cholane	NS			

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-26	AH-26	
Battelle ID	S1505-P	S1505DUP-P	
Sample Type	SA	QADU	
Collection Date	03/27/2004	03/27/2004	
Extraction Date	04/06/2004	04/06/2004	
Analysis Date	04/22/2004	04/22/2004	
Analytical Instrument	MS	MS	
% Moisture	55.90	55.90	
% Lipid	NA	NA	
Matrix	SEDIMENT	SEDIMENT	
Sample Size	13.52	13.28	
Size Unit-Basis	G_DRY	G_DRY	
Units	UG/KG_DRY	UG/KG_DRY	**RPD Qual**
Naphthalene	36.52	31.62	14.4
C1-Naphthalenes	43.61	37.49	15.1
C2-Naphthalenes	88.04	77.21	13.1
C3-Naphthalenes	63.73	58.44	8.7
C4-Naphthalenes	35.36	31.70	10.9
Biphenyl	13.14	11.49	13.4
Acenaphthylene	285.68	257.41	10.4
Acenaphthene	37.73	29.73	23.7
Dibenzofuran	37.46	32.37	14.6
Fluorene	74.23	62.11	17.8
C1-Fluorenes	51.01	44.52	13.6
C2-Fluorenes	82.82	75.31	9.5
C3-Fluorenes	203.48	185.72	9.1
Dibenzothiophene	81.59	71.48	13.2
C1-Dibenzothiophenes	96.72	87.13	10.4
C2-Dibenzothiophenes	87.73	77.52	12.4
C3-Dibenzothiophenes	51.52	44.89	13.8
C4-Dibenzothiophenes	22.62	18.53	19.9
Anthracene	314.15	283.67	10.2
Phenanthrene	1193.18	1072.51	10.7
C1-Phenanthrenes/Anthracenes	755.53	683.72	10.0
C2-Phenanthrenes/Anthracenes	521.04	474.52	9.3
C3-Phenanthrenes/Anthracenes	212.72	197.77	7.3
C4-Phenanthrenes/Anthracenes	61.34	59.21	3.5
Benzo(b)fluorene	120.13	110.87	8.0
Fluoranthene	1519.36	1384.92	9.3
Pyrene	1533.21	1408.29	8.5
C1-Fluoranthenes/Pyrenes	966.84	889.77	8.3
C2-Fluoranthenes/Pyrenes	688.93	632.78	8.5
C3-Fluoranthenes/Pyrenes	277.97	252.30	9.7
Benzo(b)naphtho(1,2-d)thiophene	34.20	30.57	11.2
Benzo(b)naphtho(2,1-d)thiophene	132.47	118.70	11.0
Benzo(b)naphtho(2,3-d)thiophene	37.78	33.58	11.8
C1-benzo(b)naphthothiophenes	138.18	124.83	10.2
C2-benzo(b)naphthothiophenes	91.24	81.95	10.7
C3-benzo(b)naphthothiophenes	65.94	56.12	16.1
C4-benzo(b)naphthothiophenes	27.73	24.99	10.4

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-26	AH-26		
Battelle ID	S1505-P	S1505DUP-P		
Sample Type	SA	QADU		
Collection Date	03/27/2004	03/27/2004		
Extraction Date	04/06/2004	04/06/2004		
Analysis Date	04/22/2004	04/22/2004		
Analytical Instrument	MS	MS		
% Moisture	55.90	55.90		
% Lipid	NA	NA		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	13.52	13.28		
Size Unit-Basis	G_DRY	G_DRY		
Units	UG/KG_DRY	UG/KG_DRY	**RPD**	**Qual**
Benzo(a)anthracene	535.47	470.18	13.0	
Chrysene	871.45	802.05	8.3	
C1-Chrysenes	484.29	439.22	9.8	
C2-Chrysenes	240.83	219.55	9.2	
C3-Chrysenes	106.39	95.03	11.3	
C4-Chrysenes	58.94	50.78	14.9	
Benzo(b)fluoranthene	789.32	730.45	7.7	
Benzo(j/k)fluoranthene	709.63	644.63	9.6	
Benzo(a)fluoranthene	190.53	171.31	10.6	
Benzo(e)pyrene	660.69	604.38	8.9	
Benzo(a)pyrene	664.35	593.03	11.3	
Perylene	150.63	134.77	11.1	
Indeno(1,2,3-cd)pyrene	572.98	522.87	9.1	
Dibenz(a,h)anthracene	137.19	120.86	12.7	
Benzo(g,h,i)perylene	498.24	451.22	9.9	
2-Methylnaphthalene	21.20	18.56	13.3	
1-Methynaphthalene	21.37	17.73	18.6	
2,6-dimethylnaphthalene	27.87	25.86	7.5	
2-Ethylnaphthalene	3.34	2.95	12.4	
1-Ethylnaphthalene	1.22 J	1.05 J		
1,5-Dimethylnaphthalene	3.87	3.42	12.3	
2-Methylfluorene	14.73	13.14	11.4	
1-Methylfluorene	12.99	11.55	11.7	
1-Methylphenanthrene	115.64	107.26	7.5	
4-Methyldibenzothiophene	35.68	31.91	11.2	
2/3-Methyldibenzothiophene	30.87	28.79	7.0	
3-Methylphenanthrene	206.62	184.21	11.5	
1-Methyldibenzothiophene	10.05	9.24	8.4	
2/4-Methylphenanthrene	30.87	28.79	7.0	
2-Methylanthracene	48.35	43.77	9.9	
9-Methylphenanthrene/1-Methylanthrace	151.47	139.19	8.4	
2,7-Dimethylphenanthrene	34.83	32.57	6.7	
1,7-Dimethylphenanthrene	37.41	35.80	4.4	
Cadalene	2.25	1.89	17.4	
Dehydroabietin(e)	U	U		
Retene	9.44	10.42	9.9	
Hopane	205.02	195.99	4.5	

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-26	AH-26	
Battelle ID	S1505-P	S1505DUP-P	
Sample Type	SA	QADU	
Collection Date	03/27/2004	03/27/2004	
Extraction Date	04/06/2004	04/06/2004	
Analysis Date	04/22/2004	04/22/2004	
Analytical Instrument	MS	MS	
% Moisture	55.90	55.90	
% Lipid	NA	NA	
Matrix	SEDIMENT	SEDIMENT	
Sample Size	13.52	13.28	
Size Unit-Basis	G_DRY	G_DRY	
Units	UG/KG_DRY	UG/KG_DRY	**RPD Qual**
Surrogate Recoveries (%)			
Naphthalene-d8	60	54	
Phenanthrene-d10	75	69	
Chrysene-d12	69	65	
5b(H)-Cholane	102	103	

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06	AH-06			
Battelle ID	S1432-P	S1432MS-P			
Sample Type	SA	MS			
Collection Date	03/23/2004	03/23/2004			
Extraction Date	04/06/2004	04/06/2004			
Analysis Date	04/20/2004	04/20/2004			
Analytical Instrument	MS	MS			
% Moisture	61.05	60.22			
% Lipid	NA	NA			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	11.82	6.13			
Size Unit-Basis	G_DRY	G_DRY			
Units	UG/KG_DRY	UG/KG_DRY	**Target**	**% REC**	**Qual**
Naphthalene	18.32	116.09	163.22	60	
C1-Naphthalenes	15.08	151.04			
C2-Naphthalenes	33.08	95.22			
C3-Naphthalenes	19.61	90.34			
C4-Naphthalenes	13.84	14.53			
Biphenyl	9.30	125.65	163.62	71	
Acenaphthylene	58.74	183.07	163.20	76	
Acenaphthene	8.62	136.76	163.20	79	
Dibenzofuran	12.24	12.42			
Fluorene	16.83	151.72	163.21	83	
C1-Fluorenes	12.08	11.45			
C2-Fluorenes	21.90	19.76			
C3-Fluorenes	44.07	43.96			
Dibenzothiophene	13.46	15.66			
C1-Dibenzothiophenes	17.93	18.32			
C2-Dibenzothiophenes	22.67	22.22			
C3-Dibenzothiophenes	19.97	18.04			
C4-Dibenzothiophenes	11.01	11.04			
Anthracene	93.37	238.69	163.20	89	
Phenanthrene	177.09	318.75	163.21	87	
C1-Phenanthrenes/Anthracenes	126.92	224.58			
C2-Phenanthrenes/Anthracenes	133.70	126.89			
C3-Phenanthrenes/Anthracenes	49.58	51.28			
C4-Phenanthrenes/Anthracenes	21.08	20.58			
Benzo(b)fluorene	58.93	59.41			
Fluoranthene	376.06	504.16	163.20	78	
Pyrene	406.32	535.44	163.20	79	
C1-Fluoranthenes/Pyrenes	252.12	242.74			
C2-Fluoranthenes/Pyrenes	159.08	152.39			
C3-Fluoranthenes/Pyrenes	80.01	73.85			
Benzo(b)naphtho(1,2-d)thiophene	9.74	9.85			
Benzo(b)naphtho(2,1-d)thiophene	38.16	37.99			
Benzo(b)naphtho(2,3-d)thiophene	11.73	12.25			
C1-benzo(b)naphthothiophenes	41.93	41.38			
C2-benzo(b)naphthothiophenes	31.79	32.99			

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06
Battelle ID	S1432MSD-P
Sample Type	MSD
Collection Date	03/23/2004
Extraction Date	04/06/2004
Analysis Date	04/21/2004
Analytical Instrument	MS
% Moisture	62.24
% Lipid	NA
Matrix	SEDIMENT
Sample Size	5.81
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

		Target	% REC	Qual	RPD	Qual
Naphthalene	115.10	172.21	56		6.9	
C1-Naphthalenes	152.71					
C2-Naphthalenes	98.37					
C3-Naphthalenes	94.01					
C4-Naphthalenes	14.33					
Biphenyl	132.05	172.63	71		0.0	
Acenaphthylene	187.52	172.19	75		1.3	
Acenaphthene	141.79	172.19	77		2.6	
Dibenzofuran	12.66					
Fluorene	160.44	172.20	83		0.0	
C1-Fluorenes	11.22					
C2-Fluorenes	22.50					
C3-Fluorenes	49.27					
Dibenzothiophene	16.14					
C1-Dibenzothiophenes	19.31					
C2-Dibenzothiophenes	21.55					
C3-Dibenzothiophenes	17.71					
C4-Dibenzothiophenes	10.03					
Anthracene	242.36	172.19	87		2.3	
Phenanthrene	331.98	172.19	90		3.4	
C1-Phenanthrenes/Anthracenes	234.56					
C2-Phenanthrenes/Anthracenes	127.54					
C3-Phenanthrenes/Anthracenes	51.18					
C4-Phenanthrenes/Anthracenes	21.16					
Benzo(b)fluorene	52.27					
Fluoranthene	532.39	172.19	91		15.4	
Pyrene	551.96	172.19	85		7.3	
C1-Fluoranthenes/Pyrenes	235.30					
C2-Fluoranthenes/Pyrenes	156.11					
C3-Fluoranthenes/Pyrenes	77.06					
Benzo(b)naphtho(1,2-d)thiophene	9.71					
Benzo(b)naphtho(2,1-d)thiophene	37.10					
Benzo(b)naphtho(2,3-d)thiophene	12.15					
C1-benzo(b)naphthothiophenes	41.07					
C2-benzo(b)naphthothiophenes	32.90					

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06	AH-06		
Battelle ID	S1432-P	S1432MS-P		
Sample Type	SA	MS		
Collection Date	03/23/2004	03/23/2004		
Extraction Date	04/06/2004	04/06/2004		
Analysis Date	04/20/2004	04/20/2004		
Analytical Instrument	MS	MS		
% Moisture	61.05	60.22		
% Lipid	NA	NA		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	11.82	6.13		
Size Unit-Basis	G_DRY	G_DRY		
Units	UG/KG_DRY	UG/KG_DRY	**Target**	**% REC Qual**
C3-benzo(b)naphthothiophenes	27.80	26.81		
C4-benzo(b)naphthothiophenes	10.70	14.06		
Benzo(a)anthracene	167.23	325.67	163.22	97
Chrysene	292.35	420.73	163.21	79
C1-Chrysenes	124.12	120.67		
C2-Chrysenes	64.94	63.00		
C3-Chrysenes	36.63	36.12		
C4-Chrysenes	28.36	26.61		
Benzo(b)fluoranthene	280.68	441.38	163.21	98
Benzo(j/k)fluoranthene	270.95	410.93	163.19	86
Benzo(a)fluoranthene	58.17	56.28		
Benzo(e)pyrene	230.03	373.94	162.74	88
Benzo(a)pyrene	213.60	362.01	163.22	91
Perylene	71.44	234.31	163.16	100
Indeno(1,2,3-cd)pyrene	204.58	365.22	163.23	98
Dibenz(a,h)anthracene	43.37	204.07	163.20	98
Benzo(g,h,i)perylene	173.03	317.81	163.21	89
2-Methylnaphthalene	9.24	79.32	163.21	43
1-Methynaphthalene	4.98	70.66	163.54	40
2,6-dimethylnaphthalene	16.53	78.57	163.30	38 N
2-Ethylnaphthalene	1.31 J	1.64 J		
1-Ethylnaphthalene	0.40 J	0.39 J		
1,5-Dimethylnaphthalene	1.15 J	1.03 J		
2-Methylfluorene	3.03	3.03		
1-Methylfluorene	3.23	3.27		
1-Methylphenanthrene	18.66	113.78	163.18	58
4-Methyldibenzothiophene	6.26	5.95		
2/3-Methyldibenzothiophene	5.87	6.20		
3-Methylphenanthrene	30.26	28.74		
1-Methyldibenzothiophene	2.15	2.02		
2/4-Methylphenanthrene	5.87	6.20		
2-Methylanthracene	14.12	13.57		
9-Methylphenanthrene/1-Methylanthracene	27.20	33.74		
2,7-Dimethylphenanthrene	6.11	6.16		
1,7-Dimethylphenanthrene	7.21	6.74		

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06					
Battelle ID	S1432MSD-P					
Sample Type	MSD					
Collection Date	03/23/2004					
Extraction Date	04/06/2004					
Analysis Date	04/21/2004					
Analytical Instrument	MS					
% Moisture	62.24					
% Lipid	NA					
Matrix	SEDIMENT					
Sample Size	5.81					
Size Unit-Basis	G_DRY					
Units	UG/KG_DRY	**Target**	**% REC**	**Qual**	**RPD**	**Qual**
C3-benzo(b)naphthothiophenes	24.88					
C4-benzo(b)naphthothiophenes	12.58					
Benzo(a)anthracene	327.85	172.21	93		4.2	
Chrysene	415.78	172.20	72		9.3	
C1-Chrysenes	120.81					
C2-Chrysenes	62.47					
C3-Chrysenes	36.81					
C4-Chrysenes	26.09					
Benzo(b)fluoranthene	461.70	172.20	105		6.9	
Benzo(j/k)fluoranthene	415.76	172.18	84		2.4	
Benzo(a)fluoranthene	55.68					
Benzo(e)pyrene	383.02	171.70	89		1.1	
Benzo(a)pyrene	366.55	172.21	89		2.2	
Perylene	240.11	172.15	98		2.0	
Indeno(1,2,3-cd)pyrene	377.70	172.22	101		3.0	
Dibenz(a,h)anthracene	215.61	172.19	100		2.0	
Benzo(g,h,i)perylene	327.68	172.20	90		1.1	
2-Methylnaphthalene	80.13	172.20	41		4.8	
1-Methynaphthalene	71.84	172.55	39	N	2.5	
2,6-dimethylnaphthalene	82.13	172.29	38	N	0.0	
2-Ethylnaphthalene	1.24 J					
1-Ethylnaphthalene	0.38 J					
1,5-Dimethylnaphthalene	0.90 J					
2-Methylfluorene	2.94					
1-Methylfluorene	3.40					
1-Methylphenanthrene	118.69	172.17	58		0.0	
4-Methyldibenzothiophene	6.12					
2/3-Methyldibenzothiophene	6.37					
3-Methylphenanthrene	30.41					
1-Methyldibenzothiophene	1.97					
2/4-Methylphenanthrene	6.37					
2-Methylanthracene	12.45					
9-Methylphenanthrene/1-Methylanthrace	37.65					
2,7-Dimethylphenanthrene	6.02					
1,7-Dimethylphenanthrene	7.02					

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06	AH-06			
Battelle ID	S1432-P	S1432MS-P			
Sample Type	SA	MS			
Collection Date	03/23/2004	03/23/2004			
Extraction Date	04/06/2004	04/06/2004			
Analysis Date	04/20/2004	04/20/2004			
Analytical Instrument	MS	MS			
% Moisture	61.05	60.22			
% Lipid	NA	NA			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	11.82	6.13			
Size Unit-Basis	G_DRY	G_DRY			
Units	UG/KG_DRY	UG/KG_DRY	**Target**	**% REC**	**Qual**
Cadalene	2.54	2.70			
Dehydroabietin(e)	U	U			
Retene	5.76	5.52			
Hopane	213.13	U			
Surrogate Recoveries (%)					
Naphthalene-d8	70	63			
Phenanthrene-d10	94	87			
Chrysene-d12	85	81			
5b(H)-Cholane	100	NS			

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06					
Battelle ID	S1432MSD-P					
Sample Type	MSD					
Collection Date	03/23/2004					
Extraction Date	04/06/2004					
Analysis Date	04/21/2004					
Analytical Instrument	MS					
% Moisture	62.24					
% Lipid	NA					
Matrix	SEDIMENT					
Sample Size	5.81					
Size Unit-Basis	G_DRY					
Units	UG/KG_DRY	**Target**	**% REC**	**Qual**	**RPD**	**Qual**
Cadalene	2.34					
Dehydroabietin(e)	U					
Retene	6.54					
Hopane	U					
Surrogate Recoveries (%)						
Naphthalene-d8	60					
Phenanthrene-d10	88					
Chrysene-d12	81					
5b(H)-Cholane	NS					

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	020326-01: SRM 1944
Battelle ID	BE163SRM-P
Sample Type	SRM
Collection Date	04/06/2004
Extraction Date	04/06/2004
Analysis Date	04/20/2004
Analytical Instrument	MS
% Moisture	1.25
% Lipid	NA
Matrix	SEDIMENT
Sample Size	1.03
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

		Target	% Diff	Qual
Naphthalene	1153.35	1650.00	30.1	
C1-Naphthalenes	1008.02			
C2-Naphthalenes	1029.14			
C3-Naphthalenes	1405.37			
C4-Naphthalenes	1645.90			
Biphenyl	181.31			
Acenaphthylene	915.66			
Acenaphthene	262.47			
Dibenzofuran	283.94			
Fluorene	372.41			
C1-Fluorenes	461.37			
C2-Fluorenes	1120.30			
C3-Fluorenes	2138.40			
Dibenzothiophene	629.16			
C1-Dibenzothiophenes	1438.62			
C2-Dibenzothiophenes	2431.69			
C3-Dibenzothiophenes	2139.36			
C4-Dibenzothiophenes	1122.59			
Anthracene	1346.21	1770.00	23.9	
Phenanthrene	4463.60	5270.00	15.3	
C1-Phenanthrenes/Anthracenes	4606.09			
C2-Phenanthrenes/Anthracenes	5372.44			
C3-Phenanthrenes/Anthracenes	3622.29			
C4-Phenanthrenes/Anthracenes	1723.30			
Benzo(b)fluorene	589.36			
Fluoranthene	7320.72	8920.00	17.9	
Pyrene	7575.54	9700.00	21.9	
C1-Fluoranthenes/Pyrenes	5724.29			
C2-Fluoranthenes/Pyrenes	4197.25			
C3-Fluoranthenes/Pyrenes	2301.73			
Benzo(b)naphtho(1,2-d)thiophene	233.70			
Benzo(b)naphtho(2,1-d)thiophene	984.15			
Benzo(b)naphtho(2,3-d)thiophene	310.53			
C1-benzo(b)naphthothiophenes	1502.38			
C2-benzo(b)naphthothiophenes	1277.48			
C3-benzo(b)naphthothiophenes	875.40			
C4-benzo(b)naphthothiophenes	418.67			

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	020326-01: SRM 1944
Battelle ID	BE163SRM-P
Sample Type	SRM
Collection Date	04/06/2004
Extraction Date	04/06/2004
Analysis Date	04/20/2004
Analytical Instrument	MS
% Moisture	1.25
% Lipid	NA
Matrix	SEDIMENT
Sample Size	1.03
Size Unit-Basis	G_DRY

Units	UG/KG_DRY	**Target**	**% Diff**	**Qual**
Benzo(a)anthracene	4119.35	4720.00	12.7	
Chrysene	5297.43	5900.00	10.2	
C1-Chrysenes	3720.89			
C2-Chrysenes	2198.68			
C3-Chrysenes	1197.90			
C4-Chrysenes	596.54			
Benzo(b)fluoranthene	3920.89	3870.00	1.3	
Benzo(j/k)fluoranthene	3921.23	4390.00	10.7	
Benzo(a)fluoranthene	928.69	780.00	19.1	
Benzo(e)pyrene	3494.57	3280.00	6.5	
Benzo(a)pyrene	2984.05	4300.00	30.6	
Perylene	891.22	1170.00	23.8	
Indeno(1,2,3-cd)pyrene	2964.15	2780.00	6.6	
Dibenz(a,h)anthracene	812.37	759.00	7.0	
Benzo(g,h,i)perylene	2674.63	2840.00	5.8	
2-Methylnaphthalene	627.89			
1-Methynaphthalene	371.73			
2,6-dimethylnaphthalene	287.28			
2-Ethylnaphthalene	78.67			
1-Ethylnaphthalene	19.80			
1,5-Dimethylnaphthalene	47.43			
2-Methylfluorene	130.23			
1-Methylfluorene	158.72			
1-Methylphenanthrene	761.72			
4-Methyldibenzothiophene	635.74			
2/3-Methyldibenzothiophene	407.06			
3-Methylphenanthrene	1336.61			
1-Methyldibenzothiophene	147.22			
2/4-Methylphenanthrene	407.06			
2-Methylanthracene	271.27			
9-Methylphenanthrene/1-Methylanthracene	1094.56			
2,7-Dimethylphenanthrene	389.64			
1,7-Dimethylphenanthrene	377.67			
Cadalene	116.82			
Dehydroabietin(e)	704.80			
Retene	1024.73			
Hopane	U			

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	020326-01: SRM 1944			
Battelle ID	BE163SRM-P			
Sample Type	SRM			
Collection Date	04/06/2004			
Extraction Date	04/06/2004			
Analysis Date	04/20/2004			
Analytical Instrument	MS			
% Moisture	1.25			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	1.03			
Size Unit-Basis	G_DRY			
Units	UG/KG_DRY	**Target**	**% Diff**	**Qual**
Surrogate Recoveries (%)				
Naphthalene-d8	41			
Phenanthrene-d10	91			
Chrysene-d12	84			
5b(H)-Cholane	NS			

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	GD81: North Slope Crude				GD81: North Slope Crude			
Battelle ID	BE212NSC-P				BE279NSC-P			
Sample Type	NSC				NSC			
Collection Date	04/19/2004				04/30/2004			
Extraction Date	04/19/2004				04/30/2004			
Analysis Date	04/20/2004				05/01/2004			
Analytical Instrument	MS				MS			
% Moisture	NA				NA			
% Lipid	NA				NA			
Matrix	SEDIMENT				OIL			
Sample Size	5.28				5.28			
Size Unit-Basis	G_OIL				G_OIL			
Units	MG/KG_OIL	**Target**	**% Diff**	**Qual**	MG/KG_OIL		**Target**	**% Diff**	**Qual**
Naphthalene	689.11	714.43	3.5		U		714.43	100.0	N
C1-Naphthalenes	1467.49	1534.53	4.4		U		1534.53	100.0	N
C2-Naphthalenes	1815.49	1897.27	4.3		U		1897.27	100.0	N
C3-Naphthalenes	1378.40	1436.53	4.0		U		1436.53	100.0	N
C4-Naphthalenes	762.91	773.42	1.4		U		773.42	100.0	N
Biphenyl	201.68	216.49	6.8		U		216.49	100.0	N
Acenaphthylene	3.23				U				
Acenaphthene	13.69				U				
Dibenzofuran	69.94	71.98	2.8		U		71.98	100.0	N
Fluorene	81.09	87.56	7.4		U		87.56	100.0	N
C1-Fluorenes	205.22	219.89	6.7		U		219.89	100.0	N
C2-Fluorenes	327.06	341.20	4.1		U		341.20	100.0	N
C3-Fluorenes	285.81	299.61	4.6		U		299.61	100.0	N
Dibenzothiophene	222.03	218.80	1.5		U		218.80	100.0	N
C1-Dibenzothiophenes	444.46	434.54	2.3		U		434.54	100.0	N
C2-Dibenzothiophenes	563.70	551.44	2.2		U		551.44	100.0	N
C3-Dibenzothiophenes	461.92	460.96	0.2		U		460.96	100.0	N
C4-Dibenzothiophenes	253.50	236.77	7.1		U		236.77	100.0	N
Anthracene	U				U				
Phenanthrene	265.52	272.58	2.6		U		272.58	100.0	N
C1-Phenanthrenes/Anthracenes	551.51	564.81	2.4		U		564.81	100.0	N
C2-Phenanthrenes/Anthracenes	638.08	660.43	3.4		U		660.43	100.0	N
C3-Phenanthrenes/Anthracenes	419.37	448.76	6.5		U		448.76	100.0	N
C4-Phenanthrenes/Anthracenes	165.47	223.35	25.9		U		223.35	100.0	N
Benzo(b)fluorene	6.43				U				
Fluoranthene	4.07				U				
Pyrene	13.89				U				
C1-Fluoranthenes/Pyrenes	73.05	78.43	6.9		U		78.43	100.0	N
C2-Fluoranthenes/Pyrenes	121.69	132.93	8.5		U		132.93	100.0	N
C3-Fluoranthenes/Pyrenes	146.65	151.73	3.3		U		151.73	100.0	N
Benzo(b)naphtho(1,2-d)thiophene	10.64				U				
Benzo(b)naphtho(2,1-d)thiophene	40.72				U				
Benzo(b)naphtho(2,3-d)thiophene	4.61				U				
C1-benzo(b)naphthothiophenes	149.66				U				
C2-benzo(b)naphthothiophenes	197.39				U				
C3-benzo(b)naphthothiophenes	158.51				U				
C4-benzo(b)naphthothiophenes	79.08				U				

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5/7/2004

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	GD81: North Slope Crude				GD81: North Slope Crude			
Battelle ID	BE212NSC-P				BE279NSC-P			
Sample Type	NSC				NSC			
Collection Date	04/19/2004				04/30/2004			
Extraction Date	04/19/2004				04/30/2004			
Analysis Date	04/20/2004				05/01/2004			
Analytical Instrument	MS				MS			
% Moisture	NA				NA			
% Lipid	NA				NA			
Matrix	SEDIMENT				OIL			
Sample Size	5.28				5.28			
Size Unit-Basis	G_OIL				G_OIL			
Units	MG/KG_OIL		**Target**	**% Diff** **Qual**	MG/KG_OIL		**Target**	**% Diff** **Qual**
Benzo(a)anthracene	5.19					U		
Chrysene	49.07		50.99	3.8		U	50.99	100.0 N
C1-Chrysenes	78.85		81.69	3.5		U	81.69	100.0 N
C2-Chrysenes	107.81		95.93	12.4		U	95.93	100.0 N
C3-Chrysenes	89.84		89.87	0.0		U	89.87	100.0 N
C4-Chrysenes	64.76		76.33	15.2		U	76.33	100.0 N
Benzo(b)fluoranthene	6.42					U		
Benzo(j/k)fluoranthene		U				U		
Benzo(a)fluoranthene		U				U		
Benzo(e)pyrene	12.65					U		
Benzo(a)pyrene		U				U		
Perylene		U				U		
Indeno(1,2,3-cd)pyrene		U				U		
Dibenz(a,h)anthracene	1.24	J				U		
Benzo(g,h,i)perylene	3.41					U		
2-Methylnaphthalene	848.08					U		
1-Methynaphthalene	609.71					U		
2,6-dimethylnaphthalene	448.36					U		
2-Ethylnaphthalene	84.81					U		
1-Ethylnaphthalene	37.60					U		
1,5-Dimethylnaphthalene	91.35					U		
2-Methylfluorene	30.96					U		
1-Methylfluorene	108.71					U		
1-Methylphenanthrene	119.63					U		
4-Methyldibenzothiophene	209.21					U		
2/3-Methyldibenzothiophene	134.15					U		
3-Methylphenanthrene	113.75					U		
1-Methyldibenzothiophene	60.26					U		
2/4-Methylphenanthrene	134.15					U		
2-Methylanthracene		U				U		
9-Methylphenanthrene/1-Methylanthrace	171.91					U		
2,7-Dimethylphenanthrene	20.72					U		
1,7-Dimethylphenanthrene	72.74					U		
Cadalene		U				U		
Dehydroabietin(e)		U				U		
Retene	30.02					U		
Hopane		U	171.67	100.0 N	147.60		171.67	14.0

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5/7/2004

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S04-0117MS-Forensics_Master:DRAFT

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	GD81: North Slope Crude				GD81: North Slope Crude			
Battelle ID	BE212NSC-P				BE279NSC-P			
Sample Type	NSC				NSC			
Collection Date	04/19/2004				04/30/2004			
Extraction Date	04/19/2004				04/30/2004			
Analysis Date	04/20/2004				05/01/2004			
Analytical Instrument	MS				MS			
% Moisture	NA				NA			
% Lipid	NA				NA			
Matrix	SEDIMENT				OIL			
Sample Size	5.28				5.28			
Size Unit-Basis	G_OIL				G_OIL			
Units	MG/KG_OIL	**Target**	**% Diff**	**Qual**	MG/KG_OIL	**Target**	**% Diff**	**Qual**
Surrogate Recoveries (%)								
Naphthalene-d8	99				0	N		
Phenanthrene-d10	103				0	N		
Chrysene-d12	91				0	N		
5b(H)-Cholane		NS			108			

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Dup3	AH-06	AH-17	AH-03	
Battelle ID	S1430-P	S1432-P	S1435-P	S1438-P	
Sample Type	SA	SA	SA	SA	
Collection Date		03/23/2004	03/23/2004	03/23/2004	
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004	
Analysis Date	04/20/2004	04/20/2004	04/21/2004	04/21/2004	
Analytical Instrument	MS	MS	MS	MS	
% Moisture	59.17	61.05	73.33	48.97	
% Lipid	NA	NA	NA	NA	
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
Sample Size	12.43	11.82	8.12	15.46	
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	
Naphthalene	16.91	18.32	45.09	13.64	
C1-Naphthalenes	13.40	15.08	37.55	11.36	
C2-Naphthalenes	31.08	33.08	106.15	21.73	
C3-Naphthalenes	17.89	19.61	45.92	17.91	
C4-Naphthalenes	12.60	13.84	33.91	14.52	
Biphenyl	8.26	9.30	18.85	8.22	
Acenaphthylene	52.99	58.74	171.97	90.09	
Acenaphthene	7.73	8.62	22.87	10.69	
Dibenzofuran	10.89	12.24	26.70	12.97	
Fluorene	14.45	16.83	39.43	30.35	
C1-Fluorenes	11.85	12.08	25.74	19.00	
C2-Fluorenes	21.59	21.90	57.98	33.75	
C3-Fluorenes	37.41	44.07	124.57	213.84	
Dibenzothiophene	11.92	13.46	35.48	17.95	
C1-Dibenzothiophenes	15.95	17.93	47.33	23.01	
C2-Dibenzothiophenes	18.32	22.67	55.58	31.46	
C3-Dibenzothiophenes	16.67	19.97	45.13	25.89	
C4-Dibenzothiophenes	10.29	11.01	21.52	12.70	
Anthracene	78.59	93.37	208.38	275.05	
Phenanthrene	157.03	177.09	497.50	348.94	
C1-Phenanthrenes/Anthracenes	112.03	126.92	348.35	280.23	
C2-Phenanthrenes/Anthracenes	121.43	133.70	330.82	255.86	
C3-Phenanthrenes/Anthracenes	48.03	49.58	149.17	121.53	
C4-Phenanthrenes/Anthracenes	20.52	21.08	56.20	53.52	
Benzo(b)fluorene	51.91	58.93	117.15	395.82	
Fluoranthene	335.13	376.06	1083.67	1869.80	D
Pyrene	368.78	406.32	1049.11	1977.37	D
C1-Fluoranthenes/Pyrenes	221.75	252.12	614.31	1222.14	
C2-Fluoranthenes/Pyrenes	137.15	159.08	429.24	714.24	
C3-Fluoranthenes/Pyrenes	71.27	80.01	197.51	291.02	
Benzo(b)naphtho(1,2-d)thiophene	8.64	9.74	23.72	46.57	
Benzo(b)naphtho(2,1-d)thiophene	33.62	38.16	81.16	217.38	
Benzo(b)naphtho(2,3-d)thiophene	10.35	11.73	24.84	55.43	
C1-benzo(b)naphthothiophenes	37.47	41.93	101.56	136.84	
C2-benzo(b)naphthothiophenes	29.61	31.79	76.20	62.13	
C3-benzo(b)naphthothiophenes	24.86	27.80	63.34	39.79	
C4-benzo(b)naphthothiophenes	13.57	10.70	32.50	10.85	

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Dup3		AH-06		AH-17		AH-03	
Battelle ID	S1430-P		S1432-P		S1435-P		S1438-P	
Sample Type	SA		SA		SA		SA	
Collection Date			03/23/2004		03/23/2004		03/23/2004	
Extraction Date	04/06/2004		04/06/2004		04/06/2004		04/06/2004	
Analysis Date	04/20/2004		04/20/2004		04/21/2004		04/21/2004	
Analytical Instrument	MS		MS		MS		MS	
% Moisture	59.17		61.05		73.33		48.97	
% Lipid	NA		NA		NA		NA	
Matrix	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
Sample Size	12.43		11.82		8.12		15.46	
Size Unit-Basis	G_DRY		G_DRY		G_DRY		G_DRY	
Units	UG/KG_DRY		UG/KG_DRY		UG/KG_DRY		UG/KG_DRY	
Benzo(a)anthracene	154.97		167.23		380.61		715.48	
Chrysene	252.47		292.35		626.91		1644.13	D
C1-Chrysenes	112.91		124.12		307.52		508.19	
C2-Chrysenes	58.97		64.94		163.32		193.76	
C3-Chrysenes	34.54		36.63		87.26		97.96	
C4-Chrysenes	24.64		28.36		66.15		63.71	
Benzo(b)fluoranthene	254.02		280.68		641.86		1408.11	D
Benzo(j/k)fluoranthene	244.66		270.95		617.11		1100.54	
Benzo(a)fluoranthene	52.49		58.17		141.77		170.62	
Benzo(e)pyrene	206.29		230.03		540.16		976.19	
Benzo(a)pyrene	194.69		213.60		497.20		792.32	
Perylene	64.98		71.44		137.33		195.27	
Indeno(1,2,3-cd)pyrene	179.39		204.58		462.31		662.89	
Dibenz(a,h)anthracene	39.27		43.37		100.55		156.39	
Benzo(g,h,i)perylene	152.79		173.03		411.55		516.30	
2-Methylnaphthalene	8.24		9.24		21.51		6.97	
1-Methynaphthalene	4.56		4.98		13.13		3.62	
2,6-dimethylnaphthalene	16.20		16.53		64.12		9.56	
2-Ethylnaphthalene	1.16	J	1.31	J	3.04	J	0.94	J
1-Ethylnaphthalene	0.32	J	0.40	J	0.99	J	0.27	J
1,5-Dimethylnaphthalene	1.10	J	1.15	J	3.03	J	0.71	J
2-Methylfluorene	2.72		3.03		6.55		6.81	
1-Methylfluorene	3.17		3.23		7.71		3.83	
1-Methylphenanthrene	16.55		18.66		50.54		39.67	
4-Methyldibenzothiophene	5.43		6.26		17.14		7.32	
2/3-Methyldibenzothiophene	5.00		5.87		14.73		6.88	
3-Methylphenanthrene	26.54		30.26		83.70		53.72	
1-Methyldibenzothiophene	1.87		2.15		5.96		2.84	
2/4-Methylphenanthrene	5.00		5.87		14.73		6.88	
2-Methylanthracene	12.03		14.12		30.86		61.69	
9-Methylphenanthrene/1-Methylanthracene	24.45		27.20		75.94		49.30	
2,7-Dimethylphenanthrene	5.62		6.11		16.32		14.58	
1,7-Dimethylphenanthrene	6.73		7.21		19.22		22.34	
Cadalene	2.24		2.54		4.07	J	1.59	
Dehydroabietin(e)		U		U		U		U
Retene	6.29		5.76		10.06		12.08	
Hopane	199.68		213.13		408.43		104.61	

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Dup3	AH-06	AH-17	AH-03
Battelle ID	S1430-P	S1432-P	S1435-P	S1438-P
Sample Type	SA	SA	SA	SA
Collection Date		03/23/2004	03/23/2004	03/23/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/20/2004	04/20/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	59.17	61.05	73.33	48.97
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	12.43	11.82	8.12	15.46
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Surrogate Recoveries (%)				
Naphthalene-d8	68	70	82	66
Phenanthrene-d10	91	94	94	83
Chrysene-d12	83	85	85	76
5b(H)-Cholane	99	100	101	103

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	REF 1-4	REF 2-1	SID Source 4-1	REF 3-2
Battelle ID	S1445-P	S1447-P	S1457-P	S1466-P
Sample Type	SA	SA	SA	SA
Collection Date	03/24/2004	03/24/2004	03/24/2004	03/25/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	42.69	56.18	11.76	57.26
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	17.58	13.22	26.66	13.08
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	10.82	16.73	29.74	13.96
C1-Naphthalenes	7.88	12.69	36.98	8.65
C2-Naphthalenes	19.42	44.17	72.96	15.87
C3-Naphthalenes	8.33	13.86	79.28	17.60
C4-Naphthalenes	5.70	8.34	45.63	11.28
Biphenyl	4.73	6.42	27.84	8.30
Acenaphthylene	13.02	18.30	172.28	27.11
Acenaphthene	2.15	3.46	24.44	5.82
Dibenzofuran	4.44	7.02	30.56	9.53
Fluorene	5.97	8.62	44.35	16.22
C1-Fluorenes	4.93	7.33	44.07	13.07
C2-Fluorenes	9.33	11.84	72.35	17.56
C3-Fluorenes	11.89	16.61	185.19	31.22
Dibenzothiophene	3.52	4.96	57.81	11.81
C1-Dibenzothiophenes	5.19	8.12	85.41	13.41
C2-Dibenzothiophenes	6.66	10.14	130.85	13.76
C3-Dibenzothiophenes	5.95	8.66	148.67	9.91
C4-Dibenzothiophenes	3.36	4.44	113.78	5.11
Anthracene	18.21	24.55	211.64	52.05
Phenanthrene	34.40	43.53	916.28	164.01
C1-Phenanthrenes/Anthracenes	30.16	42.23	507.82	98.13
C2-Phenanthrenes/Anthracenes	37.34	49.73	451.29	79.62
C3-Phenanthrenes/Anthracenes	14.20	20.89	189.91	31.51
C4-Phenanthrenes/Anthracenes	6.23	9.19	84.43	12.87
Benzo(b)fluorene	8.73	11.14	35.04	40.84
Fluoranthene	90.43	115.97	1202.09	406.54
Pyrene	78.35	104.41	1089.54	345.26
C1-Fluoranthenes/Pyrenes	46.97	67.18	539.86	174.20
C2-Fluoranthenes/Pyrenes	33.00	48.56	519.86	90.15
C3-Fluoranthenes/Pyrenes	20.88	33.58	257.63	46.72
Benzo(b)naphtho(1,2-d)thiophene	1.98	2.64	26.76	6.75
Benzo(b)naphtho(2,1-d)thiophene	6.67	8.94	109.54	24.49
Benzo(b)naphtho(2,3-d)thiophene	2.38	3.02	26.55	10.25
C1-benzo(b)naphthothiophenes	11.88	17.20	248.92	26.27
C2-benzo(b)naphthothiophenes	11.67	17.20	433.26	18.23
C3-benzo(b)naphthothiophenes	9.93	15.11	550.27	13.57
C4-benzo(b)naphthothiophenes	4.76	8.45	363.24	5.05

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	REF 1-4		REF 2-1		SID Source 4-1		REF 3-2	
Battelle ID	S1445-P		S1447-P		S1457-P		S1466-P	
Sample Type	SA		SA		SA		SA	
Collection Date	03/24/2004		03/24/2004		03/24/2004		03/25/2004	
Extraction Date	04/06/2004		04/06/2004		04/06/2004		04/06/2004	
Analysis Date	04/21/2004		04/21/2004		04/21/2004		04/21/2004	
Analytical Instrument	MS		MS		MS		MS	
% Moisture	42.69		56.18		11.76		57.26	
% Lipid	NA		NA		NA		NA	
Matrix	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
Sample Size	17.58		13.22		26.66		13.08	
Size Unit-Basis	G_DRY		G_DRY		G_DRY		G_DRY	
Units	UG/KG_DRY		UG/KG_DRY		UG/KG_DRY		UG/KG_DRY	
Benzo(a)anthracene	36.82		48.84		321.70		175.29	
Chrysene	48.48		64.66		636.01		188.13	
C1-Chrysenes	28.06		43.61		338.06		80.72	
C2-Chrysenes	18.15		31.52		239.15		41.32	
C3-Chrysenes	13.96		21.33		213.23		22.26	
C4-Chrysenes	10.51		17.98		154.86		15.88	
Benzo(b)fluoranthene	68.74		92.88		494.83		203.99	
Benzo(j/k)fluoranthene	58.71		80.25		464.01		202.15	
Benzo(a)fluoranthene	14.47		20.03		111.71		47.91	
Benzo(e)pyrene	53.98		75.13		454.31		158.68	
Benzo(a)pyrene	54.75		74.11		369.75		206.95	
Perylene	16.52		26.66		77.96		61.01	
Indeno(1,2,3-cd)pyrene	61.45		79.62		362.83		186.49	
Dibenz(a,h)anthracene	11.73		15.10		83.98		36.27	
Benzo(g,h,i)perylene	52.46		67.10		357.35		148.83	
2-Methylnaphthalene	5.07		8.16		15.30		5.42	
1-Methynaphthalene	2.25		3.70		18.61		2.99	
2,6-dimethylnaphthalene	11.68		31.57		10.82		4.60	
2-Ethylnaphthalene	0.73		1.21		2.07	J	0.87	
1-Ethylnaphthalene	0.19	J	0.35	J		U	0.29	J
1,5-Dimethylnaphthalene	0.49	J	0.85		3.11	J	0.73	J
2-Methylfluorene	0.99		1.43		8.37	J	3.50	
1-Methylfluorene	1.45		2.27		9.00	J	3.15	
1-Methylphenanthrene	4.10		6.16		79.36		14.65	
4-Methyldibenzothiophene	1.94		3.01		27.53		4.32	
2/3-Methyldibenzothiophene	1.69		2.61		23.04		4.30	
3-Methylphenanthrene	6.84		10.60		127.21		23.33	
1-Methyldibenzothiophene	0.52	J	0.80		17.31		1.65	
2/4-Methylphenanthrene	1.69		2.61		23.04		4.30	
2-Methylanthracene	3.12		4.00		31.02		9.52	
9-Methylphenanthrene/1-Methylanthracene	6.66		9.40		105.34		20.41	
2,7-Dimethylphenanthrene	1.56		2.42		24.72		4.53	
1,7-Dimethylphenanthrene	2.97		3.61		30.33		6.50	
Cadalene	0.54	J	0.75	J		U	0.98	
Dehydroabietin(e)		U		U		U		U
Retene	3.22		6.02		8.10	J	5.57	
Hopane	88.35		108.80		1048.97		97.02	

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	REF 1-4	REF 2-1	SID Source 4-1	REF 3-2
Battelle ID	S1445-P	S1447-P	S1457-P	S1466-P
Sample Type	SA	SA	SA	SA
Collection Date	03/24/2004	03/24/2004	03/24/2004	03/25/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	42.69	56.18	11.76	57.26
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	17.58	13.22	26.66	13.08
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Surrogate Recoveries (%)				
Naphthalene-d8	61	55	137 N	59
Phenanthrene-d10	83	75	101	86
Chrysene-d12	76	66	111	80
5b(H)-Cholane	94	95	102	93

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-28	AH-49	AH-45	Source 3-1
Battelle ID	S1468-P	S1471-P	S1474-P	S1481-P
Sample Type	SA	SA	SA	SA
Collection Date	03/25/2004	03/25/2004	03/26/2004	03/26/2004
Extraction Date	04/07/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	30.80	22.42	70.94	8.95
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	21.08	23.62	8.87	27.28
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	67.83	78.46	30.46	13.46
C1-Naphthalenes	84.41	115.82	27.69	6.43
C2-Naphthalenes	162.24	225.79	75.11	10.42
C3-Naphthalenes	157.35	201.81	38.54	10.61
C4-Naphthalenes	82.25	92.61	26.51	10.76
Biphenyl	25.20	30.52	15.23	3.41
Acenaphthylene	785.17	791.31	143.74	11.28
Acenaphthene	56.46	70.16	36.64	4.93
Dibenzofuran	80.77	114.81	27.07	7.95
Fluorene	145.02	230.36	43.69	5.49
C1-Fluorenes	124.93	165.82	27.85	2.90
C2-Fluorenes	215.13	246.86	49.54	6.73
C3-Fluorenes	533.15	587.47	108.61	15.42
Dibenzothiophene	216.67	308.96	37.14	5.19
C1-Dibenzothiophenes	274.57	347.86	47.22	7.47
C2-Dibenzothiophenes	240.35	277.01	48.09	14.02
C3-Dibenzothiophenes	122.21	132.34	35.29	16.33
C4-Dibenzothiophenes	40.18	43.84	17.66	13.43
Anthracene	792.27	814.22	197.53	20.83
Phenanthrene	3316.29	4493.70 D	526.04	92.64
C1-Phenanthrenes/Anthracenes	2260.21	2728.34	334.03	37.05
C2-Phenanthrenes/Anthracenes	1495.10	1702.70	338.10	35.51
C3-Phenanthrenes/Anthracenes	605.31	660.03	109.85	25.55
C4-Phenanthrenes/Anthracenes	167.18	188.86	39.45	16.17
Benzo(b)fluorene	192.21	210.07	106.37	8.84
Fluoranthene	4081.99	4872.56 D	1018.60	136.26
Pyrene	4143.47	4721.00 D	933.27	106.45
C1-Fluoranthenes/Pyrenes	2572.09	2791.52	544.67	50.67
C2-Fluoranthenes/Pyrenes	1950.53	2032.57	382.74	36.88
C3-Fluoranthenes/Pyrenes	752.61	770.07	164.54	22.55
Benzo(b)naphtho(1,2-d)thiophene	88.41	98.78	21.33	2.41
Benzo(b)naphtho(2,1-d)thiophene	364.48	419.05	81.01	11.74
Benzo(b)naphtho(2,3-d)thiophene	105.26	125.27	22.74	3.19
C1-benzo(b)naphthothiophenes	373.13	418.38	86.58	13.01
C2-benzo(b)naphthothiophenes	229.74	244.75	63.28	16.58
C3-benzo(b)naphthothiophenes	144.69	153.92	48.76	20.29
C4-benzo(b)naphthothiophenes	68.68	67.25	23.46	15.14

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Not Surrogate Corrected 5/7/2004 S04-0117MS-Forensics_Master:DRAFT

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-28		AH-49		AH-45		Source 3-1	
Battelle ID	S1468-P		S1471-P		S1474-P		S1481-P	
Sample Type	SA		SA		SA		SA	
Collection Date	03/25/2004		03/25/2004		03/26/2004		03/26/2004	
Extraction Date	04/07/2004		04/06/2004		04/06/2004		04/06/2004	
Analysis Date	04/21/2004		04/21/2004		04/21/2004		04/21/2004	
Analytical Instrument	MS		MS		MS		MS	
% Moisture	30.80		22.42		70.94		8.95	
% Lipid	NA		NA		NA		NA	
Matrix	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
Sample Size	21.08		23.62		8.87		27.28	
Size Unit-Basis	G_DRY		G_DRY		G_DRY		G_DRY	
Units	UG/KG_DRY		UG/KG_DRY		UG/KG_DRY		UG/KG_DRY	
Benzo(a)anthracene	1339.47		1502.30		362.69		58.96	
Chrysene	2227.35		2416.21		583.33		67.89	
C1-Chrysenes	1307.45		1402.83		270.47		27.85	
C2-Chrysenes	634.67		661.03		137.21		17.25	
C3-Chrysenes	239.56		257.01		69.80		17.18	
C4-Chrysenes	115.96		111.01		46.84		11.38	
Benzo(b)fluoranthene	1745.90		1724.54		592.35		66.93	
Benzo(j/k)fluoranthene	1725.11		1799.07		532.37		62.47	
Benzo(a)fluoranthene	460.61		448.56		126.95		12.23	
Benzo(e)pyrene	1596.66		1580.66		471.59		53.66	
Benzo(a)pyrene	1623.42		1654.23		452.96		42.38	
Perylene	334.32		340.04		122.50		13.94	
Indeno(1,2,3-cd)pyrene	1361.12		1349.72		422.35		51.87	
Dibenz(a,h)anthracene	317.72		331.17		94.77		13.09	
Benzo(g,h,i)perylene	1243.88		1241.54		359.63		44.71	
2-Methylnaphthalene	39.74		51.56		15.76		4.15	
1-Methynaphthalene	42.83		61.89		10.50		2.26	
2,6-dimethylnaphthalene	31.72		44.15		41.05		2.73	
2-Ethylnaphthalene	5.74		6.19		2.74		0.47	J
1-Ethylnaphthalene	2.99	J	3.50	J	0.91	J	0.20	J
1,5-Dimethylnaphthalene	8.60		11.93		2.45		0.49	J
2-Methylfluorene	38.62		55.06		6.35		0.75	J
1-Methylfluorene	33.38		45.67		7.22		0.64	J
1-Methylphenanthrene	358.71		440.04		49.76		6.80	
4-Methyldibenzothiophene	97.88		124.46		17.25		2.71	
2/3-Methyldibenzothiophene	93.09		120.93		14.37		2.41	
3-Methylphenanthrene	601.11		748.55		82.23		8.66	
1-Methyldibenzothiophene	29.61		35.34		5.69		1.25	
2/4-Methylphenanthrene	93.09		120.93		14.37		2.41	
2-Methylanthracene	126.82		134.48		28.31		2.87	
9-Methylphenanthrene/1-Methylanthracene	462.85		530.41		70.18		7.40	
2,7-Dimethylphenanthrene	108.63		127.60		15.58		2.12	
1,7-Dimethylphenanthrene	112.99		131.27		17.66		4.91	
Cadalene	1.74	J	2.14	J	4.51		1.99	
Dehydroabietin(e)		U		U		U		U
Retene	10.32		14.05		9.32		26.00	
Hopane	178.63		198.44		326.91		59.73	

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-28	AH-49	AH-45	Source 3-1
Battelle ID	S1468-P	S1471-P	S1474-P	S1481-P
Sample Type	SA	SA	SA	SA
Collection Date	03/25/2004	03/25/2004	03/26/2004	03/26/2004
Extraction Date	04/07/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	30.80	22.42	70.94	8.95
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	21.08	23.62	8.87	27.28
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Surrogate Recoveries (%)				
Naphthalene-d8	99	94	60	79
Phenanthrene-d10	108	98	79	92
Chrysene-d12	101	93	73	84
5b(H)-Cholane	111	112	95	99

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 3-2	Source 1-1	Source 2-1	Source 1-2
Battelle ID	S1482-P	S1483-P	S1484-P	S1485-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/2004	03/26/2004	03/26/2004	03/26/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/22/2004	04/22/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	12.54	10.53	9.36	16.63
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	26.38	26.91	18.42	25.39
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	163.29	18.95	3366.92	121.50
C1-Naphthalenes	164.09	11.13	13521.05 D	50.08
C2-Naphthalenes	143.06	18.30	27106.04 D	74.17
C3-Naphthalenes	70.53	16.09	23552.06	60.98
C4-Naphthalenes	40.17	15.01	11451.07	66.36
Biphenyl	140.29	4.61	950.42	28.79
Acenaphthylene	26.26	159.35	U	963.01
Acenaphthene	64.95	12.26	440.58	47.19
Dibenzofuran	306.41	20.84	536.80	97.72
Fluorene	66.46	42.99	677.93	144.77
C1-Fluorenes	10.06	13.39	1529.79	52.62
C2-Fluorenes	23.65	30.33	2184.03	117.84
C3-Fluorenes	46.70	270.32	1592.49	696.03
Dibenzothiophene	18.56	16.27	335.90	44.19
C1-Dibenzothiophenes	25.85	21.54	769.50	62.36
C2-Dibenzothiophenes	39.66	27.39	726.10	105.15
C3-Dibenzothiophenes	45.73	21.03	449.43	114.26
C4-Dibenzothiophenes	56.66	11.39	194.89	69.13
Anthracene	66.01	529.63	222.68	1885.32 D
Phenanthrene	235.38	363.61	1563.07	959.02
C1-Phenanthrenes/Anthracenes	103.02	259.41	3132.17	740.27
C2-Phenanthrenes/Anthracenes	93.89	224.69	3349.50	848.09
C3-Phenanthrenes/Anthracenes	76.67	114.16	1782.96	632.53
C4-Phenanthrenes/Anthracenes	57.00	48.39	674.20	328.53
Benzo(b)fluorene	29.36	54.22	62.90	309.99
Fluoranthene	329.37	2548.92 D	461.79	6958.00 D
Pyrene	271.02	2131.25 D	491.82	8016.78 D
C1-Fluoranthenes/Pyrenes	148.85	859.07	489.61	4961.26
C2-Fluoranthenes/Pyrenes	118.30	935.70	363.01	3347.51
C3-Fluoranthenes/Pyrenes	68.74	420.92	241.05	2626.94
Benzo(b)naphtho(1,2-d)thiophene	8.21	41.90	12.78	191.45
Benzo(b)naphtho(2,1-d)thiophene	38.25	170.51	59.22	729.54
Benzo(b)naphtho(2,3-d)thiophene	10.95	40.71	20.39	198.63
C1-benzo(b)naphthothiophenes	42.78	126.75	64.24	769.63
C2-benzo(b)naphthothiophenes	47.33	54.36	50.49	360.60
C3-benzo(b)naphthothiophenes	52.75	31.63	40.17	246.61
C4-benzo(b)naphthothiophenes	27.84	5.38	20.44	60.32

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 3-2		Source 1-1		Source 2-1		Source 1-2	
Battelle ID	S1482-P		S1483-P		S1484-P		S1485-P	
Sample Type	SA		SA		SA		SA	
Collection Date	03/26/2004		03/26/2004		03/26/2004		03/26/2004	
Extraction Date	04/06/2004		04/06/2004		04/06/2004		04/06/2004	
Analysis Date	04/21/2004		04/21/2004		04/22/2004		04/22/2004	
Analytical Instrument	MS		MS		MS		MS	
% Moisture	12.54		10.53		9.36		16.63	
% Lipid	NA		NA		NA		NA	
Matrix	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
Sample Size	26.38		26.91		18.42		25.39	
Size Unit-Basis	G_DRY		G_DRY		G_DRY		G_DRY	
Units	UG/KG_DRY		UG/KG_DRY		UG/KG_DRY		UG/KG_DRY	
Benzo(a)anthracene	186.42		770.25		314.01		3812.16	D
Chrysene	213.61		1297.64	D	338.46		6548.95	D
C1-Chrysenes	95.74		406.81		167.63		2606.47	
C2-Chrysenes	58.00		158.53		106.32		1104.16	
C3-Chrysenes	45.77		111.86		81.00		798.23	
C4-Chrysenes	25.17		74.73		37.42		532.93	
Benzo(b)fluoranthene	261.65		1020.86	D	382.86		7235.67	D
Benzo(j/k)fluoranthene	213.57		985.73		347.37		6221.25	D
Benzo(a)fluoranthene	44.43		109.55		77.21		768.56	
Benzo(e)pyrene	200.56		709.62		326.28		4431.30	D
Benzo(a)pyrene	170.42		318.34		328.14		2338.54	D
Perylene	56.16		107.47		92.30		782.42	
Indeno(1,2,3-cd)pyrene	180.88		435.21		307.27		2707.70	D
Dibenz(a,h)anthracene	46.30		116.24		91.54		824.90	
Benzo(g,h,i)perylene	154.26		300.82		295.21		1904.12	D
2-Methylnaphthalene	99.56		11.17		9428.33	D	50.00	
1-Methynaphthalene	63.67		5.08		4005.44	D	20.91	
2,6-dimethylnaphthalene	40.75		4.53		8219.92	D	19.11	
2-Ethylnaphthalene	6.99		0.82		1107.97	D	4.09	
1-Ethylnaphthalene	1.64		0.38	J	351.46	D	1.76	
1,5-Dimethylnaphthalene	5.70		0.70	J	1030.33	D	2.40	
2-Methylfluorene	2.94		3.96		343.11		12.86	
1-Methylfluorene	2.94		3.54		576.95		12.95	
1-Methylphenanthrene	19.12		58.32		408.68		131.91	
4-Methyldibenzothiophene	10.79		7.61		324.75		19.39	
2/3-Methyldibenzothiophene	7.78		5.72		266.36		18.38	
3-Methylphenanthrene	23.49		35.72		893.42		75.42	
1-Methyldibenzothiophene	3.78		2.27		91.52		5.53	
2/4-Methylphenanthrene	7.78		5.72		266.36		18.38	
2-Methylanthracene	8.87		54.90		152.17		227.69	
9-Methylphenanthrene/1-Methylanthracene	20.30		57.19		601.43		172.53	
2,7-Dimethylphenanthrene	4.60		19.45		276.06		77.74	
1,7-Dimethylphenanthrene	17.13		23.24		225.72		92.55	
Cadalene	5.41		1.97		148.76		5.05	
Dehydroabietin(e)	24.04			U	102.67			U
Retene	127.52		17.84		182.82		136.38	
Hopane	137.00		9.50		38.73		66.94	

Analyzed By Roush, James

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 3-2	Source 1-1	Source 2-1	Source 1-2
Battelle ID	S1482-P	S1483-P	S1484-P	S1485-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/2004	03/26/2004	03/26/2004	03/26/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/22/2004	04/22/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	12.54	10.53	9.36	16.63
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	26.38	26.91	18.42	25.39
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Surrogate Recoveries (%)				
Naphthalene-d8	70	73	112	156 N
Phenanthrene-d10	85	89	69	180 N
Chrysene-d12	78	90	107	208 N
5b(H)-Cholane	90	101	105	106

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 2-2		AH-29		AH-26	AH-40
Battelle ID	S1486-P		S1491-P		S1505-P	S1509-P
Sample Type	SA		SA		SA	SA
Collection Date	03/26/2004		03/26/2004		03/27/2004	03/27/2004
Extraction Date	04/06/2004		04/06/2004		04/06/2004	04/06/2004
Analysis Date	04/22/2004		04/22/2004		04/22/2004	04/22/2004
Analytical Instrument	MS		MS		MS	MS
% Moisture	10.63		65.24		55.90	19.95
% Lipid	NA		NA		NA	NA
Matrix	SEDIMENT		SEDIMENT		SEDIMENT	SEDIMENT
Sample Size	18.21		10.51		13.52	24.30
Size Unit-Basis	G_DRY		G_DRY		G_DRY	G_DRY
Units	UG/KG_DRY		UG/KG_DRY		UG/KG_DRY	UG/KG_DRY
Naphthalene	3685.04		128.42		36.52	45.59
C1-Naphthalenes	16595.28		359.89		43.61	37.98
C2-Naphthalenes	39174.57	D	845.43		88.04	39.39
C3-Naphthalenes	37990.98		736.59		63.73	33.28
C4-Naphthalenes	18774.92		388.60		35.36	72.27
Biphenyl	932.39		39.55		13.14	9.83
Acenaphthylene	650.90		534.97		285.68	27.95
Acenaphthene	748.75		97.39		37.73	115.80
Dibenzofuran	566.80		83.66		37.46	57.28
Fluorene	983.53		136.72		74.23	89.67
C1-Fluorenes	2311.29		103.96		51.01	25.44
C2-Fluorenes	3466.46		169.45		82.82	52.27
C3-Fluorenes	2531.03		476.32		203.48	105.39
Dibenzothiophene	440.96		114.68		81.59	52.32
C1-Dibenzothiophenes	1124.55		141.61		96.72	49.67
C2-Dibenzothiophenes	1114.97		147.63		87.73	60.17
C3-Dibenzothiophenes	775.02		117.69		51.52	45.09
C4-Dibenzothiophenes	376.53		68.53		22.62	22.67
Anthracene	651.79		758.28		314.15	203.32
Phenanthrene	2766.64		1486.20		1193.18	763.05
C1-Phenanthrenes/Anthracenes	4585.52		986.45		755.53	249.62
C2-Phenanthrenes/Anthracenes	5164.25		816.38		521.04	160.18
C3-Phenanthrenes/Anthracenes	2934.56		408.55		212.72	71.92
C4-Phenanthrenes/Anthracenes	1158.59		140.81		61.34	26.14
Benzo(b)fluorene	362.48		695.17		120.13	78.31
Fluoranthene	1942.94		4751.11	D	1519.36	1100.26
Pyrene	1739.83		4322.01		1533.21	904.73
C1-Fluoranthenes/Pyrenes	1592.16		2382.02		966.84	396.41
C2-Fluoranthenes/Pyrenes	882.18		1249.43		688.93	264.45
C3-Fluoranthenes/Pyrenes	554.67		531.46		277.97	110.40
Benzo(b)naphtho(1,2-d)thiophene	42.12		106.29		34.20	17.70
Benzo(b)naphtho(2,1-d)thiophene	196.05		347.92		132.47	70.30
Benzo(b)naphtho(2,3-d)thiophene	70.76		120.73		37.78	23.13
C1-benzo(b)naphthothiophenes	191.58		315.05		138.18	63.61
C2-benzo(b)naphthothiophenes	158.25		200.98		91.24	44.50
C3-benzo(b)naphthothiophenes	117.38		141.53		65.94	40.41
C4-benzo(b)naphthothiophenes	65.51		52.16		27.73	25.02

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 2-2		AH-29		AH-26		AH-40	
Battelle ID	S1486-P		S1491-P		S1505-P		S1509-P	
Sample Type	SA		SA		SA		SA	
Collection Date	03/26/2004		03/26/2004		03/27/2004		03/27/2004	
Extraction Date	04/06/2004		04/06/2004		04/06/2004		04/06/2004	
Analysis Date	04/22/2004		04/22/2004		04/22/2004		04/22/2004	
Analytical Instrument	MS		MS		MS		MS	
% Moisture	10.63		65.24		55.90		19.95	
% Lipid	NA		NA		NA		NA	
Matrix	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
Sample Size	18.21		10.51		13.52		24.30	
Size Unit-Basis	G_DRY		G_DRY		G_DRY		G_DRY	
Units	UG/KG_DRY		UG/KG_DRY		UG/KG_DRY		UG/KG_DRY	
Benzo(a)anthracene	1059.88		1187.49		535.47		441.24	
Chrysene	1207.94		1974.39		871.45		501.01	
C1-Chrysenes	606.28		931.17		484.29		182.94	
C2-Chrysenes	339.20		419.60		240.83		80.76	
C3-Chrysenes	200.37		205.54		106.39		51.75	
C4-Chrysenes	103.00		132.72		58.94		30.15	
Benzo(b)fluoranthene	1128.68		2195.47		789.32		420.58	
Benzo(j/k)fluoranthene	1029.39		2033.61		709.63		433.61	
Benzo(a)fluoranthene	313.25		455.40		190.53		85.47	
Benzo(e)pyrene	959.95		1617.90		660.69		321.82	
Benzo(a)pyrene	988.67		1503.46		664.35		389.82	
Perylene	311.56		385.48		150.63		103.75	
Indeno(1,2,3-cd)pyrene	935.45		1294.80		572.98		306.66	
Dibenz(a,h)anthracene	258.74		288.39		137.19		75.76	
Benzo(g,h,i)perylene	875.34		1067.85		498.24		244.50	
2-Methylnaphthalene	10012.10		213.46		21.20		22.22	
1-Methynaphthalene	6484.68		142.23		21.37		14.94	
2,6-dimethylnaphthalene	10893.68	D	269.12		27.87		8.77	
2-Ethylnaphthalene	1480.82	D	32.18		3.34		2.94	
1-Ethylnaphthalene	536.36	D	11.45		1.22	J	0.79	J
1,5-Dimethylnaphthalene	1533.91	D	31.46		3.87		1.79	
2-Methylfluorene	457.78		26.17		14.73		8.40	
1-Methylfluorene	838.01		30.67		12.99		6.90	
1-Methylphenanthrene	591.19		139.28		115.64		38.52	
4-Methyldibenzothiophene	455.42		146.41		35.68		17.30	
2/3-Methyldibenzothiophene	378.30		43.21		30.87		15.30	
3-Methylphenanthrene	1313.50		247.84		206.62		60.88	
1-Methyldibenzothiophene	130.61		15.74		10.05		7.38	
2/4-Methylphenanthrene	378.30		43.21		30.87		15.30	
2-Methylanthracene	258.40		99.23		48.35		23.88	
9-Methylphenanthrene/1-Methylanthracene	923.46		217.28		151.47		49.74	
2,7-Dimethylphenanthrene	375.64		48.16		34.83		14.25	
1,7-Dimethylphenanthrene	354.45		51.42		37.41		11.99	
Cadalene	256.93		7.90		2.25		4.74	
Dehydroabietin(e)	363.82			U		U		U
Retene	570.52		35.77		9.44		6.93	
Hopane	887.67		617.01		205.02		249.46	

Analyzed By Roush, James

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 2-2	AH-29	AH-26	AH-40
Battelle ID	S1486-P	S1491-P	S1505-P	S1509-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/2004	03/26/2004	03/27/2004	03/27/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/22/2004	04/22/2004	04/22/2004	04/22/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	10.63	65.24	55.90	19.95
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	18.21	10.51	13.52	24.30
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Surrogate Recoveries (%)				
Naphthalene-d8	101	87	60	85
Phenanthrene-d10	58	100	75	98
Chrysene-d12	96	97	69	91
5b(H)-Cholane	103	98	102	108

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Glossary of Data Qualifiers

Flag:	Application:
B	Analyte concentration found in the sample at a concentration <5x the level found in the procedural blank.
D	Dilution Run. Initial run outside linear range of instrument.
E	Estimate, result is greater than the highest concentration level in the calibration.
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract.
J	Analyte detected below the sample-specific Reporting Limit (RL).
ME	Significant Matrix Interference - Estimated value.
MI	Significant Matrix Interference - value could not be determined or estimated.
n	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets the contingency criteria.
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not applicable
T	Holding Time (HT) exceeded.
U	Analyte not detected at 3:1 signal:noise ratio. The sample-specific method detection limit (MDL) reported.

Misc. Docs

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Miscellaneous Documentation Form

Project Number: EA Davisville | Batch 04-0117 | Entered By: James Roush

Project Title: Davisville Naval Sediment Study | Date: 04/28/2004

QC PARAMETER	CONTROL LIMITS	NUMBER OF DQO EXCEEDENCES	CORRECTIVE ACTION
Procedural Blank	<5xMDL or samples >5x PB conc.	4	2-Methylnaphthalene, 1-Methylnaphthalene, Indeno(1,2,3-cd)pyrene, and Benzo(g,h,I)perylene were found at a level >5x the ssMDL, but all samples have concentrations >5x the PB concentration, so secondary DQO criteria is met. No action taken.
Surrogates	40% - 120%	5	Low Naphehalene-d8 in the LCS, most likely due to improper nitrogen blow-down. Low Naphthalene-d8 in sample S1457-P, due to slight contribution of Naphthalene, magnified by high dilution factor. (64.231 – highest in batch) All PAH surrogates high in sample S1485-P Sample appears to have been double spiked. Assuming a double spiking, surrogate recoveries would appear correct.
LCS recoveries	40% - 120%	6	Naphthalene, 2-Methylnaphthalene, 1-Methylnaphthalene, 2,6-Dimethylnaphthalene, Biphenyl and Acenaphthylene were all under-recovered. This was most likely due to improper nitrogen blow-down. The SRM, MS/MSD and NSC recoveries of these compounds were good, so the data does not appear to be compromised.
Duplicate Precision	<30% RPD	0	
MS/MSD Recoveries	40% - 120% for at least 80% of analytes	3	Low 2,6-Dimethylnaphthalene (38%) in the MS, and low 1-Methylnaphthalene (39%) and 2,6-Dimethylnaphthalene (38%) in the MSD. These compounds are only outside criteria because they were quantified using the response factor from Naphthalene. At equal concentrations, these compounds have an area roughly 60% of Naphthalene. Secondary criteria that 80% of analytes must pass was met so no corrective action taken.
MS/MSD Precision	<30% RPD	0	
Standard Reference Material	<30% difference from a range of certified values	0	
North Slope Crude	< 30% difference from laboratory average	0	

Independent Calibration Check	<15% difference	0	
Initial Calibration	Initial: ±25% RSD	0	
Continuing Calibration	<25% Difference, 15% on average.	0	

- The RF of parent PAH compounds was used for the associated alkylated PAH patterns and isomers.
- The RF of *17b(H),21b(H)-hopane* was used for Hopane.
- *Fluorene-d10*, *OTP* and *5a-androstane* were subtracted out of the *C3-Naphthalenes*, *C1-Dibenzothiophenes* and *C2-Phenanthrene/Anthracenes* ranges respectively when required, as is standard lab practice. "ME" qualifier will not appear on data tables due to the subtraction. The subtraction reports are included in the Unused Data section of the package.
- Units on all sample quant reports read "ng/µl", but should be "ng".
- The target value for *C4-Phenanthrenes/Anthracenes* of 223.35 mg/kg in the North Slope Crude was generated previous to a pattern integration adjustment that excludes *Benzo(b)naphtho(2,1-d)thiophene* from the pattern. A new value of 176 mg/kg has been established, but has not been implemented in the LIMS system as of this time. The % difference using the new value would be 6.0%.
- DATA FOR THE SRM WAS QUALIFIED USING THE STANDARD BATTELLE QUALIFIER CRITERIA OF 30% DIFFERENCE PLUS THE 95% CONFIDENCE LEVEL, NOT THE WORKPLAN CRITERIA OF 30% DIFFERENCE.

  JH 5/3/04
- SOME QC SAMPLES DID NOT GET PROCESSED FOR BIOMARKER ANALYSIS, BE162LCS-P, BE163SRM-P, BE212NSC-P, S1432MS-P AND S1432MSD-P. THESE SAMPLES RECEIVED NO 5β(H)CHOLANE SIS, AND AS SUCH, A "NS" QUALIFIER WAS APPLIED TO THESE SAMPLES FOR 5β(H)CHOLANE AND THE VALUE FIELD APPEARS NULL.

  DEFINITION

  NS - NOT SPIKED. JH 5/7/04
- SAMPLE BE212NSC-P ~~WAS~~ JH 5/7/04 WAS NOT ANALYZED FOR BIOMARKERS, AND AS A RESULT, THE HOPANE VALUE FIELD IS NULL, WITH A 100% DIFFERENCE VERSUS LABORATORY MEAN. CONVERSELY, SAMPLE BE279NSC-P WAS ONLY ANALYZED FOR BIOMARKERS, SO ALL PAH'S APPEAR NULL IN THE VALUE FIELD, AND THE PAH SIS COMPOUNDS READ "0" WITH AN "N" QUALIFIER.
- AN UNKNOWN INTERFERENT WAS SUBTRACTED FROM THE C2-PHENANTHRENES/ANTHRACENES RANGE IN SAMPLES S1445-P AND S1447-P. AN "ME" WILL NOT APPEAR ON THE DATA TABLES DUE TO THE SUBTRACTION. JH 5/7/04 JAR 6/18/04

Approved: _____ Date: 4-30-04

Approved: _____ Date: 4-30-04

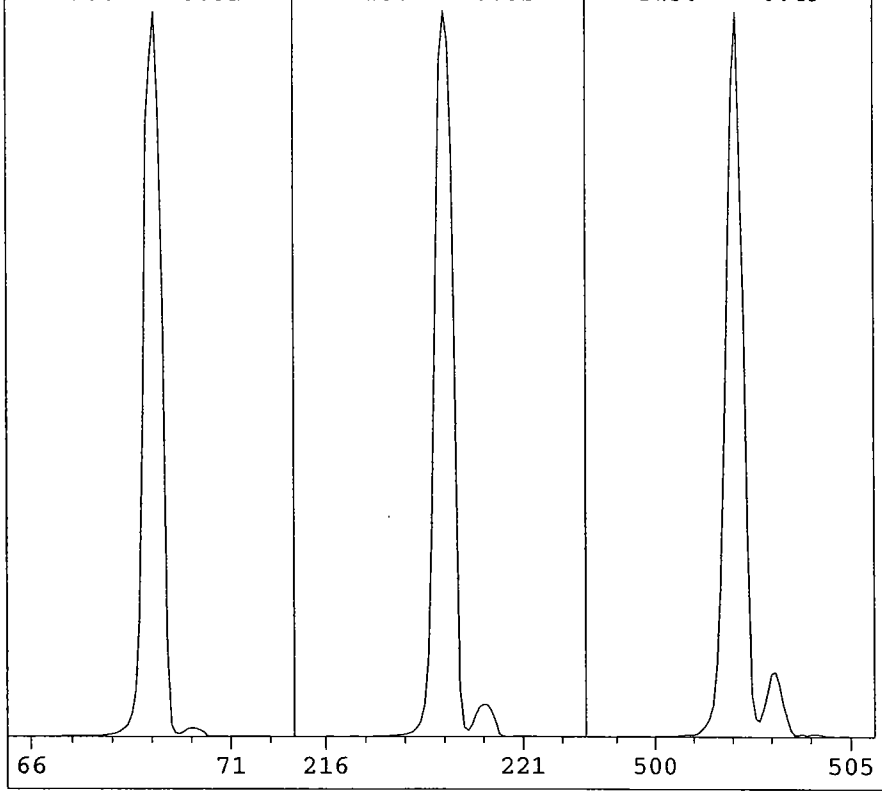
5973

Instrument: Inst. E
Fri Apr 16 09:49:22 2004

C:\MSDCHEM\2\5973N\ATUNE.U

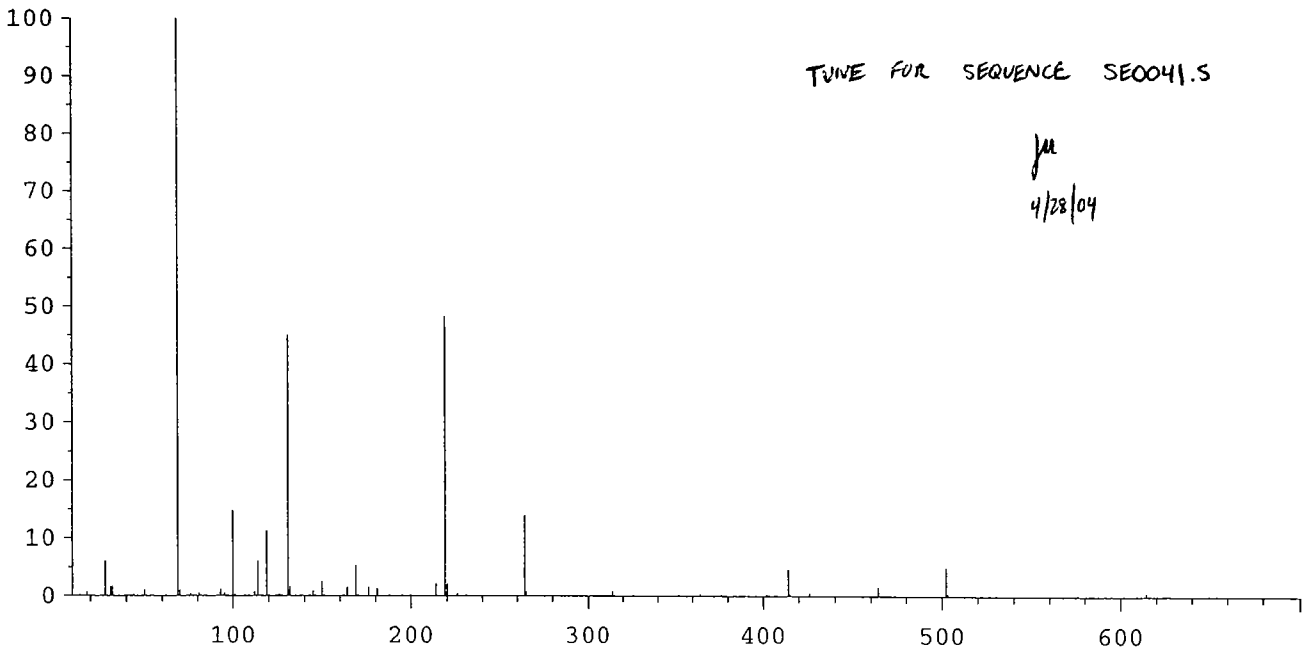
63
86

Mass	69.10	Mass	219.00	Mass	502.10
Ab	460798	Ab	221084	Ab	23684
Pw50	0.51	Pw50	0.52	Pw50	0.49



Ion Pol	POS	MassGain	210
		MassOffs	-10
Emission	34.6	AmuGain	2362
EleEnergy	69.9	AmuOffs	137
Filament	1	Wid219	-0.002
		DC Pol	NEG
Repeller	34.81		
IonFocus	90.2	HED	ON
EntLens	0.0	EMVolts	1765
EntOffs	VAR		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10
Zones:			
MS Source	230	TurboSpd	100
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100 Step: 0.10
148 peaks Base: 69.10 Abundance: 404800



TUNE FOR SEQUENCE SE0041.S

JM
4/28/04

Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.10	404800	100.00	70.10	4081	1.01
219.00	195264	48.24	220.00	8348	4.28
502.10	20000	4.94	503.10	2062	10.31

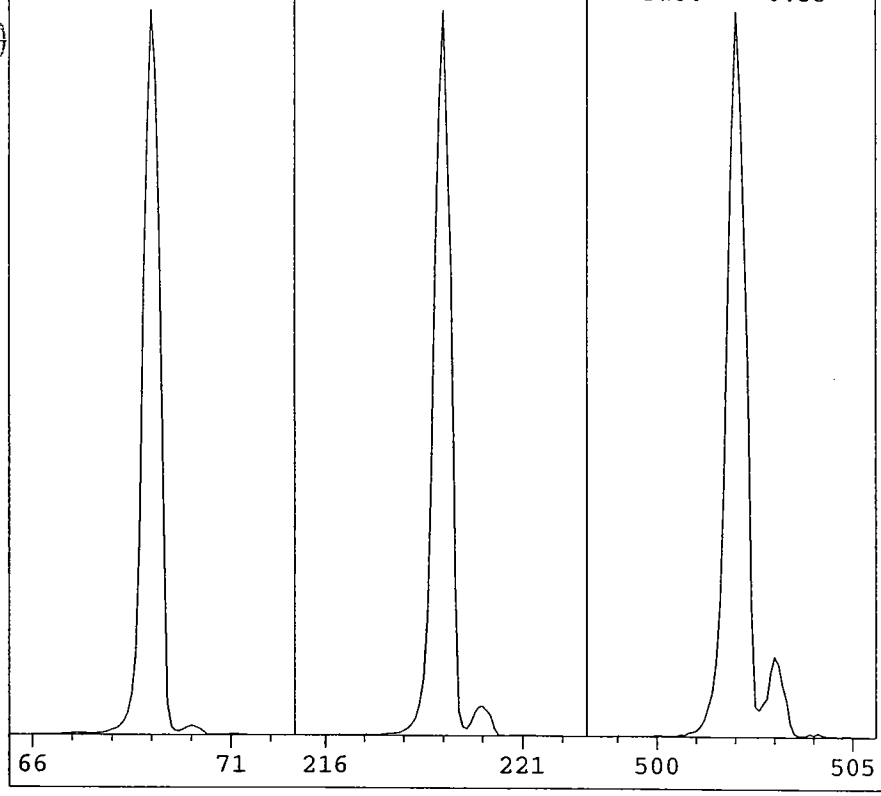
TARGET MASS:	50	69	131	219	414	502
DYNAMIC ENT OFFSET:	13.8	14.3	15.3	16.8	20.1	22.3
TARGET ABUND(%):	1.0	100.0	45.0	50.0	5.0	5.0
ACTUAL TUNE ABUND(%):	1.0	100.0	44.9	48.2	4.7	4.9

5973

Instrument: Inst. E
Tue Apr 27 16:52:33 2004

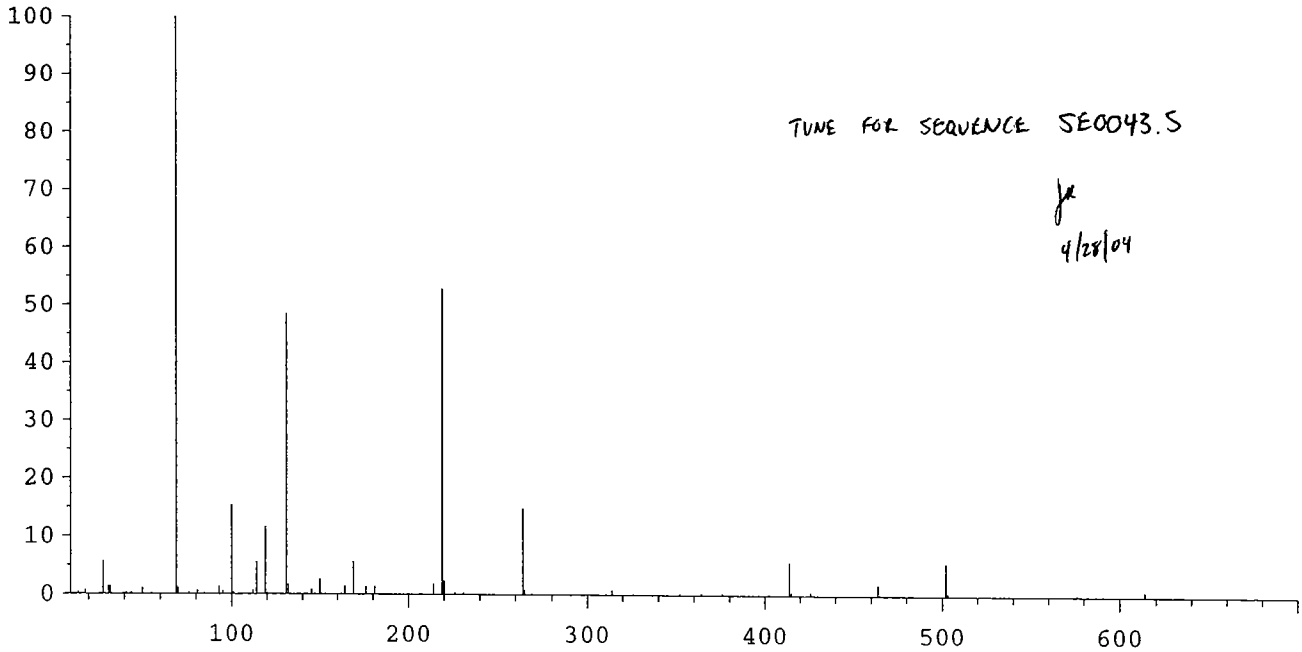
C:\MSDCHEM\2\5973N\ATUNE.U

Mass	69.00	Mass	219.00	Mass	502.00
Ab	440863	Ab	240156	Ab	25550
Pw50	0.49	Pw50	0.49	Pw50	0.55



Ion Pol	POS	MassGain	208
		MassOffs	-11
Emission	34.6	AmuGain	2350
EleEnergy	69.9	AmuOffs	136
Filament	1	Wid219	-0.028
		DC Pol	NEG
Repeller	34.81		
IonFocus	90.2	HED	ON
EntLens	0.0	EMVolts	1859
EntOffs	VAR		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10
Zones:			
MS Source	230	TurboSpd	100
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100 Step: 0.10
188 peaks Base: 69.00 Abundance: 367040



TUNE FOR SEQUENCE SE0043.S

4/28/04

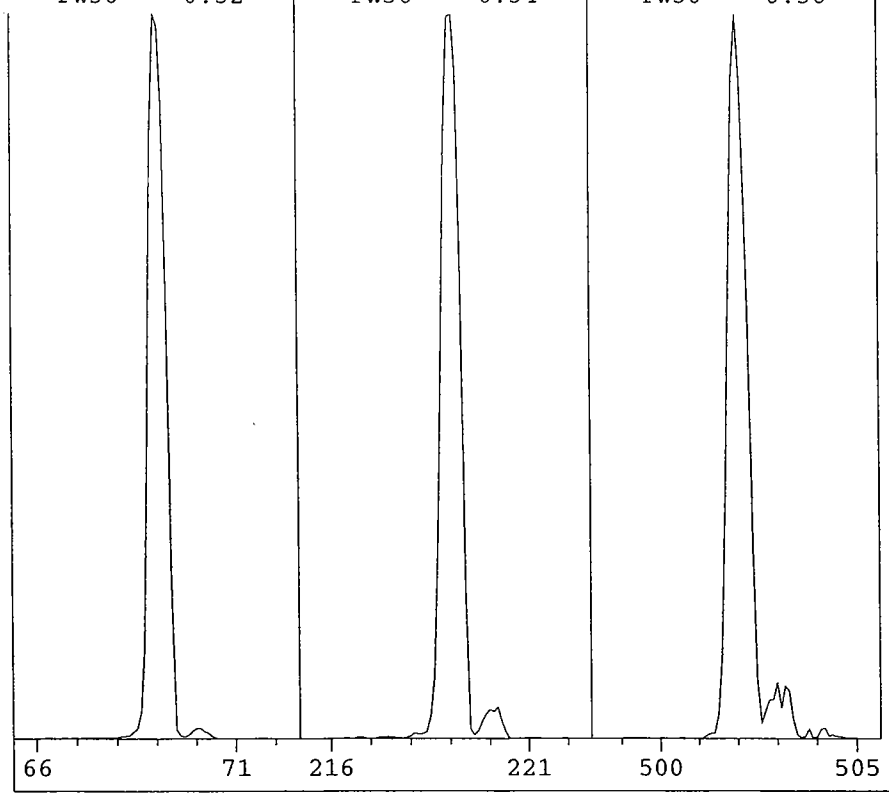
Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	367040	100.00	70.00	4127	1.12
219.00	194112	52.89	220.00	9146	4.71
502.00	20984	5.72	503.00	1758	8.38

TARGET MASS:	50	69	131	219	414	502
DYNAMIC ENT OFFSET:	16.1	16.3	17.3	17.6	20.1	21.6
TARGET ABUND(%):	1.0	100.0	45.0	50.0	5.0	5.0
ACTUAL TUNE ABUND(%):	1.0	100.0	48.5	52.9	5.8	5.7

88

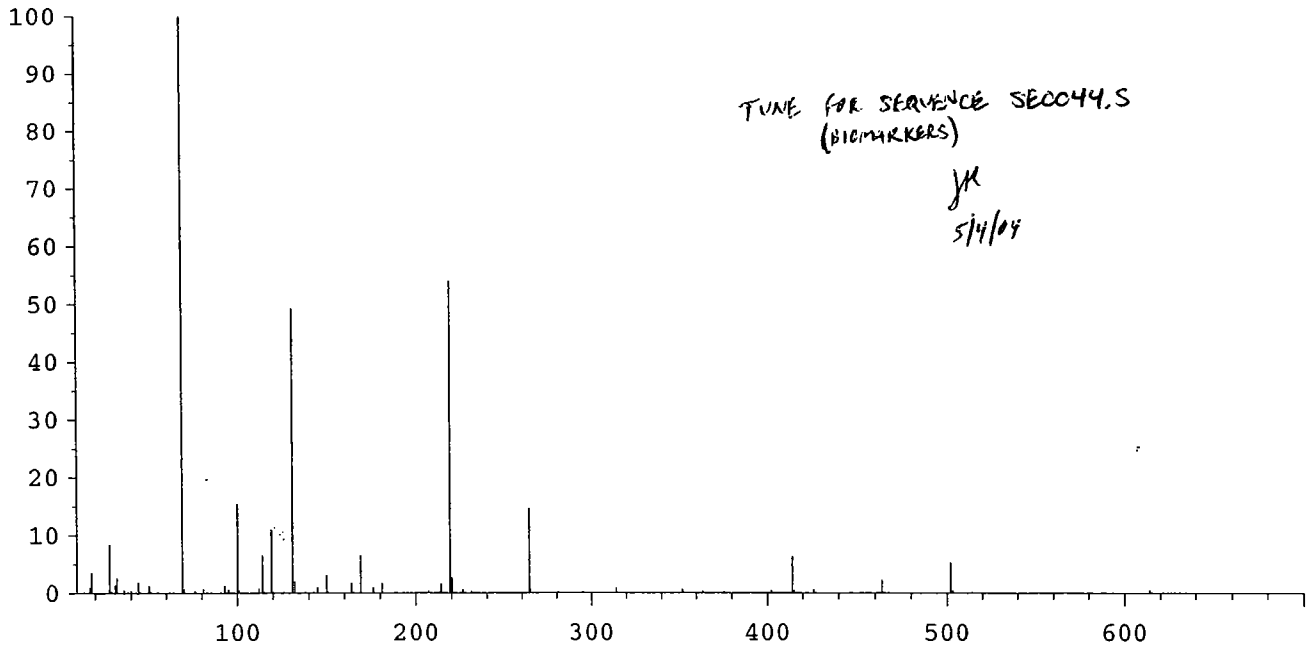
Instrument: Inst. E
Fri Apr 30 13:14:31 2004 C:\MSDCHEM\2\5973N\ATUNE.U

Mass	69.00	Mass	219.10	Mass	502.00
Ab	405072	Ab	222489	Ab	25991
Pw50	0.52	Pw50	0.54	Pw50	0.56



Ion Pol	POS	MassGain	209
		MassOffs	-9
Emission	34.6	AmuGain	2348
EleEnergy	69.9	AmuOffs	136
Filament	1	Wid219	0.003
		DC Pol	NEG
Repeller	18.90		
IonFocus	76.9	HED	ON
EntLens	0.0	EMVolts	1176
EntOffs	VAR		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10
Zones:			
MS Source	230	TurboSpd	100
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100 Step: 0.10
202 peaks Base: 69.10 Abundance: 361728



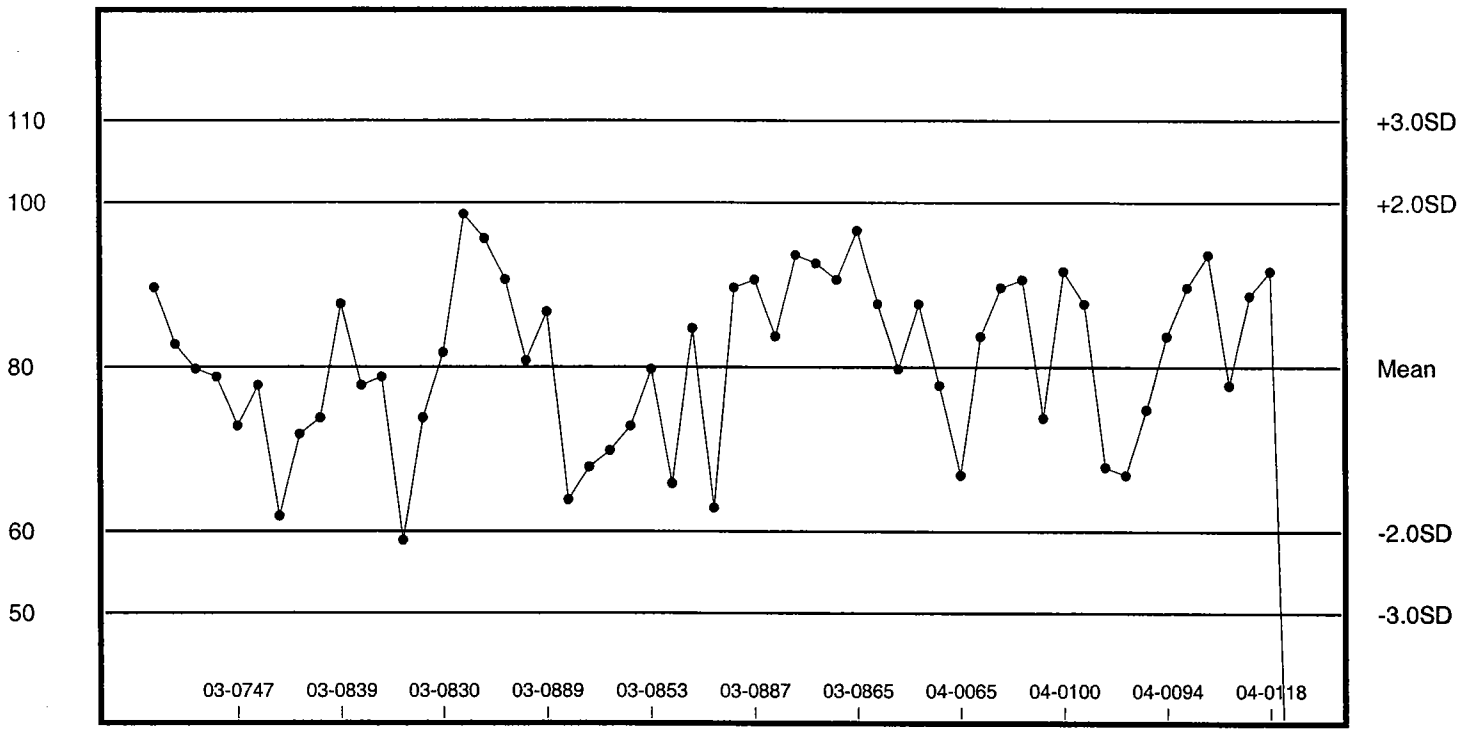
TUNE FOR SEQUENCE SEC044.S
(BIOMARKERS)
JK
5/4/04

Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.10	361728	100.00	70.10	2614	0.72
219.10	195264	53.98	220.10	9700	4.97
502.00	19096	5.28	503.20	1695	8.88

TARGET MASS:	50	69	131	219	414	502
DYNAMIC ENT OFFSET:	13.3	10.5	9.8	10.3	14.1	16.1
TARGET ABUND(%):	1.0	100.0	45.0	50.0	5.0	5.0
ACTUAL TUNE ABUND(%):	1.3	100.0	49.3	54.0	6.3	5.3

BATTELLE ORGANIC LABORATORY

Naphthalene Sediments - 2004



n= 20 mean= 80 SD= 10 %CV= 12.54% min= 59 max= 99

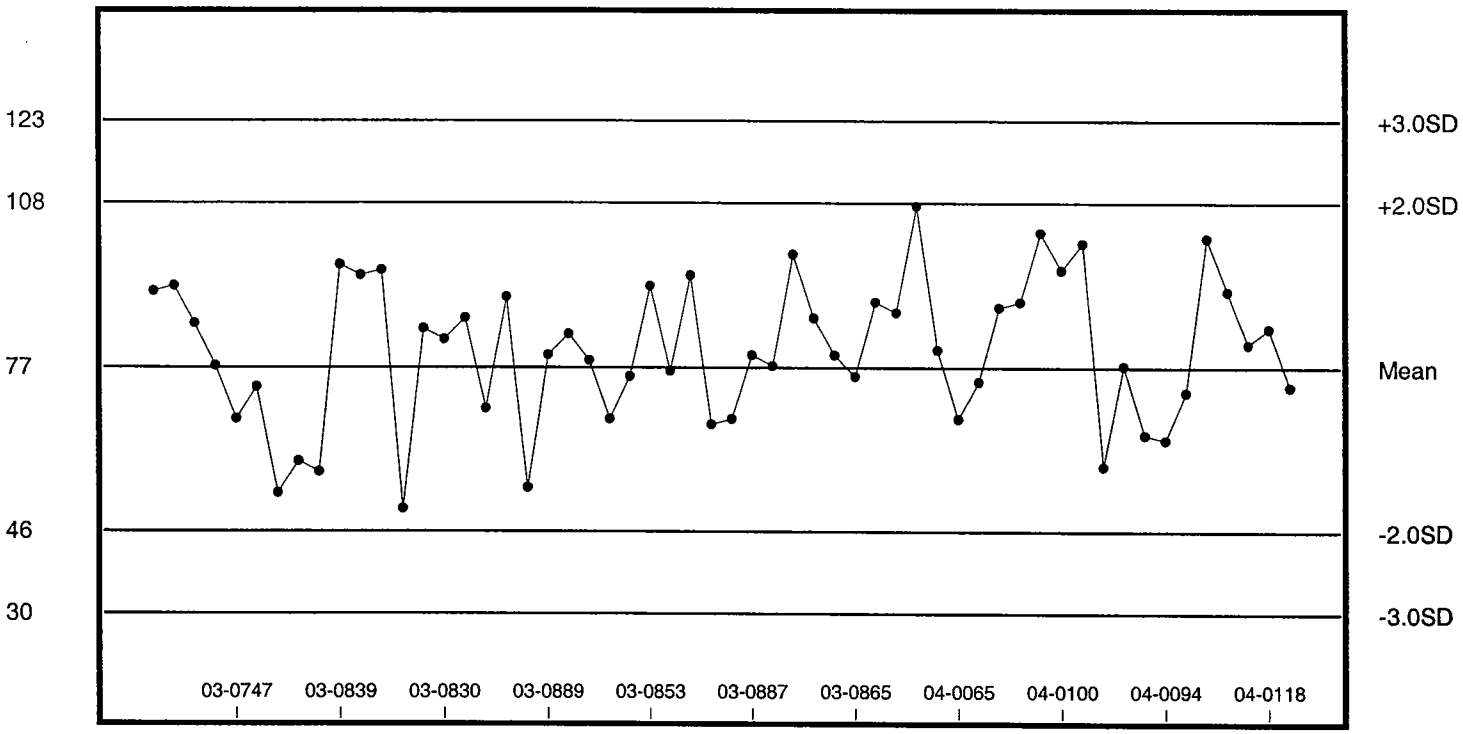
F: C:\Active\Control Chart 2004\MS\Sediments\Pah Seds.ccp

nn Naphthalene

BL 4-30-04

BATTELLE ORGANIC LABORATORY

Benzo(g,h,i)perylene Sediments - 2004



n= 20 mean= 77 SD= 15 %CV= 20.13% min= 50 max= 96

BL 4.30.04

Fi' C:\Active\Control Chart 2004\MS\Sediments\Pah Seds.ccp

(nn Benzo(g h i)perylene

Sample Prep

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BATTELLE - DUXBURY OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

SOP Numbers (see workplan for modifications)
Extraction SOP No. 5-203

This Batch Contains The Following Samples:				
BE161PB-P	S1432MS-P	S1457-P	S1482-P	S1505-P
BE162LCS-P	S1432MSD-P	S1466-P	S1483-P	S1505DUP-P
BE163SRM-P	S1435-P	S1468-P	S1484-P	S1509-P
BE212NSC-P	S1438-P	S1471-P	S1485-P	② BE279NSC-P
S1430-P	S1445-P	S1474-P	S1486-P	
S1432-P	S1447-P	S1481-P	S1491-P	

* Please refer to Batch 04-0118 for all sample custody records
4/20/04 BOM

Laboratory Preparation Records
COMPLETE AND VALIDATED

Prep Task Leader: Bryan Massa

Approved By:	# Pages ③	Date	Initials
Bryan Massa	4/4 ① ~~5/4~~ 54	04/20/2004	BOM

① 9 Pages added 5/21/04 BOM

③ 1 Page added 5/4/04 BOM

② Sample added to Batch 4/30/04 BOM

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BATTELLE - DUXBURY OPERATIONS
SAMPLE CUSTODY LOG

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Requested On/By:	Apr 6 2004 11:32AM BJM	**Purpose:**	Sample Preparation
Relinquished On/By:	Apr 6 2004 11:32AM JN	**Last Activity:**	Return

Accepted On/By:	Apr 6 2004 11:32AM BJM	**Returned On/To:**	Apr 6 2004 5:00PM JN
Stored In Facility:	TBT	**Returned To Facility:**	Chem South: 29
Stored Until	4/6/2004 5:00:00 PM		
Stored Comment:	NA	**Returned Comment:**	NA

No.	BDO-ID:	Ctrs	*	Condition:	Custody Comment:
1	S1430	1	--	Intact	NA
2	S1432	1	--	Intact	NA
3	S1435	1	--	Intact	NA
4	S1438	1	--	Intact	NA
5	S1445	1,2	--	Intact	NA
6	S1447	1,2	--	Intact	NA
7	S1457	1,2	--	Intact	NA
8	S1466	1,2	--	Intact	NA
9	S1468	1,2	--	Intact	NA
10	S1471	1,2	--	Intact	NA
11	S1474	1	--	Intact	NA
12	S1481	1	--	Intact	NA
13	S1482	1	--	Intact	NA
14	S1483	1	--	Intact	NA
15	S1484	1	--	Intact	NA
16	S1485	1	--	Intact	NA
17	S1486	1	--	Intact	NA
18	S1491	1	--	Intact	NA
19	S1505	1,2	--	Intact	NA
20	S1509	1	--	Intact	NA
Total Samples	20	* "C" = Consumed Container			

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BATTELLE - DUXBURY OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID	Description
BE161PB-P	Procedural Blank
BE162LCS-P	Laboratory Control Sample
BE163SRM-P	Standard Reference Material - SRM 1944 (020326-01)
BE212NSC-P	North Slope Crude North Slope Crude (GD81)
BE279NSC-P	North Slope Crude North Slope Crude (GD81)
S1430-P	Dup3
S1432-P	AH-06
S1432MS-P	Matrix Spike of AH-06
S1432MSD-P	Matrix Spike Duplicate of AH-06
S1435-P	AH-17
S1438-P	AH-03
S1445-P	REF 1-4
S1447-P	REF 2-1
S1457-P	SID Source 4-1
S1466-P	REF 3-2
S1468-P	AH-28
S1471-P	AH-49
S1474-P	AH-45
S1481-P	Source 3-1
S1482-P	Source 3-2
S1483-P	Source 1-1

Samples Assigned By: Bryan Massa Date : April 5, 2004

Comments: All sample (PB,LCS,ans SRM where split 50:50) volumes where adjusted so that they contained ~3-5 mg of oil. Samples that had a PIV of 500 where spiked with 1/2 the amount of RIS as stated in the work plan per order of PM. Please refer to the gravemetric weight page to see how sample volumes where adjusted.

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BATTELLE - DUXBURY OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID	Description
S1484-P	Source 2-1
S1485-P	Source 1-2
S1486-P	Source 2-2
S1491-P	AH-29
S1505-P	AH-26
S1505DUP-P	Lab Duplicate of AH-26
S1509-P	AH-40

Samples Assigned By: Bryan Massa Date : April 5, 2004

Comments: All sample (PB,LCS,ans SRM where split 50:50) volumes where adjusted so that they contained ~3-5 mg of oil. Samples that had a PIV of 500 where spiked with 1/2 the amount of RIS as stated in the work plan per order of PM. Please refer to the gravemetric weight page to see how sample volumes where adjusted.

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)
BE161PB-P	NA	--	NA	NA	NA	29.36	62.79	37.21	18.44
BE162LCS-P	NA	--	NA	NA	NA	NA	NA	NA	NA
BE163SRM-P	NA	--	NA	NA	NA	1.04	98.75	1.25	1.03
BE212NSC-P	NA	--	NA	NA	NA	NA	NA	NA	NA
BE279NSC-P	NA	--	NA	NA	NA	NA	NA	NA	NA
S1430-P	1	--	1.12	9.79	4.66	30.45	40.83	59.17	12.43
S1432-P	1	--	1.16	9.71	4.49	30.34	38.95	61.05	11.82
S1432MS-P	1,4	--	1.15	10.05	4.69	15.41	39.78	60.22	6.13
S1432MSD-P	1,6	--	1.15	10.42	4.65	15.38	37.76	62.24	5.81
S1435-P	1	--	1.15	10.86	3.74	30.45	26.67	73.33	8.12
S1438-P	1	--	1.15	9.91	5.62	30.30	51.03	48.97	15.46
S1445-P	1,2	--	1.15	9.91	6.17	30.67	57.31	42.69	17.58
S1447-P	1,2	--	1.14	10.52	5.25	30.16	43.82	56.18	13.22
S1457-P	1,2	--	1.15	10.16	9.10	30.21	88.24	11.76	26.66
S1466-P	1,2	--	1.15	10.72	5.24	30.61	42.74	57.26	13.08
S1468-P	1,2	--	1.15	10.24	7.44	30.46	69.20	30.80	21.08
S1471-P	1,2	--	1.15	9.98	8.00	30.44	77.58	22.42	23.62
S1474-P	1	--	1.16	11.14	4.06	30.53	29.06	70.94	8.87
S1481-P	1	--	1.13	10.52	9.68	29.96	91.05	8.95	27.28
S1482-P	1	--	1.14	10.07	8.95	30.16	87.46	12.54	26.38
S1483-P	1	--	1.16	10.47	9.49	30.08	89.47	10.53	26.91
S1484-P	1	--	1.16	10.56	9.68	20.32	90.64	9.36	18.42
S1485-P	1	--	1.12	10.44	8.89	30.46	83.37	16.63	25.39

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100
Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]
* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)
S1486-P	1	--	1.13	10.82	9.79	20.38	89.37	10.63	18.21
S1491-P	1	--	1.15	10.47	4.39	30.25	34.76	65.24	10.51
S1505-P	1,2	--	1.13	10.36	5.20	30.66	44.10	55.90	13.52
S1505DUP-P	1,2	--	1.13	10.36	5.20	30.11	44.10	55.90	13.28
S1509-P	1	--	1.13	9.70	7.99	30.36	80.05	19.95	24.30

Validation of:	Performed:
% Dry	04/20/04 BJM
Wet Wt.	Not Validated

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100
Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]
* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Balance Data:

Task: **Wet Weight**

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
BE161PB-P	04/20/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
BE162LCS-P	--	--	--	--	--	--
BE163SRM-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
BE212NSC-P	--	--	--	--	--	--
BE279NSC-P	--	--	--	--	--	--
S1430-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432MS-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432MSD-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1435-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1438-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1445-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1447-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1457-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1466-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1468-P	04/07/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1471-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1474-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1481-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1482-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1483-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1484-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1485-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1486-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1491-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1505-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1505DUP-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1509-P	04/06/2004 BJM	--	--	--	--	--

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100

Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]

* "C" = Sample Container Is Consumed

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ELECTRONIC DRY WEIGHT DETERMINATION

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Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Task: **Tare Weight**

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
BE161PB-P	--	--	--	--	--	--
BE162LCS-P	--	--	--	--	--	--
BE163SRM-P	--	--	--	--	--	--
BE212NSC-P	--	--	--	--	--	--
BE279NSC-P	--	--	--	--	--	--
S1430-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432MS-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432MSD-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1435-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1438-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1445-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1447-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1457-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1466-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1468-P	04/07/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1471-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1474-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1481-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1482-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1483-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1484-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1485-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1486-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1491-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1505-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1505DUP-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1509-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100
Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]
* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

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Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Task: Aliquot Wet Weight

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
BE161PB-P	--	--	--	--	--	--
BE162LCS-P	--	--	--	--	--	--
BE163SRM-P	--	--	--	--	--	--
BE212NSC-P	--	--	--	--	--	--
BE279NSC-P	--	--	--	--	--	--
S1430-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432MS-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432MSD-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1435-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1438-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1445-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1447-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1457-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1466-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1468-P	04/07/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1471-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1474-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1481-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1482-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1483-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1484-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1485-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1486-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1491-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1505-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1505DUP-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1509-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100

Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]

* "C" = Sample Container Is Consumed

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ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
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G004976-0001

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Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Task: **Aliquot Dry Weight**

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
BE161PB-P	--	--	--	--	--	--
BE162LCS-P	--	--	--	--	--	--
BE163SRM-P	--	--	--	--	--	--
BE212NSC-P	--	--	--	--	--	--
BE279NSC-P	--	--	--	--	--	--
S1430-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432MS-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1432MSD-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1435-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1438-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1445-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1447-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1457-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1466-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1468-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1471-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1474-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1481-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1482-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1483-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1484-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1485-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1486-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1491-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1505-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1505DUP-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1509-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100

Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]

* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

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Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Sample ID:	Comments:	Reference:
BE161PB-P	Average of percent dry weights from authentic samples in Batch No. 04-0117 Davisville Naval Sediment Study (Forensic) Average of wet weights from authentic samples in Batch No. 04-0117 Davisville Naval Sediment Study (Forensic)	NA
S1505-P		S1505 (04-0117)
S1505DUP-P		S1505 (04-0117)

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100

Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]

* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
SAMPLE EXTRACTION FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID	First Extraction	Second Extraction	Third Extraction	Turbo °C	Turbo PSI	KD °C	Comment
BE161PB-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
BE162LCS-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
BE163SRM-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
BE212NSC-P	04/19/04 BJM	04/19/04 BJM	04/19/04 BJM	NA	NA	65	NA
BE279NSC-P	04/30/04 BJM	04/30/04 BJM	04/30/04 BJM	NA	NA	65	NA
S1430-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1432-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1432MS-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1432MSD-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1435-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1438-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1445-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1447-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1457-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1466-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1468-P	04/07/04 BJM	04/08/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1471-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1474-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1481-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1482-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1483-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1484-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1485-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1486-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1491-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1505-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA

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BATTELLE - DUXBURY OPERATIONS
SAMPLE EXTRACTION FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
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Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID	First Extraction	Second Extraction	Third Extraction	Turbo °C	Turbo PSI	KD °C	Comment
S1505DUP-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA
S1509-P	04/06/04 BJM	04/07/04 BJM	04/08/04 BJM	NA	NA	65	NA

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BATTELLE - DUXBURY OPERATIONS
SURROGATE SPIKE FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
BE161PB-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
BE162LCS-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
BE162LCS-P	GC37	LCS/MS	7	100	04/06/04 BJM	MRM	NA
BE163SRM-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
BE212NSC-P	GB67	SIS	88	200	04/19/04 BJM	ALD	NA
BE279NSC-P	FZ48	SIS	2	100	04/30/04 BJM	RPR	NA
BE279NSC-P	GB67	SIS	44	200	04/30/04 BJM	RPR	NA
S1430-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1432-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1432MS-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1432MS-P	GC37	LCS/MS	7	100	04/06/04 BJM	MRM	NA
S1432MSD-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1432MSD-P	GC37	LCS/MS	7	100	04/06/04 BJM	MRM	NA
S1435-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1438-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1445-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1447-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1457-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1466-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1468-P	GB67	SIS	56	200	04/07/04 BJM	MRM	NA
S1471-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1474-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1481-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1482-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1483-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1484-P	GB67	SIS	33	0	04/06/04 BJM	MRM	NA

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BATTELLE - DUXBURY OPERATIONS
SURROGATE SPIKE FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
S1484-P	GC92	SIS	6	100	04/06/04 BJM	MRM	NA
S1485-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1486-P	GB67	SIS	33	0	04/06/04 BJM	MRM	NA
S1486-P	GC92	SIS	6	100	04/06/04 BJM	MRM	NA
S1491-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1505-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1505DUP-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA
S1509-P	GB67	SIS	33	200	04/06/04 BJM	MRM	NA

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BATTELLE - DUXBURY OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
BE161PB-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
BE161PB-P-A	2	C	4/19/2004 10:52:00 AM	BE161PB-P	0	1000	500	2.000	2.000	04/19/04 BJM
BE161PB-P	3	--	4/19/2004 10:52:00 AM	BE161PB-P	0	1000	500	2.000	2.000	04/19/04 BJM
BE161PB-P-A-F1	4	--	4/19/2004 10:52:00 AM	BE161PB-P-A	2	1000	1000	1.000	2.000	04/19/04 BJM
BE162LCS-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
BE162LCS-P-A	2	--	4/19/2004 10:52:00 AM	BE162LCS-P	0	1000	500	2.000	2.000	04/19/04 BJM
BE162LCS-P	3	--	4/19/2004 10:52:00 AM	BE162LCS-P	0	1000	500	2.000	2.000	04/19/04 BJM
BE163SRM-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
BE163SRM-P-A	2	--	4/19/2004 10:52:00 AM	BE163SRM-P	0	1000	500	2.000	2.000	04/19/04 BJM
BE163SRM-P	3	--	4/19/2004 10:52:00 AM	BE163SRM-P	0	1000	500	2.000	2.000	04/19/04 BJM
BE212NSC-P	0	--	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
BE279NSC-P	0	--	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1430-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1430-P	2	C	4/14/2004 3:47:00 PM	S1430-P	0	10000	9950	1.005	1.005	04/14/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

* - "C" = Extract is Consumed

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Extract Name	Extract #	*	Extract Date	Source Name	Source #	Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
S1430-P-GW1	3	C	4/14/2004 3:47:00 PM	S1430-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1430-P	4	C	4/16/2004 2:11:00 PM	S1430-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1430-P-GW2	5	C	4/16/2004 2:11:00 PM	S1430-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1430-P-A	6	C	4/19/2004 10:33:00 AM	S1430-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1430-P	7	--	4/19/2004 10:33:00 AM	S1430-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1430-P-A-F1	8	--	4/19/2004 10:33:00 AM	S1430-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM
S1432-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1432-P	2	C	4/14/2004 3:47:00 PM	S1432-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1432-P-GW1	3	C	4/14/2004 3:47:00 PM	S1432-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1432-P	4	C	4/16/2004 2:11:00 PM	S1432-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1432-P-GW2	5	C	4/16/2004 2:11:00 PM	S1432-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1432-P-A	6	C	4/19/2004 10:33:00 AM	S1432-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1432-P	7	--	4/19/2004 10:33:00 AM	S1432-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1432-P-A-F1	8	--	4/19/2004 10:33:00 AM	S1432-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1432MS-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1432MS-P	2	C	4/14/2004 3:47:00 PM	S1432MS-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1432MS-P-GW1	3	C	4/14/2004 3:47:00 PM	S1432MS-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1432MS-P	4	C	4/16/2004 2:11:00 PM	S1432MS-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1432MS-P-GW2	5	C	4/16/2004 2:11:00 PM	S1432MS-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1432MS-P-A	6	--	4/19/2004 10:35:00 AM	S1432MS-P	4	500	250	2.000	2.116	04/19/04 BJM
S1432MS-P	7	--	4/19/2004 10:35:00 AM	S1432MS-P	4	500	250	2.000	2.116	04/19/04 BJM
S1432MSD-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1432MSD-P	2	C	4/14/2004 3:47:00 PM	S1432MSD-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1432MSD-P-GW1	3	C	4/14/2004 3:47:00 PM	S1432MSD-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1432MSD-P	4	C	4/16/2004 2:11:00 PM	S1432MSD-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1432MSD-P-GW2	5	C	4/16/2004 2:11:00 PM	S1432MSD-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1432MSD-P-A	6	--	4/19/2004 10:35:00 AM	S1432MSD-P	4	500	250	2.000	2.116	04/19/04 BJM
S1432MSD-P	7	--	4/19/2004 10:35:00 AM	S1432MSD-P	4	500	250	2.000	2.116	04/19/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1435-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1435-P	2	C	4/14/2004 3:47:00 PM	S1435-P	0	25000	24950	1.002	1.002	04/14/04 BJM
S1435-P-GW1	3	C	4/14/2004 3:47:00 PM	S1435-P	0	25000	50	500.000	500.000	04/14/04 BJM
S1435-P	4	C	4/16/2004 2:11:00 PM	S1435-P	2	1000	950	1.053	1.055	04/16/04 BJM
S1435-P-GW2	5	C	4/16/2004 2:11:00 PM	S1435-P	2	1000	50	20.000	20.040	04/16/04 BJM
S1435-P-A	6	C	4/19/2004 10:37:00 AM	S1435-P	4	1000	750	1.333	1.406	04/19/04 BJM
S1435-P	7	--	4/19/2004 10:37:00 AM	S1435-P	4	1000	250	4.000	4.219	04/19/04 BJM
S1435-P-A-F1	8	C	4/19/2004 10:37:00 AM	S1435-P-A	6	1000	1000	1.000	1.406	04/19/04 BJM
S1435-P-A-F1	9	--	4/30/2004 4:16:00 PM	S1435-P-A-F1	8	1000	500	2.000	2.813	04/30/04 BJM
S1435-P-A-F1	10	--	4/30/2004 4:16:00 PM	S1435-P-A-F1	8	1000	500	2.000	2.813	04/30/04 BJM
S1438-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1438-P	2	C	4/14/2004 3:47:00 PM	S1438-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1438-P-GW1	3	C	4/14/2004 3:47:00 PM	S1438-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1438-P	4	C	4/16/2004 2:11:00 PM	S1438-P	2	1000	950	1.053	1.058	04/16/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1438-P-GW2	5	C	4/16/2004 2:11:00 PM	S1438-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1438-P-A	6	C	4/19/2004 10:33:00 AM	S1438-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1438-P	7	--	4/19/2004 10:33:00 AM	S1438-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1438-P-A-F1	8	--	4/19/2004 10:33:00 AM	S1438-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM
S1445-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1445-P	2	C	4/14/2004 3:47:00 PM	S1445-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1445-P-GW1	3	C	4/14/2004 3:47:00 PM	S1445-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1445-P	4	C	4/16/2004 2:11:00 PM	S1445-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1445-P-GW2	5	C	4/16/2004 2:11:00 PM	S1445-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1445-P-A	6	C	4/19/2004 10:35:00 AM	S1445-P	4	500	250	2.000	2.116	04/19/04 BJM
S1445-P	7	--	4/19/2004 10:35:00 AM	S1445-P	4	500	250	2.000	2.116	04/19/04 BJM
S1445-P-A-F1	8	--	4/19/2004 10:35:00 AM	S1445-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM
S1447-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1447-P	2	C	4/14/2004 3:47:00 PM	S1447-P	0	10000	9950	1.005	1.005	04/14/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1447-P-GW1	3	C	4/14/2004 3:47:00 PM	S1447-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1447-P	4	C	4/16/2004 2:11:00 PM	S1447-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1447-P-GW2	5	C	4/16/2004 2:11:00 PM	S1447-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1447-P-A	6	C	4/19/2004 10:35:00 AM	S1447-P	4	500	250	2.000	2.116	04/19/04 BJM
S1447-P	7	--	4/19/2004 10:35:00 AM	S1447-P	4	500	250	2.000	2.116	04/19/04 BJM
S1447-P-A-F1	8	--	4/19/2004 10:35:00 AM	S1447-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM
S1457-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1457-P	2	C	4/14/2004 3:47:00 PM	S1457-P	0	25000	24950	1.002	1.002	04/14/04 BJM
S1457-P-GW1	3	C	4/14/2004 3:47:00 PM	S1457-P	0	25000	50	500.000	500.000	04/14/04 BJM
S1457-P-A	4	--	4/16/2004 10:40:00 AM	S1457-P	2	25000	21000	1.190	1.193	04/16/04 BJM
S1457-P	5	C	4/16/2004 10:40:00 AM	S1457-P	2	25000	4000	6.250	6.263	04/16/04 BJM
S1457-P	6	C	4/16/2004 2:11:00 PM	S1457-P	5	2000	1950	1.026	6.423	04/16/04 BJM
S1457-P-GW2	7	C	4/16/2004 2:11:00 PM	S1457-P	5	2000	50	40.000	250.501	04/16/04 BJM
S1457-P-A	8	--	4/19/2004 10:50:00 AM	S1457-P	6	2000	1800	1.111	7.137	04/19/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1457-P	9	C	4/19/2004 10:50:00 AM	S1457-P	6	2000	200	10.000	64.231	04/19/04 BJM
S1457-P-A	10	--	4/28/2004 3:35:00 PM	S1457-P-A	8	2000	1000	2.000	128.462	04/28/04 BJM
S1457-P	11	C	4/28/2004 3:35:00 PM	S1457-P-A	8	2000	1000	2.000	128.462	04/28/04 BJM
S1457-P-F1	12	C	4/28/2004 3:35:00 PM	S1457-P	11	1000	1000	1.000	14.274	04/28/04 BJM
S1457-P-F1-A	13	--	4/30/2004 4:17:00 PM	S1457-P-F1	12	1000	500	2.000	28.547	04/30/04 BJM
S1457-P-F1	14	--	4/30/2004 4:17:00 PM	S1457-P-F1	12	1000	500	2.000	28.547	04/30/04 BJM
S1466-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1466-P	2	C	4/14/2004 3:47:00 PM	S1466-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1466-P-GW1	3	C	4/14/2004 3:47:00 PM	S1466-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1466-P	4	C	4/16/2004 2:11:00 PM	S1466-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1466-P-GW2	5	C	4/16/2004 2:11:00 PM	S1466-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1466-P-A	6	C	4/19/2004 10:35:00 AM	S1466-P	4	500	250	2.000	2.116	04/19/04 BJM
S1466-P	7	--	4/19/2004 10:35:00 AM	S1466-P	4	500	250	2.000	2.116	04/19/04 BJM
S1466-P-A-F1	8	--	4/19/2004 10:35:00 AM	S1466-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1468-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1468-P	2	C	4/14/2004 3:47:00 PM	S1468-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1468-P-GW1	3	C	4/14/2004 3:47:00 PM	S1468-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1468-P	4	C	4/16/2004 2:11:00 PM	S1468-P	2	2000	1950	1.026	1.031	04/16/04 BJM
S1468-P-GW2	5	C	4/16/2004 2:11:00 PM	S1468-P	2	2000	50	40.000	40.201	04/16/04 BJM
S1468-P-A	6	C	4/19/2004 10:50:00 AM	S1468-P	4	2000	1800	1.111	1.145	04/19/04 BJM
S1468-P	7	--	4/19/2004 10:50:00 AM	S1468-P	4	2000	200	10.000	10.308	04/19/04 BJM
S1468-P-A-F1	8	C	4/19/2004 10:50:00 AM	S1468-P-A	6	1000	1000	1.000	1.145	04/19/04 BJM
S1468-P-A-F1	9	--	4/30/2004 4:17:00 PM	S1468-P-A-F1	8	1000	800	1.250	1.432	04/30/04 BJM
S1468-P-A-F1	10	--	4/30/2004 4:17:00 PM	S1468-P-A-F1	8	1000	200	5.000	5.727	04/30/04 BJM
S1471-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1471-P	2	C	4/14/2004 3:47:00 PM	S1471-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1471-P-GW1	3	C	4/14/2004 3:47:00 PM	S1471-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1471-P	4	C	4/16/2004 2:11:00 PM	S1471-P	2	2000	1950	1.026	1.031	04/16/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1471-P-GW2	5	C	4/16/2004 2:11:00 PM	S1471-P	2	2000	50	40.000	40.201	04/16/04 BJM
S1471-P-A	6	C	4/19/2004 10:50:00 AM	S1471-P	4	2000	1800	1.111	1.145	04/19/04 BJM
S1471-P	7	--	4/19/2004 10:50:00 AM	S1471-P	4	2000	200	10.000	10.308	04/19/04 BJM
S1471-P-A-F1	8	C	4/19/2004 10:50:00 AM	S1471-P-A	6	1000	1000	1.000	1.145	04/19/04 BJM
S1471-P-A-F1	9	--	4/30/2004 4:18:00 PM	S1471-P-A-F1	8	1000	800	1.250	1.432	04/30/04 BJM
S1471-P-A-F1	10	--	4/30/2004 4:18:00 PM	S1471-P-A-F1	8	1000	200	5.000	5.727	04/30/04 BJM
S1474-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1474-P	2	C	4/14/2004 3:47:00 PM	S1474-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1474-P-GW1	3	C	4/14/2004 3:47:00 PM	S1474-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1474-P-A	4	--	4/16/2004 10:39:00 AM	S1474-P	2	10000	5000	2.000	2.010	04/16/04 BJM
S1474-P	5	C	4/16/2004 10:39:00 AM	S1474-P	2	10000	5000	2.000	2.010	04/16/04 BJM
S1474-P	6	C	4/16/2004 2:11:00 PM	S1474-P	5	1000	950	1.053	2.116	04/16/04 BJM
S1474-P-GW2	7	C	4/16/2004 2:11:00 PM	S1474-P	5	1000	50	20.000	40.201	04/16/04 BJM
S1474-P-A	8	C	4/19/2004 10:35:00 AM	S1474-P	6	500	250	2.000	4.232	04/19/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

* - "C" = Extract is Consumed

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BATTELLE - DUXBURY OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1474-P	9	--	4/19/2004 10:35:00 AM	S1474-P	6	500	250	2.000	4.232	04/19/04 BJM
S1474-P-A-F1	10	--	4/19/2004 10:35:00 AM	S1474-P-A	8	1000	1000	1.000	4.232	04/19/04 BJM
S1481-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1481-P	2	C	4/14/2004 3:47:00 PM	S1481-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1481-P-GW1	3	C	4/14/2004 3:47:00 PM	S1481-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1481-P	4	C	4/16/2004 2:11:00 PM	S1481-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1481-P-GW2	5	C	4/16/2004 2:11:00 PM	S1481-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1481-P-A	6	C	4/19/2004 10:33:00 AM	S1481-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1481-P	7	--	4/19/2004 10:33:00 AM	S1481-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1481-P-A-F1	8	--	4/19/2004 10:33:00 AM	S1481-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM
S1482-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1482-P	2	C	4/14/2004 3:47:00 PM	S1482-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1482-P-GW1	3	C	4/14/2004 3:47:00 PM	S1482-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1482-P	4	C	4/16/2004 2:11:00 PM	S1482-P	2	1000	950	1.053	1.058	04/16/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract Name	Extract #	*	Extract Date	Source Name	Source #	Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
S1482-P-GW2	5	C	4/16/2004 2:11:00 PM	S1482-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1482-P-A	6	C	4/19/2004 10:35:00 AM	S1482-P	4	500	250	2.000	2.116	04/19/04 BJM
S1482-P	7	--	4/19/2004 10:35:00 AM	S1482-P	4	500	250	2.000	2.116	04/19/04 BJM
S1482-P-A-F1	8	--	4/19/2004 10:35:00 AM	S1482-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM
S1483-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1483-P	2	C	4/14/2004 3:47:00 PM	S1483-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1483-P-GW1	3	C	4/14/2004 3:47:00 PM	S1483-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1483-P	4	C	4/16/2004 2:11:00 PM	S1483-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1483-P-GW2	5	C	4/16/2004 2:11:00 PM	S1483-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1483-P-A	6	C	4/19/2004 10:33:00 AM	S1483-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1483-P	7	--	4/19/2004 10:33:00 AM	S1483-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1483-P-A-F1	8	--	4/19/2004 10:33:00 AM	S1483-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM
S1484-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1484-P	2	C	4/14/2004 3:47:00 PM	S1484-P	0	10000	9950	1.005	1.005	04/14/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1484-P-GW1	3	C	4/14/2004 3:47:00 PM	S1484-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1484-P	4	C	4/16/2004 2:11:00 PM	S1484-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1484-P-GW2	5	C	4/16/2004 2:11:00 PM	S1484-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1484-P-A	6	C	4/19/2004 10:50:00 AM	S1484-P	4	1000	900	1.111	1.175	04/19/04 BJM
S1484-P	7	--	4/19/2004 10:50:00 AM	S1484-P	4	1000	100	10.000	10.579	04/19/04 BJM
S1484-P-A-F1	8	C	4/19/2004 10:50:00 AM	S1484-P-A	6	1000	1000	1.000	1.175	04/19/04 BJM
S1484-P-A-F1	9	--	4/30/2004 4:18:00 PM	S1484-P-A-F1	8	1000	800	1.250	1.469	04/30/04 BJM
S1484-P-A-F1	10	--	4/30/2004 4:18:00 PM	S1484-P-A-F1	8	1000	200	5.000	5.877	04/30/04 BJM
S1485-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1485-P	2	C	4/14/2004 3:47:00 PM	S1485-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1485-P-GW1	3	C	4/14/2004 3:47:00 PM	S1485-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1485-P	4	C	4/16/2004 2:11:00 PM	S1485-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1485-P-GW2	5	C	4/16/2004 2:11:00 PM	S1485-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1485-P-A	6	C	4/19/2004 10:37:00 AM	S1485-P	4	1000	750	1.333	1.411	04/19/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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BATTELLE - DUXBURY OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1485-P	7	--	4/19/2004 10:37:00 AM	S1485-P	4	1000	250	4.000	4.232	04/19/04 BJM
S1485-P-A-F1	8	C	4/19/2004 10:37:00 AM	S1485-P-A	6	1000	1000	1.000	1.411	04/19/04 BJM
S1485-P-A-F1	9	--	4/30/2004 4:19:00 PM	S1485-P-A-F1	8	1000	500	2.000	2.821	04/30/04 BJM
S1485-P-A-F1	10	--	4/30/2004 4:19:00 PM	S1485-P-A-F1	8	1000	500	2.000	2.821	04/30/04 BJM
S1486-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1486-P	2	C	4/14/2004 3:47:00 PM	S1486-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1486-P-GW1	3	C	4/14/2004 3:47:00 PM	S1486-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1486-P	4	C	4/16/2004 2:11:00 PM	S1486-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1486-P-GW2	5	C	4/16/2004 2:11:00 PM	S1486-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1486-P-A	6	C	4/19/2004 10:52:00 AM	S1486-P	4	1000	950	1.053	1.114	04/19/04 BJM
S1486-P	7	--	4/19/2004 10:52:00 AM	S1486-P	4	1000	50	20.000	21.158	04/19/04 BJM
S1486-P-A-F1	8	C	4/19/2004 10:52:00 AM	S1486-P-A	6	1000	1000	1.000	1.114	04/19/04 BJM
S1486-P-A-F1	9	--	4/30/2004 4:19:00 PM	S1486-P-A-F1	8	1000	900	1.111	1.237	04/30/04 BJM
S1486-P-A-F1	10	--	4/30/2004 4:19:00 PM	S1486-P-A-F1	8	1000	100	10.000	11.136	04/30/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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BATTELLE - DUXBURY OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1491-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1491-P	2	C	4/14/2004 3:47:00 PM	S1491-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1491-P-GW1	3	C	4/14/2004 3:47:00 PM	S1491-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1491-P	4	C	4/16/2004 2:11:00 PM	S1491-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1491-P-GW2	5	C	4/16/2004 2:11:00 PM	S1491-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1491-P-A	6	C	4/19/2004 10:37:00 AM	S1491-P	4	1000	750	1.333	1.411	04/19/04 BJM
S1491-P	7	--	4/19/2004 10:37:00 AM	S1491-P	4	1000	250	4.000	4.232	04/19/04 BJM
S1491-P-A-F1	8	C	4/19/2004 10:37:00 AM	S1491-P-A	6	1000	1000	1.000	1.411	04/19/04 BJM
S1491-P-A-F1	9	--	4/30/2004 4:20:00 PM	S1491-P-A-F1	8	1000	750	1.333	1.881	04/30/04 BJM
S1491-P-A-F1	10	--	4/30/2004 4:20:00 PM	S1491-P-A-F1	8	1000	250	4.000	5.642	04/30/04 BJM
S1505-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1505-P	2	C	4/14/2004 3:47:00 PM	S1505-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1505-P-GW1	3	C	4/14/2004 3:47:00 PM	S1505-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1505-P	4	C	4/16/2004 2:11:00 PM	S1505-P	2	1000	950	1.053	1.058	04/16/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

* - "C" = Extract is Consumed

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BATTELLE - DUXBURY OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1505-P-GW2	5	C	4/16/2004 2:11:00 PM	S1505-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1505-P-A	6	C	4/19/2004 10:33:00 AM	S1505-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1505-P	7	--	4/19/2004 10:33:00 AM	S1505-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1505-P-A-F1	8	--	4/19/2004 10:33:00 AM	S1505-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM
S1505DUP-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1505DUP-P	2	C	4/14/2004 3:47:00 PM	S1505DUP-P	0	10000	9950	1.005	1.005	04/14/04 BJM
S1505DUP-P-GW1	3	C	4/14/2004 3:47:00 PM	S1505DUP-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1505DUP-P	4	C	4/16/2004 2:11:00 PM	S1505DUP-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1505DUP-P-GW2	5	C	4/16/2004 2:11:00 PM	S1505DUP-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1505DUP-P-A	6	C	4/19/2004 10:33:00 AM	S1505DUP-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1505DUP-P	7	--	4/19/2004 10:33:00 AM	S1505DUP-P	4	1000	500	2.000	2.116	04/19/04 BJM
S1505DUP-P-A-F1	8	--	4/19/2004 10:33:00 AM	S1505DUP-P-A	6	1000	1000	1.000	2.116	04/19/04 BJM
S1509-P	0	C	4/6/2004	NA		NA	NA	1.000	1.000	04/06/04 BJM
S1509-P	2	C	4/14/2004 3:47:00 PM	S1509-P	0	10000	9950	1.005	1.005	04/14/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL)] * Prior Dilution Factor

* - "C" = Extract is Consumed

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BATTELLE - DUXBURY OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1509-P-GW1	3	C	4/14/2004 3:47:00 PM	S1509-P	0	10000	50	200.000	200.000	04/14/04 BJM
S1509-P	4	C	4/16/2004 2:11:00 PM	S1509-P	2	1000	950	1.053	1.058	04/16/04 BJM
S1509-P-GW2	5	C	4/16/2004 2:11:00 PM	S1509-P	2	1000	50	20.000	20.101	04/16/04 BJM
S1509-P-A	6	C	4/19/2004 10:51:00 AM	S1509-P	4	1000	750	1.333	1.411	04/19/04 BJM
S1509-P	7	--	4/19/2004 10:51:00 AM	S1509-P	4	1000	250	4.000	4.232	04/19/04 BJM
S1509-P-A-F1	8	C	4/19/2004 10:51:00 AM	S1509-P-A	6	1000	1000	1.000	1.411	04/19/04 BJM
S1509-P-A-F1	9	--	4/30/2004 4:20:00 PM	S1509-P-A-F1	8	1000	750	1.333	1.881	04/30/04 BJM
S1509-P-A-F1	10	--	4/30/2004 4:20:00 PM	S1509-P-A-F1	8	1000	250	4.000	5.642	04/30/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

* - "C" = Extract is Consumed

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BATTELLE - DUXBURY OPERATIONS
EXTRACT SPIKE FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117
Davisville Naval Sediment Study (Forensic)
SEDIMENT

Extract Id	DF	Std. ID	Type	Vial No.	Vol. Added (uL)	Conc (ug/mL)	Added (ng)	Date Spiked/ Spiked By	Witn'd By
BE161PB-P-A(2)	2	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1430-P-A(6)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1432-P-A(6)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1435-P-A(6)	1.406	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1438-P-A(6)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1445-P-A(6)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1447-P-A(6)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1457-P(11)	128.462	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1466-P-A(6)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1468-P-A(6)	1.145	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1471-P-A(6)	1.145	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1474-P-A(8)	4.232	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1481-P-A(6)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1482-P-A(6)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1483-P-A-F1(8)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1484-P-A(6)	1.175	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1485-P-A(6)	1.411	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1486-P-A(6)	1.114	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1491-P-A(6)	1.411	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1505-P-A(6)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR

First Extraction Started - **Date:** 4/6/2004 **Initials:** BJM **Turbo Vap Temp C:** NA **PSI:** NA

Second Extraction - **Date:** 4/7/2004 **Initials:** BJM **K-D Temp C:** 65

Thrd Extraction Completed - **Date:** 4/8/2004 **Initials:** BJM

Comments:

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BATTELLE - DUXBURY OPERATIONS
EXTRACT SPIKE FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract Id	DF	Std. ID	Type	Vial No.	Vol. Added (uL)	Conc (ug/mL)	Added (ng)	Date Spiked/ Spiked By	Witn'd By
S1505DUP-P-A(6)	2.116	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR
S1509-P-A(6)	1.411	FZ48	SIS	1	100	10	1000	04/28/04 BJM	RPR

First Extraction Started - **Date:** 4/6/2004 **Initials:** BJM **Turbo Vap Temp C:** NA **PSI:** NA

Second Extraction - **Date:** 4/7/2004 **Initials:** BJM **K-D Temp C:** 65

Thrd Extraction Completed - **Date:** 4/8/2004 **Initials:** BJM

Comments:

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BATTELLELIMS - LABORATORY OPERATIONS
GRAVIMETRIC ANALYSIS FORM (All Weights)

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

3-5 mg

Extract ID	Alq #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials
S1430-P(0)	1	10000	50	0.147	29.40	9950	29.254	1.005	04/14/04 BJM
S1430-P(2)	2	1000	50	0.283	5.69	1mL 950	1/2 1mL 5.377	1.058	04/16/04 BJM
S1432-P(0)	1	10000	50	0.160	32.00	9950	31.841	1.005	04/14/04 BJM
S1432-P(2)	2	1000	50	0.286	5.75	1mL 950	1/2 1mL 5.434	1.058	04/16/04 BJM
S1432MS-P(0)	1	10000	50	0.078	15.60	9950	15.522	1.005	04/14/04 BJM
S1432MS-P(2)	2	1000	50	0.146	2.93	950	1/2 500 2.774	1.058	04/16/04 BJM
S1432MSD-P(0)	1	10000	50	0.086	17.20	9950	17.114	1.005	04/14/04 BJM
S1432MSD-P(2)	2	1000	50	0.145	2.91	950	1/2 500 2.755	1.058	04/16/04 BJM
S1435-P(0)	1	25000	50	0.119	59.50	24950	59.381	1.002	04/14/04 BJM
S1435-P(2)	2	1000	50	0.563	11.28	1/2 1mL 950	1/4 1mL 10.694	1.055	04/16/04 BJM
S1438-P(0)	1	10000	50	0.244	48.80	9950	48.557	1.005	04/14/04 BJM
S1438-P(2)	2	1000	50	0.342	6.87	1mL 950	1/2 1mL 6.498	1.058	04/16/04 BJM
S1445-P(0)	1	10000	50	0.159	31.80	9950	31.642	1.005	04/14/04 BJM
S1445-P(2)	2	1000	50	0.219	4.40	500 950	1/2 500 4.161	1.058	04/16/04 BJM
S1447-P(0)	1	10000	50	0.296	59.20	9950	58.905	1.005	04/14/04 BJM
S1447-P(2)	2	1000	50	0.204	4.10	500 950	1/2 500 3.876	1.058	04/16/04 BJM
S1457-P(0)	1	25000	50	0.686	343.00	24950	342.315	1.002	04/14/04 BJM
S1457-P(5)	2	2000	50	0.573	143.54	1/10 1mL 1950	1/10 1mL 22.347	6.423	04/16/04 BJM
S1466-P(0)	1	10000	50	0.146	29.20	9950	29.055	1.005	04/14/04 BJM
S1466-P(2)	2	1000	50	0.179	3.60	500 950	1/2 500 3.401	1.058	04/16/04 BJM
S1468-P(0)	1	10000	50	0.327	65.40	9950	65.075	1.005	04/14/04 BJM
S1468-P(2)	2	2000	50	0.499	20.06	1/10 1mL 1950	1/10 1mL 19.457	1.031	04/16/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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BATTELLELIMS - LABORATORY OPERATIONS
GRAVIMETRIC ANALYSIS FORM (All Weights)

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract ID	Alq #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials
S1471-P(0)	1	10000	50	0.339	67.80	9950	67.463	1.005	04/14/04 BJM
S1471-P(2)	2	2000	50	0.609	24.48	1mL 1950	1mL 23.746	1.031	04/16/04 BJM
S1474-P(0)	1	10000	50	0.529	105.80	9950	105.274	1.005	04/14/04 BJM
S1474-P(5)	2	1000	50	0.242	9.73	500 950	500 4.598	2.116	04/16/04 BJM
S1481-P(0)	1	10000	50	0.125	25.00	9950	24.876	1.005	04/14/04 BJM
S1481-P(2)	2	1000	50	0.463	9.31	1mL 950	1mL 8.797	1.058	04/16/04 BJM
S1482-P(0)	1	10000	50	0.187	37.40	9950	37.214	1.005	04/14/04 BJM
S1482-P(2)	2	1000	50	0.184	3.70	500 950	500 3.496	1.058	04/16/04 BJM
S1483-P(0)	1	10000	50	0.111	22.20	9950	22.090	1.005	04/14/04 BJM
S1483-P(2)	2	1000	50	0.301	6.05	1mL 950	1mL 5.719	1.058	04/16/04 BJM
S1484-P(0)	1	10000	50	0.173	34.60	9950	34.428	1.005	04/14/04 BJM
S1484-P(2)	2	1000	50	1.100	22.11	1mL 950	1mL 20.899	1.058	04/16/04 BJM
S1485-P(0)	1	10000	50	0.140	28.00	9950	27.861	1.005	04/14/04 BJM
S1485-P(2)	2	1000	50	0.499	10.03	1mL 950	1mL 9.481	1.058	04/16/04 BJM
S1486-P(0)	1	10000	50	0.386	77.20	9950	76.816	1.005	04/14/04 BJM
S1486-P(2)	2	1000	50	3.156	63.44	1mL 950	1mL 59.961	1.058	04/16/04 BJM
S1491-P(0)	1	10000	50	0.296	59.20	9950	58.905	1.005	04/14/04 BJM
S1491-P(2)	2	1000	50	0.866	17.41	1mL 950	1mL 16.453	1.058	04/16/04 BJM
S1505-P(0)	1	10000	50	0.276	55.20	9950	54.925	1.005	04/14/04 BJM
S1505-P(2)	2	1000	50	0.473	9.51	1mL 950	1mL 8.987	1.058	04/16/04 BJM
S1505DUP-P(0)	1	10000	50	0.209	41.80	9950	41.592	1.005	04/14/04 BJM
S1505DUP-P(2)	2	1000	50	0.433	8.70	1mL 950	1mL 8.227	1.058	04/16/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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BATTELLELIMS - LABORATORY OPERATIONS
GRAVIMETRIC ANALYSIS FORM (All Weights)

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract ID	Alq. #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials
S1509-P(0)	1	10000	50	0.383	76.60	9950	76.219	1.005	04/14/04 BJM
S1509-P(2)	2	1000	50	0.805	16.18	950	15.294	1.058	04/16/04 BJM

Validation of:	Performed:
Grav. Wt.	Not Validated

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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BATTELLELIMS - LABORATORY OPERATIONS
GRAVIMETRIC ANALYSIS FORM (All Weights)

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
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04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract ID	Alq. #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials

Gravimetric Balance Data

Task: Gravimetric Aliquot Weight

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
S1430-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1430-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1432-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1432MS-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1432MSD-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1432-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1432MS-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1432MSD-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1435-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1435-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1438-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1438-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1445-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1445-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1447-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1447-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1457-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1457-P-GW2(7)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1466-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1466-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1468-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1468-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1471-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1471-P-GW2(5)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1474-P-GW1(3)	04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1474-P-GW2(7)	04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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BATTELLELIMS - LABORATORY OPERATIONS
GRAVIMETRIC ANALYSIS FORM (All Weights)

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract ID	Alq #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials
S1481-P-GW1(3)		04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1481-P-GW2(5)		04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1482-P-GW1(3)		04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1482-P-GW2(5)		04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1483-P-GW1(3)		04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1483-P-GW2(5)		04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1484-P-GW1(3)		04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1484-P-GW2(5)		04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1485-P-GW1(3)		04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1485-P-GW2(5)		04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1486-P-GW1(3)		04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1486-P-GW2(5)		04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1491-P-GW1(3)		04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1491-P-GW2(5)		04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1505-P-GW1(3)		04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1505DUP-P-GW1(3)		04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1505-P-GW2(5)		04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1505DUP-P-GW2(5)		04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1509-P-GW1(3)		04/14/2004 BJM	Balance	Forensics	Cahn	70187	C28		
S1509-P-GW2(5)		04/16/2004 BJM	Balance	Forensics	Cahn	70187	C28		

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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BATTELLE - DUXBURY OPERATIONS
COLUMN FRACTIONATION FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract Id	Date	Init.	Sample Specific Comments
BE161PB-P(0)	04/15/04	BJM	NA
BE162LCS-P(0)	04/15/04	BJM	NA
BE163SRM-P(0)	04/15/04	BJM	NA
S1430-P(2)	04/15/04	BJM	NA
S1432-P(2)	04/15/04	BJM	NA
S1432MS-P(2)	04/15/04	BJM	NA
S1432MSD-P(2)	04/15/04	BJM	NA
S1435-P(2)	04/15/04	BJM	NA
S1438-P(2)	04/15/04	BJM	NA
S1445-P(2)	04/15/04	BJM	NA
S1447-P(2)	04/15/04	BJM	NA
S1457-P(5)	04/15/04	BJM	NA
S1466-P(2)	04/15/04	BJM	NA
S1468-P(2)	04/15/04	BJM	NA
S1471-P(2)	04/15/04	BJM	NA
S1474-P(5)	04/15/04	BJM	NA
S1481-P(2)	04/15/04	BJM	NA

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BATTELLE - DUXBURY OPERATIONS
COLUMN FRACTIONATION FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117
Davisville Naval Sediment Study (Forensic)
SEDIMENT

Extract Id	Date	Init.	Sample Specific Comments
S1482-P(2)	04/15/04	BJM	NA
S1483-P(2)	04/15/04	BJM	NA
S1484-P(2)	04/15/04	BJM	NA
S1485-P(2)	04/15/04	BJM	NA
S1486-P(2)	04/15/04	BJM	NA
S1491-P(2)	04/15/04	BJM	NA
S1505-P(2)	04/15/04	BJM	NA
S1505DUP-P(2)	04/15/04	BJM	NA
S1509-P(2)	04/15/04	BJM	NA

Column Diameter: 13 mm **Procedure Comment:**

Elution Volume: 40 mL

Solvents

Name	Lot No
DCM	Y46E07

Reagents

Weight g	Name	Expires	Lot No	Procedure
10	6% Deactivated Alumina	04/15/04	23	250 g Alumina shaken for 2 hours with 15 mL Milli-Q water

Fractions

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COLUMN FRACTIONATION FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract Id	Date	Init.	Sample Specific Comments
BE161PB-P-A(2)	04/28/04	BJM	NA
S1430-P-A(6)	04/28/04	BJM	NA
S1432-P-A(6)	04/28/04	BJM	NA
S1435-P-A(6)	04/28/04	BJM	NA
S1438-P-A(6)	04/28/04	BJM	NA
S1445-P-A(6)	04/28/04	BJM	NA
S1447-P-A(6)	04/28/04	BJM	NA
S1457-P(11)	04/28/04	BJM	NA
S1466-P-A(6)	04/28/04	BJM	NA
S1468-P-A(6)	04/28/04	BJM	NA
S1471-P-A(6)	04/28/04	BJM	NA
S1474-P-A(8)	04/28/04	BJM	NA
S1481-P-A(6)	04/28/04	BJM	NA
S1482-P-A(6)	04/28/04	BJM	NA
S1483-P-A(6)	04/28/04	BJM	NA
S1484-P-A(6)	04/28/04	BJM	NA
S1485-P-A(6)	04/28/04	BJM	NA

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COLUMN FRACTIONATION FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract Id	Date	Init.	Sample Specific Comments
S1486-P-A(6)	04/28/04	BJM	NA
S1491-P-A(6)	04/28/04	BJM	NA
S1505-P-A(6)	04/28/04	BJM	NA
S1505DUP-P-A(6)	04/28/04	BJM	NA
S1509-P-A(6)	04/28/04	BJM	NA

Column Diameter: 13 mm **Procedure Comment:**

Elution Volume: 16 mL

Solvents

Name	Lot No
DCM	Y46E07
Pentane	T36265

Reagents

Weight g	Name	Expires	Lot No	Procedure
11	Silica Gel	04/28/04	09912DA	Baked at 125 °C for more than 2 hours

Fractions

Fraction	Elution Vol. (mL)	Elution Mixture	Comment
F1	16	pentane	

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BATTELLE - DUXBURY OPERATIONS
EXTRACT CLEANUP FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract Id	Date	Init.	Comments
BE161PB-P(0)	04/15/04	BJM	NA
BE162LCS-P(0)	04/15/04	BJM	NA
BE163SRM-P(0)	04/15/04	BJM	NA
S1430-P(2)	04/15/04	BJM	NA
S1432-P(2)	04/15/04	BJM	NA
S1432MS-P(2)	04/15/04	BJM	NA
S1432MSD-P(2)	04/15/04	BJM	NA
S1435-P(2)	04/15/04	BJM	NA
S1438-P(2)	04/15/04	BJM	NA
S1445-P(2)	04/15/04	BJM	NA
S1447-P(2)	04/15/04	BJM	NA
S1457-P(2)	04/15/04	BJM	NA
S1466-P(2)	04/15/04	BJM	NA
S1468-P(2)	04/15/04	BJM	NA
S1471-P(2)	04/15/04	BJM	NA
S1474-P(2)	04/15/04	BJM	NA
S1481-P(2)	04/15/04	BJM	NA
S1483-P(2)	04/15/04	BJM	NA

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BATTELLE - DUXBURY OPERATIONS
EXTRACT CLEANUP FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Extract Id	Date	Init.	Comments
S1484-P(2)	04/15/04	BJM	NA
S1485-P(2)	04/15/04	BJM	NA
S1486-P(2)	04/15/04	BJM	NA
S1491-P(2)	04/15/04	BJM	NA
S1505-P(2)	04/15/04	BJM	NA
S1505DUP-P(2)	04/15/04	BJM	NA
S1509-P(2)	04/15/04	BJM	NA

Cleanup:
Copper Cleanup

Reagents:

Name	Expires	Lot No.	Procedure
Activated Copper	04/15/04	X34595	Activated according to Extraction SOP

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BATTELLE - DUXBURY OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
BE161PB-P(3)	800	200	FZ70	200	59	1000	2.000	04/19/04 BJM	MRM
BE162LCS-P(3)	800	200	FZ70	200	59	1000	2.000	04/19/04 BJM	MRM
BE163SRM-P(3)	800	200	FZ70	200	59	1000	2.000	04/19/04 BJM	MRM
BE212NSC-P(0)	1200	200	FZ70	200	67	1400	1.000	04/19/04 BJM	ALD
BE279NSC-P(0)	1300	200	FZ70	200	56	1500	1.000	04/30/04 BJM	RPR
S1430-P(7)	800	200	FZ70	200	59	1000	2.116	04/19/04 BJM	MRM
S1432-P(7)	800	200	FZ70	200	59	1000	2.116	04/19/04 BJM	MRM
S1432MS-P(7)	400	100	FZ70	100	59	500	2.116	04/19/04 BJM	MRM
S1432MSD-P(7)	400	100	FZ70	100	59	500	2.116	04/19/04 BJM	MRM
S1435-P(7)	800	200	FZ70	200	59	1000	4.219	04/19/04 BJM	MRM
S1438-P(7)	800	200	FZ70	200	59	1000	2.116	04/19/04 BJM	MRM
S1445-P(7)	400	100	FZ70	100	59	500	2.116	04/19/04 BJM	MRM
S1447-P(7)	400	100	FZ70	100	59	500	2.116	04/19/04 BJM	MRM
S1457-P(9)	800	200	FZ70	200	59	1000	64.231	04/19/04 BJM	MRM
S1466-P(7)	400	100	FZ70	100	59	500	2.116	04/19/04 BJM	MRM
S1468-P(7)	800	200	FZ70	200	59	1000	10.308	04/19/04 BJM	MRM
S1471-P(7)	800	200	FZ70	200	59	1000	10.308	04/19/04 BJM	MRM
S1474-P(9)	400	100	FZ70	100	59	500	4.232	04/19/04 BJM	MRM
S1481-P(7)	800	200	FZ70	200	59	1000	2.116	05/03/04 BJM	MRM

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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BATTELLE - DUXBURY OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
S1482-P(7)	400	100	FZ70	100	59	500	2.116	04/19/04 BJM	MRM
S1483-P(7)	800	200	FZ70	200	59	1000	2.116	04/19/04 BJM	MRM
S1484-P(7)	800	200	FZ70	200	59	1000	10.579	04/19/04 BJM	MRM
S1485-P(7)	800	200	FZ70	200	59	1000	4.232	04/19/04 BJM	MRM
S1486-P(7)	800	200	FZ70	200	59	1000	21.158	04/19/04 BJM	MRM
S1491-P(7)	800	200	FZ70	200	59	1000	4.232	04/19/04 BJM	MRM
S1505-P(7)	800	200	FZ70	200	59	1000	2.116	04/19/04 BJM	MRM
S1505DUP-P(7)	800	200	FZ70	200	59	1000	2.116	04/19/04 BJM	MRM
S1509-P(7)	800	200	FZ70	200	59	1000	4.232	04/19/04 BJM	MRM

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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BATTELLE - DUXBURY OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

(F1 Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
BE161PB-P-A-F1(4)	800	200	FZ70	200	68	1000	2.000	04/30/04 BJM	RPR
S1430-P-A-F1(8)	800	200	FZ70	200	68	1000	2.116	04/30/04 BJM	RPR
S1432-P-A-F1(8)	800	200	FZ70	200	68	1000	2.116	04/30/04 BJM	RPR
S1435-P-A-F1(10)	800	200	FZ70	200	68	1000	2.813	04/30/04 BJM	RPR
S1438-P-A-F1(8)	800	200	FZ70	200	68	1000	2.116	04/30/04 BJM	RPR
S1445-P-A-F1(8)	400	100	FZ70	100	68	500	2.116	04/30/04 BJM	RPR
S1447-P-A-F1(8)	400	100	FZ70	100	68	500	2.116	04/30/04 BJM	RPR
S1457-P-F1-A(13)	800	200	FZ70	200	68	1000	28.547	04/30/04 BJM	NA
S1457-P-F1(14)	800	200	FZ70	200	68	1000	28.547	04/30/04 BJM	RPR
S1466-P-A-F1(8)	400	100	FZ70	100	68	500	2.116	04/30/04 BJM	RPR
S1468-P-A-F1(10)	800	200	FZ70	200	68	1000	5.727	04/30/04 BJM	RPR
S1471-P-A-F1(10)	800	200	FZ70	200	68	1000	5.727	04/30/04 BJM	RPR
S1474-P-A-F1(10)	400	100	FZ70	100	68	500	4.232	05/03/04 BJM	RPR
S1481-P-A-F1(8)	800	200	FZ70	200	34	1000	2.116	04/30/04 BJM	RPR
S1482-P-A-F1(8)	400	100	FZ70	100	68	500	2.116	04/30/04 BJM	RPR
S1483-P-A-F1(8)	800	200	FZ70	200	68	1000	2.116	04/30/04 BJM	RPR
S1484-P-A-F1(10)	800	200	FZ70	200	68	1000	5.877	04/30/04 BJM	RPR
S1485-P-A-F1(10)	800	200	FZ70	200	68	1000	2.821	04/30/04 BJM	RPR
S1486-P-A-F1(10)	800	200	FZ70	200	68	1000	11.136	04/30/04 BJM	RPR

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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BATTELLE - DUXBURY OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

(F1 Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd. By
S1491-P-A-F1(10)	800	200	FZ70	200	68	1000	5.642	04/30/04 BJM	RPR
S1505-P-A-F1(8)	800	200	FZ70	200	68	1000	2.116	04/30/04 BJM	RPR
S1505DUP-P-A-F1(8)	800	200	FZ70	200	68	1000	2.116	04/30/04 BJM	RPR
S1509-P-A-F1(10)	800	200	FZ70	200	68	1000	5.642	04/30/04 BJM	RPR

* - Final Dilution is any HPLC, dilutions, or other manipulation

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SAMPLE SPECIFIC COMMENTS

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Sample ID:	Comment:	Date/Initials:
BE161PB-P	NA	NA
BE162LCS-P	NA	NA
BE163SRM-P	NA	NA
BE212NSC-P	NA	NA
BE279NSC-P	NA	NA
S1430-P	NA	NA
S1432-P	NA	NA
S1432MS-P	NA	NA
S1432MSD-P	NA	NA
S1435-P	NA	NA
S1438-P	NA	NA
S1445-P	NA	NA
S1447-P	NA	NA
S1457-P	NA	NA
S1466-P	NA	NA
S1468-P	sample was added to batch within 24 of first extraction per order of PM.	04/20/04 BJM
S1471-P	NA	NA
S1474-P	NA	NA
S1481-P	NA	NA
S1482-P	NA	NA
S1483-P	NA	NA
S1484-P	NA	NA
S1485-P	NA	NA
S1486-P	NA	NA
S1491-P	NA	NA
S1505-P	NA	NA
S1505DUP-P	NA	NA
S1509-P	NA	NA

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BATTELLE - DUXBURY OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Purpose:	GC/FID TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Apr 19 2004 4:26PM BJM	**Received On/By:**	Apr 19 2004 4:31PM RR
Relinquished From:	Lower Organics: NA	**Received Location:**	
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	BE161PB-P(3)	1000	2	Intact	NA
2	BE162LCS-P(3)	1000	2	Intact	NA
3	BE163SRM-P(3)	1000	2	Intact	NA
4	BE212NSC-P(0)	1400	1	Intact	NA
5	S1430-P(7)	1000	2.116	Intact	NA
6	S1432-P(7)	1000	2.116	Intact	NA
7	S1432MS-P(7)	500	2.116	Intact	NA
8	S1432MSD-P(7)	500	2.116	Intact	NA
9	S1435-P(7)	1000	4.219	Intact	NA
10	S1438-P(7)	1000	2.116	Intact	NA
11	S1445-P(7)	500	2.116	Intact	NA
12	S1447-P(7)	500	2.116	Intact	NA
13	S1457-P(9)	1000	64.231	Intact	NA
14	S1466-P(7)	500	2.116	Intact	NA
15	S1468-P(7)	1000	10.308	Intact	NA
16	S1471-P(7)	1000	10.308	Intact	NA
17	S1474-P(9)	500	4.232	Intact	NA
18	S1481-P(7)	1000	2.116	Intact	NA
19	S1482-P(7)	500	2.116	Intact	NA
20	S1483-P(7)	1000	2.116	Intact	NA
21	S1484-P(7)	1000	10.579	Intact	NA
22	S1485-P(7)	1000	4.232	Intact	NA
23	S1486-P(7)	1000	21.158	Intact	NA
24	S1491-P(7)	1000	4.232	Intact	NA
25	S1505-P(7)	1000	2.116	Intact	NA
26	S1505DUP-P(7)	1000	2.116	Intact	NA
27	S1509-P(7)	1000	4.232	Intact	NA

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BATTELLE - DUXBURY OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)	Project No.(s)
Davisville Naval Sediment Study	G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Total Extracts:	27

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The Business of Innovation

BATTELLE - DUXBURY OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Purpose:	GC/MSD TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Apr 19 2004 4:27PM BJM	**Received On/By:**	Apr 19 2004 4:32PM RR
Relinquished From:	Lower Organics: NA	**Received Location:**	
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	BE161PB-P(3)	1000	2	Intact	NA
2	BE162LCS-P(3)	1000	2	Intact	NA
3	BE163SRM-P(3)	1000	2	Intact	NA
4	BE212NSC-P(0)	1400	1	Intact	NA
5	S1430-P(7)	1000	2.116	Intact	NA
6	S1432-P(7)	1000	2.116	Intact	NA
7	S1432MS-P(7)	500	2.116	Intact	NA
8	S1432MSD-P(7)	500	2.116	Intact	NA
9	S1435-P(7)	1000	4.219	Intact	NA
10	S1438-P(7)	1000	2.116	Intact	NA
11	S1445-P(7)	500	2.116	Intact	NA
12	S1447-P(7)	500	2.116	Intact	NA
13	S1457-P(9)	1000	64.231	Intact	NA
14	S1466-P(7)	500	2.116	Intact	NA
15	S1468-P(7)	1000	10.308	Intact	NA
16	S1471-P(7)	1000	10.308	Intact	NA
17	S1474-P(9)	500	4.232	Intact	NA
18	S1481-P(7)	1000	2.116	Intact	NA
19	S1482-P(7)	500	2.116	Intact	NA
20	S1483-P(7)	1000	2.116	Intact	NA
21	S1484-P(7)	1000	10.579	Intact	NA
22	S1485-P(7)	1000	4.232	Intact	NA
23	S1486-P(7)	1000	21.158	Intact	NA
24	S1491-P(7)	1000	4.232	Intact	NA
25	S1505-P(7)	1000	2.116	Intact	NA
26	S1505DUP-P(7)	1000	2.116	Intact	NA
27	S1509-P(7)	1000	4.232	Intact	NA

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BATTELLE - DUXBURY OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Total Extracts: 27

Purpose: GC/MSD TRANSFER

Last Activity: Prep->Inst

Relinquished On/By: Apr 30 2004 9:10AM BJM

Received On/By: Apr 30 2004 5:00PM JAR

Relinquished From: Lower Organics: NA

Received Location: GC Room: NA

Relinquish Comment: NA

Received Comment: NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	BE161PB-P-A-F1(4)	1000	2	Intact	NA
2	S1430-P-A-F1(8)	1000	2.116	Intact	NA
3	S1432-P-A-F1(8)	1000	2.116	Intact	NA
4	S1435-P-A-F1(10)	1000	2.813	Intact	NA
5	S1438-P-A-F1(8)	1000	2.116	Intact	NA
6	S1445-P-A-F1(8)	500	2.116	Intact	NA
7	S1447-P-A-F1(8)	500	2.116	Intact	NA
8	S1457-P-F1(14)	1000	28.547	Intact	NA
9	S1466-P-A-F1(8)	500	2.116	Intact	NA
10	S1468-P-A-F1(10)	1000	5.727	Intact	NA
11	S1471-P-A-F1(10)	1000	5.727	Intact	NA
12	S1474-P-A-F1(10)	500	4.232	Intact	NA
13	S1481-P-A-F1(8)	1000	2.116	Intact	NA
14	S1482-P-A-F1(8)	500	2.116	Intact	NA
15	S1483-P-A-F1(8)	1000	2.116	Intact	NA
16	S1484-P-A-F1(10)	1000	5.877	Intact	NA
17	S1485-P-A-F1(10)	1000	2.821	Intact	NA
18	S1486-P-A-F1(10)	1000	11.136	Intact	NA
19	S1491-P-A-F1(10)	1000	5.642	Intact	NA
20	S1505-P-A-F1(8)	1000	2.116	Intact	NA
21	S1505DUP-P-A-F1(8)	1000	2.116	Intact	NA
22	S1509-P-A-F1(10)	1000	5.642	Intact	NA

Total Extracts: 22

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BATTELLE - DUXBURY OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0117

Davisville Naval Sediment Study (Forensic)

SEDIMENT

Purpose:	GC/MSD TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Apr 30 2004 3:22PM BJM	**Received On/By:**	Apr 30 2004 3:22PM JAR
Relinquished From:	Lower Organics: NA	**Received Location:**	GC Room: NA
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	BE279NSC-P(0)	1500	1	Intact	NA

Total Extracts: 1

Calibrations

Response Factor Report Inst. E

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration

(1) ANALYTE NOT USED FOR THIS PROJECT.
4/27/04

Calibration Files
GD34 =W8583.D GD35 =W8584.D GD36 =W8585.D
GD37 =W8586.D GD38 =W8587.D GD39 =W8588.D

		Compound	GD34	GD35	GD36	GD37	GD38	GD39	Avg	%RSD	
1)	I	Acenaphthene-d10	----------ISTD----------								
2)	S	Naphthalene-d8	1.883	1.873	1.867	1.889	1.906	1.883	1.884	0.72	
3)	J1	Naphthalene	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
4)	J2	C1-Naphthalenes	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
5)	J2	2-Methylnaphtha	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
6)	J2	1-Methylnaphtha	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
7)	J2	C2-Naphthalenes	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
8)	J2	2-Ethylnaphthal	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
9)	J2	1-Ethylnaphthal	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
10)	J2	2,6-Dimethylnap	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
11)	J2	1,5-Dimethylnap	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
12)	J2	C3-Naphthalenes	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
13)	J2	C4-Naphthalenes	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
14)		Biphenyl	1.736	1.639	1.650	1.640	1.625	1.539	1.638	3.84	
15)		Acenaphthylene	2.246	2.035	2.094	2.069	2.048	1.967	2.077	4.50	
16)		Acenaphthene	1.259	1.248	1.289	1.236	1.218	1.175	1.238	3.15	
17)		Dibenzofuran	1.625	1.674	1.740	1.731	1.740	1.679	1.698	2.74	
18)		Cadalene	0.463	0.463	0.469	0.470	0.469	0.466	0.467	0.67	
19)	S	Fluorene-d10	1.197	1.197	1.222	1.348	1.921	2.570	1.576	35.57	(1)
20)	J1	Fluorene	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
21)	J2	C1-Fluorenes	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
[illegible]	J2	2-Methylfluoren	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
[illegible]	J2	1-Methylfluoren	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
[illegible]	J2	C2-Fluorenes	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
25)	J2	C3-Fluorenes	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
26)	J1	Dibenzothiophen	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
27)	J2	C1-Dibenzothiop	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
28)	J2	4-Methyldibenzo	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
29)	J2	2/3-Methyldiben	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
30)	J2	1-Methyldibenzo	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
31)	J2	C2-Dibenzothiop	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
32)	J2	C3-Dibenzothiop	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
33)	J2	C4-Dibenzothiop	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
34)	S	Phenanthrene-d1	1.542	1.541	1.556	1.587	1.622	1.616	1.577	2.30	
35)	J1	Phenanthrene	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
36)		Anthracene	1.785	1.804	1.867	1.954	1.868	1.801	1.846	3.44	
37)	J2	C1-Phenanthrene	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
38)	J2	3-Methylphenant	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
39)	J2	2/4-Methylphena	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
40)	J2	2-Methylanthrac	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
41)	J2	9-Methylphenant	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
42)	J2	1-Methylphenant	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
43)	J2	C2-Phenanthrene	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
44)	J2	2,7-Dimethylphe	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
45)	J2	1,7-Dimethylphe	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
46)	J2	C3-Phenanthrene	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
47)	J2	C4-Phenanthrene	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
48)		Dehydroabietin(	0.176	0.155	0.164	0.167	0.165	0.167	0.166	4.08	
49)		Retene	0.482	0.427	0.442	0.453	0.465	0.453	0.454	4.19	
50)		Benzo(b)fluoren	1.235	1.242	1.329	1.381	1.460	1.397	1.341	6.70	
51)	J1	Fluoranthene	2.185	2.139	2.269	2.260	2.274	2.173	2.217	2.62	
52)	J1	Pyrene	2.289	2.242	2.322	2.332	2.331	2.223	2.290	2.07	
[illegible]	J2	C1-Fluoranthene	2.289	2.242	2.322	2.332	2.331	2.223	2.290	2.07	
[illegible]	J2	C2-Fluoranthene	2.289	2.242	2.322	2.332	2.331	2.223	2.290	2.07	
[illegible]	J2	C3-Fluoranthene	2.289	2.242	2.322	2.332	2.331	2.223	2.290	2.07	
56)	J1	Benzo(b)naphtho	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56	

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report Inst. E

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration

Calibration Files
GD34 =W8583.D GD35 =W8584.D GD36 =W8585.D
GD37 =W8586.D GD38 =W8587.D GD39 =W8588.D

		Compound	GD34	GD35	GD36	GD37	GD38	GD39	Avg	%RSD
57)	J2	Benzo(b)naphtho	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
58)	J2	Benzo(b)naphtho	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
59)	J2	C1-Benzo(b)naph	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
60)	J2	C2-Benzo(b)naph	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
61)	J2	C3-Benzo(b)naph	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
62)	J2	C4-Benzo(b)naph	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
63)		Benzo(a)anthrac	2.081	2.102	2.130	2.130	2.181	2.129	2.125	1.58
64)	S	Chrysene-d12	1.698	1.698	1.692	1.734	1.759	1.749	1.722	1.72
65)	J1	Chrysene	2.156	2.169	2.242	2.214	2.196	2.104	2.180	2.22
66)	J2	C1-Chrysenes	2.156	2.169	2.242	2.214	2.196	2.104	2.180	2.22
67)	J2	C2-Chrysenes	2.156	2.169	2.242	2.214	2.196	2.104	2.180	2.22
68)	J2	C3-Chrysenes	2.156	2.169	2.242	2.214	2.196	2.104	2.180	2.22
69)	J2	C4-Chrysenes	2.156	2.169	2.242	2.214	2.196	2.104	2.180	2.22
70)		Benzo(b)fluoran	2.073	2.017	2.041	2.182	2.235	2.265	2.135	4.94
71)		Benzo(j/k)fluor	2.218	2.112	2.262	2.220	2.252	2.140	2.201	2.77
72)		Benzo(a)fluoran	1.830	1.754	1.774	1.848	1.852	1.863	1.820	2.48
73)		Benzo(e)pyrene	2.053	1.972	2.025	2.029	2.079	2.001	2.027	1.86
74)	S	Benzo(a)pyrene-	1.537	1.502	1.477	1.512	1.522	1.548	1.516	1.68
75)		Benzo(a)pyrene	2.052	2.024	2.128	2.128	2.194	2.152	2.113	3.00
76)		Perylene	2.008	1.880	2.030	2.083	2.166	2.113	2.046	4.87
77)		Indeno(1,2,3-cd	1.707	1.730	1.781	1.796	1.978	1.970	1.827	6.48
78)		Dibenz(a,h)anth	1.778	1.744	1.895	1.916	2.044	2.041	1.903	6.64
[illegible]		Benzo(g,h,i)per	2.317	2.152	2.182	2.179	2.222	2.174	2.204	2.70

(#) = Out of Range ### Number of calibration levels exceeded format ###

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8583.D
Acq On : 16 Apr 2004 11:17 am
Sample : GD34
Misc :
Integration Params: RTEINT.P
Print Time: Apr 16 14:18:31 2004

Vial: 2
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 14:18:11 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	129224	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	242821	0.000 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 0.00%	
19) Fluorene-d10	27.35	176	154345	0.000 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 0.00%	
34) Phenanthrene-d10	31.17	188	198846	0.000 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 0.00%	
64) Chrysene-d12	41.78	240	218952	0.000 ng/µl	-0.02
Spiked Amount 1.002			Recovery	= 0.00%	
74) Benzo(a)pyrene-d12	47.89	264	197840	0.000 ng/µl	-0.03
Spiked Amount 1.000			Recovery	= 0.00%	

Target Compounds					Qvalue
3) Naphthalene	18.47	128	2834	No Calib	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.05	154	2235	No Calib	
15) Acenaphthylene	24.71	152	2891	No Calib	
16) Acenaphthene	25.45	154	1621	No Calib	
17) Dibenzofuran	26.11	168	2092	No Calib	
18) Cadalene	29.15	198	596	No Calib	
20) Fluorene	27.46	166	1970	No Calib	
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.77	184	2435	No Calib	
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	2967	No Calib	
36) Anthracene	31.46	178	2297	No Calib	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8583.D
Acq On : 16 Apr 2004 11:17 am
Sample : GD34
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 16 14:18:31 2004

Vial: 2
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 14:18:11 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	227	No Calib	
49)	Retene	38.30	234	621	No Calib	
50)	Benzo(b)fluorene	38.58	216	1589	No Calib	
51)	Fluoranthene	36.04	202	2812	No Calib	
52)	Pyrene	36.92	202	2946	No Calib	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	2442	No Calib	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	2679	No Calib	
65)	Chrysene	41.88	228	2775	No Calib	
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.36	252	2668	No Calib	
71)	Benzo(j/k)fluoranthene	46.45	252	5710	No Calib	
72)	Benzo(a)fluoranthene	46.89	252	2356	No Calib	
73)	Benzo(e)pyrene	47.75	252	2643	No Calib	
75)	Benzo(a)pyrene	48.03	252	2641	No Calib	
76)	Perylene	48.48	252	2584	No Calib	
77)	Indeno(1,2,3-cd)pyrene	54.56	276	2197	No Calib	
78)	Dibenz(a,h)anthracene	54.68	278	2289	No Calib	
79)	Benzo(g,h,i)perylene	55.74	276	2982	No Calib	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8584.D
Acq On : 16 Apr 2004 12:43 pm
Sample : GD35
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 16 14:14:17 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 09:16:03 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	134469	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	251323	1.006 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 100.40%	
19) Fluorene-d10	27.35	176	160670	0.764 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 76.25%	
34) Phenanthrene-d10	31.17	188	206858	0.971 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 96.91%	
64) Chrysene-d12	41.79	240	227862	0.976 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 97.41%	
74) Benzo(a)pyrene-d12	47.89	264	201109	1.059 ng/µl	-0.03
Spiked Amount 1.000			Recovery	= 105.90%	

Target Compounds					Qvalue
3) Naphthalene	18.47	128	14409m	0.051 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	11000	0.051 ng/µl	100
15) Acenaphthylene	24.71	152	13683m	0.050 ng/µl	
16) Acenaphthene	25.45	154	8390	0.050 ng/µl	99
17) Dibenzofuran	26.10	168	11233	0.048 ng/µl	100
18) Cadalene	29.15	198	3102m	0.050 ng/µl	
20) Fluorene	27.46	166	9816	0.050 ng/µl	99
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.77	184	11812m	0.044 ng/µl	
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	13943m	0.050 ng/µl	
36) Anthracene	31.45	178	12128m	0.048 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8584.D
Acq On : 16 Apr 2004 12:43 pm
Sample : GD35
sc :
Integration Params: RTEINT.P
Int Time: Apr 16 14:14:17 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 09:16:03 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	1040	0.054 ng/µl#	85
49)	Retene	38.29	234	2864m	0.050 ng/µl	
50)	Benzo(b)fluorene	38.58	216	8331	0.045 ng/µl#	70
51)	Fluoranthene	36.04	202	14382	0.048 ng/µl	99
52)	Pyrene	36.92	202	15045m	0.048 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	12514	0.046 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	14132	0.051 ng/µl	99
65)	Chrysene	41.88	228	14581m	0.047 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.36	252	13561	0.051 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.44	252	28848m	0.098 ng/µl	
72)	Benzo(a)fluoranthene	46.89	252	11748	0.051 ng/µl	94
73)	Benzo(e)pyrene	47.75	252	13234	0.049 ng/µl	95
75)	Benzo(a)pyrene	48.03	252	13609m	0.048 ng/µl	
76)	Perylene	48.49	252	12613	0.048 ng/µl	100
77)	Indeno(1,2,3-cd)pyrene	54.56	276	11631	0.051 ng/µl	98
78)	Dibenz(a,h)anthracene	54.67	278	11723m	0.047 ng/µl	
79)	Benzo(g,h,i)perylene	55.74	276	14472	0.049 ng/µl	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8585.D
Acq On : 16 Apr 2004 2:08 pm
Sample : GD36
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 16 15:27:18 2004

Vial: 4
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 14:23:51 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	134376	1.004	ng/µl	-0.01
System Monitoring Compounds						
2) Naphthalene-d8	18.39	136	250431	0.996	ng/µl	-0.01
Spiked Amount 1.002			Recovery	=	99.40%	
19) Fluorene-d10	27.35	176	163867	1.023	ng/µl	-0.01
Spiked Amount 1.002			Recovery	=	102.10%	
34) Phenanthrene-d10	31.17	188	208637	1.011	ng/µl	-0.01
Spiked Amount 1.002			Recovery	=	100.90%	
64) Chrysene-d12	41.79	240	226855	0.998	ng/µl	-0.01
Spiked Amount 1.002			Recovery	=	99.60%	
74) Benzo(a)pyrene-d12	47.89	264	197711	0.972	ng/µl	-0.03
Spiked Amount 1.000			Recovery	=	97.20%	
Target Compounds						Qvalue
3) Naphthalene	18.47	128	59590	0.205	ng/µl	99
4) C1-Naphthalenes	0.00	142	0	N.D.	d	
5) 2-Methylnaphthalene	0.00	142	0	N.D.	d	
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d	
7) C2-Naphthalenes	0.00	156	0	N.D.	d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D.	d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D.	d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.		
12) C3-Naphthalenes	0.00	170	0	N.D.		
13) C4-Naphthalenes	0.00	184	0	N.D.		
14) Biphenyl	23.04	154	44252	0.196	ng/µl	99
15) Acenaphthylene	24.71	152	56230m	0.196	ng/µl	
16) Acenaphthene	25.45	154	34649	0.207	ng/µl	100
17) Dibenzofuran	26.10	168	46659	0.211	ng/µl	99
18) Cadalene	29.14	198	12562	0.203	ng/µl#	76
20) Fluorene	27.46	166	40751	0.204	ng/µl	98
21) C1-Fluorenes	0.00	180	0	N.D.		
22) 2-Methylfluorene	0.00	180	0	N.D.		
23) 1-Methylfluorene	0.00	180	0	N.D.		
24) C2-Fluorenes	0.00	194	0	N.D.		
25) C3-Fluorenes	0.00	208	0	N.D.		
26) Dibenzothiophene	30.77	184	52374	0.214	ng/µl	96
27) C1-Dibenzothiophenes	0.00	198	0	N.D.		
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.		
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.		
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.		
31) C2-Dibenzothiophenes	0.00	212	0	N.D.		
32) C3-Dibenzothiophenes	0.00	226	0	N.D.		
33) C4-Dibenzothiophenes	0.00	240	0	N.D.		
35) Phenanthrene	31.26	178	57610	0.197	ng/µl	99
36) Anthracene	31.45	178	50120m	0.209	ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.		
38) 3-Methylphenanthrene	0.00	192	0	N.D.		
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d	
40) 2-Methylanthracene	0.00	192	0	N.D.	d	
41) 9-Methylphenanthrene	0.00	192	0	N.D.	d	
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8585.D
Acq On : 16 Apr 2004 2:08 pm
Sample : GD36
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 16 15:27:18 2004

Vial: 4
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 14:23:51 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	4401	0.198 ng/µl#	90
49)	Retene	38.29	234	11860m	0.195 ng/µl	
50)	Benzo(b)fluorene	38.58	216	35646m	0.215 ng/µl	
51)	Fluoranthene	36.04	202	60925	0.211 ng/µl	98
52)	Pyrene	36.91	202	62267m	0.205 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.79	234	54006	0.215 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.72	228	57188	0.204 ng/µl	100
65)	Chrysene	41.88	228	60264m	0.208 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.35	252	54851	0.200 ng/µl	95
71)	Benzo(j/k)fluoranthene	46.44	252	121324m	0.419 ng/µl	
72)	Benzo(a)fluoranthene	46.88	252	47486	0.198 ng/µl	100
73)	Benzo(e)pyrene	47.75	252	54311m	0.202 ng/µl	
75)	Benzo(a)pyrene	48.03	252	57141m	0.209 ng/µl	
76)	Perylene	48.49	252	54437m	0.209 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.55	276	47816	0.208 ng/µl	100
78)	Dibenz(a,h)anthracene	54.66	278	50939m	0.216 ng/µl	
79)	Benzo(g,h,i)perylene	55.73	276	58631	0.196 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8586.D
Acq On : 16 Apr 2004 3:34 pm
Sample : GD37
Misc :
Integration Params: RTEINT.P
Print Time: Apr 16 16:53:49 2004

Vial: 5
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 15:29:54 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	132342	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	249545	1.010 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 100.80%	
19) Fluorene-d10	27.35	176	178088	1.121 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 111.88%	
34) Phenanthrene-d10	31.17	188	209555	1.028 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 102.59%	
64) Chrysene-d12	41.78	240	228991	1.024 ng/µl	-0.02
Spiked Amount 1.002			Recovery	= 102.20%	
74) Benzo(a)pyrene-d12	47.89	264	199295	1.004 ng/µl	-0.03
Spiked Amount 1.000			Recovery	= 100.40%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	279370	0.969 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	216574	0.981 ng/µl	99
15) Acenaphthylene	24.70	152	273494m	0.976 ng/µl	
16) Acenaphthene	25.45	154	163630	0.981 ng/µl	99
17) Dibenzofuran	26.09	168	228633m	1.033 ng/µl	
18) Cadalene	29.14	198	61911	1.010 ng/µl#	80
20) Fluorene	27.46	166	197907	0.999 ng/µl	100
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.76	184	253767	1.030 ng/µl	100
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	282024	0.984 ng/µl	99
36) Anthracene	31.44	178	258341m	1.078 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8586.D
Acq On : 16 Apr 2004 3:34 pm
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 16 16:53:49 2004

Vial: 5
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 15:29:54 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	21983	1.009 ng/µl#	92
49)	Retene	38.29	234	59836m	1.008 ng/µl	
50)	Benzo(b)fluorene	38.57	216	182409m	1.091 ng/µl	
51)	Fluoranthene	36.03	202	298737	1.031 ng/µl	99
52)	Pyrene	36.91	202	308037	1.023 ng/µl	100
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.79	234	266680	1.051 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.72	228	281588	1.015 ng/µl	100
65)	Chrysene	41.88	228	293024m	1.016 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.34	252	288804	1.072 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.44	252	586395m	2.025 ng/µl	
72)	Benzo(a)fluoranthene	46.88	252	243610	1.035 ng/µl	97
73)	Benzo(e)pyrene	47.74	252	267935m	1.008 ng/µl	
75)	Benzo(a)pyrene	48.02	252	281306m	1.032 ng/µl	
76)	Perylene	48.48	252	275057m	1.058 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.54	276	237434m	1.036 ng/µl	
78)	Dibenz(a,h)anthracene	54.66	278	253597m	1.065 ng/µl	
79)	Benzo(g,h,i)perylene	55.73	276	288356	0.987 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

155

Data File : H:\E\DATA\SE0041\W8587.D
Acq On : 16 Apr 2004 4:58 pm
Sample : GD38
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 20 09:11:32 2004

Vial: 6
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:11:28 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	136241	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	259155	1.017 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 101.50%	
19) Fluorene-d10	27.35	176	261165	1.551 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 154.79%	
34) Phenanthrene-d10	31.17	188	220566	1.044 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 104.19%	
64) Chrysene-d12	41.79	240	239233	1.034 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 103.19%	
74) Benzo(a)pyrene-d12	47.89	264	206538	1.010 ng/µl	-0.03
Spiked Amount 1.000			Recovery	= 101.00%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	1411249	4.796 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	1104951	4.887 ng/µl	98
15) Acenaphthylene	24.70	152	1393640m	4.865 ng/µl	
16) Acenaphthene	25.45	154	829949	4.861 ng/µl	100
17) Dibenzofuran	26.09	168	1182843	5.150 ng/µl	99
18) Cadalene	29.14	198	127400	2.013 ng/µl#	81
20) Fluorene	27.46	166	1015881	4.986 ng/µl	99
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.76	184	1302618	5.102 ng/µl	98
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	1434379	4.886 ng/µl	100
36) Anthracene	31.44	178	1271460m	5.058 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
0) 2-Methylanthracene	0.00	192	0	N.D. d	
1) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8587.D
Acq On : 16 Apr 2004 4:58 pm
Sample : GD38
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 20 09:11:32 2004

Vial: 6
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:11:28 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	44713	1.988 ng/µl	94
49)	Retene	38.29	234	316040m	5.163 ng/µl	
50)	Benzo(b)fluorene	38.57	216	992660m	5.642 ng/µl	
51)	Fluoranthene	36.04	202	1547500	5.153 ng/µl	99
52)	Pyrene	36.91	202	1584727	5.086 ng/µl	97
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.79	234	1379012m	5.215 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	1484155	5.182 ng/µl	100
65)	Chrysene	41.88	228	1496020m	5.022 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.36	252	1522673m	5.399 ng/µl	
71)	Benzo(j/k)fluoranthene	46.47	252	3061514m	10.242 ng/µl	
72)	Benzo(a)fluoranthene	46.88	252	502597	2.056 ng/µl	98
73)	Benzo(e)pyrene	47.76	252	1413610	5.158 ng/µl	98
75)	Benzo(a)pyrene	48.03	252	1493025m	5.282 ng/µl	
76)	Perylene	48.49	252	1472580m	5.426 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.55	276	1345955	5.657 ng/µl	100
78)	Dibenz(a,h)anthracene	54.67	278	1392044m	5.595 ng/µl	
79)	Benzo(g,h,i)perylene	55.74	276	1513771	5.054 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8588.D
Acq On : 16 Apr 2004 6:23 pm
Sample : GD39
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 20 09:15:10 2004

Vial: 7
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:15:04 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	141046	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	265120	1.002 ng/µl	-0.02
Spiked Amount 1.002			Recovery	= 100.00%	
19) Fluorene-d10	27.35	176	361738	1.870 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 186.63%	
34) Phenanthrene-d10	31.17	188	227425	1.031 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 102.89%	
64) Chrysene-d12	41.79	240	246255m	1.021 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 101.90%	
74) Benzo(a)pyrene-d12	47.90	264	217477	1.025 ng/µl	-0.02
Spiked Amount 1.000			Recovery	= 102.50%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	2745839	9.095 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	2166784	9.302 ng/µl	97
15) Acenaphthylene	24.70	152	2772305	9.404 ng/µl	100
16) Acenaphthene	25.45	154	1656836	9.433 ng/µl	100
17) Dibenzofuran	26.09	168	2363049	9.883 ng/µl	99
18) Cadalene	29.15	198	327240	4.989 ng/µl	96
20) Fluorene	27.46	166	2031835	9.645 ng/µl	100
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.76	184	2595292	9.783 ng/µl	98
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	2856931	9.451 ng/µl	99
36) Anthracene	31.45	178	2537425m	9.734 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
0) 2-Methylanthracene	0.00	192	0	N.D. d	
1) 9-Methylphenanthrene	0.00	192	0	N.D. d	
2) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

158

Data File : H:\E\DATA\SE0041\W8588.D
Acq On : 16 Apr 2004 6:23 pm
Sample : GD39
ɜc :
Integration Params: RTEINT.P
ınt Time: Apr 20 09:15:10 2004

Vial: 7
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:15:04 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
48)	Dehydroabietin(e)	35.17	256	117574	5.056	ng/µl	93
49)	Retene	38.29	234	637459m	9.997	ng/µl	
50)	Benzo(b)fluorene	38.58	216	1966884m	10.533	ng/µl	
51)	Fluoranthene	36.04	202	3062013	9.795	ng/µl	99
52)	Pyrene	36.92	202	3129545	9.672	ng/µl	99
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.		
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	2734131m	9.906	ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.		
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.		
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.		
63)	Benzo(a)anthracene	41.73	228	2999334m	10.048	ng/µl	
65)	Chrysene	41.89	228	2968225m	9.624	ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.		
67)	C2-Chrysenes	0.00	256	0	N.D.		
68)	C3-Chrysenes	0.00	270	0	N.D.		
69)	C4-Chrysenes	0.00	284	0	N.D.		
70)	Benzo(b)fluoranthene	46.38	252	3194005	10.777	ng/µl	99
71)	Benzo(j/k)fluoranthene	46.49	252	6025559m	19.385	ng/µl	
72)	Benzo(a)fluoranthene	46.90	252	1832210	7.199	ng/µl	98
73)	Benzo(e)pyrene	47.78	252	2817083	9.870	ng/µl	98
75)	Benzo(a)pyrene	48.06	252	3031660m	10.251	ng/µl	
76)	Perylene	48.52	252	2974960m	10.416	ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	2775343m	10.986	ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	2878159m	10.924	ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	3066375	9.875	ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Independant Calibration Check

Data File Name W8589.D
Data File Path H:\E\DATA\SE0041\
Operator JAR
Date Acquired 4/16/2004 19:48
Acq. Method File PYRSIM0
Sample Name GC44 - ICC
Misc Info
Vial Number 8
Instrument Name Inst. E
Number of Compounds 79.
Sample Multiplier 1

Name	Ret Time	Amount Found	Units	GC44	% Difference
Naphthalene-d8	18.39	0.954	ng/µl	1.0005	4.7
Naphthalene	18.47	0.927	ng/µl	1.0006	7.4
C1-Naphthalenes	0.00	0.000	ng/µl		
2-Methylnaphthalene	0.00	0.000	ng/µl		
1-Methylnaphthalene	0.00	0.000	ng/µl		
C2-Naphthalenes	0.00	0.000	ng/µl		
2-Ethylnaphthalene	0.00	0.000	ng/µl		
1-Ethylnaphthalene	0.00	0.000	ng/µl		
2,6-Dimethylnaphthalene	0.00	0.000	ng/µl		
1,5-Dimethylnaphthalene	0.00	0.000	ng/µl		
C3-Naphthalenes	0.00	0.000	ng/µl		
C4-Naphthalenes	0.00	0.000	ng/µl		
Biphenyl	23.04	0.927	ng/µl	1.003	7.6
Acenaphthylene	24.70	0.964	ng/µl	1.0004	3.7
Acenaphthene	25.45	0.955	ng/µl	1.0004	4.5
Dibenzofuran	0.00	0.000	ng/µl		
Cadalene	0.00	0.000	ng/µl		
Fluorene	27.46	0.950	ng/µl	1.0005	5.1
C1-Fluorenes	0.00	0.000	ng/µl		
2-Methylfluorene	0.00	0.000	ng/µl		
1-Methylfluorene	0.00	0.000	ng/µl		
C2-Fluorenes	0.00	0.000	ng/µl		
C3-Fluorenes	0.00	0.000	ng/µl		
Dibenzothiophene	0.00	0.000	ng/µl		
C1-Dibenzothiophenes	0.00	0.000	ng/µl		
4-Methyldibenzothiophene	0.00	0.000	ng/µl		
2/3-Methyldibenzothiophene	0.00	0.000	ng/µl		
1-Methyldibenzothiophene	0.00	0.000	ng/µl		
C2-Dibenzothiophenes	0.00	0.000	ng/µl		
C3-Dibenzothiophenes	0.00	0.000	ng/µl		
C4-Dibenzothiophenes	0.00	0.000	ng/µl		
Phenanthrene-d10	31.17	0.955	ng/µl	0.99425	4.0
Phenanthrene	31.26	0.936	ng/µl	1.0005	6.5
Anthracene	31.44	1.068	ng/µl	1.0004	6.7
C1-Phenanthrenes/Anthracenes	0.00	0.000	ng/µl		
3-Methylphenanthrene	0.00	0.000	ng/µl		
2/4-Methylphenanthrene	0.00	0.000	ng/µl		
2-Methylanthracene	0.00	0.000	ng/µl		
9-Methylphenanthrene	0.00	0.000	ng/µl		
1-Methylphenanthrene	0.00	0.000	ng/µl		
C2-Phenanthrenes/Anthracenes	0.00	0.000	ng/µl		
2,7-Dimethylphenanthrene	0.00	0.000	ng/µl		
1,7-Dimethylphenanthrene	0.00	0.000	ng/µl		
C3-Phenanthrenes/Anthracenes	0.00	0.000	ng/µl		
C4-Phenanthrenes/Anthracenes	0.00	0.000	ng/µl		
Dehydroabietin(e)	0.00	0.000	ng/µl		
Retene	0.00	0.000	ng/µl		
Benzo(b)fluorene	0.00	0.000	ng/µl		
Fluoranthene	36.03	0.988	ng/µl	1.0004	1.3
Pyrene	36.91	0.999	ng/µl	1.0004	0.1
C1-Fluoranthenes/Pyrenes	0.00	0.000	ng/µl		
C2-Fluoranthenes/Pyrenes	0.00	0.000	ng/µl		
C3-Fluoranthenes/Pyrenes	0.00	0.000	ng/µl		
Benzo(b)naphtho(2,1-d)thiophene	0.00	0.000	ng/µl		
Benzo(b)naphtho(1,2-d)thiophene	0.00	0.000	ng/µl		
Benzo(b)naphtho(2,3-d)thiophene	0.00	0.000	ng/µl		
C1-Benzo(b)naphthothiophenes	0.00	0.000	ng/µl		
C2-Benzo(b)naphthothiophenes	0.00	0.000	ng/µl		
C3-Benzo(b)naphthothiophenes	0.00	0.000	ng/µl		
C4-Benzo(b)naphthothiophenes	0.00	0.000	ng/µl		
Benzo(a)anthracene	41.72	0.975	ng/µl	1.0006	2.5
Chrysene-d12	41.78	0.886	ng/µl	1.002	11.6
Chrysene	41.88	0.979	ng/µl	1.0005	2.2
C1-Chrysenes	0.00	0.000	ng/µl		
C2-Chrysenes	0.00	0.000	ng/µl		
C3-Chrysenes	0.00	0.000	ng/µl		
C4-Chrysenes	0.00	0.000	ng/µl		
Benzo(b)fluoranthene	46.34	0.969	ng/µl	1.0005	3.2
Benzo(j/k)fluoranthene	46.46	1.063	ng/µl	1.0004	6.2
Benzo(a)fluoranthene	0.00	0.000	ng/µl		
Benzo(e)pyrene	47.75	1.008	ng/µl	0.9888	2.0
Benzo(a)pyrene	48.02	0.985	ng/µl	1.0006	1.6
Perylene	48.47	0.989	ng/µl	1.0002	1.1
Indeno(1,2,3-cd)pyrene	54.54	0.932	ng/µl	1.0006	6.8
Dibenz(a,h)anthracene	54.66	0.989	ng/µl	1.0004	1.2
Benzo(g,h,i)perylene	55.73	0.938	ng/µl	1.0005	6.3

N - QC value outside the accuracy or precision data quality objective

Quantitation Report (QT Reviewed)

160

Data File : H:\E\DATA\SE0041\W8589.D
Acq On : 16 Apr 2004 7:48 pm
Sample : GC44 - ICC
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 20 11:54:10 2004

Vial: 8
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 11:54:05 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	139925	1.001	ng/µl	-0.01
System Monitoring Compounds						
2) Naphthalene-d8	18.39	136	251171	0.954	ng/µl	-0.01
Spiked Amount 1.000			Recovery	=	95.35%	
19) Fluorene-d10	27.35	176	155067	0.704	ng/µl	-0.01
Spiked Amount 1.038			Recovery	=	67.82%	
34) Phenanthrene-d10	31.17	188	210443	0.955	ng/µl	-0.01
Spiked Amount 0.994			Recovery	=	96.05%	
64) Chrysene-d12	41.78	240	213115m	0.886	ng/µl	-0.02
Spiked Amount 1.002			Recovery	=	88.42%	
74) Benzo(a)pyrene-d12	47.88	264	198194	0.935	ng/µl	-0.04
Spiked Amount 1.032			Recovery	=	90.60%	
Target Compounds						Qvalue
3) Naphthalene	18.47	128	274111	0.927	ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D.	d	
5) 2-Methylnaphthalene	0.00	142	0	N.D.	d	
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d	
7) C2-Naphthalenes	0.00	156	0	N.D.	d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D.	d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D.	d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.		
12) C3-Naphthalenes	0.00	170	0	N.D.		
13) C4-Naphthalenes	0.00	184	0	N.D.		
14) Biphenyl	23.04	154	212293	0.927	ng/µl	100
15) Acenaphthylene	24.70	152	279738	0.964	ng/µl	99
16) Acenaphthene	25.45	154	165230	0.955	ng/µl	100
17) Dibenzofuran	0.00	168	0	N.D.	d	
18) Cadalene	0.00	198	0	N.D.		
20) Fluorene	27.46	166	197795	0.950	ng/µl	99
21) C1-Fluorenes	0.00	180	0	N.D.		
22) 2-Methylfluorene	0.00	180	0	N.D.		
23) 1-Methylfluorene	0.00	180	0	N.D.		
24) C2-Fluorenes	0.00	194	0	N.D.		
25) C3-Fluorenes	0.00	208	0	N.D.		
26) Dibenzothiophene	0.00	184	0	N.D.	d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.		
32) C3-Dibenzothiophenes	0.00	226	0	N.D.		
33) C4-Dibenzothiophenes	0.00	240	0	N.D.		
35) Phenanthrene	31.26	178	278748	0.936	ng/µl	99
36) Anthracene	31.44	178	275612m	1.068	ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d	
40) 2-Methylanthracene	0.00	192	0	N.D.	d	
41) 9-Methylphenanthrene	0.00	192	0	N.D.	d	
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8589.D
Acq On : 16 Apr 2004 7:48 pm
Sample : GC44 - ICC
Inc :
Integration Params: RTEINT.P
Quant Time: Apr 20 11:54:10 2004

Vial: 8
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 11:54:05 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D.	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	
51)	Fluoranthene	36.03	202	306015	0.988 ng/µl	99
52)	Pyrene	36.91	202	319818	0.999 ng/µl	99
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.72	228	289767	0.975 ng/µl	100
65)	Chrysene	41.88	228	298351m	0.979 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.34	252	289167	0.969 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.46	252	326900m	1.063 ng/µl	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	47.75	252	285639m	1.008 ng/µl	
75)	Benzo(a)pyrene	48.02	252	290801m	0.985 ng/µl	
76)	Perylene	48.47	252	282929m	0.989 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.54	276	238081	0.932 ng/µl	100
78)	Dibenz(a,h)anthracene	54.66	278	263003m	0.989 ng/µl	
79)	Benzo(g,h,i)perylene	55.73	276	288975	0.938 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8631.D
Acq On : 20 Apr 2004 12:41 pm
Sample : GD37
Misc :
MS Integration Params: RTEINT.P

Vial: 2
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	111	-0.01
2	S	Naphthalene-d8	1.884	1.917	-1.8	113	-0.01
3	J1	Naphthalene	2.115	2.152	-1.7	113	-0.01
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	1.648	-0.6	112	-0.01
15		Acenaphthylene	2.077	2.102	-1.2	113	0.00
16		Acenaphthene	1.238	1.242	-0.3	112	-0.01
17		Dibenzofuran	1.698	1.744	-2.7	112	0.00
18		Cadalene	0.467	0.477	-2.1	113	0.00
[illegible]	S	Fluorene-d10	1.576	1.352	14.2	111	0.00
[illegible]	J1	Fluorene	1.490	1.507	-1.1	112	0.00
[illegible]	J2	C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	1.914	-1.8	111	0.00
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	1.602	-1.6	112	0.00
35	J1	Phenanthrene	2.131	2.136	-0.2	111	-0.01
36		Anthracene	1.846	1.896	-2.7	108	-0.01
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.165	0.6	110	0.00
4[illegible]		Retene	0.454	0.452	0.4	111	0.00
[illegible]		Benzo(b)fluorene	1.341	1.314	2.0	106	-0.02
[illegible]	J1	Fluoranthene	2.217	2.271	-2.4	112	-0.01
[illegible]	J1	Pyrene	2.290	2.333	-1.9	111	-0.01
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8631.D
Acq On : 20 Apr 2004 12:41 pm
Sample : GD37
Misc :
S Integration Params: RTEINT.P

Vial: 2
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	2.011	-2.5	111	0.00
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0#	0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0#	0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-47.11#
63		Benzo(a)anthracene	2.125	2.112	0.6	110	-0.01
64	S	Chrysene-d12	1.722	1.705	1.0	109	0.00
65	J1	Chrysene	2.180	2.176	0.2	109	-0.01
66	J2	C1-Chrysenes	2.180	0.000	100.0#	0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0#	0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0#	0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0#	0#	-46.96#
70		Benzo(b)fluoranthene	2.135	2.179	-2.1	111	0.00
71		Benzo(j/k)fluoranthene	2.201	2.092	5.0	105	0.00
72		Benzo(a)fluoranthene	1.820	1.801	1.0	108	-0.01
7[illegible]		Benzo(e)pyrene	2.027	1.945	4.0	106	-0.02
[illegible]	S	Benzo(a)pyrene-d12	1.516	1.408	7.1	103	-0.01
[illegible]		Benzo(a)pyrene	2.113	1.995	5.6	104	0.00
76		Perylene	2.046	1.983	3.1	106	-0.01
77		Indeno(1,2,3-cd)pyrene	1.827	1.646	9.9	102	-0.01
78		Dibenz(a,h)anthracene	1.903	1.694	11.0	98	-0.01
79		Benzo(g,h,i)perylene	2.204	1.946	11.7	99	-0.01

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8631.D
Acq On : 20 Apr 2004 12:41 pm
Sample : GD37
sc :
Integration Params: RTEINT.P
Quant Time: Apr 20 13:56:47 2004

Vial: 2
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:56:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	146886	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	280994	1.020 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 101.80%	
19) Fluorene-d10	27.36	176	198212	0.860 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 85.83%	
34) Phenanthrene-d10	31.18	188	234848	1.018 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 101.60%	
64) Chrysene-d12	41.80	240	249928	0.992 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 99.00%	
74) Benzo(a)pyrene-d12	47.91	264	205965	0.928 ng/µl	-0.01
Spiked Amount 1.000			Recovery	= 92.80%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	316102	1.021 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	241641	1.008 ng/µl	99
15) Acenaphthylene	24.71	152	308510	1.015 ng/µl	98
16) Acenaphthene	25.45	154	182457	1.008 ng/µl	99
17) Dibenzofuran	26.10	168	255681	1.029 ng/µl	100
18) Cadalene	29.15	198	69783	1.022 ng/µl	89
20) Fluorene	27.47	166	221185	1.015 ng/µl	98
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.77	184	280620	1.020 ng/µl	99
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	313755	1.006 ng/µl	100
36) Anthracene	31.45	178	278251	1.030 ng/µl	100
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8631.D
Acq On : 20 Apr 2004 12:41 pm
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 20 13:56:47 2004

Vial: 2
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:56:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	24201	0.998 ng/µl	94
49)	Retene	38.30	234	66310	0.999 ng/µl	92
50)	Benzo(b)fluorene	38.58	216	192618m	0.982 ng/µl	
51)	Fluoranthene	36.04	202	333227	1.028 ng/µl	100
52)	Pyrene	36.92	202	341993	1.021 ng/µl	99
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	294753	1.027 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	309926	0.997 ng/µl	100
65)	Chrysene	41.89	228	319570m	1.002 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.37	252	320070	1.024 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.47	252	613276m	1.905 ng/µl	
72)	Benzo(a)fluoranthene	46.90	252	263506	0.989 ng/µl	98
73)	Benzo(e)pyrene	47.76	252	285075m	0.961 ng/µl	
75)	Benzo(a)pyrene	48.04	252	292727m	0.947 ng/µl	
76)	Perylene	48.50	252	290627m	0.971 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.57	276	241603	0.904 ng/µl	100
78)	Dibenz(a,h)anthracene	54.68	278	248893m	0.894 ng/µl	
79)	Benzo(g,h,i)perylene	55.76	276	285882	0.886 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

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Data File : H:\E\DATA\SE0041\W8642.D
Acq On : 21 Apr 2004 4:25 am
Sample : GD37
Misc :
IS Integration Params: RTEINT.P

Vial: 13
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	109	-0.01
2	S	Naphthalene-d8	1.884	1.903	-1.0	110	-0.01
3	J1	Naphthalene	2.115	2.149	-1.6	111	-0.01
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	1.652	-0.9	110	-0.01
15		Acenaphthylene	2.077	2.088	-0.5	110	0.00
16		Acenaphthene	1.238	1.244	-0.5	110	-0.01
17		Dibenzofuran	1.698	1.730	-1.9	109	-0.01
18		Cadalene	0.467	0.477	-2.1	111	0.00
19	S	Fluorene-d10	1.576	1.354	14.1	109	0.00
[illegible]	J1	Fluorene	1.490	1.494	-0.3	109	-0.01
[illegible]	J2	C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	1.923	-2.2	109	0.00
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	1.604	-1.7	110	0.00
35	J1	Phenanthrene	2.131	2.136	-0.2	109	-0.01
36		Anthracene	1.846	1.934	-4.8	108	-0.01
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.163	1.8	107	0.00
49		Retene	0.454	0.456	-0.4	110	0.00
[illegible]		Benzo(b)fluorene	1.341	1.379	-2.8	109	-0.03
[illegible]	J1	Fluoranthene	2.217	2.269	-2.3	109	-0.01
[illegible]	J1	Pyrene	2.290	2.322	-1.4	109	-0.01
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8642.D
Acq On : 21 Apr 2004 4:25 am
Sample : GD37
Misc :
IS Integration Params: RTEINT.P

Vial: 13
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	2.052	-4.6	111	-0.01
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0#	0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0#	0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-47.11#
63		Benzo(a)anthracene	2.125	2.165	-1.9	111	-0.01
64	S	Chrysene-d12	1.722	1.737	-0.9	109	-0.01
65	J1	Chrysene	2.180	2.196	-0.7	108	-0.01
66	J2	C1-Chrysenes	2.180	0.000	100.0#	0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0#	0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0#	0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0#	0#	-46.96#
70		Benzo(b)fluoranthene	2.135	2.192	-2.7	109	0.00
71		Benzo(j/k)fluoranthene	2.201	2.226	-1.1	109	0.00
72		Benzo(a)fluoranthene	1.820	1.897	-4.2	112	-0.02
73		Benzo(e)pyrene	2.027	2.026	0.0	109	-0.02
	S	Benzo(a)pyrene-d12	1.516	1.511	0.3	109	-0.02
		Benzo(a)pyrene	2.113	2.139	-1.2	110	0.00
76		Perylene	2.046	2.107	-3.0	110	-0.02
77		Indeno(1,2,3-cd)pyrene	1.827	1.851	-1.3	112	-0.01
78		Dibenz(a,h)anthracene	1.903	1.939	-1.9	110	0.00
79		Benzo(g,h,i)perylene	2.204	2.111	4.2	106	-0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8642.D
Acq On : 21 Apr 2004 4:25 am
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 21 09:15:00 2004

Vial: 13
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	144254	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	273995	1.012 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 101.00%	
19) Fluorene-d10	27.36	176	194902	0.861 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 85.93%	
34) Phenanthrene-d10	31.18	188	230885	1.019 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 101.70%	
64) Chrysene-d12	41.79	240	250069	1.011 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 100.90%	
74) Benzo(a)pyrene-d12	47.90	264	217124	0.997 ng/µl	-0.02
Spiked Amount 1.000			Recovery	= 99.70%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	309939	1.020 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	237881	1.011 ng/µl	99
15) Acenaphthylene	24.71	152	300835m	1.008 ng/µl	
16) Acenaphthene	25.45	154	179466	1.009 ng/µl	99
17) Dibenzofuran	26.09	168	249107	1.021 ng/µl	100
18) Cadalene	29.15	198	68584	1.023 ng/µl	94
20) Fluorene	27.46	166	215267	1.006 ng/µl	100
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.77	184	276819	1.024 ng/µl	97
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	308119	1.006 ng/µl	99
36) Anthracene	31.45	178	278653m	1.050 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

169

Data File : H:\E\DATA\SE0041\W8642.D
Acq On : 21 Apr 2004 4:25 am
Sample : GD37
Misc :
Integration Params: RTEINT.P
Print Time: Apr 21 09:15:00 2004

Vial: 13
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.		
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
48)	Dehydroabietin(e)	35.17	256	23472	0.985	ng/µl	95
49)	Retene	38.29	234	65638m	1.007	ng/µl	
50)	Benzo(b)fluorene	38.57	216	198569	1.031	ng/µl#	71
51)	Fluoranthene	36.04	202	327058	1.027	ng/µl	100
52)	Pyrene	36.92	202	334352	1.016	ng/µl	100
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.		
56)	Benzo(b)naphtho(2,1-d)thio	40.79	234	295483	1.049	ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.		
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.		
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.		
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.		
63)	Benzo(a)anthracene	41.73	228	311946	1.021	ng/µl	99
65)	Chrysene	41.89	228	316842m	1.011	ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.		
67)	C2-Chrysenes	0.00	256	0	N.D.		
68)	C3-Chrysenes	0.00	270	0	N.D.		
69)	C4-Chrysenes	0.00	284	0	N.D.		
70)	Benzo(b)fluoranthene	46.36	252	316217	1.031	ng/µl	97
71)	Benzo(j/k)fluoranthene	46.46	252	640968m	2.027	ng/µl	
72)	Benzo(a)fluoranthene	46.89	252	272551	1.042	ng/µl	98
73)	Benzo(e)pyrene	47.76	252	291641m	1.002	ng/µl	
75)	Benzo(a)pyrene	48.04	252	308192m	1.015	ng/µl	
76)	Perylene	48.49	252	303402m	1.032	ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.57	276	266785	1.016	ng/µl	100
78)	Dibenz(a,h)anthracene	54.68	278	279752m	1.023	ng/µl	
79)	Benzo(g,h,i)perylene	55.75	276	304503	0.961	ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8653.D
Acq On : 21 Apr 2004 8:03 pm
Sample : GD37
Misc :
IS Integration Params: RTEINT.P

Vial: 24
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	98	-0.01
2	S	Naphthalene-d8	1.884	1.888	-0.2	98	-0.01
3	J1	Naphthalene	2.115	2.117	-0.1	98	-0.01
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	1.636	0.1	98	-0.01
15		Acenaphthylene	2.077	2.068	0.4	98	0.00
16		Acenaphthene	1.238	1.240	-0.2	98	-0.01
17		Dibenzofuran	1.698	1.731	-1.9	98	0.00
18		Cadalene	0.467	0.470	-0.6	98	0.00
19	S	Fluorene-d10	1.576	1.353	14.1	98	0.00
[illegible]	J1	Fluorene	1.490	1.504	-0.9	98	0.00
[illegible]	J2	C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	1.906	-1.3	97	0.00
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	1.598	-1.3	99	0.00
35	J1	Phenanthrene	2.131	2.125	0.3	98	0.00
36		Anthracene	1.846	1.865	-1.0	94	0.00
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.165	0.6	97	0.00
49		Retene	0.454	0.465	-2.4	101	0.00
[illegible]		Benzo(b)fluorene	1.341	1.412	-5.3	100	-0.02
[illegible]	J1	Fluoranthene	2.217	2.249	-1.4	98	0.00
[illegible]	J1	Pyrene	2.290	2.323	-1.4	98	-0.01
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

171

Data File : H:\E\DATA\SE0041\W8653.D
Acq On : 21 Apr 2004 8:03 pm
Sample : GD37
Misc :
MS Integration Params: RTEINT.P

Vial: 24
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	2.068	-5.5	100	0.00
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0#	0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0#	0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-47.11#
63		Benzo(a)anthracene	2.125	2.191	-3.1	101	0.00
64	S	Chrysene-d12	1.722	1.733	-0.6	98	0.00
65	J1	Chrysene	2.180	2.200	-0.9	97	0.00
66	J2	C1-Chrysenes	2.180	0.000	100.0#	0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0#	0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0#	0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0#	0#	-46.96#
70		Benzo(b)fluoranthene	2.135	2.357	-10.4	106	0.00
71		Benzo(j/k)fluoranthene	2.201	2.198	0.1	97	0.00
72		Benzo(a)fluoranthene	1.820	1.930	-6.0	102	0.00
		Benzo(e)pyrene	2.027	2.065	-1.9	100	0.00
	S	Benzo(a)pyrene-d12	1.516	1.555	-2.6	101	0.00
		Benzo(a)pyrene	2.113	2.177	-3.0	100	0.01
76		Perylene	2.046	2.154	-5.3	101	0.00
77		Indeno(1,2,3-cd)pyrene	1.827	1.968	-7.7	107	0.00
78		Dibenz(a,h)anthracene	1.903	2.023	-6.3	103	0.00
79		Benzo(g,h,i)perylene	2.204	2.182	1.0	98	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

172

Data File : H:\E\DATA\SE0041\W8653.D
Acq On : 21 Apr 2004 8:03 pm
Sample : GD37
sc :
Integration Params: RTEINT.P
ant Time: Apr 22 09:25:07 2004

Vial: 24
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	129671	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	244395	1.005 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 100.30%	
19) Fluorene-d10	27.36	176	175118	0.860 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 85.83%	
34) Phenanthrene-d10	31.18	188	206863	1.015 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 101.30%	
64) Chrysene-d12	41.80	240	224335	1.009 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 100.70%	
74) Benzo(a)pyrene-d12	47.92	264	200825	1.025 ng/µl	0.00
Spiked Amount 1.000			Recovery	= 102.50%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	274469	1.005 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	211718	1.001 ng/µl	99
15) Acenaphthylene	24.71	152	267886m	0.999 ng/µl	
16) Acenaphthene	25.45	154	160793	1.006 ng/µl	99
17) Dibenzofuran	26.10	168	223974	1.021 ng/µl	100
18) Cadalene	29.15	198	60749	1.008 ng/µl#	84
20) Fluorene	27.47	166	194812	1.012 ng/µl	98
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.77	184	246679	1.015 ng/µl	100
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.27	178	275587	1.001 ng/µl	99
36) Anthracene	31.46	178	241563m	1.013 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

173

Data File : H:\E\DATA\SE0041\W8653.D
Acq On : 21 Apr 2004 8:03 pm
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:25:07 2004

Vial: 24
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.18	256	21270	0.993 ng/µl#	88
49)	Retene	38.30	234	60198	1.027 ng/µl	94
50)	Benzo(b)fluorene	38.58	216	182689	1.055 ng/µl#	69
51)	Fluoranthene	36.05	202	291381	1.018 ng/µl	99
52)	Pyrene	36.92	202	300635	1.017 ng/µl	98
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	267648	1.057 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.74	228	283823	1.034 ng/µl	99
65)	Chrysene	41.90	228	285291m	1.013 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.37	252	305573	1.108 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.46	252	568991m	2.002 ng/µl	
72)	Benzo(a)fluoranthene	46.91	252	249320	1.060 ng/µl	98
73)	Benzo(e)pyrene	47.78	252	267198m	1.021 ng/µl	
75)	Benzo(a)pyrene	48.06	252	282060m	1.034 ng/µl	
76)	Perylene	48.52	252	278772m	1.055 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	254940	1.080 ng/µl	100
78)	Dibenz(a,h)anthracene	54.69	278	262379m	1.068 ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	282994	0.994 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

174

Data File : H:\E\DATA\SE0041\W8664.D
Acq On : 22 Apr 2004 11:42 am
Sample : GD37
Misc :
S Integration Params: RTEINT.P

Vial: 35
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	83	0.00
2	S	Naphthalene-d8	1.884	1.878	0.3	82	-0.01
3	J1	Naphthalene	2.115	2.101	0.7	82	0.00
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	1.633	0.3	82	0.00
15		Acenaphthylene	2.077	2.063	0.7	83	0.01
16		Acenaphthene	1.238	1.228	0.8	82	0.00
17		Dibenzofuran	1.698	1.727	-1.7	83	0.00
18		Cadalene	0.467	0.482	-3.2	85	0.00
1[illegible]	S	Fluorene-d10	1.576	1.356	14.0	83	0.01
[illegible]	J1	Fluorene	1.490	1.496	-0.4	83	0.00
[illegible]	J2	C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	1.909	-1.5	82	0.01
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	1.606	-1.8	84	0.01
35	J1	Phenanthrene	2.131	2.113	0.8	82	0.00
36		Anthracene	1.846	1.875	-1.6	79	0.00
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.165	0.6	82	0.00
49		Retene	0.454	0.468	-3.1	85	0.01
[illegible]		Benzo(b)fluorene	1.341	1.409	-5.1	84	-0.01
[illegible]	J1	Fluoranthene	2.217	2.242	-1.1	82	0.01
[illegible]	J1	Pyrene	2.290	2.321	-1.4	82	0.00
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8664.D
Acq On : 22 Apr 2004 11:42 am
Sample : GD37
Misc :
MS Integration Params: RTEINT.P

Vial: 35
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	2.039	-4.0	84	0.01
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0#	0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0#	0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-47.11#
63		Benzo(a)anthracene	2.125	2.187	-2.9	85	0.01
64	S	Chrysene-d12	1.722	1.744	-1.3	83	0.01
65	J1	Chrysene	2.180	2.191	-0.5	82	0.01
66	J2	C1-Chrysenes	2.180	0.000	100.0#	0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0#	0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0#	0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0#	0#	-46.96#
70		Benzo(b)fluoranthene	2.135	2.221	-4.0	84	0.02
71		Benzo(j/k)fluoranthene	2.201	2.154	2.1	80	0.02
72		Benzo(a)fluoranthene	1.820	1.914	-5.2	86	0.01
7[illegible]		Benzo(e)pyrene	2.027	2.065	-1.9	84	0.02
[illegible]	S	Benzo(a)pyrene-d12	1.516	1.556	-2.6	85	0.02
[illegible]		Benzo(a)pyrene	2.113	2.178	-3.1	85	0.03
76		Perylene	2.046	2.147	-4.9	85	0.02
77		Indeno(1,2,3-cd)pyrene	1.827	1.980	-8.4	91	0.03
78		Dibenz(a,h)anthracene	1.903	2.032	-6.8	88	0.02
79		Benzo(g,h,i)perylene	2.204	2.166	1.7	82	0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

176

Data File : H:\E\DATA\SE0041\W8664.D
Acq On : 22 Apr 2004 11:42 am
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 13:46:31 2004

Vial: 35
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 13:46:19 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	109618	1.004 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	205415	0.999 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 99.70%	
19) Fluorene-d10	27.37	176	148353	0.862 ng/µl	0.01
Spiked Amount 1.002			Recovery	= 86.03%	
34) Phenanthrene-d10	31.19	188	175656	1.020 ng/µl	0.01
Spiked Amount 1.002			Recovery	= 101.80%	
64) Chrysene-d12	41.81	240	190846	1.015 ng/µl	0.01
Spiked Amount 1.002			Recovery	= 101.30%	
74) Benzo(a)pyrene-d12	47.94	264	169845	1.026 ng/µl	0.02
Spiked Amount 1.000			Recovery	= 102.60%	
Target Compounds					Qvalue
3) Naphthalene	18.48	128	230353	0.997 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.05	154	178658	0.999 ng/µl	99
15) Acenaphthylene	24.72	152	225962	0.997 ng/µl	98
16) Acenaphthene	25.46	154	134665	0.997 ng/µl	100
17) Dibenzofuran	26.10	168	188982	1.019 ng/µl	100
18) Cadalene	29.16	198	52646	1.033 ng/µl	97
20) Fluorene	27.47	166	163775	1.007 ng/µl	99
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.78	184	208896	1.017 ng/µl	98
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.27	178	231616	0.996 ng/µl	100
36) Anthracene	31.46	178	205346m	1.019 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8664.D
Acq On : 22 Apr 2004 11:42 am
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 13:46:31 2004

Vial: 35
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 13:46:19 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.18	256	18050	0.997 ng/µl	97
49)	Retene	38.31	234	51150	1.033 ng/µl	91
50)	Benzo(b)fluorene	38.59	216	154106	1.053 ng/µl#	69
51)	Fluoranthene	36.06	202	245545	1.015 ng/µl	98
52)	Pyrene	36.93	202	253883	1.016 ng/µl	99
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.81	234	223086	1.042 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.75	228	239457	1.032 ng/µl	99
65)	Chrysene	41.91	228	240158m	1.009 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.39	252	243516m	1.044 ng/µl	
71)	Benzo(j/k)fluoranthene	46.49	252	471350m	1.962 ng/µl	
72)	Benzo(a)fluoranthene	46.92	252	208941	1.051 ng/µl	98
73)	Benzo(e)pyrene	47.80	252	225956m	1.021 ng/µl	
75)	Benzo(a)pyrene	48.08	252	238557m	1.034 ng/µl	
76)	Perylene	48.54	252	234835m	1.051 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.61	276	216798	1.087 ng/µl	100
78)	Dibenz(a,h)anthracene	54.71	278	222766m	1.072 ng/µl	
79)	Benzo(g,h,i)perylene	55.79	276	237472	0.987 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

173

Data File : H:\E\DATA\SE0041\W8672.D
Acq On : 23 Apr 2004 12:18 am
Sample : GD37
Misc :
IS Integration Params: RTEINT.P

Vial: 43
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	85	-0.01
2	S	Naphthalene-d8	1.884	1.856	1.5	83	-0.01
3	J1	Naphthalene	2.115	2.064	2.4	83	-0.01
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	1.611	1.6	83	-0.01
15		Acenaphthylene	2.077	2.018	2.8	83	0.00
16		Acenaphthene	1.238	1.214	1.9	83	-0.01
17		Dibenzofuran	1.698	1.720	-1.3	84	0.00
18		Cadalene	0.467	0.481	-3.0	87	0.00
1[illegible]	S	Fluorene-d10	1.576	1.358	13.8	85	0.00
[illegible]	J1	Fluorene	1.490	1.477	0.9	84	0.00
[illegible]	J2	C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	1.901	-1.1	84	0.00
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	1.604	-1.7	86	0.00
35	J1	Phenanthrene	2.131	2.109	1.0	84	0.00
36		Anthracene	1.846	1.835	0.6	80	0.00
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.166	0.0	85	0.00
49		Retene	0.454	0.465	-2.4	87	0.00
[illegible]		Benzo(b)fluorene	1.341	1.369	-2.1	84	-0.02
[illegible]	J1	Fluoranthene	2.217	2.233	-0.7	84	0.00
[illegible]	J1	Pyrene	2.290	2.296	-0.3	83	-0.01
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

179

Data File : H:\E\DATA\SE0041\W8672.D
Acq On : 23 Apr 2004 12:18 am
Sample : GD37
Misc :
MS Integration Params: RTEINT.P

Vial: 43
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	2.028	-3.4	85	0.00
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0#	0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0#	0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-47.11#
63		Benzo(a)anthracene	2.125	2.100	1.2	84	0.00
64	S	Chrysene-d12	1.722	1.696	1.5	83	0.00
65	J1	Chrysene	2.180	2.161	0.9	83	-0.01
66	J2	C1-Chrysenes	2.180	0.000	100.0#	0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0#	0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0#	0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0#	0#	-46.96#
70		Benzo(b)fluoranthene	2.135	2.155	-0.9	84	0.00
71		Benzo(j/k)fluoranthene	2.201	2.115	3.9	81	0.00
72		Benzo(a)fluoranthene	1.820	1.778	2.3	82	0.00
73		Benzo(e)pyrene	2.027	1.930	4.8	81	0.00
[illegible]	S	Benzo(a)pyrene-d12	1.516	1.435	5.3	80	0.00
[illegible]		Benzo(a)pyrene	2.113	2.008	5.0	80	0.01
76		Perylene	2.046	1.944	5.0	79	0.00
77		Indeno(1,2,3-cd)pyrene	1.827	1.732	5.2	82	0.01
78		Dibenz(a,h)anthracene	1.903	1.799	5.5	80	0.01
79		Benzo(g,h,i)perylene	2.204	1.948	11.6	76	0.01

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

180

Data File : H:\E\DATA\SE0041\W8672.D
Acq On : 23 Apr 2004 12:18 am
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 09:22:37 2004

Vial: 43
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 09:22:31 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	112192	1.004	ng/µl	-0.01
System Monitoring Compounds						
2) Naphthalene-d8	18.39	136	207836	0.987	ng/µl	-0.01
Spiked Amount 1.002			Recovery	=	98.50%	
19) Fluorene-d10	27.36	176	152025	0.863	ng/µl	0.00
Spiked Amount 1.002			Recovery	=	86.13%	
34) Phenanthrene-d10	31.18	188	179627	1.019	ng/µl	0.00
Spiked Amount 1.002			Recovery	=	101.70%	
64) Chrysene-d12	41.80	240	189929	0.987	ng/µl	0.00
Spiked Amount 1.002			Recovery	=	98.50%	
74) Benzo(a)pyrene-d12	47.92	264	160304	0.946	ng/µl	0.00
Spiked Amount 1.000			Recovery	=	94.60%	
Target Compounds						Qvalue
3) Naphthalene	18.47	128	231515	0.979	ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D.	d	
5) 2-Methylnaphthalene	0.00	142	0	N.D.	d	
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d	
7) C2-Naphthalenes	0.00	156	0	N.D.	d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D.	d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D.	d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.		
12) C3-Naphthalenes	0.00	170	0	N.D.		
13) C4-Naphthalenes	0.00	184	0	N.D.		
14) Biphenyl	23.04	154	180396	0.985	ng/µl	99
15) Acenaphthylene	24.71	152	226165m	0.975	ng/µl	
16) Acenaphthene	25.45	154	136188	0.985	ng/µl	99
17) Dibenzofuran	26.10	168	192602	1.015	ng/µl	99
18) Cadalene	29.15	198	53737	1.030	ng/µl	91
20) Fluorene	27.47	166	165588	0.995	ng/µl	99
21) C1-Fluorenes	0.00	180	0	N.D.		
22) 2-Methylfluorene	0.00	180	0	N.D.		
23) 1-Methylfluorene	0.00	180	0	N.D.	d	
24) C2-Fluorenes	0.00	194	0	N.D.		
25) C3-Fluorenes	0.00	208	0	N.D.		
26) Dibenzothiophene	30.77	184	212872	1.013	ng/µl	99
27) C1-Dibenzothiophenes	0.00	198	0	N.D.		
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.		
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.		
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.		
31) C2-Dibenzothiophenes	0.00	212	0	N.D.		
32) C3-Dibenzothiophenes	0.00	226	0	N.D.		
33) C4-Dibenzothiophenes	0.00	240	0	N.D.		
35) Phenanthrene	31.27	178	236575	0.994	ng/µl	99
36) Anthracene	31.46	178	205722m	0.997	ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d	
40) 2-Methylanthracene	0.00	192	0	N.D.	d	
41) 9-Methylphenanthrene	0.00	192	0	N.D.	d	
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8672.D
Acq On : 23 Apr 2004 12:18 am
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 09:22:37 2004

Vial: 43
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 09:22:31 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	18596	1.004 ng/µl	96
49)	Retene	38.30	234	52111	1.028 ng/µl	91
50)	Benzo(b)fluorene	38.58	216	153283	1.023 ng/µl#	70
51)	Fluoranthene	36.05	202	250273	1.010 ng/µl	99
52)	Pyrene	36.92	202	257102	1.005 ng/µl	98
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	227065	1.036 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.74	228	235368	0.991 ng/µl	100
65)	Chrysene	41.89	228	242476m	0.995 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.37	252	241721	1.013 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.47	252	473593m	1.926 ng/µl	
72)	Benzo(a)fluoranthene	46.91	252	198685	0.977 ng/µl	98
73)	Benzo(e)pyrene	47.78	252	216083m	0.954 ng/µl	
75)	Benzo(a)pyrene	48.06	252	225101m	0.953 ng/µl	
76)	Perylene	48.52	252	217707m	0.952 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.59	276	194164	0.951 ng/µl	99
78)	Dibenz(a,h)anthracene	54.70	278	201839m	0.949 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	218540	0.887 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0043\W8711.D
Acq On : 27 Apr 2004 7:48 pm
Sample : GD37
Misc :
MS Integration Params: RTEINT.P

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Wed Apr 28 09:55:41 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	132	-0.01
2	S	Naphthalene-d8	1.884	0.000	100.0#	0#	-18.40#
3	J1	Naphthalene	2.115	0.000	100.0#	0#	-18.48#
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	0.000	100.0#	0#	-23.05#
15		Acenaphthylene	2.077	0.000	100.0#	0#	-24.71#
16		Acenaphthene	1.238	0.000	100.0#	0#	-25.46#
17		Dibenzofuran	1.698	0.000	100.0#	0#	-26.10#
18		Cadalene	0.467	0.000	100.0#	0#	-29.16#
19	S	Fluorene-d10	1.576	0.000	100.0#	0#	-27.36#
[illegible]	J1	Fluorene	1.490	0.000	100.0#	0#	-27.47#
[illegible]	J2	C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	0.000	100.0#	0#	-30.77#
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	0.000	100.0#	0#	-31.18#
35	J1	Phenanthrene	2.131	0.000	100.0#	0#	-31.27#
36		Anthracene	1.846	0.000	100.0#	0#	-31.46#
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.000	100.0#	0#	-35.18#
49		Retene	0.454	0.000	100.0#	0#	-38.30#
50		Benzo(b)fluorene	1.341	0.000	100.0#	0#	-38.60#
[illegible]	1	Fluoranthene	2.217	2.002	9.7	117	0.00
52	J1	Pyrene	2.290	0.000	100.0#	0#	-36.93#
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0043\W8711.D
Acq On : 27 Apr 2004 7:48 pm
Sample : GD37
Misc :
MS Integration Params: RTEINT.P

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Wed Apr 28 09:55:41 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0# 0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	0.000	100.0# 0#	-40.80#
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0# 0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0# 0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0# 0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0# 0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0# 0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0# 0#	-47.11#
63		Benzo(a)anthracene	2.125	0.000	100.0# 0#	-41.74#
64	S	Chrysene-d12	1.722	0.000	100.0# 0#	-41.80#
65	J1	Chrysene	2.180	0.000	100.0# 0#	-41.90#
66	J2	C1-Chrysenes	2.180	0.000	100.0# 0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0# 0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0# 0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0# 0#	-46.96#
70		Benzo(b)fluoranthene	2.135	0.000	100.0# 0#	-46.37#
71		Benzo(j/k)fluoranthene	2.201	0.000	100.0# 0#	-46.47#
72		Benzo(a)fluoranthene	1.820	0.000	100.0# 0#	-46.91#
7[illegible]		Benzo(e)pyrene	2.027	0.000	100.0# 0#	-47.78#
[illegible]	S	Benzo(a)pyrene-d12	1.516	0.000	100.0# 0#	-47.92#
[illegible]		Benzo(a)pyrene	2.113	0.000	100.0# 0#	-48.05#
76		Perylene	2.046	0.000	100.0# 0#	-48.52#
77		Indeno(1,2,3-cd)pyrene	1.827	0.000	100.0# 0#	-54.58#
78		Dibenz(a,h)anthracene	1.903	0.000	100.0# 0#	-54.69#
79		Benzo(g,h,i)perylene	2.204	0.000	100.0# 0#	-55.77#

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0043\W8711.D
Acq On : 27 Apr 2004 7:48 pm
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 28 09:52:34 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	174990	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	0.00	136	0d	0.000 ng/µl	
Spiked Amount 1.002			Recovery	= 0.00%	
19) Fluorene-d10	0.00	176	0d	0.000 ng/µl	
Spiked Amount 1.002			Recovery	= 0.00%	
34) Phenanthrene-d10	0.00	188	0d	0.000 ng/µl	
Spiked Amount 1.002			Recovery	= 0.00%	
64) Chrysene-d12	0.00	240	0d	0.000 ng/µl	
Spiked Amount 1.002			Recovery	= 0.00%	
74) Benzo(a)pyrene-d12	0.00	264	0d	0.000 ng/µl	
Spiked Amount 1.000			Recovery	= 0.00%	
Target Compounds					Qvalue
3) Naphthalene	0.00	128	0	N.D.	d
4) C1-Naphthalenes	0.00	142	0	N.D.	d
5) 2-Methylnaphthalene	0.00	142	0	N.D.	d
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d
7) C2-Naphthalenes	0.00	156	0	N.D.	d
8) 2-Ethylnaphthalene	0.00	156	0	N.D.	d
9) 1-Ethylnaphthalene	0.00	156	0	N.D.	d
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D.	d
15) Acenaphthylene	0.00	152	0	N.D.	d
16) Acenaphthene	0.00	154	0	N.D.	d
17) Dibenzofuran	0.00	168	0	N.D.	d
18) Cadalene	0.00	198	0	N.D.	d
20) Fluorene	0.00	166	0	N.D.	d
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	0.00	184	0	N.D.	d
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	d
35) Phenanthrene	0.00	178	0	N.D.	d
36) Anthracene	0.00	178	0	N.D.	d
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d
38) 3-Methylphenanthrene	0.00	192	0	N.D.	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d
40) 2-Methylanthracene	0.00	192	0	N.D.	d
41) 9-Methylphenanthrene	0.00	192	0	N.D.	d
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0043\W8711.D
Acq On : 27 Apr 2004 7:48 pm
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 28 09:52:34 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d
49)	Retene	0.00	234	0	N.D.	d
50)	Benzo(b)fluorene	0.00	216	0	N.D.	d
51)	Fluoranthene	36.05	202	350028m	0.906 ng/µl	
52)	Pyrene	0.00	202	0	N.D.	d
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	d
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	0.00	228	0	N.D.	d
65)	Chrysene	0.00	228	0	N.D.	d
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	0.00	252	0	N.D.	d
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D.	d
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d
75)	Benzo(a)pyrene	0.00	252	0	N.D.	d
76)	Perylene	0.00	252	0	N.D.	d
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D.	d
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D.	d
79)	Benzo(g,h,i)perylene	0.00	276	0	N.D.	d

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

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Data File : H:\E\DATA\SE0043\W8714.D
Acq On : 28 Apr 2004 12:03 am
Sample : GD37
Misc :
MS Integration Params: RTEINT.P

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Wed Apr 28 09:55:41 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	151#	-0.01
2	S	Naphthalene-d8	1.884	0.000	100.0#	0#	-18.40#
3	J1	Naphthalene	2.115	0.000	100.0#	0#	-18.48#
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	0.000	100.0#	0#	-23.05#
15		Acenaphthylene	2.077	0.000	100.0#	0#	-24.71#
16		Acenaphthene	1.238	0.000	100.0#	0#	-25.46#
17		Dibenzofuran	1.698	0.000	100.0#	0#	-26.10#
18		Cadalene	0.467	0.000	100.0#	0#	-29.16#
[illegible]	S	Fluorene-d10	1.576	0.000	100.0#	0#	-27.36#
[illegible]	J1	Fluorene	1.490	0.000	100.0#	0#	-27.47#
[illegible]	J2	C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	0.000	100.0#	0#	-30.77#
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	0.000	100.0#	0#	-31.18#
35	J1	Phenanthrene	2.131	0.000	100.0#	0#	-31.27#
36		Anthracene	1.846	0.000	100.0#	0#	-31.46#
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.000	100.0#	0#	-35.18#
49		Retene	0.454	0.000	100.0#	0#	-38.30#
5[illegible]		Benzo(b)fluorene	1.341	0.000	100.0#	0#	-38.60#
[illegible]	[illegible]1	Fluoranthene	2.217	2.034	8.3	136	0.00
5[illegible]	J1	Pyrene	2.290	0.000	100.0#	0#	-36.93#
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0043\W8714.D
Acq On : 28 Apr 2004 12:03 am
Sample : GD37
Misc :
MS Integration Params: RTEINT.P

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Wed Apr 28 09:55:41 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	0.000	100.0#	0#	-40.80#
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0#	0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0#	0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-47.11#
63		Benzo(a)anthracene	2.125	0.000	100.0#	0#	-41.74#
64	S	Chrysene-d12	1.722	0.000	100.0#	0#	-41.80#
65	J1	Chrysene	2.180	0.000	100.0#	0#	-41.90#
66	J2	C1-Chrysenes	2.180	0.000	100.0#	0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0#	0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0#	0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0#	0#	-46.96#
70		Benzo(b)fluoranthene	2.135	0.000	100.0#	0#	-46.37#
71		Benzo(j/k)fluoranthene	2.201	0.000	100.0#	0#	-46.47#
72		Benzo(a)fluoranthene	1.820	0.000	100.0#	0#	-46.91#
		Benzo(e)pyrene	2.027	0.000	100.0#	0#	-47.78#
	S	Benzo(a)pyrene-d12	1.516	0.000	100.0#	0#	-47.92#
		Benzo(a)pyrene	2.113	0.000	100.0#	0#	-48.05#
76		Perylene	2.046	0.000	100.0#	0#	-48.52#
77		Indeno(1,2,3-cd)pyrene	1.827	0.000	100.0#	0#	-54.58#
78		Dibenz(a,h)anthracene	1.903	0.000	100.0#	0#	-54.69#
79		Benzo(g,h,i)perylene	2.204	0.000	100.0#	0#	-55.77#

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0043\W8714.D
Acq On : 28 Apr 2004 12:03 am
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 28 09:54:08 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	199506	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	0.00	136	0d	0.000 ng/µl	
Spiked Amount 1.002			Recovery	= 0.00%	
19) Fluorene-d10	0.00	176	0d	0.000 ng/µl	
Spiked Amount 1.002			Recovery	= 0.00%	
34) Phenanthrene-d10	0.00	188	0d	0.000 ng/µl	
Spiked Amount 1.002			Recovery	= 0.00%	
64) Chrysene-d12	0.00	240	0d	0.000 ng/µl	
Spiked Amount 1.002			Recovery	= 0.00%	
74) Benzo(a)pyrene-d12	0.00	264	0d	0.000 ng/µl	
Spiked Amount 1.000			Recovery	= 0.00%	
Target Compounds					Qvalue
3) Naphthalene	0.00	128	0	N.D.	d
4) C1-Naphthalenes	0.00	142	0	N.D.	d
5) 2-Methylnaphthalene	0.00	142	0	N.D.	d
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d
7) C2-Naphthalenes	0.00	156	0	N.D.	d
8) 2-Ethylnaphthalene	0.00	156	0	N.D.	d
9) 1-Ethylnaphthalene	0.00	156	0	N.D.	d
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	d
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D.	d
15) Acenaphthylene	0.00	152	0	N.D.	d
16) Acenaphthene	0.00	154	0	N.D.	d
17) Dibenzofuran	0.00	168	0	N.D.	d
18) Cadalene	0.00	198	0	N.D.	d
20) Fluorene	0.00	166	0	N.D.	d
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	0.00	184	0	N.D.	d
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	d
35) Phenanthrene	0.00	178	0	N.D.	d
36) Anthracene	0.00	178	0	N.D.	d
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d
40) 2-Methylanthracene	0.00	192	0	N.D.	d
41) 9-Methylphenanthrene	0.00	192	0	N.D.	d
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0043\W8714.D
Acq On : 28 Apr 2004 12:03 am
Sample : GD37
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 28 09:54:08 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d
49)	Retene	0.00	234	0	N.D.	d
50)	Benzo(b)fluorene	0.00	216	0	N.D.	d
51)	Fluoranthene	36.05	202	405392m	0.920 ng/µl	
52)	Pyrene	0.00	202	0	N.D.	d
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	d
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	0.00	228	0	N.D.	d
65)	Chrysene	0.00	228	0	N.D.	d
66)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	0.00	252	0	N.D.	d
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D.	d
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d
75)	Benzo(a)pyrene	0.00	252	0	N.D.	d
76)	Perylene	0.00	252	0	N.D.	d
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D.	d
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D.	d
79)	Benzo(g,h,i)perylene	0.00	276	0	N.D.	d

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Response Factor Report Inst. E

Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 16:30:50 2004
Response via : Initial Calibration

Calibration Files
GD34 =W8718.D GD35 =W8719.D GD36 =W8720.D
GD37 =W8721.D GD38 =W8722.D GD39 =W8723.D

		Compound	GD34	GD35	GD36	GD37	GD38	GD39	Avg	%RSD
1)	I	Fluorene-d10	----------ISTD----------							
2)	J1	17B(H),21B(H)-h	0.697	0.718	0.716	0.755	0.756	0.777	0.736	4.17
3)	J2	Hopane	0.697	0.718	0.716	0.755	0.756	0.777	0.736	4.17
4)	s	5b(H)-cholane	0.300	0.295	0.302	0.297	0.281	0.289	0.294	2.66

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8718.D
Acq On : 30 Apr 2004 7:17 pm
Sample : GD34
Misc :
Integration Params: rteint.p
Quant Time: May 03 11:10:06 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:10:01 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	425007m	1.002 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	101773	0.586 ng/µl	0.00
Spiked Amount 0.800			Recovery	= 73.25%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	60.65	191	2955m	0.007 ng/µl	
3) Hopane	0.00	191	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

192

Data File : H:\E\DATA\SE0044\W8719.D
Acq On : 30 Apr 2004 8:47 pm
Sample : GD35
Misc :
S Integration Params: rteint.p
Quant Time: May 03 11:10:52 2004

Vial: 4
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:10:46 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorene-d10	29.19	176	436078m	1.002	ng/µl	0.00
System Monitoring Compounds						
4) 5b(H)-cholane	44.31	217	102548m	0.786	ng/µl	0.00
Spiked Amount 0.800			Recovery	=	98.25%	
Target Compounds						Qvalue
2) 17B(H),21B(H)-hopane	60.63	191	15619m	0.052	ng/µl	
3) Hopane	0.00	191	0	N.D.		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

193

Data File : H:\E\DATA\SE0044\W8720.D
Acq On : 30 Apr 2004 10:16 pm
Sample : GD36
Misc :
S Integration Params: rteint.p
ant Time: May 03 11:11:32 2004

Vial: 5
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:11:23 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	420461m	1.002 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	101405	0.813 ng/µl	0.00
Spiked Amount 0.800			Recovery	= 101.62%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	60.62	191	60123	0.203 ng/µl	100
3) Hopane	0.00	191	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

194

Data File : H:\E\DATA\SE0044\W8721.D
Acq On : 30 Apr 2004 11:46 pm
Sample : GD37
Misc :
S Integration Params: rteint.p
ant Time: May 03 11:11:55 2004

Vial: 6
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:11:51 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	397302m	1.002 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	94339m	0.796 ng/µl	0.00
Spiked Amount 0.800			Recovery	= 99.50%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	60.63	191	299181m	1.062 ng/µl	
3) Hopane	0.00	191	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8722.D
Acq On : 1 May 2004 1:16 am
Sample : GD38
Misc :
S Integration Params: rteint.p
ant Time: May 03 11:12:33 2004

Vial: 7
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:12:22 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	392928m	1.002 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	88202m	0.754 ng/µl	0.00
Spiked Amount 0.800			Recovery	= 94.25%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	60.63	191	592803	2.096 ng/µl	100
3) Hopane	0.00	191	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

196

Data File : H:\E\DATA\SE0044\W8723.D
Acq On : 1 May 2004 2:46 am
Sample : GD39
Misc :
G Integration Params: rteint.p
ant Time: May 03 11:13:04 2004

Vial: 8
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:12:58 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorene-d10	29.19	176	387106m	1.002	ng/µl	0.00
System Monitoring Compounds						
4) 5b(H)-cholane	44.31	217	89208m	0.783	ng/µl	0.00
Spiked Amount 0.800			Recovery	=	97.88%	
Target Compounds						Qvalue
2) 17B(H),21B(H)-hopane	60.64	191	1501789	5.338	ng/µl	100
3) Hopane	0.00	191	0	N.D.	d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0044\W8735.D
Acq On : 1 May 2004 8:40 pm
Sample : GD37
Misc :
MS Integration Params: rteint.p

Vial: 20
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 16:30:50 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorene-d10	1.000	1.000	0.0	68	0.00
2	J1	17B(H),21B(H)-hopane	0.736	0.777	-5.6	70	-0.02
3	J2	Hopane	0.736	0.000	100.0#	0#	-56.04#
4	s	5b(H)-cholane	0.294	0.298	-1.4	68	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
W8735.D ME0044.M Mon May 03 16:32:35 2004 RPT1

Quantitation Report (QT Reviewed)

198

Data File : H:\E\DATA\SE0044\W8735.D
Acq On : 1 May 2004 8:40 pm
Sample : GD37
Misc :
S Integration Params: rteint.p
ant Time: May 03 16:30:59 2004

Vial: 20
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 16:30:50 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	271281m	1.002 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	64477	0.810 ng/µl	0.00
Spiked Amount 0.800			Recovery	= 101.25%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	60.63	191	210250	1.054 ng/µl	100
3) Hopane	0.00	191	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

199

Data File : H:\E\DATA\SE0044\W8745.D
Acq On : 2 May 2004 11:36 am
Sample : GD37
Misc :
MS Integration Params: rteint.p

Vial: 30
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 16:30:50 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorene-d10	1.000	1.000	0.0	54	0.00
2	J1	17B(H),21B(H)-hopane	0.736	0.781	-6.1	56	-0.01
3	J2	Hopane	0.736	0.000	100.0#	0#	-56.04#
4	s	5b(H)-cholane	0.294	0.300	-2.0	55	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
W8745.D ME0044.M Mon May 03 16:32:37 2004 RPT1

Quantitation Report (QT Reviewed)

200

Data File : H:\E\DATA\SE0044\W8745.D
Acq On : 2 May 2004 11:36 am
Sample : GD37
Misc :
S Integration Params: rteint.p
ant Time: May 03 16:31:23 2004

Vial: 30
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 16:30:50 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	216408m	1.002 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	51873m	0.817 ng/µl	0.00
Spiked Amount 0.800			Recovery	= 102.12%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	60.64	191	168642m	1.060 ng/µl	
3) Hopane	0.00	191	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

201

Data File : H:\E\DATA\SE0044\W8754.D
Acq On : 3 May 2004 1:01 am
Sample : GD37
Misc :
MS Integration Params: rteint.p

Vial: 39
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 16:30:50 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorene-d10	1.000	1.000	0.0	44#	0.00
2	J1	17B(H),21B(H)-hopane	0.736	0.776	-5.4	46#	-0.02
3	J2	Hopane	0.736	0.000	100.0#	0#	-56.04#
4	s	5b(H)-cholane	0.294	0.302	-2.7	45#	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
W8754.D ME0044.M Mon May 03 16:32:39 2004 RPT1

Quantitation Report (QT Reviewed)

202

Data File : H:\E\DATA\SE0044\W8754.D
Acq On : 3 May 2004 1:01 am
Sample : GD37
Misc :
IS Integration Params: rteint.p
Quant Time: May 03 16:31:53 2004

Vial: 39
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 16:30:50 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	176587m	1.002 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	42511	0.821 ng/µl	0.00
Spiked Amount 0.800			Recovery	= 102.62%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	60.63	191	136801	1.054 ng/µl	100
3) Hopane	0.00	191	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sample Data

Injection Log

Directory: H:\E\DATA\SE0041

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	W8582.d	1.	DCM		16 Apr 2004 09:51
2	2	W8583.d	1.	GD34 (1)	(1) INITIAL AND CONTINUING CALIBRATION FILES RELATED TO THIS BATCH.	16 Apr 2004 11:17
3	3	W8584.d	1.	GD35		16 Apr 2004 12:43
4	4	W8585.d	1.	GD36	(2) SAMPLES PROCESSED FROM BATCH 04-0117.	16 Apr 2004 14:08
5	5	W8586.d	1.	GD37		16 Apr 2004 15:34
6	6	W8587.d	1.	GD38	(3) NOT USED.	16 Apr 2004 16:58
7	7	W8588.d	1.	GD39		16 Apr 2004 18:23
8	8	W8589.d	1.	GC44 - ICC (1)	JM	16 Apr 2004 19:48
9	9	W8590.d	1.	DCM (3)		16 Apr 2004 21:13
10	10	W8591.d	1.	BE152PB-P(3) (3)	4/27/04	16 Apr 2004 22:38
11	11	W8592.d	1.	BE153LCS-P(3)	(4) DILUTIONS FROM BATCH 04-0117.	17 Apr 2004 00:04
12	12	W8593.d	1.	S1487-P(3)		17 Apr 2004 01:29
13	13	W8594.d	1.	S1489-P(3)		17 Apr 2004 02:55
14	14	W8595.d	1.	DCM	JM	17 Apr 2004 04:20
15	15	W8596.d	1.	GD37		17 Apr 2004 05:46
16	16	W8597.d	1.	DCM	4/27/04	17 Apr 2004 07:11
17	17	W8598.d	1.	BE164PB-P(3)		17 Apr 2004 08:37
18	18	W8599.d	1.	BE165LCS-P(3)		17 Apr 2004 10:03
19	19	W8600.d	1.	BE166SRM-P(3)		17 Apr 2004 11:29
20	20	W8601.d	1.	BE174NSC-P(0)		17 Apr 2004 12:55
21	21	W8602.d	1.	S1421-P(7)		17 Apr 2004 14:20
22	22	W8603.d	1.	S1424-P(7)		17 Apr 2004 15:45
23	23	W8604.d	1.	S1424MS-P(7)		17 Apr 2004 17:10
24	24	W8605.d	1.	S1424MSD-P(7)		17 Apr 2004 18:35
25	25	W8606.d	1.	DCM		17 Apr 2004 20:00
26	26	W8607.d	1.	GD37		17 Apr 2004 21:26
27	27	W8608.d	1.	S1426-P(7)		17 Apr 2004 22:51
28	28	W8609.d	1.	S1442-P(4)		18 Apr 2004 00:17
29	29	W8610.d	1.	S1443-P(4)		18 Apr 2004 01:43
30	30	W8611.d	1.	S1449-P(7)		18 Apr 2004 03:09
31	31	W8612.d	1.	S1451-P(7)		18 Apr 2004 04:34
32	32	W8613.d	1.	S1452-P(7)		18 Apr 2004 06:00
33	33	W8614.d	1.	S1464-P(7)		18 Apr 2004 07:26
34	34	W8615.d	1.	S1467-P(7)		18 Apr 2004 08:52
35	35	W8616.d	1.	S1473-P(7)		18 Apr 2004 10:18
36	36	W8617.d	1.	DCM		18 Apr 2004 11:43
37	37	W8618.d	1.	GD37		18 Apr 2004 13:08
38	38	W8619.d	1.	S1476-P(7)		18 Apr 2004 14:33
39	39	W8620.d	1.	S1479-P(7)		18 Apr 2004 15:58
40	40	W8621.d	1.	S1490-P(7)		18 Apr 2004 17:22
41	41	W8622.d	1.	S1494-P(7)		18 Apr 2004 18:47
42	42	W8623.d	1.	S1502-P(7)		18 Apr 2004 20:12
43	43	W8624.d	1.	S1507-P(7)		18 Apr 2004 21:37
44	44	W8625.d	1.	S1510-P(7)		18 Apr 2004 23:03
45	45	W8626.d	1.	S1511-P(7)		19 Apr 2004 00:28
46	46	W8627.d	1.	S1511DUP-P(7)		19 Apr 2004 01:54
47	47	W8628.d	1.	DCM		19 Apr 2004 03:20
48	48	W8629.d	1.	GC37		19 Apr 2004 04:45
49	1	W8630.d	1.	DCM		20 Apr 2004 11:16
50	2	W8631.d	1.	GD37 (1)		20 Apr 2004 12:41
51	3	W8632.d	1.	BE161PB-P(3) (2)		20 Apr 2004 14:13
52	4	W8633.d	1.	BE162LCS-P(3)		20 Apr 2004 15:38
53	5	W8634.d	1.	BE163SRM-P(3)		20 Apr 2004 17:03
54	6	W8635.d	1.	BE212NSC-P(0)		20 Apr 2004 18:28
55	7	W8636.d	1.	S1430-P(7)		20 Apr 2004 19:52

Injection Log

Directory: H:\E\DATA\SE0041

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Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
[illegible]	8	W8637.d	1.	S1432-P(7) 2		20 Apr 2004 21:18
7	9	W8638.d	1.	S1432MS-P(7)		20 Apr 2004 22:43
8	10	W8639.d	1.	S1432MSD-P(7)		21 Apr 2004 00:08
9	11	W8640.d	1.	S1435-P(7)		21 Apr 2004 01:34
0	12	W8641.d	1.	DCM 3		21 Apr 2004 02:59
1	13	W8642.d	1.	GD37 1		21 Apr 2004 04:25
2	14	W8643.d	1.	S1438-P(7) 2		21 Apr 2004 05:50
3	15	W8644.d	1.	S1445-P(7)		21 Apr 2004 07:16
4	16	W8645.d	1.	S1447-P(7)		21 Apr 2004 08:42
5	17	W8646.d	1.	S1457-P(9)		21 Apr 2004 10:08
6	18	W8647.d	1.	S1466-P(7)		21 Apr 2004 11:33
7	19	W8648.d	1.	S1468-P(7)		21 Apr 2004 12:59
8	20	W8649.d	1.	S1471-P(7)		21 Apr 2004 14:24
9	21	W8650.d	1.	S1474-P(9)		21 Apr 2004 15:49
0	22	W8651.d	1.	S1481-P(7)		21 Apr 2004 17:13
1	23	W8652.d	1.	DCM 3		21 Apr 2004 18:38
2	24	W8653.d	1.	GD37 1		21 Apr 2004 20:03
3	25	W8654.d	1.	S1482-P(7) 2		21 Apr 2004 21:27
4	26	W8655.d	1.	S1483-P(7)		21 Apr 2004 22:53
5	27	W8656.d	1.	S1484-P(7)		22 Apr 2004 00:19
6	28	W8657.d	1.	S1485-P(7)		22 Apr 2004 01:45
7	29	W8658.d	1.	S1486-P(7)		22 Apr 2004 03:11
8	30	W8659.d	1.	S1491-P(7)		22 Apr 2004 04:36
9	31	W8660.d	1.	S1505-P(7)		22 Apr 2004 06:01
0	32	W8661.d	1.	S1505DUP-P(7) 2		22 Apr 2004 07:27
[illegible]	33	W8662.d	1.	S1509-P(7) 2		22 Apr 2004 08:52
[illegible]	34	W8663.d	1.	DCM 3		22 Apr 2004 10:17
3	35	W8664.d	1.	GD37 1		22 Apr 2004 11:42
4	36	W8665.d	1.	S1438-P(7) 4		22 Apr 2004 14:25
5	37	W8666.d	1.	S1471-P(7)		22 Apr 2004 15:49
6	38	W8667.d	1.	S1483-P(7)		22 Apr 2004 17:14
7	39	W8668.d	1.	S1484-P(7)		22 Apr 2004 18:38
8	40	W8669.d	1.	S1485-P(7)		22 Apr 2004 20:03
9	41	W8670.d	1.	S1486-P(7)		22 Apr 2004 21:28
0	42	W8671.d	1.	DCM 3		22 Apr 2004 22:53
1	43	W8672.d	1.	GD37 1		23 Apr 2004 00:18

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8632.D
Acq On : 20 Apr 2004 2:13 pm
Sample : BE161PB-P(3)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:13 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	283572	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	217501	815.210 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	40.74%	
19) Fluorene-d10	27.36	176	311700	1396.481 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	67.27%	
34) Phenanthrene-d10	31.18	188	198749	889.632 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	44.74%	
64) Chrysene-d12	41.79	240	202623m	830.896 ng/µl	-0.01
Spiked Amount 2004.000			Recovery =	41.46%	
74) Benzo(a)pyrene-d12	47.90	264	331238	1542.235 ng/µl	-0.02
Spiked Amount 2064.000			Recovery =	74.72%	

Target Compounds					Qvalue
3) Naphthalene	18.47	128	543m	1.812 ng/µl	
4) C1-Naphthalenes	21.57	142	995m	3.321 ng/µl	
5) 2-Methylnaphthalene	21.16	142	498m	1.662 ng/µl	
6) 1-Methylnaphthalene	21.57	142	473m	1.579 ng/µl	
7) C2-Naphthalenes	0.00	156	0	N.D.	
8) 2-Ethylnaphthalene	0.00	156	0	N.D.	
9) 1-Ethylnaphthalene	0.00	156	0	N.D.	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.06	154	481m	2.073 ng/µl	
15) Acenaphthylene	24.70	152	251m	0.853 ng/µl	
16) Acenaphthene	0.00	154	0	N.D. d	
17) Dibenzofuran	0.00	168	0	N.D.	
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	27.47	166	320m	1.516 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	0.00	184	0	N.D.	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	557	1.845 ng/µl	98
36) Anthracene	0.00	178	0	N.D. d	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D.	
41) 9-Methylphenanthrene	0.00	192	0	N.D.	
42) 1-Methylphenanthrene	0.00	192	0	N.D.	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

206

Data File : H:\E\DATA\SE0041\W8632.D
Acq On : 20 Apr 2004 2:13 pm
Sample : BE161PB-P(3)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:13 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45) 1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46) C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47) C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	
48) Dehydroabietin(e)	0.00	256	0	N.D.	d
49) Retene	0.00	234	0	N.D.	
50) Benzo(b)fluorene	38.60	216	206m	1.085	ng/µl
51) Fluoranthene	36.05	202	203m	0.647	ng/µl
52) Pyrene	36.93	202	300m	0.925	ng/µl
53) C1-Fluoranthenes/Pyrenes	38.60	216	1495m	4.609	ng/µl
54) C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55) C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56) Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	
57) Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d
58) Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d
59) C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60) C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61) C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62) C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63) Benzo(a)anthracene	41.74	228	221m	0.734	ng/µl
65) Chrysene	41.89	228	320m	1.036	ng/µl
66) C1-Chrysenes	0.00	242	0	N.D.	
67) C2-Chrysenes	0.00	256	0	N.D.	
68) C3-Chrysenes	0.00	270	0	N.D.	
69) C4-Chrysenes	0.00	284	0	N.D.	
70) Benzo(b)fluoranthene	0.00	252	0	N.D.	
71) Benzo(j/k)fluoranthene	0.00	252	0	N.D.	
72) Benzo(a)fluoranthene	0.00	252	0	N.D.	
73) Benzo(e)pyrene	0.00	252	0	N.D.	d
75) Benzo(a)pyrene	0.00	252	0	N.D.	d
76) Perylene	0.00	252	0	N.D.	
77) Indeno(1,2,3-cd)pyrene	54.58	276	1435m	5.546	ng/µl
78) Dibenz(a,h)anthracene	54.69	278	2126m	7.887	ng/µl
79) Benzo(g,h,i)perylene	55.79	276	1502m	4.811	ng/µl

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

207

Data File : H:\E\DATA\SE0041\W8633.D
Acq On : 20 Apr 2004 3:38 pm
Sample : BE162LCS-P(3)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:15 2004

Vial: 4
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	289610	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.40	136	18865m	69.233 ng/µl	0.00
Spiked Amount 2001.000			Recovery =	3.46%	
19) Fluorene-d10	27.36	176	316452	1388.213 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	66.87%	
34) Phenanthrene-d10	31.18	188	176280	772.607 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	38.85%	
64) Chrysene-d12	41.79	240	196320m	788.265 ng/µl	-0.01
Spiked Amount 2004.000			Recovery =	39.33%	
74) Benzo(a)pyrene-d12	47.90	264	356095m	1623.402 ng/µl	-0.02
Spiked Amount 2064.000			Recovery =	78.65%	
Target Compounds					Qvalue
3) Naphthalene	18.48	128	7748m	25.321 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.16	142	11961m	39.089 ng/µl	
6) 1-Methylnaphthalene	21.57	142	12714m	41.549 ng/µl	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	23.64	156	23188m	75.778 ng/µl	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.05	154	31075	131.117 ng/µl	99
15) Acenaphthylene	24.71	152	54317m	180.814 ng/µl	
16) Acenaphthene	25.45	154	37939	211.901 ng/µl	97
17) Dibenzofuran	0.00	168	0	N.D.	
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	27.47	166	66758	309.717 ng/µl	99
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	119537	387.802 ng/µl	99
36) Anthracene	31.45	178	107323m	401.806 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	33.79	192	89918m	291.712 ng/µl	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

208

Data File : H:\E\DATA\SE0041\W8633.D
Acq On : 20 Apr 2004 3:38 pm
Sample : BE162LCS-P(3)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:15 2004

Vial: 4
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45) 1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46) C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47) C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	
48) Dehydroabietin(e)	0.00	256	0	N.D. d	
49) Retene	0.00	234	0	N.D.	
50) Benzo(b)fluorene	0.00	216	0	N.D.	
51) Fluoranthene	36.04	202	142453	444.254 ng/µl	100
52) Pyrene	36.92	202	148719	448.965 ng/µl	100
53) C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54) C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55) C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56) Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	
57) Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58) Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59) C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60) C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61) C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62) C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63) Benzo(a)anthracene	41.73	228	131480	427.621 ng/µl	99
65) Chrysene	41.89	228	137237m	435.117 ng/µl	
66) C1-Chrysenes	0.00	242	0	N.D.	
67) C2-Chrysenes	0.00	256	0	N.D.	
68) C3-Chrysenes	0.00	270	0	N.D.	
69) C4-Chrysenes	0.00	284	0	N.D.	
70) Benzo(b)fluoranthene	46.36	252	128973	417.499 ng/µl	98
71) Benzo(j/k)fluoranthene	46.47	252	140511m	441.397 ng/µl	
72) Benzo(a)fluoranthene	0.00	252	0	N.D.	
73) Benzo(e)pyrene	47.76	252	119529m	407.707 ng/µl	
75) Benzo(a)pyrene	48.04	252	115966m	379.401 ng/µl	
76) Perylene	48.50	252	103451m	349.443 ng/µl	
77) Indeno(1,2,3-cd)pyrene	54.57	276	93866	355.184 ng/µl	99
78) Dibenz(a,h)anthracene	54.68	278	99863m	362.766 ng/µl	
79) Benzo(g,h,i)perylene	55.75	276	116379	364.962 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8634.D
Acq On : 20 Apr 2004 5:03 pm
Sample : BE163SRM-P(3)
Misc :
Integration Params: RTEINT.P
Print Time: Apr 22 09:48:17 2004

Vial: 5
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	313521	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	120166	407.367 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 20.36%		
19) Fluorene-d10	27.35	176	356421	1444.303 ng/µl	-0.01
Spiked Amount 2076.000			Recovery = 69.57%		
34) Phenanthrene-d10	31.18	188	224353m	908.310 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 45.68%		
64) Chrysene-d12	41.80	240	227126	842.406 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 42.04%		
74) Benzo(a)pyrene-d12	47.92	264	486848	2050.220 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 99.33%		
Target Compounds					Qvalue
3) Naphthalene	18.47	128	80672	243.530 ng/µl	100
4) C1-Naphthalenes	21.15	142	70507m	212.844 ng/µl	
5) 2-Methylnaphthalene	21.15	142	43918m	132.578 ng/µl	
6) 1-Methylnaphthalene	21.57	142	26001	78.491 ng/µl	96
7) C2-Naphthalenes	23.99	156	159769m	482.305 ng/µl	
8) 2-Ethylnaphthalene	23.40	156	12213	36.868 ng/µl	90
9) 1-Ethylnaphthalene	23.49	156	3074m	9.280 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	44599m	134.634 ng/µl	
11) 1,5-Dimethylnaphthalene	24.52	156	7364m	22.230 ng/µl	
12) C3-Naphthalenes	27.35	170	264640m	798.887 ng/µl	
13) C4-Naphthalenes	29.09	184	255519m	771.352 ng/µl	
14) Biphenyl	23.04	154	21801	84.971 ng/µl	100
15) Acenaphthylene	24.71	152	139553m	429.124 ng/µl	
16) Acenaphthene	25.45	154	23842m	123.009 ng/µl	
17) Dibenzofuran	26.09	168	35387m	133.069 ng/µl	
18) Cadalene	29.15	198	4002	54.750 ng/µl#	81
20) Fluorene	27.46	166	40725m	174.530 ng/µl	
21) C1-Fluorenes	29.84	180	50453m	216.220 ng/µl	
22) 2-Methylfluorene	29.69	180	14241m	61.031 ng/µl	
23) 1-Methylfluorene	29.84	180	17357m	74.385 ng/µl	
24) C2-Fluorenes	32.00	194	122511m	525.030 ng/µl	
25) C3-Fluorenes	34.54	208	233845m	1002.160 ng/µl	
26) Dibenzothiophene	30.77	184	86856m	294.856 ng/µl	
27) C1-Dibenzothiophenes	32.55	198	211381m	717.589 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	87764m	297.938 ng/µl	
29) 2/3-Methyldibenzothiophene	32.88	198	56195m	190.769 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	20324	68.995 ng/µl	90
31) C2-Dibenzothiophenes	34.24	212	335696m	1139.610 ng/µl	
32) C3-Dibenzothiophenes	36.07	226	295340m	1002.611 ng/µl	
33) C4-Dibenzothiophenes	37.78	240	154975m	526.104 ng/µl	
35) Phenanthrene	31.26	178	698038	2091.866 ng/µl	100
36) Anthracene	31.45	178	182427m	630.899 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.23	192	720322m	2158.646 ng/µl	
38) 3-Methylphenanthrene	33.23	192	209025m	626.402 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	166812m	499.899 ng/µl	
40) 2-Methylanthracene	33.51	192	42423m	127.132 ng/µl	
41) 9-Methylphenanthrene	33.69	192	171172m	512.965 ng/µl	
42) 1-Methylphenanthrene	33.79	192	119121m	356.979 ng/µl	
43) C2-Phenanthrenes/Anthracen	35.52	206	840166m	2517.792 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	60933m	182.603 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

210

Data File : H:\E\DATA\SE0041\W8634.D
Acq On : 20 Apr 2004 5:03 pm
Sample : BE163SRM-P(3)
Misc :
Integration Params: RTEINT.P
Print Time: Apr 22 09:48:17 2004

Vial: 5
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.75	206	59062m	176.996 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.38	220	566470m	1697.585 ng/µl	
47)	C4-Phenanthrenes/Anthracen	38.30	234	269497m	807.623 ng/µl	
48)	Dehydroabietin(e)	35.18	256	8578m	330.307 ng/µl	
49)	Retene	38.30	234	34122m	480.238 ng/µl	
50)	Benzo(b)fluorene	38.58	216	57987m	276.203 ng/µl	
51)	Fluoranthene	36.05	202	1190956m	3430.856 ng/µl	
52)	Pyrene	36.92	202	1273121m	3550.278 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.74	216	962005m	2682.687 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.40	230	705377m	1967.043 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	386822m	1078.708 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	141637m	461.222 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	41.13	234	33633	109.521 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	44691m	145.530 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	216220m	704.091 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	183853m	598.693 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.44	276	125986m	410.257 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.06	290	60254m	196.209 ng/µl	
63)	Benzo(a)anthracene	41.74	228	593156m	1782.029 ng/µl	
65)	Chrysene	41.90	228	782474	2291.668 ng/µl	99
66)	C1-Chrysenes	43.42	242	549606m	1609.656 ng/µl	
67)	C2-Chrysenes	45.45	256	324763m	951.148 ng/µl	
68)	C3-Chrysenes	46.92	270	176940m	518.212 ng/µl	
69)	C4-Chrysenes	50.17	284	88114m	258.064 ng/µl	
70)	Benzo(b)fluoranthene	46.38	252	567242	1696.178 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.47	252	584579	1696.324 ng/µl	98
72)	Benzo(a)fluoranthene	46.91	252	114527	401.751 ng/µl	92
73)	Benzo(e)pyrene	47.79	252	479797m	1511.749 ng/µl	
75)	Benzo(a)pyrene	48.06	252	427147m	1290.899 ng/µl	
76)	Perylene	48.53	252	123561	385.540 ng/µl	97
77)	Indeno(1,2,3-cd)pyrene	54.59	276	366856m	1282.293 ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	104730	351.431 ng/µl	99
79)	Benzo(g,h,i)perylene	55.77	276	399421	1157.046 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

211

Data File : H:\E\DATA\SE0041\W8635.D
Acq On : 20 Apr 2004 6:28 pm
Sample : BE212NSC-P(0)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:19 2004

Vial: 6
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	231772m	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	430077	1972.226 ng/µl	-0.02
Spiked Amount 2001.000			Recovery = 98.56%		
19) Fluorene-d10	27.36	176	263244	1442.976 ng/µl	0.00
Spiked Amount 2076.000			Recovery = 69.51%		
34) Phenanthrene-d10	31.18	188	375072	2054.105 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 103.30%		
64) Chrysene-d12	41.80	240	365219	1832.372 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 91.44%		
74) Benzo(a)pyrene-d12	47.91	264	337813	1924.373 ng/µl	-0.01
Spiked Amount 2064.000			Recovery = 93.24%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	890341m	3635.730 ng/µl	
4) C1-Naphthalenes	21.15	142	1896025m	7742.467 ng/µl	
5) 2-Methylnaphthalene	21.15	142	1095731	4474.446 ng/µl	97
6) 1-Methylnaphthalene	21.57	142	787763m	3216.850 ng/µl	
7) C2-Naphthalenes	23.99	156	2345647m	9578.509 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	109578	447.465 ng/µl	98
9) 1-Ethylnaphthalene	23.50	156	48577m	198.365 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	579294m	2365.562 ng/µl	
11) 1,5-Dimethylnaphthalene	24.52	156	118023m	481.950 ng/µl	
12) C3-Naphthalenes	26.32	170	1780920m	7272.432 ng/µl	
13) C4-Naphthalenes	29.09	184	985694m	4025.107 ng/µl	
14) Biphenyl	23.04	154	201823m	1064.075 ng/µl	
15) Acenaphthylene	24.90	152	4102	17.063 ng/µl	66
16) Acenaphthene	25.45	154	10350m	72.234 ng/µl	
17) Dibenzofuran	26.10	168	72539m	368.986 ng/µl	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	73796m	427.807 ng/µl	
21) C1-Fluorenes	29.84	180	186770m	1082.734 ng/µl	
22) 2-Methylfluorene	29.70	180	28175m	163.335 ng/µl	
23) 1-Methylfluorene	29.84	180	98934m	573.535 ng/µl	
24) C2-Fluorenes	32.04	194	297655m	1725.551 ng/µl	
25) C3-Fluorenes	33.88	208	260112m	1507.908 ng/µl	
26) Dibenzothiophene	30.77	184	255093	1171.424 ng/µl	98
27) C1-Dibenzothiophenes	32.55	198	510651m	2344.984 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	240365	1103.791 ng/µl	97
29) 2/3-Methyldibenzothiophene	32.91	198	154124m	707.760 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	69229m	317.910 ng/µl	
31) C2-Dibenzothiophenes	34.24	212	647648m	2974.094 ng/µl	
32) C3-Dibenzothiophenes	36.07	226	530712m	2437.107 ng/µl	
33) C4-Dibenzothiophenes	37.77	240	291254m	1337.481 ng/µl	
35) Phenanthrene	31.27	178	345575	1400.886 ng/µl	99
36) Anthracene	0.00	178	0	N.D. d	
37) C1-Phenanthrenes/Anthracen	33.69	192	717797m	2909.793 ng/µl	
38) 3-Methylphenanthrene	33.24	192	148043m	600.134 ng/µl	
39) 2/4-Methylphenanthrene	33.36	192	156366m	633.874 ng/µl	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	33.69	192	223744m	907.009 ng/µl	
42) 1-Methylphenanthrene	33.79	192	155705m	631.194 ng/µl	
43) C2-Phenanthrenes/Anthracen	35.52	206	830459m	3366.500 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	26971m	109.335 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8635.D
Acq On : 20 Apr 2004 6:28 pm
Sample : BE212NSC-P(0)
Misc :
Integration Params: RTEINT.P
Print Time: Apr 22 09:48:19 2004

Vial: 6
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.75	206	94665m	383.751	ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.38	220	545804m	2212.570	ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.56	234	215357m	873.010	ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	38.30	234	8319m	158.379	ng/µl	
50)	Benzo(b)fluorene	38.58	216	5266m	33.930	ng/µl	
51)	Fluoranthene	36.04	202	5515	21.491	ng/µl	71
52)	Pyrene	36.92	202	19428m	73.287	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.34	216	102167m	385.398	ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.17	230	170206m	642.056	ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.19	244	205116m	773.745	ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	48773m	214.842	ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	41.14	234	12744m	56.136	ng/µl	
58)	Benzo(b)naphtho(2,3-d)thio	41.45	234	5516m	24.298	ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	179250m	789.583	ng/µl	
60)	C2-Benzo(b)naphthothiophen	44.35	262	236424m	1041.431	ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.44	276	189858m	836.311	ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.06	290	94714m	417.208	ng/µl	
63)	Benzo(a)anthracene	41.71	228	6740m	27.391	ng/µl	
65)	Chrysene	41.87	228	65347m	258.889	ng/µl	
66)	C1-Chrysenes	43.41	242	105009m	416.020	ng/µl	
67)	C2-Chrysenes	45.10	256	143573m	568.801	ng/µl	
68)	C3-Chrysenes	49.91	270	119637m	473.972	ng/µl	
69)	C4-Chrysenes	49.35	284	75569m	299.386	ng/µl	
70)	Benzo(b)fluoranthene	46.37	252	8373m	33.868	ng/µl	
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D.	d	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d	
73)	Benzo(e)pyrene	47.78	252	15663m	66.758	ng/µl	
75)	Benzo(a)pyrene	0.00	252	0	N.D.	d	
76)	Perylene	0.00	252	0	N.D.	d	
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D.	d	
78)	Dibenz(a,h)anthracene	54.68	278	1436m	6.518	ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	4586	17.970	ng/µl	84

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8636.D
Acq On : 20 Apr 2004 7:52 pm
Sample : S1430-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:21 2004

Vial: 7
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	310530	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	188818	646.266 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 32.30%		
19) Fluorene-d10	27.35	176	351573	1438.380 ng/µl	-0.01
Spiked Amount 2076.000			Recovery = 69.29%		
34) Phenanthrene-d10	31.18	188	209729	857.282 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 43.11%		
64) Chrysene-d12	41.80	240	209655	785.096 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 39.18%		
74) Benzo(a)pyrene-d12	47.92	264	492468	2093.863 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 101.45%		
Target Compounds					Qvalue
3) Naphthalene	18.47	128	32584	99.311 ng/µl	99
4) C1-Naphthalenes	21.15	142	25826m	78.714 ng/µl	
5) 2-Methylnaphthalene	21.15	142	15884m	48.412 ng/µl	
6) 1-Methylnaphthalene	21.57	142	8796	26.809 ng/µl	97
7) C2-Naphthalenes	23.64	156	59894m	182.548 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	2239m	6.824 ng/µl	
9) 1-Ethylnaphthalene	23.50	156	623	1.899 ng/µl	89
10) 2,6-Dimethylnaphthalene	23.64	156	31214	95.135 ng/µl	98
11) 1,5-Dimethylnaphthalene	24.51	156	2129	6.489 ng/µl	92
12) C3-Naphthalenes	27.35	170	75836m	231.136 ng/µl	
13) C4-Naphthalenes	29.09	184	24286m	74.020 ng/µl	
14) Biphenyl	23.04	154	12335m	48.540 ng/µl	
15) Acenaphthylene	24.71	152	100269m	311.296 ng/µl	
16) Acenaphthene	25.45	154	8720	45.423 ng/µl	96
17) Dibenzofuran	26.10	168	16847m	63.961 ng/µl	
18) Cadalene	29.18	198	954m	13.177 ng/µl	
20) Fluorene	27.46	166	19613m	84.863 ng/µl	
21) C1-Fluorenes	29.84	180	16083m	69.589 ng/µl	
22) 2-Methylfluorene	29.69	180	3690m	15.966 ng/µl	
23) 1-Methylfluorene	29.84	180	4301m	18.610 ng/µl	
24) C2-Fluorenes	32.63	194	29308m	126.811 ng/µl	
25) C3-Fluorenes	34.54	208	50787m	219.748 ng/µl	
26) Dibenzothiophene	30.77	184	20436m	70.044 ng/µl	
27) C1-Dibenzothiophenes	32.99	198	38309m	131.303 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	9312m	31.917 ng/µl	
29) 2/3-Methyldibenzothiophene	32.91	198	8574m	29.387 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	3204	10.982 ng/µl	94
31) C2-Dibenzothiophenes	34.24	212	31405m	107.640 ng/µl	
32) C3-Dibenzothiophenes	36.06	226	28570m	97.923 ng/µl	
33) C4-Dibenzothiophenes	37.77	240	17643m	60.471 ng/µl	
35) Phenanthrene	31.26	178	304875	922.443 ng/µl	100
36) Anthracene	31.45	178	132221m	461.673 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.35	192	217512m	658.114 ng/µl	
38) 3-Methylphenanthrene	33.23	192	51520m	155.881 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	54195m	163.975 ng/µl	
40) 2-Methylanthracene	33.51	192	23354m	70.661 ng/µl	
41) 9-Methylphenanthrene	33.69	192	47471m	143.630 ng/µl	
42) 1-Methylphenanthrene	33.79	192	32125m	97.199 ng/µl	
43) C2-Phenanthrenes/Anthracen	36.03	206	235748m	713.289 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	10904m	32.992 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8636.D
Acq On : 20 Apr 2004 7:52 pm
Sample : S1430-P(7)
sc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:21 2004

Vial: 7
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.75	206	13072m	39.551 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.37	220	93249m	282.138 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.59	234	39843m	120.551 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.30	234	2602m	36.974 ng/µl	
50)	Benzo(b)fluorene	38.58	216	63414m	304.962 ng/µl	
51)	Fluoranthene	36.04	202	676867m	1968.671 ng/µl	
52)	Pyrene	36.92	202	769424m	2166.314 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.34	216	462667m	1302.640 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.40	230	286157m	805.675 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	148694m	418.648 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	60070	197.494 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.13	234	15430	50.730 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	18486m	60.777 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	66948m	220.107 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	52898m	173.914 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.44	276	44422m	146.048 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.21	290	24247m	79.718 ng/µl	
63)	Benzo(a)anthracene	41.73	228	300127m	910.362 ng/µl	
65)	Chrysene	41.89	228	501557	1483.082 ng/µl	99
66)	C1-Chrysenes	43.41	242	224316m	663.292 ng/µl	
67)	C2-Chrysenes	45.45	256	117145m	346.393 ng/µl	
68)	C3-Chrysenes	46.56	270	68626m	202.924 ng/µl	
69)	C4-Chrysenes	48.20	284	48945m	144.728 ng/µl	
70)	Benzo(b)fluoranthene	46.37	252	494262	1492.188 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.47	252	490563	1437.221 ng/µl	98
72)	Benzo(a)fluoranthene	46.91	252	87056m	308.326 ng/µl	
73)	Benzo(e)pyrene	47.78	252	380934m	1211.812 ng/µl	
75)	Benzo(a)pyrene	48.05	252	374811m	1143.643 ng/µl	
76)	Perylene	48.52	252	121163	381.699 ng/µl	96
77)	Indeno(1,2,3-cd)pyrene	54.59	276	298613m	1053.813 ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	68084m	230.663 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	306888	897.559 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8637.D
Acq On : 20 Apr 2004 9:18 pm
Sample : S1432-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:23 2004

Vial: 8
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	304764m	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	189148	659.644 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 32.97%		
19) Fluorene-d10	27.35	176	342746	1428.797 ng/µl	-0.01
Spiked Amount 2076.000			Recovery = 68.82%		
34) Phenanthrene-d10	31.18	188	211144	879.395 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 44.22%		
64) Chrysene-d12	41.80	240	211228	805.952 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 40.22%		
74) Benzo(a)pyrene-d12	47.92	264	487519	2112.038 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 102.33%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	32948m	102.320 ng/µl	
4) C1-Naphthalenes	21.15	142	27126m	84.240 ng/µl	
5) 2-Methylnaphthalene	21.15	142	16618m	51.607 ng/µl	
6) 1-Methylnaphthalene	21.57	142	8959m	27.822 ng/µl	
7) C2-Naphthalenes	23.64	156	59494m	184.759 ng/µl	
8) 2-Ethylnaphthalene	23.40	156	2359m	7.326 ng/µl	
9) 1-Ethylnaphthalene	23.49	156	715m	2.220 ng/µl	
10) 2,6-Dimethylnaphthalene	23.64	156	29725m	92.311 ng/µl	
11) 1,5-Dimethylnaphthalene	24.51	156	2064m	6.410 ng/µl	
12) C3-Naphthalenes	27.35	170	75596m	234.764 ng/µl	
13) C4-Naphthalenes	29.08	184	24898m	77.321 ng/µl	
14) Biphenyl	23.04	154	12962m	51.972 ng/µl	
15) Acenaphthylene	24.71	152	103723m	328.112 ng/µl	
16) Acenaphthene	25.45	154	9071	48.145 ng/µl	100
17) Dibenzofuran	26.09	168	17670m	68.355 ng/µl	
18) Cadalene	29.18	198	1007m	14.172 ng/µl	
20) Fluorene	27.47	166	21327m	94.025 ng/µl	
21) C1-Fluorenes	29.84	180	15308m	67.489 ng/µl	
22) 2-Methylfluorene	29.69	180	3834m	16.903 ng/µl	
23) 1-Methylfluorene	29.84	180	4098m	18.067 ng/µl	
24) C2-Fluorenes	32.01	194	27754m	122.359 ng/µl	
25) C3-Fluorenes	34.54	208	55835m	246.161 ng/µl	
26) Dibenzothiophene	30.77	184	21524m	75.169 ng/µl	
27) C1-Dibenzothiophenes	32.99	198	39506m	137.967 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	10017m	34.982 ng/µl	
29) 2/3-Methyldibenzothiophene	32.87	198	9387m	32.782 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	3438m	12.007 ng/µl	
31) C2-Dibenzothiophenes	34.24	212	36258m	126.624 ng/µl	
32) C3-Dibenzothiophenes	36.06	226	31938m	111.537 ng/µl	
33) C4-Dibenzothiophenes	37.77	240	17617m	61.524 ng/µl	
35) Phenanthrene	31.26	178	320878	989.231 ng/µl	99
36) Anthracene	31.45	178	146601m	521.568 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.35	192	229967m	708.962 ng/µl	
38) 3-Methylphenanthrene	33.23	192	54829m	169.032 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	57932m	178.598 ng/µl	
40) 2-Methylanthracene	33.51	192	25588m	78.885 ng/µl	
41) 9-Methylphenanthrene	33.69	192	49285m	151.940 ng/µl	
42) 1-Methylphenanthrene	33.79	192	33803m	104.211 ng/µl	
43) C2-Phenanthrenes/Anthracen	36.03	206	242252m	746.836 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	11069m	34.124 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8637.D
Acq On : 20 Apr 2004 9:18 pm
Sample : S1432-P(7)
sc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:23 2004

Vial: 8
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.74	206	13065m	40.278	ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.38	220	89832m	276.942	ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.58	234	38188m	117.729	ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	38.30	234	2222m	32.171	ng/µl	
50)	Benzo(b)fluorene	38.58	216	67182m	329.195	ng/µl	
51)	Fluoranthene	36.04	202	708846m	2100.688	ng/µl	
52)	Pyrene	36.92	202	791178m	2269.707	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.34	216	490927m	1408.356	ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.40	230	309765m	888.644	ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	155797m	446.946	ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	63640	213.190	ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.14	234	16236	54.390	ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	19565m	65.541	ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	69925m	234.244	ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	53004m	177.560	ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.43	276	46353m	155.279	ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.78	290	17835m	59.746	ng/µl	
63)	Benzo(a)anthracene	41.74	228	302248m	934.140	ng/µl	
65)	Chrysene	41.89	228	542030	1633.082	ng/µl	99
66)	C1-Chrysenes	43.42	242	230120m	693.328	ng/µl	
67)	C2-Chrysenes	45.45	256	120396m	362.741	ng/µl	
68)	C3-Chrysenes	46.57	270	67905m	204.591	ng/µl	
69)	C4-Chrysenes	48.19	284	52574m	158.400	ng/µl	
70)	Benzo(b)fluoranthene	46.37	252	509691	1567.881	ng/µl	99
71)	Benzo(j/k)fluoranthene	46.47	252	507026	1513.557	ng/µl	99
72)	Benzo(a)fluoranthene	46.91	252	90042m	324.935	ng/µl	
73)	Benzo(e)pyrene	47.78	252	396430m	1284.966	ng/µl	
75)	Benzo(a)pyrene	48.05	252	383788m	1193.189	ng/µl	
76)	Perylene	48.52	252	124319	399.051	ng/µl	96
77)	Indeno(1,2,3-cd)pyrene	54.58	276	317817m	1142.804	ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	70175m	242.245	ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	324334	966.530	ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8638.D
Acq On : 20 Apr 2004 10:43 pm
Sample : S1432MS-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:38 2004

Vial: 9
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:49:30 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	287479	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	323666	598.318 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 29.90%		
19) Fluorene-d10	27.36	176	326350	721.123 ng/µl	0.00
Spiked Amount 1038.000			Recovery = 69.47%		
34) Phenanthrene-d10	31.18	188	369563	815.871 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 41.03%		
64) Chrysene-d12	41.80	240	377457	763.401 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 38.09%		
74) Benzo(a)pyrene-d12	47.92	264	459839	1055.950 ng/µl	0.00
Spiked Amount 1032.000			Recovery = 102.32%		
Target Compounds					Qvalue
3) Naphthalene	18.47	128	204299	336.300 ng/µl	99
4) C1-Naphthalenes	21.15	142	265816m	437.564 ng/µl	
5) 2-Methylnaphthalene	21.15	142	139589	229.780 ng/µl	98
6) 1-Methylnaphthalene	21.57	142	124349m	204.693 ng/µl	
7) C2-Naphthalenes	23.63	156	167578m	275.853 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	2881	4.742 ng/µl#	76
9) 1-Ethylnaphthalene	23.49	156	683	1.124 ng/µl#	59
10) 2,6-Dimethylnaphthalene	23.63	156	138266	227.602 ng/µl	94
11) 1,5-Dimethylnaphthalene	24.51	156	1810m	2.979 ng/µl	
12) C3-Naphthalenes	27.01	170	197151m	324.533 ng/µl	
13) C4-Naphthalenes	29.09	184	25579m	42.106 ng/µl	
14) Biphenyl	23.04	154	171266	363.997 ng/µl	100
15) Acenaphthylene	24.71	152	316297m	530.358 ng/µl	
16) Acenaphthene	25.45	154	140821m	396.179 ng/µl	
17) Dibenzofuran	26.10	168	17553m	35.993 ng/µl	
18) Cadalene	29.17	198	1050m	7.833 ng/µl	
20) Fluorene	27.46	166	188087m	439.540 ng/µl	
21) C1-Fluorenes	29.84	180	14198m	33.179 ng/µl	
22) 2-Methylfluorene	29.69	180	3756m	8.777 ng/µl	
23) 1-Methylfluorene	29.84	180	4054m	9.474 ng/µl	
24) C2-Fluorenes	32.01	194	24490m	57.231 ng/µl	
25) C3-Fluorenes	34.54	208	54502m	127.366 ng/µl	
26) Dibenzothiophene	30.77	184	24500	45.353 ng/µl	96
27) C1-Dibenzothiophenes	33.00	198	47792m	88.470 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	9311m	17.236 ng/µl	
29) 2/3-Methyldibenzothiophene	32.91	198	9696m	17.949 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	3161	5.851 ng/µl	95
31) C2-Dibenzothiophenes	34.24	212	34770m	64.364 ng/µl	
32) C3-Dibenzothiophenes	36.06	226	28233m	52.263 ng/µl	
33) C4-Dibenzothiophenes	37.77	240	17281m	31.990 ng/µl	
35) Phenanthrene	31.26	178	565082	923.415 ng/µl	100
36) Anthracene	31.45	178	366678m	691.491 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.79	192	398138m	650.607 ng/µl	
38) 3-Methylphenanthrene	33.24	192	50950m	83.259 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	55533m	90.748 ng/µl	
40) 2-Methylanthracene	33.51	192	24060m	39.317 ng/µl	
41) 9-Methylphenanthrene	33.69	192	59814m	97.744 ng/µl	
42) 1-Methylphenanthrene	33.79	192	201707	329.614 ng/µl	95
43) C2-Phenanthrenes/Anthracen	36.03	206	224944m	367.587 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	10920m	17.845 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8638.D
Acq On : 20 Apr 2004 10:43 pm
Sample : S1432MS-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:38 2004

Vial: 9
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:49:30 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.75	206	11943m	19.516 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.38	220	90907m	148.553 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.59	234	36484m	59.619 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.30	234	2083m	15.986 ng/µl	
50)	Benzo(b)fluorene	38.58	216	66259m	172.097 ng/µl	
51)	Fluoranthene	36.05	202	929773m	1460.542 ng/µl	
52)	Pyrene	36.92	202	1020071m	1551.149 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.34	216	462445m	703.207 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	41.21	230	290314m	441.460 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	140701m	213.954 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	61978	110.053 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.13	234	16077	28.548 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	19991m	35.498 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	67518m	119.890 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	53825m	95.576 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.45	276	43746m	77.679 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.04	290	22940m	40.734 ng/µl	
63)	Benzo(a)anthracene	41.74	228	575900m	943.460 ng/µl	
65)	Chrysene	41.89	228	763198	1218.848 ng/µl	100
66)	C1-Chrysenes	43.41	242	218902m	349.592 ng/µl	
67)	C2-Chrysenes	45.45	256	114283m	182.513 ng/µl	
68)	C3-Chrysenes	46.56	270	65527m	104.648 ng/µl	
69)	C4-Chrysenes	48.19	284	48266m	77.082 ng/µl	
70)	Benzo(b)fluoranthene	46.37	252	784195	1278.668 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.48	252	752344	1190.454 ng/µl	98
72)	Benzo(a)fluoranthene	46.91	252	85234m	163.039 ng/µl	
73)	Benzo(e)pyrene	47.78	252	630509m	1083.288 ng/µl	
75)	Benzo(a)pyrene	48.06	252	636381m	1048.728 ng/µl	
76)	Perylene	48.52	252	398956	678.803 ng/µl	97
77)	Indeno(1,2,3-cd)pyrene	54.59	276	555109	1058.036 ng/µl	98
78)	Dibenz(a,h)anthracene	54.70	278	323089m	591.183 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	582856	920.686 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8639.D
Acq On : 21 Apr 2004 12:08 am
Sample : S1432MSD-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:40 2004

Vial: 10
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	283140	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	304396	571.320 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 28.55%		
19) Fluorene-d10	27.35	176	320532	719.121 ng/µl	-0.01
Spiked Amount 1038.000			Recovery = 69.28%		
34) Phenanthrene-d10	31.18	188	368953	827.006 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 41.59%		
64) Chrysene-d12	41.80	240	375240	770.547 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 38.45%		
74) Benzo(a)pyrene-d12	47.92	264	449026	1046.921 ng/µl	0.00
Spiked Amount 1032.000			Recovery = 101.45%		
Target Compounds					Qvalue
3) Naphthalene	18.47	128	189094	316.041 ng/µl	99
4) C1-Naphthalenes	21.15	142	250881m	419.308 ng/µl	
5) 2-Methylnaphthalene	21.15	142	131647	220.027 ng/µl	98
6) 1-Methylnaphthalene	21.57	142	118014m	197.242 ng/µl	
7) C2-Naphthalenes	23.63	156	161611m	270.107 ng/µl	
8) 2-Ethylnaphthalene	23.40	156	2031	3.394 ng/µl#	79
9) 1-Ethylnaphthalene	23.50	156	621	1.038 ng/µl	93
10) 2,6-Dimethylnaphthalene	23.63	156	134923	225.502 ng/µl	96
11) 1,5-Dimethylnaphthalene	24.52	156	1484m	2.480 ng/µl	
12) C3-Naphthalenes	27.01	170	192130m	321.115 ng/µl	
13) C4-Naphthalenes	29.09	184	23534m	39.333 ng/µl	
14) Biphenyl	23.04	154	168018	362.566 ng/µl	99
15) Acenaphthylene	24.71	152	302430m	514.878 ng/µl	
16) Acenaphthene	25.45	154	136292m	389.313 ng/µl	
17) Dibenzofuran	26.09	168	16696m	34.760 ng/µl	
18) Cadalene	29.19	198	847m	6.415 ng/µl	
20) Fluorene	27.46	166	185669m	440.538 ng/µl	
21) C1-Fluorenes	29.84	180	12988m	30.817 ng/µl	
22) 2-Methylfluorene	29.70	180	3408m	8.086 ng/µl	
23) 1-Methylfluorene	29.84	180	3931m	9.327 ng/µl	
24) C2-Fluorenes	32.63	194	26034m	61.771 ng/µl	
25) C3-Fluorenes	34.54	208	57016m	135.282 ng/µl	
26) Dibenzothiophene	30.77	184	23578	44.315 ng/µl	97
27) C1-Dibenzothiophenes	33.00	198	47075m	88.478 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	8935m	16.793 ng/µl	
29) 2/3-Methyldibenzothiophene	32.91	198	9305m	17.489 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	2878	5.409 ng/µl	92
31) C2-Dibenzothiophenes	34.24	212	31489m	59.184 ng/µl	
32) C3-Dibenzothiophenes	36.07	226	25873m	48.629 ng/µl	
33) C4-Dibenzothiophenes	37.77	240	14657m	27.548 ng/µl	
35) Phenanthrene	31.26	178	549392	911.533 ng/µl	100
36) Anthracene	31.45	178	347543m	665.449 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.79	192	388164m	644.029 ng/µl	
38) 3-Methylphenanthrene	33.24	192	50319m	83.488 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	53097m	88.097 ng/µl	
40) 2-Methylanthracene	33.51	192	20611m	34.197 ng/µl	
41) 9-Methylphenanthrene	33.69	192	62315m	103.391 ng/µl	
42) 1-Methylphenanthrene	33.79	192	196426	325.904 ng/µl	96
43) C2-Phenanthrenes/Anthracen	36.03	206	211072m	350.204 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	9963m	16.530 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

220

Data File : H:\E\DATA\SE0041\W8639.D
Acq On : 21 Apr 2004 12:08 am
Sample : S1432MSD-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:40 2004

Vial: 10
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.74	206	11616m	19.273 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.38	220	84690m	140.515 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.59	234	35012m	58.091 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.30	234	2304m	17.953 ng/µl	
50)	Benzo(b)fluorene	38.58	216	54419m	143.511 ng/µl	
51)	Fluoranthene	36.04	202	916541m	1461.820 ng/µl	
52)	Pyrene	36.92	202	981617m	1515.550 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.34	216	418454m	646.064 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.40	230	277633m	428.646 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	137043m	211.585 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	56507	101.876 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.13	234	14792	26.668 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	18503m	33.359 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	62555m	112.780 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	50107m	90.337 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.44	276	37893m	68.317 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.05	290	19153m	34.531 ng/µl	
63)	Benzo(a)anthracene	41.74	228	541194m	900.190 ng/µl	
65)	Chrysene	41.89	228	704058	1141.630 ng/µl	100
66)	C1-Chrysenes	43.41	242	204574m	331.717 ng/µl	
67)	C2-Chrysenes	45.44	256	105791m	171.540 ng/µl	
68)	C3-Chrysenes	46.56	270	62331m	101.070 ng/µl	
69)	C4-Chrysenes	48.20	284	44186m	71.648 ng/µl	
70)	Benzo(b)fluoranthene	46.37	252	765733	1267.698 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.48	252	710562	1141.571 ng/µl	98
72)	Benzo(a)fluoranthene	46.91	252	78719m	152.885 ng/µl	
73)	Benzo(e)pyrene	47.78	252	602863m	1051.662 ng/µl	
75)	Benzo(a)pyrene	48.06	252	601509m	1006.451 ng/µl	
76)	Perylene	48.52	252	381632	659.278 ng/µl	97
77)	Indeno(1,2,3-cd)pyrene	54.59	276	535898	1037.073 ng/µl	99
78)	Dibenz(a,h)anthracene	54.70	278	318660m	592.014 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	560988	899.723 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

221

Data File : H:\E\DATA\SE0041\W8640.D
Acq On : 21 Apr 2004 1:34 am
Sample : S1435-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:25 2004

Vial: 11
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	295761	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	107589	386.633 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 19.32%		
19) Fluorene-d10	27.36	176	332524	1428.380 ng/µl	0.00
Spiked Amount 2076.000			Recovery = 68.80%		
34) Phenanthrene-d10	31.18	188	102916	441.683 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 22.21%		
64) Chrysene-d12	41.80	240	102384m	402.543 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 20.09%		
74) Benzo(a)pyrene-d12	47.92	264	471468	2104.675 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 101.97%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	27118	86.779 ng/µl	98
4) C1-Naphthalenes	21.15	142	22586m	72.276 ng/µl	
5) 2-Methylnaphthalene	21.15	142	12934m	41.389 ng/µl	
6) 1-Methylnaphthalene	21.57	142	7897	25.271 ng/µl	99
7) C2-Naphthalenes	23.64	156	63845m	204.307 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	1828m	5.850 ng/µl	
9) 1-Ethylnaphthalene	23.49	156	598m	1.914 ng/µl	
10) 2,6-Dimethylnaphthalene	23.64	156	38564m	123.406 ng/µl	
11) 1,5-Dimethylnaphthalene	24.52	156	1820m	5.824 ng/µl	
12) C3-Naphthalenes	27.35	170	66723m	213.516 ng/µl	
13) C4-Naphthalenes	29.09	184	20396m	65.268 ng/µl	
14) Biphenyl	23.04	154	8783m	36.288 ng/µl	
15) Acenaphthylene	24.71	152	101538m	330.977 ng/µl	
16) Acenaphthene	25.45	154	8047	44.010 ng/µl	96
17) Dibenzofuran	26.10	168	12892m	51.390 ng/µl	
18) Cadalene	29.17	198	540m	7.831 ng/µl	
20) Fluorene	27.47	166	16703m	75.880 ng/µl	
21) C1-Fluorenes	29.84	180	10906m	49.545 ng/µl	
22) 2-Methylfluorene	29.69	180	2777m	12.616 ng/µl	
23) 1-Methylfluorene	29.84	180	3266m	14.837 ng/µl	
24) C2-Fluorenes	32.63	194	24565m	111.597 ng/µl	
25) C3-Fluorenes	34.54	208	52775m	239.752 ng/µl	
26) Dibenzothiophene	30.77	184	18976m	68.287 ng/µl	
27) C1-Dibenzothiophenes	32.55	198	30785m	110.783 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	9168m	32.992 ng/µl	
29) 2/3-Methyldibenzothiophene	32.88	198	7879m	28.354 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	3190	11.480 ng/µl	89
31) C2-Dibenzothiophenes	34.24	212	29727m	106.976 ng/µl	
32) C3-Dibenzothiophenes	36.06	226	24138m	86.863 ng/µl	
33) C4-Dibenzothiophenes	37.77	240	11509m	41.416 ng/µl	
35) Phenanthrene	31.26	178	301409	957.495 ng/µl	100
36) Anthracene	31.45	178	109397m	401.053 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.35	192	211048m	670.443 ng/µl	
38) 3-Methylphenanthrene	33.23	192	50707m	161.083 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	55433m	176.096 ng/µl	
0) 2-Methylanthracene	33.51	192	18695m	59.389 ng/µl	
1) 9-Methylphenanthrene	33.69	192	46010m	146.161 ng/µl	
42) 1-Methylphenanthrene	33.79	192	30620m	97.272 ng/µl	
43) C2-Phenanthrenes/Anthracen	35.52	206	200430m	636.712 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	9887m	31.408 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8640.D
Acq On : 21 Apr 2004 1:34 am
Sample : S1435-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:25 2004

Vial: 11
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.74	206	11646m	36.996	ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.37	220	90373m	287.091	ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.59	234	34049m	108.165	ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	38.30	234	1298m	19.365	ng/µl	
50)	Benzo(b)fluorene	38.58	216	44656m	225.478	ng/µl	
51)	Fluoranthene	36.04	202	682983m	2085.654	ng/µl	
52)	Pyrene	36.92	202	683045m	2019.146	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.34	216	399959m	1182.317	ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.40	230	279466m	826.128	ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	128593m	380.133	ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	45252	156.206	ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.14	234	13224	45.648	ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	13850m	47.809	ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	56628m	195.475	ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	42484m	146.651	ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.44	276	35316m	121.908	ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.19	290	18120m	62.549	ng/µl	
63)	Benzo(a)anthracene	41.74	228	230013m	732.527	ng/µl	
65)	Chrysene	41.89	228	388638	1206.571	ng/µl	100
66)	C1-Chrysenes	43.41	242	190639m	591.860	ng/µl	
67)	C2-Chrysenes	45.45	256	101245m	314.327	ng/µl	
68)	C3-Chrysenes	46.56	270	54092m	167.935	ng/µl	
69)	C4-Chrysenes	50.03	284	41005m	127.305	ng/µl	
70)	Benzo(b)fluoranthene	46.37	252	389726	1235.345	ng/µl	98
71)	Benzo(j/k)fluoranthene	46.47	252	386117	1187.710	ng/µl	99
72)	Benzo(a)fluoranthene	46.90	252	73378m	272.860	ng/µl	
73)	Benzo(e)pyrene	47.78	252	311257	1039.602	ng/µl	98
75)	Benzo(a)pyrene	48.05	252	298702m	956.927	ng/µl	
76)	Perylene	48.52	252	79911	264.314	ng/µl	95
77)	Indeno(1,2,3-cd)pyrene	54.59	276	240140m	889.779	ng/µl	
78)	Dibenz(a,h)anthracene	54.70	278	54405m	193.523	ng/µl	
79)	Benzo(g,h,i)perylene	55.79	276	257942	792.077	ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

223

Data File : H:\E\DATA\SE0041\W8643.D
Acq On : 21 Apr 2004 5:50 am
Sample : S1438-P(7)
Misc :
Integration Params: RTEINT.P
Print Time: Apr 22 09:48:27 2004

Vial: 14
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

(1) ANALYTES OVERCAL, REPORT FROM DILUTION.

JR 4/27/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	299352	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	176750	627.550 ng/µl	-0.02
Spiked Amount 2001.000			Recovery = 31.36%		
19) Fluorene-d10	27.35	176	338897	1438.293 ng/µl	0.00
Spiked Amount 2076.000			Recovery = 69.28%		
34) Phenanthrene-d10	31.18	188	184463	782.161 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 39.33%		
64) Chrysene-d12	41.80	240	184172	715.423 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 35.70%		
74) Benzo(a)pyrene-d12	47.93	264	473075	2086.515 ng/µl	0.01
Spiked Amount 2064.000			Recovery = 101.09%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	31525m	99.671 ng/µl	
4) C1-Naphthalenes	21.15	142	26258m	83.019 ng/µl	
5) 2-Methylnaphthalene	21.15	142	16109	50.931 ng/µl	98
6) 1-Methylnaphthalene	21.57	142	8359m	26.428 ng/µl	
7) C2-Naphthalenes	23.64	156	50208m	158.740 ng/µl	
8) 2-Ethylnaphthalene	23.40	156	2170	6.861 ng/µl	88
9) 1-Ethylnaphthalene	23.49	156	627	1.982 ng/µl	96
10) 2,6-Dimethylnaphthalene	23.64	156	22082	69.816 ng/µl	99
11) 1,5-Dimethylnaphthalene	24.51	156	1637	5.176 ng/µl	80
12) C3-Naphthalenes	27.35	170	81522m	257.744 ng/µl	
13) C4-Naphthalenes	29.09	184	33558m	106.099 ng/µl	
14) Biphenyl	23.04	154	14721m	60.092 ng/µl	
15) Acenaphthylene	24.71	152	204374m	658.194 ng/µl	
16) Acenaphthene	25.45	154	14448m	78.070 ng/µl	
17) Dibenzofuran	26.09	168	24058m	94.749 ng/µl	
18) Cadalene	29.18	198	812	11.634 ng/µl#	22
20) Fluorene	27.46	166	49398m	221.719 ng/µl	
21) C1-Fluorenes	29.69	180	30932m	138.836 ng/µl	
22) 2-Methylfluorene	29.69	180	11092m	49.786 ng/µl	
23) 1-Methylfluorene	29.83	180	6230m	27.963 ng/µl	
24) C2-Fluorenes	32.62	194	54934m	246.567 ng/µl	
25) C3-Fluorenes	34.54	208	348090m	1562.374 ng/µl	
26) Dibenzothiophene	30.77	184	36884	131.139 ng/µl	99
27) C1-Dibenzothiophenes	32.55	198	57173m	203.276 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	15050m	53.510 ng/µl	
29) 2/3-Methyldibenzothiophene	32.87	198	14134m	50.253 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	5845	20.782 ng/µl	88
31) C2-Dibenzothiophenes	34.25	212	64648m	229.853 ng/µl	
32) C3-Dibenzothiophenes	36.06	226	53208m	189.178 ng/µl	
33) C4-Dibenzothiophenes	37.77	240	26095m	92.779 ng/µl	
35) Phenanthrene	31.26	178	812279	2549.438 ng/µl	100
36) Anthracene	31.45	178	554811m	2009.557 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.35	192	652343m	2047.459 ng/µl	
38) 3-Methylphenanthrene	33.23	192	125051m	392.488 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	160046m	502.324 ng/µl	
40) 2-Methylanthracene	33.50	192	143608m	450.731 ng/µl	
41) 9-Methylphenanthrene	33.68	192	114772m	360.226 ng/µl	
42) 1-Methylphenanthrene	33.78	192	92355	289.868 ng/µl	96
43) C2-Phenanthrenes/Anthracen	35.52	206	595602m	1869.370 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	33935m	106.509 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

224

Data File : H:\E\DATA\SE0041\W8643.D
Acq On : 21 Apr 2004 5:50 am
Sample : S1438-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:27 2004

Vial: 14
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.74	206	51993m	163.186 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.37	220	282904m	887.929 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.59	234	124585m	391.025 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.31	234	5987m	88.250 ng/µl	
50)	Benzo(b)fluorene	38.58	216	579706m	2891.946 ng/µl	
51)	Fluoranthene	36.05	202	4292711m	12951.583 ng/µl ①	
52)	Pyrene	36.93	202	4697282m	13719.042 ng/µl ①	
53)	C1-Fluoranthenes/Pyrenes	38.34	216	3057304m	8929.266 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.40	230	1786731m	5218.387 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	41.75	244	728019m	2126.277 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	465682	1588.207 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.14	234	99773	340.276 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	118746m	404.983 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	293142m	999.760 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	133094m	453.917 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.15	276	85233m	290.687 ng/µl	
62)	C4-Benzo(b)naphthothiophen	50.39	290	23251m	79.297 ng/µl	
63)	Benzo(a)anthracene	41.74	228	1661340m	5227.437 ng/µl	
5)	Chrysene	41.91	228	3816470	11706.526 ng/µl ①	99
66)	C1-Chrysenes	43.41	242	1210471m	3712.963 ng/µl	
67)	C2-Chrysenes	45.44	256	461520m	1415.653 ng/µl	
68)	C3-Chrysenes	46.55	270	233339m	715.737 ng/µl	
69)	C4-Chrysenes	47.59	284	151743m	465.452 ng/µl	
70)	Benzo(b)fluoranthene	46.39	252	3477222	10889.802 ng/µl ①	100
71)	Benzo(j/k)fluoranthene	46.50	252	2645746	8040.783 ng/µl	98
72)	Benzo(a)fluoranthene	46.91	252	339311m	1246.612 ng/µl	
73)	Benzo(e)pyrene	47.79	252	2161339m	7132.301 ng/µl	
75)	Benzo(a)pyrene	48.07	252	1828923m	5788.884 ng/µl	
76)	Perylene	48.52	252	436575	1426.696 ng/µl	98
77)	Indeno(1,2,3-cd)pyrene	54.60	276	1323006m	4843.263 ng/µl	
78)	Dibenz(a,h)anthracene	54.70	278	325127m	1142.632 ng/µl	
79)	Benzo(g,h,i)perylene	55.80	276	1243347	3772.217 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8644.D
Acq On : 21 Apr 2004 7:16 am
Sample : S1445-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:42 2004

Vial: 15
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	273331m	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	295985	575.469 ng/µl	-0.02
Spiked Amount 2001.000			Recovery = 28.76%		
19) Fluorene-d10	27.35	176	310730	722.148 ng/µl	-0.01
Spiked Amount 1038.000			Recovery = 69.57%		
34) Phenanthrene-d10	31.18	188	336267	780.790 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 39.27%		
64) Chrysene-d12	41.80	240	338198	719.405 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 35.90%		
74) Benzo(a)pyrene-d12	47.92	264	439988	1062.663 ng/µl	0.00
Spiked Amount 1032.000			Recovery = 102.97%		
Target Compounds					Qvalue
3) Naphthalene	18.47	128	51936	89.918 ng/µl	100
4) C1-Naphthalenes	21.15	142	37817m	65.473 ng/µl	
5) 2-Methylnaphthalene	21.15	142	24338m	42.137 ng/µl	
6) 1-Methylnaphthalene	21.57	142	10815m	18.724 ng/µl	
7) C2-Naphthalenes	23.64	156	93201m	161.361 ng/µl	
8) 2-Ethylnaphthalene	23.40	156	3493m	6.048 ng/µl	
9) 1-Ethylnaphthalene	23.49	156	897	1.553 ng/µl#	52
10) 2,6-Dimethylnaphthalene	23.64	156	56042	97.027 ng/µl	99
11) 1,5-Dimethylnaphthalene	24.52	156	2340m	4.051 ng/µl	
12) C3-Naphthalenes	27.35	170	76773m	132.919 ng/µl	
13) C4-Naphthalenes	29.09	184	27337m	47.329 ng/µl	
14) Biphenyl	23.04	154	17579m	39.295 ng/µl	
15) Acenaphthylene	24.71	152	61343m	108.182 ng/µl	
16) Acenaphthene	25.45	154	6032	17.849 ng/µl	100
17) Dibenzofuran	26.09	168	17088m	36.853 ng/µl	
18) Cadalene	29.18	198	570m	4.472 ng/µl	
20) Fluorene	27.46	166	20184m	49.609 ng/µl	
21) C1-Fluorenes	29.84	180	16656m	40.938 ng/µl	
22) 2-Methylfluorene	29.69	180	3350m	8.234 ng/µl	
23) 1-Methylfluorene	29.84	180	4915m	12.080 ng/µl	
24) C2-Fluorenes	32.03	194	31531m	77.499 ng/µl	
25) C3-Fluorenes	34.55	208	40190m	98.781 ng/µl	
26) Dibenzothiophene	30.77	184	15014m	29.232 ng/µl	
27) C1-Dibenzothiophenes	33.00	198	39514m	76.932 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	8284m	16.129 ng/µl	
29) 2/3-Methyldibenzothiophene	32.88	198	7210m	14.038 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	2219	4.320 ng/µl	99
31) C2-Dibenzothiophenes	34.24	212	28407m	55.307 ng/µl	
32) C3-Dibenzothiophenes	36.07	226	25379m	49.412 ng/µl	
33) C4-Dibenzothiophenes	37.78	240	14339m	27.918 ng/µl	
35) Phenanthrene	31.26	178	166302	285.825 ng/µl	99
36) Anthracene	31.45	178	76272m	151.281 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.35	192	145784m	250.560 ng/µl	
38) 3-Methylphenanthrene	33.23	192	33057m	56.815 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	36649m	62.989 ng/µl	
40) 2-Methylanthracene	33.51	192	15066m	25.894 ng/µl	
41) 9-Methylphenanthrene	33.69	192	32218m	55.373 ng/µl	
42) 1-Methylphenanthrene	33.79	192	19826m	34.075 ng/µl	
43) C2-Phenanthrenes/Anthracen	36.06	206	476924m	819.694 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	7537m	12.954 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8644.D
Acq On : 21 Apr 2004 7:16 am
Sample : S1445-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:42 2004

Vial: 15
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.74	206	14349	24.662 ng/µl	84
46)	C3-Phenanthrenes/Anthracen	37.38	220	68633m	117.960 ng/µl	
47)	C4-Phenanthrenes/Anthracen	38.30	234	30099m	51.731 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.30	234	3316m	26.766 ng/µl	
50)	Benzo(b)fluorene	38.58	216	26552m	72.534 ng/µl	
51)	Fluoranthene	36.04	202	454747m	751.319 ng/µl	
52)	Pyrene	36.92	202	407022m	650.966 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.34	216	243983m	390.211 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	41.22	230	171433m	274.179 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	108457m	173.459 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	29686m	55.441 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	41.14	234	8813	16.459 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	10588m	19.774 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	52831m	98.667 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	51898m	96.924 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.43	276	44191m	82.531 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.06	290	21188m	39.570 ng/µl	
63)	Benzo(a)anthracene	41.74	228	177560m	305.942 ng/µl	
5)	Chrysene	41.89	228	239784	402.763 ng/µl	100
66)	C1-Chrysenes	43.41	242	138807m	233.153 ng/µl	
67)	C2-Chrysenes	45.45	256	89765m	150.777 ng/µl	
68)	C3-Chrysenes	46.91	270	69064m	116.006 ng/µl	
69)	C4-Chrysenes	50.03	284	51990m	87.327 ng/µl	
70)	Benzo(b)fluoranthene	46.37	252	332993	571.066 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.48	252	293066	487.729 ng/µl	98
72)	Benzo(a)fluoranthene	46.91	252	59754	120.216 ng/µl	91
73)	Benzo(e)pyrene	47.78	252	248171m	448.457 ng/µl	
75)	Benzo(a)pyrene	48.06	252	262446m	454.886 ng/µl	
76)	Perylene	48.52	252	76689	137.236 ng/µl	95
77)	Indeno(1,2,3-cd)pyrene	54.61	276	254678m	510.541 ng/µl	
78)	Dibenz(a,h)anthracene	54.72	278	50642m	97.460 ng/µl	
79)	Benzo(g,h,i)perylene	55.80	276	262358	435.875 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8645.D
Acq On : 21 Apr 2004 8:42 am
Sample : S1447-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:44 2004

Vial: 16
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	277303	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	273270	523.695 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 26.17%		
19) Fluorene-d10	27.36	176	318290	729.122 ng/µl	0.00
Spiked Amount 1038.000			Recovery = 70.24%		
34) Phenanthrene-d10	31.18	188	307548	703.878 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 35.40%		
64) Chrysene-d12	41.80	240	298129	625.088 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 31.19%		
74) Benzo(a)pyrene-d12	47.92	264	447268	1064.773 ng/µl	0.00
Spiked Amount 1032.000			Recovery = 103.18%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	61245	104.516 ng/µl	98
4) C1-Naphthalenes	21.15	142	46448m	79.264 ng/µl	
5) 2-Methylnaphthalene	21.15	142	29884	50.998 ng/µl	98
6) 1-Methylnaphthalene	21.57	142	13538	23.103 ng/µl	98
7) C2-Naphthalenes	23.64	156	161715m	275.970 ng/µl	
8) 2-Ethylnaphthalene	23.40	156	4416m	7.536 ng/µl	
9) 1-Ethylnaphthalene	23.50	156	1294m	2.208 ng/µl	
10) 2,6-Dimethylnaphthalene	23.64	156	115565	197.214 ng/µl	96
11) 1,5-Dimethylnaphthalene	24.52	156	3110m	5.307 ng/µl	
12) C3-Naphthalenes	27.35	170	88208m	150.529 ng/µl	
13) C4-Naphthalenes	29.09	184	30521m	52.085 ng/µl	
14) Biphenyl	23.04	154	18206	40.114 ng/µl	98
15) Acenaphthylene	24.71	152	65765m	114.320 ng/µl	
16) Acenaphthene	25.45	154	7422	21.647 ng/µl	100
17) Dibenzofuran	26.09	168	20624m	43.842 ng/µl	
18) Cadalene	29.15	198	606m	4.687 ng/µl	
20) Fluorene	27.47	166	22224m	53.841 ng/µl	
21) C1-Fluorenes	29.84	180	18899m	45.786 ng/µl	
22) 2-Methylfluorene	29.70	180	3684m	8.925 ng/µl	
23) 1-Methylfluorene	29.84	180	5862m	14.202 ng/µl	
24) C2-Fluorenes	32.03	194	30545m	74.000 ng/µl	
25) C3-Fluorenes	34.55	208	42842m	103.791 ng/µl	
26) Dibenzothiophene	30.77	184	16150m	30.993 ng/µl	
27) C1-Dibenzothiophenes	33.00	198	42029m	80.657 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	9800m	18.807 ng/µl	
29) 2/3-Methyldibenzothiophene	32.88	198	8490m	16.293 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	2595	4.980 ng/µl	94
31) C2-Dibenzothiophenes	34.24	212	33008m	63.345 ng/µl	
32) C3-Dibenzothiophenes	36.06	226	28209m	54.135 ng/µl	
33) C4-Dibenzothiophenes	37.78	240	14457m	27.744 ng/µl	
35) Phenanthrene	31.26	178	160541m	271.971 ng/µl	
36) Anthracene	31.45	178	78462	153.395 ng/µl	100
37) C1-Phenanthrenes/Anthracen	33.35	192	155730m	263.821 ng/µl	
38) 3-Methylphenanthrene	33.24	192	39103m	66.244 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	40592m	68.767 ng/µl	
40) 2-Methylanthracene	33.51	192	14770	25.022 ng/µl#	35
41) 9-Methylphenanthrene	33.69	192	34683m	58.756 ng/µl	
42) 1-Methylphenanthrene	33.79	192	22705m	38.464 ng/µl	
43) C2-Phenanthrenes/Anthracen	36.05	206	349623m	592.293 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	8928m	15.125 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8645.D
Acq On : 21 Apr 2004 8:42 am
Sample : S1447-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:44 2004

Vial: 16
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.74	206	13308m	22.545	ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.38	220	77035m	130.504	ng/µl	
47)	C4-Phenanthrenes/Anthracen	38.30	234	33875m	57.387	ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	38.30	234	4729m	37.625	ng/µl	
50)	Benzo(b)fluorene	38.59	216	25837m	69.570	ng/µl	
51)	Fluoranthene	36.05	202	444912m	724.541	ng/µl	
52)	Pyrene	36.92	202	413789m	652.309	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.34	216	266243m	419.713	ng/µl	
54)	C2-Fluoranthenes/Pyrenes	41.22	230	192470m	303.416	ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	133092m	209.810	ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	30327m	55.827	ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	41.13	234	8946	16.468	ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	10234m	18.839	ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	58392m	107.490	ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	58379m	107.466	ng/µl	
61)	C3-Benzo(b)naphthothiophen	45.67	276	51288m	94.413	ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.07	290	28669m	52.775	ng/µl	
63)	Benzo(a)anthracene	41.74	228	179668m	305.140	ng/µl	
65)	Chrysene	41.89	228	243980	403.941	ng/µl	99
66)	C1-Chrysenes	43.42	242	164579m	272.482	ng/µl	
67)	C2-Chrysenes	45.45	256	118960m	196.954	ng/µl	
68)	C3-Chrysenes	46.91	270	80503m	133.283	ng/µl	
69)	C4-Chrysenes	50.03	284	67844m	112.325	ng/µl	
70)	Benzo(b)fluoranthene	46.37	252	343271	580.260	ng/µl	98
71)	Benzo(j/k)fluoranthene	46.47	252	305638	501.366	ng/µl	98
72)	Benzo(a)fluoranthene	46.91	252	63120	125.169	ng/µl	91
73)	Benzo(e)pyrene	47.78	252	263543m	469.414	ng/µl	
75)	Benzo(a)pyrene	48.06	252	271034	463.042	ng/µl	97
76)	Perylene	48.52	252	94423	166.551	ng/µl	95
77)	Indeno(1,2,3-cd)pyrene	54.62	276	251747m	497.437	ng/µl	
78)	Dibenz(a,h)anthracene	54.72	278	49733m	94.340	ng/µl	
79)	Benzo(g,h,i)perylene	55.82	276	256008m	419.233	ng/µl	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8646.D
Acq On : 21 Apr 2004 10:08 am
Sample : S1457-P(9)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:29 2004

Vial: 17
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	295201	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	11891m	42.813 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	2.14%	
19) Fluorene-d10	27.36	176	334182	1438.225 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	69.28%	
34) Phenanthrene-d10	31.18	188	7250m	31.174 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	1.57%	
64) Chrysene-d12	41.80	240	8804	34.680 ng/µl	0.00
Spiked Amount 2004.000			Recovery =	1.73%	
74) Benzo(a)pyrene-d12	47.91	264	457720	2047.179 ng/µl	-0.01
Spiked Amount 2064.000			Recovery =	99.19%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	3850m	12.344 ng/µl	
4) C1-Naphthalenes	21.57	142	4788m	15.351 ng/µl	
5) 2-Methylnaphthalene	21.15	142	1981m	6.351 ng/µl	
6) 1-Methylnaphthalene	21.57	142	2409m	7.724 ng/µl	
7) C2-Naphthalenes	23.99	156	9445m	30.282 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	268m	0.859 ng/µl	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	23.66	156	1401	4.492 ng/µl	97
11) 1,5-Dimethylnaphthalene	24.51	156	402m	1.289 ng/µl	
12) C3-Naphthalenes	27.36	170	49002m	157.106 ng/µl	
13) C4-Naphthalenes	29.09	184	5907m	18.938 ng/µl	
14) Biphenyl	23.05	154	2792m	11.557 ng/µl	
15) Acenaphthylene	24.71	152	21896m	71.508 ng/µl	
16) Acenaphthene	25.45	154	1851	10.143 ng/µl	96
17) Dibenzofuran	26.10	168	3176	12.684 ng/µl	90
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	27.47	166	4044	18.406 ng/µl	99
21) C1-Fluorenes	29.84	180	4019m	18.293 ng/µl	
22) 2-Methylfluorene	29.70	180	763m	3.473 ng/µl	
23) 1-Methylfluorene	29.84	180	821m	3.737 ng/µl	
24) C2-Fluorenes	32.64	194	6598m	30.031 ng/µl	
25) C3-Fluorenes	34.55	208	16888m	76.866 ng/µl	
26) Dibenzothiophene	30.77	184	6655	23.994 ng/µl	95
27) C1-Dibenzothiophenes	32.55	198	10426m	37.590 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	3169m	11.426 ng/µl	
29) 2/3-Methyldibenzothiophene	32.91	198	2652m	9.562 ng/µl	
30) 1-Methyldibenzothiophene	33.33	198	1993	7.186 ng/µl	81
31) C2-Dibenzothiophenes	34.61	212	15064m	54.312 ng/µl	
32) C3-Dibenzothiophenes	36.06	226	17115m	61.707 ng/µl	
33) C4-Dibenzothiophenes	39.25	240	13098m	47.224 ng/µl	
35) Phenanthrene	31.26	178	119493	380.317 ng/µl	99
36) Anthracene	31.45	178	23916m	87.843 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.35	192	66225m	210.778 ng/µl	
38) 3-Methylphenanthrene	33.23	192	16589	52.799 ng/µl	98
39) 2/4-Methylphenanthrene	33.35	192	19577m	62.309 ng/µl	
40) 2-Methylanthracene	33.51	192	4045m	12.874 ng/µl	
41) 9-Methylphenanthrene	33.69	192	13737m	43.722 ng/µl	
42) 1-Methylphenanthrene	33.78	192	10350	32.942 ng/µl	97
43) C2-Phenanthrenes/Anthracen	35.22	206	58853m	187.315 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	3224m	10.261 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8646.D
Acq On : 21 Apr 2004 10:08 am
Sample : S1457-P(9)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 22 09:48:29 2004

Vial: 17
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.73	206	3955	12.588 ng/µl	95
46)	C3-Phenanthrenes/Anthracen	37.38	220	24766m	78.824 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.59	234	11011m	35.045 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D.	
50)	Benzo(b)fluorene	38.58	216	2875m	14.544 ng/µl	
51)	Fluoranthene	36.04	202	163078m	498.943 ng/µl	
52)	Pyrene	36.92	202	152693m	452.231 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.74	216	75658m	224.077 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.40	230	72855m	215.775 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.29	244	36105m	106.932 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	13146m	45.465 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	41.13	234	3212	11.109 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	3186m	11.019 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	29874m	103.318 ng/µl	
60)	C2-Benzo(b)naphthothiophen	44.34	262	51998m	179.833 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.43	276	66040m	228.396 ng/µl	
62)	C4-Benzo(b)naphthothiophen	49.02	290	43594m	150.768 ng/µl	
63)	Benzo(a)anthracene	41.74	228	41848m	133.527 ng/µl	
5)	Chrysene	41.89	228	84869	263.985 ng/µl	98
6)	C1-Chrysenes	43.41	242	45111m	140.318 ng/µl	
67)	C2-Chrysenes	45.10	256	31912m	99.262 ng/µl	
68)	C3-Chrysenes	49.91	270	28454m	88.506 ng/µl	
69)	C4-Chrysenes	51.48	284	20665m	64.279 ng/µl	
70)	Benzo(b)fluoranthene	46.37	252	64672	205.385 ng/µl	97
71)	Benzo(j/k)fluoranthene	46.46	252	62493	192.595 ng/µl	96
72)	Benzo(a)fluoranthene	46.90	252	12445m	46.365 ng/µl	
73)	Benzo(e)pyrene	47.77	252	56350	188.567 ng/µl	93
75)	Benzo(a)pyrene	48.04	252	47815	153.472 ng/µl	96
76)	Perylene	48.50	252	9764	32.357 ng/µl	96
77)	Indeno(1,2,3-cd)pyrene	54.57	276	40568m	150.600 ng/µl	
78)	Dibenz(a,h)anthracene	54.68	278	9781m	34.858 ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	48211m	148.325 ng/µl	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8647.D
Acq On : 21 Apr 2004 11:33 am
Sample : S1466-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:46 2004

Vial: 18
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	278138m	1001.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	294149	562.016 ng/µl	0.00
Spiked Amount 2001.000			Recovery = 28.09%		
19) Fluorene-d10	27.36	176	320248	731.405 ng/µl	0.00
Spiked Amount 1038.000			Recovery = 70.46%		
34) Phenanthrene-d10	31.18	188	354569	809.058 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 40.69%		
64) Chrysene-d12	41.80	240	360569	753.736 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 37.61%		
74) Benzo(a)pyrene-d12	47.93	264	446424	1059.573 ng/µl	0.01
Spiked Amount 1032.000			Recovery = 102.67%		
Target Compounds					Qvalue
3) Naphthalene	18.47	128	50727m	86.307 ng/µl	
4) C1-Naphthalenes	21.15	142	31432m	53.478 ng/µl	
5) 2-Methylnaphthalene	21.15	142	19695	33.509 ng/µl	95
6) 1-Methylnaphthalene	21.57	142	10867m	18.489 ng/µl	
7) C2-Naphthalenes	23.64	156	57673m	98.125 ng/µl	
8) 2-Ethylnaphthalene	23.40	156	3164	5.383 ng/µl	91
9) 1-Ethylnaphthalene	23.50	156	1045	1.778 ng/µl	93
10) 2,6-Dimethylnaphthalene	23.64	156	16711m	28.432 ng/µl	
11) 1,5-Dimethylnaphthalene	24.52	156	2660	4.526 ng/µl	79
12) C3-Naphthalenes	27.36	170	102838m	174.968 ng/µl	
13) C4-Naphthalenes	29.09	184	40969m	69.705 ng/µl	
14) Biphenyl	23.04	154	23347m	51.287 ng/µl	
15) Acenaphthylene	24.71	152	96712m	167.610 ng/µl	
16) Acenaphthene	25.45	154	12381	36.002 ng/µl	98
17) Dibenzofuran	26.09	168	27782m	58.881 ng/µl	
18) Cadalene	29.17	198	786m	6.060 ng/µl	
20) Fluorene	27.47	166	41521m	100.289 ng/µl	
21) C1-Fluorenes	29.70	180	33440m	80.770 ng/µl	
22) 2-Methylfluorene	29.70	180	8949m	21.615 ng/µl	
23) 1-Methylfluorene	29.84	180	8071m	19.495 ng/µl	
24) C2-Fluorenes	32.04	194	44949m	108.569 ng/µl	
25) C3-Fluorenes	34.54	208	79906m	193.003 ng/µl	
26) Dibenzothiophene	30.77	184	38170	73.031 ng/µl	97
27) C1-Dibenzothiophenes	33.00	198	61930m	118.492 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	13951m	26.693 ng/µl	
29) 2/3-Methyldibenzothiophene	32.88	198	13883m	26.563 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	5337m	10.211 ng/µl	
31) C2-Dibenzothiophenes	34.25	212	44451m	85.049 ng/µl	
32) C3-Dibenzothiophenes	36.07	226	32016m	61.257 ng/µl	
33) C4-Dibenzothiophenes	38.25	240	16523m	31.614 ng/µl	
35) Phenanthrene	31.26	178	600243	1013.814 ng/µl	100
36) Anthracene	31.45	178	165068m	321.744 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.36	192	359126m	606.566 ng/µl	
38) 3-Methylphenanthrene	33.24	192	85381m	144.209 ng/µl	
39) 2/4-Methylphenanthrene	33.36	192	97623m	164.886 ng/µl	
0) 2-Methylanthracene	33.51	192	34833m	58.833 ng/µl	
1) 9-Methylphenanthrene	33.69	192	74701m	126.170 ng/µl	
42) 1-Methylphenanthrene	33.79	192	53606	90.541 ng/µl	94
43) C2-Phenanthrenes/Anthracen	35.52	206	291409m	492.191 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	16597m	28.032 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8647.D
Acq On : 21 Apr 2004 11:33 am
Sample : S1466-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:46 2004

Vial: 18
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.75	206	23798m	40.195	ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.38	220	115332m	194.796	ng/µl	
47)	C4-Phenanthrenes/Anthracen	38.30	234	47090m	79.535	ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	38.30	234	4339	34.418	ng/µl#	76
50)	Benzo(b)fluorene	38.58	216	94035m	252.443	ng/µl	
51)	Fluoranthene	36.05	202	1547784m	2513.005	ng/µl	
52)	Pyrene	36.93	202	1357917m	2134.235	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.34	216	685146m	1076.842	ng/µl	
54)	C2-Fluoranthenes/Pyrenes	41.21	230	354574m	557.283	ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	183750m	288.799	ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	82492	151.398	ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.14	234	22731	41.718	ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	34515m	63.346	ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.22	248	88463m	162.357	ng/µl	
60)	C2-Benzo(b)naphthothiophen	44.19	262	61388m	112.666	ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.44	276	45697m	83.868	ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.20	290	16998m	31.197	ng/µl	
63)	Benzo(a)anthracene	41.74	228	639915m	1083.539	ng/µl	
65)	Chrysene	41.89	228	704508m	1162.904	ng/µl	
66)	C1-Chrysenes	43.42	242	302273m	498.950	ng/µl	
67)	C2-Chrysenes	45.45	256	154752m	255.443	ng/µl	
68)	C3-Chrysenes	46.91	270	83368m	137.612	ng/µl	
69)	C4-Chrysenes	48.20	284	59483m	98.186	ng/µl	
70)	Benzo(b)fluoranthene	46.38	252	748204	1260.955	ng/µl	99
71)	Benzo(j/k)fluoranthene	46.48	252	764057	1249.591	ng/µl	98
72)	Benzo(a)fluoranthene	46.91	252	149790	296.147	ng/µl	99
73)	Benzo(e)pyrene	47.79	252	552353m	980.879	ng/µl	
75)	Benzo(a)pyrene	48.07	252	751048m	1279.260	ng/µl	
76)	Perylene	48.53	252	214456m	377.140	ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.60	276	585158m	1152.766	ng/µl	
78)	Dibenz(a,h)anthracene	54.70	278	118559m	224.223	ng/µl	
79)	Benzo(g,h,i)perylene	55.79	276	563496	919.998	ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8648.D
Acq On : 21 Apr 2004 12:59 pm
Sample : S1468-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:31 2004

Vial: 19
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	289235	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	52418	192.620 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	9.63%	
19) Fluorene-d10	27.36	176	330163	1450.238 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	69.86%	
34) Phenanthrene-d10	31.18	188	47356	207.823 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	10.45%	
64) Chrysene-d12	41.80	240	48635	195.533 ng/µl	0.00
Spiked Amount 2004.000			Recovery =	9.76%	
74) Benzo(a)pyrene-d12	47.92	264	454144	2073.082 ng/µl	0.00
Spiked Amount 2064.000			Recovery =	100.44%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	42394m	138.723 ng/µl	
4) C1-Naphthalenes	21.57	142	52753m	172.621 ng/µl	
5) 2-Methylnaphthalene	21.15	142	24835m	81.266 ng/µl	
6) 1-Methylnaphthalene	21.57	142	26768	87.591 ng/µl	99
7) C2-Naphthalenes	23.99	156	101394m	331.786 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	3586m	11.734 ng/µl	
9) 1-Ethylnaphthalene	23.49	156	1869m	6.116 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	19824	64.869 ng/µl	100
11) 1,5-Dimethylnaphthalene	24.52	156	5376	17.592 ng/µl	89
12) C3-Naphthalenes	27.36	170	139203m	455.506 ng/µl	
13) C4-Naphthalenes	29.09	184	51405m	168.210 ng/µl	
14) Biphenyl	23.04	154	12197m	51.531 ng/µl	
15) Acenaphthylene	24.71	152	481729m	1605.693 ng/µl	
16) Acenaphthene	25.45	154	20645m	115.458 ng/µl	
17) Dibenzofuran	26.10	168	40524m	165.181 ng/µl	
18) Cadalene	29.16	198	240m	3.559 ng/µl	
20) Fluorene	27.47	166	63841m	296.568 ng/µl	
21) C1-Fluorenes	29.70	180	54998m	255.489 ng/µl	
22) 2-Methylfluorene	29.70	180	17001m	78.977 ng/µl	
23) 1-Methylfluorene	29.84	180	14693m	68.255 ng/µl	
24) C2-Fluorenes	32.63	194	94703m	439.935 ng/µl	
25) C3-Fluorenes	34.54	208	234705m	1090.303 ng/µl	
26) Dibenzothiophene	30.77	184	120410m	443.086 ng/µl	
27) C1-Dibenzothiophenes	32.55	198	156259m	575.004 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	54398	200.174 ng/µl	98
29) 2/3-Methyldibenzothiophene	32.88	198	51733m	190.368 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	16458m	60.562 ng/µl	
31) C2-Dibenzothiophenes	34.61	212	133571m	491.516 ng/µl	
32) C3-Dibenzothiophenes	36.07	226	67917m	249.922 ng/µl	
33) C4-Dibenzothiophenes	37.77	240	22331m	82.174 ng/µl	
35) Phenanthrene	31.27	178	2087746	6781.850 ng/µl	100
36) Anthracene	31.45	178	432198m	1620.203 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.35	192	1422903m	4622.169 ng/µl	
38) 3-Methylphenanthrene	33.24	192	378426m	1229.282 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	426016m	1383.874 ng/µl	
0) 2-Methylanthracene	33.51	192	79839m	259.350 ng/µl	
1) 9-Methylphenanthrene	33.69	192	291387m	946.544 ng/µl	
42) 1-Methylphenanthrene	33.79	192	225822	733.562 ng/µl	95
43) C2-Phenanthrenes/Anthracen	35.52	206	941230m	3057.499 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	68388m	222.152 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8648.D
Acq On : 21 Apr 2004 12:59 pm
Sample : S1468-P(7)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 22 09:48:31 2004

Vial: 19
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.75	206	71133m	231.069 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.38	220	381067m	1237.861 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.59	234	105244m	341.875 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.31	234	1383m	21.099 ng/µl	
50)	Benzo(b)fluorene	38.58	216	76130m	393.070 ng/µl	
51)	Fluoranthene	36.05	202	2673286m	8347.721 ng/µl	
52)	Pyrene	36.93	202	2803187m	8473.455 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.74	216	1740096m	5259.951 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	41.21	230	1319597m	3988.869 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	509161m	1539.088 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	211167	745.375 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.13	234	51222	180.803 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	60985m	215.264 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	216176m	763.056 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	133101m	469.819 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.43	276	83828m	295.895 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.04	290	39791m	140.454 ng/µl	
63)	Benzo(a)anthracene	41.74	228	841138m	2739.232 ng/µl	
5)	Chrysene	41.90	228	1434787	4554.964 ng/µl	99
6)	C1-Chrysenes	43.42	242	842218m	2673.758 ng/µl	
67)	C2-Chrysenes	45.44	256	408832m	1297.903 ng/µl	
68)	C3-Chrysenes	46.55	270	154319m	489.911 ng/µl	
69)	C4-Chrysenes	47.59	284	74700m	237.147 ng/µl	
70)	Benzo(b)fluoranthene	46.38	252	1101530	3570.386 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.48	252	1121580	3527.863 ng/µl	98
72)	Benzo(a)fluoranthene	46.91	252	247721	941.949 ng/µl	97
73)	Benzo(e)pyrene	47.78	252	956025m	3265.182 ng/µl	
75)	Benzo(a)pyrene	48.06	252	1013439m	3319.926 ng/µl	
76)	Perylene	48.52	252	202144	683.699 ng/µl	98
77)	Indeno(1,2,3-cd)pyrene	54.59	276	734658m	2783.510 ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	178632m	649.747 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	810098	2543.743 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8649.D
Acq On : 21 Apr 2004 2:24 pm
Sample : S1471-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:33 2004

Vial: 20
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

① ANALYTE OVERCAL, REPORT FROM DILUTION.

JAR 4/27/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	282426	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	48455	182.350 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	9.11%	
19) Fluorene-d10	27.36	176	317563	1428.522 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	68.81%	
34) Phenanthrene-d10	31.18	188	42170	189.526 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	9.53%	
64) Chrysene-d12	41.80	240	43758m	180.166 ng/µl	0.00
Spiked Amount 2004.000			Recovery =	8.99%	
74) Benzo(a)pyrene-d12	47.93	264	436173	2039.050 ng/µl	0.01
Spiked Amount 2064.000			Recovery =	98.79%	

Target Compounds					Qvalue
3) Naphthalene	18.47	128	53651m	179.792 ng/µl	
4) C1-Naphthalenes	21.57	142	79194m	265.390 ng/µl	
5) 2-Methylnaphthalene	21.15	142	35254m	118.141 ng/µl	
6) 1-Methylnaphthalene	21.57	142	42317	141.810 ng/µl	97
7) C2-Naphthalenes	23.99	156	154387m	517.371 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	4233m	14.185 ng/µl	
9) 1-Ethylnaphthalene	23.50	156	2394m	8.023 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	30190m	101.171 ng/µl	
11) 1,5-Dimethylnaphthalene	24.52	156	8159	27.342 ng/µl	89
12) C3-Naphthalenes	27.36	170	178147m	596.994 ng/µl	
13) C4-Naphthalenes	29.09	184	63324m	212.207 ng/µl	
14) Biphenyl	23.04	154	16164	69.937 ng/µl	96
15) Acenaphthylene	24.71	152	531187m	1813.231 ng/µl	
16) Acenaphthene	25.45	154	28071m	160.773 ng/µl	
17) Dibenzofuran	26.10	168	63020m	263.071 ng/µl	
18) Cadalene	29.16	198	323m	4.905 ng/µl	
20) Fluorene	27.47	166	110952m	527.844 ng/µl	
21) C1-Fluorenes	29.70	180	79867m	379.960 ng/µl	
22) 2-Methylfluorene	29.70	180	26518m	126.157 ng/µl	
23) 1-Methylfluorene	29.84	180	21999m	104.658 ng/µl	
24) C2-Fluorenes	32.63	194	118901m	565.661 ng/µl	
25) C3-Fluorenes	34.54	208	282955m	1346.134 ng/µl	
26) Dibenzothiophene	30.77	184	187862m	707.964 ng/µl	
27) C1-Dibenzothiophenes	32.55	198	211515m	797.101 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	75678m	285.195 ng/µl	
29) 2/3-Methyldibenzothiophene	32.88	198	73530m	277.100 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	21489	80.982 ng/µl	91
31) C2-Dibenzothiophenes	34.61	212	168433m	634.745 ng/µl	
32) C3-Dibenzothiophenes	36.07	226	80466m	303.239 ng/µl	
33) C4-Dibenzothiophenes	37.77	240	26656m	100.454 ng/µl	
35) Phenanthrene	31.27	178	3071425	10217.781 ng/µl ①	99
36) Anthracene	31.45	178	485973m	1865.714 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.35	192	1879264m	6251.791 ng/µl	
38) 3-Methylphenanthrene	33.24	192	515597m	1715.249 ng/µl	
39) 2/4-Methylphenanthrene	33.35	192	595890m	1982.361 ng/µl	
40) 2-Methylanthracene	33.51	192	92627m	308.144 ng/µl	
41) 9-Methylphenanthrene	33.69	192	365340m	1215.385 ng/µl	
42) 1-Methylphenanthrene	33.78	192	303095	1008.313 ng/µl	96
43) C2-Phenanthrenes/Anthracen	35.53	206	1172806m	3901.601 ng/µl	
44) 2,7-Dimethylphenanthrene	35.30	206	87890m	292.386 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8649.D
Acq On : 21 Apr 2004 2:24 pm
Sample : S1471-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:33 2004

Vial: 20
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.75	206	90415m	300.786 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.37	220	454627m	1512.418 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.59	234	130083m	432.750 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.32	234	2060m	32.185 ng/µl	
50)	Benzo(b)fluorene	38.58	216	91036m	481.363 ng/µl	
51)	Fluoranthene	36.06	202	3370165m	10777.545 ng/µl (1)	
52)	Pyrene	36.93	202	3348428m	10365.627 ng/µl (1)	
53)	C1-Fluoranthenes/Pyrenes	38.74	216	2066295m	6396.567 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.40	230	1504518m	4657.491 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	570008m	1764.557 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	265631m	960.227 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	41.13	234	62612	226.336 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	79406m	287.044 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.21	248	265206m	958.691 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.79	262	155141m	560.818 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.45	276	97566m	352.690 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.05	290	42628m	154.096 ng/µl	
63)	Benzo(a)anthracene	41.74	228	1032175m	3442.398 ng/µl	
65)	Chrysene	41.90	228	1702931m	5536.569 ng/µl	
66)	C1-Chrysenes	43.42	242	988706m	3214.481 ng/µl	
67)	C2-Chrysenes	45.45	256	465888m	1514.695 ng/µl	
68)	C3-Chrysenes	46.56	270	181142m	588.929 ng/µl	
69)	C4-Chrysenes	47.59	284	78240m	254.374 ng/µl	
70)	Benzo(b)fluoranthene	46.38	252	1190459	3951.659 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.48	252	1279753m	4122.435 ng/µl	
72)	Benzo(a)fluoranthene	46.91	252	263947m	1027.845 ng/µl	
73)	Benzo(e)pyrene	47.79	252	1035526m	3621.974 ng/µl	
75)	Benzo(a)pyrene	48.07	252	1129858m	3790.537 ng/µl	
76)	Perylene	48.52	252	224951	779.181 ng/µl	98
77)	Indeno(1,2,3-cd)pyrene	54.59	276	797070m	3092.788 ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	203717m	758.854 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	884678	2844.900 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8650.D
Acq On : 21 Apr 2004 3:49 pm
Sample : S1474-P(9)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:48 2004

Vial: 21
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	258370	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	138416	284.699 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 14.23%		
19) Fluorene-d10	27.36	176	294975	725.228 ng/µl	0.00
Spiked Amount 1038.000			Recovery = 69.87%		
34) Phenanthrene-d10	31.18	188	150691	370.155 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 18.61%		
64) Chrysene-d12	41.80	240	152920	344.123 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 17.17%		
74) Benzo(a)pyrene-d12	47.93	264	417103	1065.725 ng/µl	0.01
Spiked Amount 1032.000			Recovery = 103.27%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	34854m	63.838 ng/µl	
4) C1-Naphthalenes	21.15	142	31689m	58.041 ng/µl	
5) 2-Methylnaphthalene	21.15	142	18031	33.025 ng/µl	98
6) 1-Methylnaphthalene	21.57	142	12010	21.997 ng/µl	100
7) C2-Naphthalenes	23.64	156	85947m	157.418 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	3140m	5.751 ng/µl	
9) 1-Ethylnaphthalene	23.49	156	1043m	1.910 ng/µl	
10) 2,6-Dimethylnaphthalene	23.64	156	46978	86.044 ng/µl	98
11) 1,5-Dimethylnaphthalene	24.52	156	2805m	5.138 ng/µl	
12) C3-Naphthalenes	27.36	170	80007m	146.539 ng/µl	
13) C4-Naphthalenes	29.09	184	30338m	55.566 ng/µl	
14) Biphenyl	23.05	154	13498m	31.920 ng/µl	
15) Acenaphthylene	24.71	152	161485m	301.280 ng/µl	
16) Acenaphthene	25.45	154	24532	76.793 ng/µl	99
17) Dibenzofuran	26.10	168	24872m	56.746 ng/µl	
18) Cadalene	29.16	198	1138	9.446 ng/µl#	84
20) Fluorene	27.47	166	35216m	91.568 ng/µl	
21) C1-Fluorenes	29.84	180	22451m	58.377 ng/µl	
22) 2-Methylfluorene	29.70	180	5120m	13.313 ng/µl	
23) 1-Methylfluorene	29.84	180	5817m	15.125 ng/µl	
24) C2-Fluorenes	32.63	194	39936m	103.841 ng/µl	
25) C3-Fluorenes	34.54	208	87549m	227.643 ng/µl	
26) Dibenzothiophene	30.77	184	37793m	77.842 ng/µl	
27) C1-Dibenzothiophenes	32.55	198	56226m	115.809 ng/µl	
28) 4-Methyldibenzothiophene	32.55	198	17556	36.160 ng/µl	90
29) 2/3-Methyldibenzothiophene	32.88	198	14618m	30.109 ng/µl	
30) 1-Methyldibenzothiophene	33.32	198	5786	11.917 ng/µl	95
31) C2-Dibenzothiophenes	34.26	212	48931m	100.783 ng/µl	
32) C3-Dibenzothiophenes	36.07	226	35907m	73.958 ng/µl	
33) C4-Dibenzothiophenes	37.78	240	17967m	37.007 ng/µl	
35) Phenanthrene	31.27	178	606384	1102.547 ng/µl	100
36) Anthracene	31.45	178	197311m	414.016 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.36	192	385048m	700.107 ng/µl	
38) 3-Methylphenanthrene	33.24	192	94792m	172.354 ng/µl	
39) 2/4-Methylphenanthrene	33.36	192	106376m	193.416 ng/µl	
40) 2-Methylanthracene	33.51	192	32636m	59.340 ng/µl	
41) 9-Methylphenanthrene	33.69	192	80901m	147.097 ng/µl	
42) 1-Methylphenanthrene	33.79	192	57365m	104.303 ng/µl	
43) C2-Phenanthrenes/Anthracen	36.04	206	389737m	708.632 ng/µl	
44) 2,7-Dimethylphenanthrene	35.31	206	17956m	32.648 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8650.D
Acq On : 21 Apr 2004 3:49 pm
Sample : S1474-P(9)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 22 09:51:48 2004

Vial: 21
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.75	206	20360	37.019 ng/µl	88
46)	C3-Phenanthrenes/Anthracen	37.38	220	126628m	230.239 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.60	234	45477m	82.688 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.30	234	2288m	19.538 ng/µl	
50)	Benzo(b)fluorene	38.59	216	77144m	222.943 ng/µl	
51)	Fluoranthene	36.05	202	1221462m	2134.918 ng/µl	
52)	Pyrene	36.93	202	1156108m	1956.076 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.35	216	674716m	1141.585 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	41.21	230	474122m	802.190 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.31	244	203829m	344.868 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	85942	169.798 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.15	234	22628	44.707 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.44	234	24127m	47.668 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.22	248	91847m	181.465 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.80	262	67134m	132.639 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.44	276	51729m	102.203 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.06	290	24887m	49.170 ng/µl	
63)	Benzo(a)anthracene	41.74	228	417037m	760.177 ng/µl	
5)	Chrysene	41.90	228	688043	1222.621 ng/µl	100
66)	C1-Chrysenes	43.42	242	319020m	566.884 ng/µl	
67)	C2-Chrysenes	45.46	256	161835m	287.573 ng/µl	
68)	C3-Chrysenes	46.57	270	82326m	146.290 ng/µl	
69)	C4-Chrysenes	50.05	284	55249m	98.175 ng/µl	
70)	Benzo(b)fluoranthene	46.39	252	684323	1241.535 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.48	252	633769	1115.813 ng/µl	98
72)	Benzo(a)fluoranthene	46.92	252	125013m	266.072 ng/µl	
73)	Benzo(e)pyrene	47.79	252	517046m	988.430 ng/µl	
75)	Benzo(a)pyrene	48.08	252	517761m	949.377 ng/µl	
76)	Perylene	48.54	252	135618	256.744 ng/µl	97
77)	Indeno(1,2,3-cd)pyrene	54.63	276	417410m	885.216 ng/µl	
78)	Dibenz(a,h)anthracene	54.73	278	97563m	198.632 ng/µl	
79)	Benzo(g,h,i)perylene	55.82	276	428866	753.765 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8651.D
Acq On : 21 Apr 2004 5:13 pm
Sample : S1481-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:35 2004

Vial: 22
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	279604	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	197569m	751.012 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	37.53%	
19) Fluorene-d10	27.36	176	318066	1445.225 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	69.62%	
34) Phenanthrene-d10	31.18	188	191247	868.201 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	43.66%	
64) Chrysene-d12	41.80	240	191393m	795.983 ng/µl	0.00
Spiked Amount 2004.000			Recovery =	39.72%	
74) Benzo(a)pyrene-d12	47.93	264	427942	2020.763 ng/µl	0.01
Spiked Amount 2064.000			Recovery =	97.91%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	51276m	173.567 ng/µl	
4) C1-Naphthalenes	21.15	142	24492m	82.904 ng/µl	
5) 2-Methylnaphthalene	21.15	142	15825	53.567 ng/µl	91
6) 1-Methylnaphthalene	21.57	142	8611	29.148 ng/µl	94
7) C2-Naphthalenes	24.07	156	39687m	134.339 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	1788	6.052 ng/µl	93
9) 1-Ethylnaphthalene	23.50	156	754m	2.552 ng/µl	
10) 2,6-Dimethylnaphthalene	23.66	156	10412	35.244 ng/µl	98
11) 1,5-Dimethylnaphthalene	24.52	156	1853m	6.272 ng/µl	
12) C3-Naphthalenes	27.36	170	77917m	263.746 ng/µl	
13) C4-Naphthalenes	29.28	184	40995m	138.766 ng/µl	
14) Biphenyl	23.04	154	10046	43.905 ng/µl	94
15) Acenaphthylene	24.71	152	42178m	145.430 ng/µl	
16) Acenaphthene	25.45	154	10976	63.498 ng/µl	99
17) Dibenzofuran	26.10	168	24312m	102.512 ng/µl	
18) Cadalene	29.16	198	1670	25.618 ng/µl#	1
20) Fluorene	27.47	166	14724m	70.755 ng/µl	
21) C1-Fluorenes	29.70	180	7775m	37.362 ng/µl	
22) 2-Methylfluorene	29.70	180	2021m	9.712 ng/µl	
23) 1-Methylfluorene	29.85	180	1708m	8.208 ng/µl	
24) C2-Fluorenes	32.01	194	18062m	86.796 ng/µl	
25) C3-Fluorenes	34.55	208	41378m	198.839 ng/µl	
26) Dibenzothiophene	30.77	184	17571m	66.885 ng/µl	
27) C1-Dibenzothiophenes	33.00	198	35688m	135.849 ng/µl	
28) 4-Methyldibenzothiophene	32.56	198	9177	34.933 ng/µl	100
29) 2/3-Methyldibenzothiophene	32.92	198	8170m	31.100 ng/µl	
30) 1-Methyldibenzothiophene	33.33	198	4240m	16.140 ng/µl	
31) C2-Dibenzothiophenes	34.62	212	47481m	180.740 ng/µl	
32) C3-Dibenzothiophenes	36.07	226	55308m	210.533 ng/µl	
33) C4-Dibenzothiophenes	38.25	240	45476m	173.107 ng/µl	
35) Phenanthrene	31.27	178	355413	1194.294 ng/µl	99
36) Anthracene	31.46	178	69248m	268.535 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.36	192	142153m	477.677 ng/µl	
38) 3-Methylphenanthrene	33.24	192	33225m	111.646 ng/µl	
39) 2/4-Methylphenanthrene	33.36	192	41703m	140.135 ng/µl	
40) 2-Methylanthracene	33.51	192	10994m	36.943 ng/µl	
41) 9-Methylphenanthrene	33.69	192	28406m	95.453 ng/µl	
42) 1-Methylphenanthrene	33.79	192	26091	87.674 ng/µl	94
43) C2-Phenanthrenes/Anthracen	35.53	206	136239m	457.804 ng/µl	
44) 2,7-Dimethylphenanthrene	35.31	206	8120m	27.286 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8651.D
Acq On : 21 Apr 2004 5:13 pm
Sample : S1481-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:35 2004

Vial: 22
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.75	206	18851	63.345 ng/µl	90
46)	C3-Phenanthrenes/Anthracen	37.38	220	98031m	329.414 ng/µl	
47)	C4-Phenanthrenes/Anthracen	38.30	234	62023m	208.416 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.30	234	21240m	335.197 ng/µl	
50)	Benzo(b)fluorene	38.59	216	21347m	114.014 ng/µl	
51)	Fluoranthene	36.05	202	543833m	1756.692 ng/µl	
52)	Pyrene	36.93	202	438903m	1372.412 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.35	216	208897m	653.203 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.40	230	152043m	475.425 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.30	244	92982m	290.747 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.81	234	41453	151.360 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.15	234	8523	31.121 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.45	234	11277m	41.177 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.22	248	45949m	167.777 ng/µl	
60)	C2-Benzo(b)naphthothiophen	44.41	262	58556m	213.810 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.44	276	71635m	261.566 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.05	290	53461m	195.206 ng/µl	
63)	Benzo(a)anthracene	41.74	228	225643m	760.135 ng/µl	
5)	Chrysene	41.90	228	266503	875.200 ng/µl	99
66)	C1-Chrysenes	43.42	242	109325m	359.025 ng/µl	
67)	C2-Chrysenes	45.11	256	67705m	222.344 ng/µl	
68)	C3-Chrysenes	46.92	270	67442m	221.480 ng/µl	
69)	C4-Chrysenes	50.16	284	44659m	146.661 ng/µl	
70)	Benzo(b)fluoranthene	46.38	252	257341	862.850 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.48	252	247512	805.351 ng/µl	96
72)	Benzo(a)fluoranthene	46.91	252	40099m	157.727 ng/µl	
73)	Benzo(e)pyrene	47.79	252	195793	691.740 ng/µl	97
75)	Benzo(a)pyrene	48.06	252	161247	546.424 ng/µl	98
76)	Perylene	48.53	252	51369	179.727 ng/µl	99
77)	Indeno(1,2,3-cd)pyrene	54.59	276	170613m	668.694 ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	44841m	168.720 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	177458	576.419 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8654.D
Acq On : 21 Apr 2004 9:27 pm
Sample : S1482-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:50 2004

Vial: 25
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	263183	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	326458	659.190 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 32.94%		
19) Fluorene-d10	27.36	176	355390	857.786 ng/µl	0.00
Spiked Amount 1038.000			Recovery = 82.64%		
34) Phenanthrene-d10	31.18	188	329577	794.764 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 39.97%		
64) Chrysene-d12	41.82	240	333811	737.453 ng/µl	0.02
Spiked Amount 2004.000			Recovery = 36.80%		
74) Benzo(a)pyrene-d12	47.97	264	427627m	1072.633 ng/µl	0.05
Spiked Amount 1032.000			Recovery = 103.94%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	1132170m	2035.729 ng/µl	
4) C1-Naphthalenes	21.15	142	1137679m	2045.635 ng/µl	
5) 2-Methylnaphthalene	21.15	142	690296	1241.206 ng/µl	97
6) 1-Methylnaphthalene	21.57	142	441439	793.742 ng/µl	98
7) C2-Naphthalenes	23.99	156	991880m	1783.477 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	48445	87.108 ng/µl	98
9) 1-Ethylnaphthalene	23.50	156	11339m	20.388 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	282548	508.043 ng/µl	97
11) 1,5-Dimethylnaphthalene	24.52	156	39531m	71.080 ng/µl	
12) C3-Naphthalenes	26.32	170	534704m	961.439 ng/µl	
13) C4-Naphthalenes	29.09	184	278535m	500.828 ng/µl	
14) Biphenyl	23.04	154	753363m	1748.956 ng/µl	
15) Acenaphthylene	24.71	152	178751m	327.394 ng/µl	
16) Acenaphthene	25.45	154	263497m	809.744 ng/µl	
17) Dibenzofuran	26.10	168	1705500m	3819.994 ng/µl	
18) Cadalene	29.15	198	8284m	67.503 ng/µl	
20) Fluorene	27.47	166	324604m	828.594 ng/µl	
21) C1-Fluorenes	29.70	180	49112m	125.365 ng/µl	
22) 2-Methylfluorene	29.70	180	14358m	36.651 ng/µl	
23) 1-Methylfluorene	29.84	180	14375m	36.694 ng/µl	
24) C2-Fluorenes	32.01	194	115518m	294.875 ng/µl	
25) C3-Fluorenes	34.55	208	228103m	582.262 ng/µl	
26) Dibenzothiophene	30.77	184	114458m	231.438 ng/µl	
27) C1-Dibenzothiophenes	32.56	198	177233m	358.371 ng/µl	
28) 4-Methyldibenzothiophene	32.56	198	66498m	134.461 ng/µl	
29) 2/3-Methyldibenzothiophene	32.91	198	47980m	97.017 ng/µl	
30) 1-Methyldibenzothiophene	33.33	198	23307	47.128 ng/µl	92
31) C2-Dibenzothiophenes	34.26	212	244535m	494.458 ng/µl	
32) C3-Dibenzothiophenes	36.08	226	281945m	570.103 ng/µl	
33) C4-Dibenzothiophenes	38.26	240	349315m	706.327 ng/µl	
35) Phenanthrene	31.27	178	1643982	2934.476 ng/µl	100
36) Anthracene	31.46	178	399526m	822.990 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.36	192	719510m	1284.311 ng/µl	
38) 3-Methylphenanthrene	33.24	192	164030m	292.790 ng/µl	
39) 2/4-Methylphenanthrene	33.36	192	196238m	350.281 ng/µl	
0) 2-Methylanthracene	33.52	192	61963m	110.603 ng/µl	
1) 9-Methylphenanthrene	33.70	192	141748m	253.017 ng/µl	
42) 1-Methylphenanthrene	33.79	192	133568	238.416 ng/µl	96
43) C2-Phenanthrenes/Anthracen	35.76	206	655735m	1170.474 ng/µl	
44) 2,7-Dimethylphenanthrene	35.31	206	32150m	57.387 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8654.D
Acq On : 21 Apr 2004 9:27 pm
Sample : S1482-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:51:50 2004

Vial: 25
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:50:58 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.76	206	119649m	213.571 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.38	220	535512m	955.879 ng/µl	
47)	C4-Phenanthrenes/Anthracen	38.31	234	398100m	710.601 ng/µl	
48)	Dehydroabietin(e)	35.18	256	13067m	299.699 ng/µl	
49)	Retene	38.31	234	189642m	1589.774 ng/µl	
50)	Benzo(b)fluorene	38.59	216	129012m	366.022 ng/µl	
51)	Fluoranthene	36.06	202	2393114m	4106.283 ng/µl	
52)	Pyrene	36.94	202	2034175m	3378.779 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.35	216	1117201m	1855.679 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.42	230	887904m	1474.815 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.32	244	515970m	857.030 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.82	234	245836	476.823 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.16	234	52783	102.378 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.46	234	70400m	136.548 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.23	248	275000m	533.390 ng/µl	
60)	C2-Benzo(b)naphthothiophen	44.42	262	304205m	590.036 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.48	276	339068m	657.656 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.10	290	178951m	347.093 ng/µl	
63)	Benzo(a)anthracene	41.76	228	1298721m	2324.023 ng/µl	
65)	Chrysene	41.92	228	1526573m	2663.042 ng/µl	
66)	C1-Chrysenes	43.44	242	684230m	1193.610 ng/µl	
67)	C2-Chrysenes	45.47	256	414532m	723.134 ng/µl	
68)	C3-Chrysenes	46.59	270	327118m	570.644 ng/µl	
69)	C4-Chrysenes	49.21	284	179861m	313.760 ng/µl	
70)	Benzo(b)fluoranthene	46.42	252	1831490	3262.019 ng/µl	100
71)	Benzo(j/k)fluoranthene	46.52	252	1540461m	2662.534 ng/µl	
72)	Benzo(a)fluoranthene	46.94	252	265100m	553.908 ng/µl	
73)	Benzo(e)pyrene	47.83	252	1332326m	2500.412 ng/µl	
75)	Benzo(a)pyrene	48.11	252	1180305	2124.653 ng/µl	98
76)	Perylene	48.57	252	376706	700.115 ng/µl	97
77)	Indeno(1,2,3-cd)pyrene	54.64	276	1083119m	2255.001 ng/µl	
78)	Dibenz(a,h)anthracene	54.73	278	288807m	577.239 ng/µl	
79)	Benzo(g,h,i)perylene	55.83	276	1114618	1923.201 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

243

Data File : H:\E\DATA\SE0041\W8655.D
Acq On : 21 Apr 2004 10:53 pm
Sample : S1483-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:37 2004

Vial: 26
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

① ANALYTE OVERCAL, REPORT FROM DILUTION.

4/27/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	270580	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	174754	686.440 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 34.30%		
19) Fluorene-d10	27.37	176	309130	1451.467 ng/µl	0.01
Spiked Amount 2076.000			Recovery = 69.92%		
34) Phenanthrene-d10	31.19	188	178602m	837.837 ng/µl	0.01
Spiked Amount 1988.500			Recovery = 42.13%		
64) Chrysene-d12	41.83	240	199147	855.853 ng/µl	0.03
Spiked Amount 2004.000			Recovery = 42.71%		
74) Benzo(a)pyrene-d12	47.97	264	422923	2063.666 ng/µl	0.05
Spiked Amount 2064.000			Recovery = 99.98%		

Target Compounds					Qvalue
3) Naphthalene	18.48	128	68895m	240.984 ng/µl	
4) C1-Naphthalenes	21.16	142	40484	141.607 ng/µl	98
5) 2-Methylnaphthalene	21.16	142	40616	142.068 ng/µl	98
6) 1-Methylnaphthalene	21.58	142	18459m	64.567 ng/µl	
7) C2-Naphthalenes	23.99	156	66544m	232.761 ng/µl	
8) 2-Ethylnaphthalene	23.42	156	2998m	10.487 ng/µl	
9) 1-Ethylnaphthalene	23.50	156	1387m	4.852 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	16462m	57.582 ng/µl	
11) 1,5-Dimethylnaphthalene	24.52	156	2555m	8.937 ng/µl	
12) C3-Naphthalenes	27.37	170	96492m	337.514 ng/µl	
13) C4-Naphthalenes	29.10	184	54561m	190.846 ng/µl	
14) Biphenyl	23.05	154	12972m	58.583 ng/µl	
15) Acenaphthylene	24.72	152	568768m	2026.515 ng/µl	
16) Acenaphthene	25.46	154	26076	155.885 ng/µl	98
17) Dibenzofuran	26.10	168	60821m	265.007 ng/µl	
18) Cadalene	29.16	198	1584m	25.109 ng/µl	
20) Fluorene	27.48	166	110090m	546.673 ng/µl	
21) C1-Fluorenes	29.71	180	34297m	170.308 ng/µl	
22) 2-Methylfluorene	29.71	180	10152m	50.412 ng/µl	
23) 1-Methylfluorene	29.85	180	9068m	45.029 ng/µl	
24) C2-Fluorenes	32.64	194	77689m	385.780 ng/µl	
25) C3-Fluorenes	34.56	208	692309m	3437.794 ng/µl	
26) Dibenzothiophene	30.78	184	52587m	206.852 ng/µl	
27) C1-Dibenzothiophenes	32.56	198	80307m	315.889 ng/µl	
28) 4-Methyldibenzothiophene	32.56	198	24600	96.764 ng/µl	97
29) 2/3-Methyldibenzothiophene	32.92	198	18481m	72.695 ng/µl	
30) 1-Methyldibenzothiophene	33.33	198	7338	28.864 ng/µl	86
31) C2-Dibenzothiophenes	34.27	212	88550m	348.313 ng/µl	
32) C3-Dibenzothiophenes	36.09	226	68001m	267.483 ng/µl	
33) C4-Dibenzothiophenes	38.26	240	36812m	144.801 ng/µl	
35) Phenanthrene	31.28	178	1331703	4624.162 ng/µl	100
36) Anthracene	31.47	178	1680835m	6735.455 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.80	192	950090m	3299.062 ng/µl	
38) 3-Methylphenanthrene	33.25	192	130815m	454.238 ng/µl	
39) 2/4-Methylphenanthrene	33.37	192	176807m	613.939 ng/µl	
40) 2-Methylanthracene	33.52	192	201083m	698.234 ng/µl	
41) 9-Methylphenanthrene	33.71	192	209463m	727.332 ng/µl	
42) 1-Methylphenanthrene	33.80	192	213595	741.680 ng/µl	96
43) C2-Phenanthrenes/Anthracen	35.54	206	822923m	2857.491 ng/µl	
44) 2,7-Dimethylphenanthrene	35.32	206	71218m	247.295 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8655.D
Acq On : 21 Apr 2004 10:53 pm
Sample : S1483-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:37 2004

Vial: 26
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.77	206	85129m	295.599 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.39	220	418124m	1451.880 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.61	234	177229m	615.404 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.32	234	13913m	226.889 ng/µl	
50)	Benzo(b)fluorene	38.60	216	124939m	689.552 ng/µl	
51)	Fluoranthene	36.09	202	8903868m	29720.519 ng/µl i	
52)	Pyrene	36.97	202	7729948m	24976.995 ng/µl i	
53)	C1-Fluoranthenes/Pyrenes	39.12	216	3381154m	10925.179 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.43	230	3682751m	11899.699 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.95	244	1656680m	5353.062 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.82	234	574714	2168.483 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.16	234	141239	532.916 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.46	234	137228m	517.782 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.49	248	427223m	1611.977 ng/µl	
60)	C2-Benzo(b)naphthothiophen	44.21	262	183234m	691.370 ng/µl	
61)	C3-Benzo(b)naphthothiophen	45.93	276	106616m	402.278 ng/µl	
62)	C4-Benzo(b)naphthothiophen	49.41	290	18118m	68.362 ng/µl	
63)	Benzo(a)anthracene	41.77	228	2813939m	9795.608 ng/µl	
5)	Chrysene	41.94	228	4803860m	16302.079 ng/µl i	
66)	C1-Chrysenes	43.44	242	1524528m	5173.543 ng/µl	
67)	C2-Chrysenes	45.47	256	594089m	2016.063 ng/µl	
68)	C3-Chrysenes	46.59	270	419217m	1422.629 ng/µl	
69)	C4-Chrysenes	47.62	284	280052m	950.367 ng/µl	
70)	Benzo(b)fluoranthene	46.44	252	4078724	14131.829 ng/µl i	100
71)	Benzo(j/k)fluoranthene	46.56	252	3728359m	12535.867 ng/µl	
72)	Benzo(a)fluoranthene	46.94	252	342768m	1393.221 ng/µl	
73)	Benzo(e)pyrene	47.84	252	2471888	9024.477 ng/µl	98
75)	Benzo(a)pyrene	48.11	252	1156120	4048.450 ng/µl	99
76)	Perylene	48.56	252	378046	1366.796 ng/µl	96
77)	Indeno(1,2,3-cd)pyrene	54.63	276	1366589m	5534.783 ng/µl	
78)	Dibenz(a,h)anthracene	54.72	278	380198m	1478.257 ng/µl	
79)	Benzo(g,h,i)perylene	55.83	276	1139754m	3825.620 ng/µl	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8656.D
Acq On : 22 Apr 2004 12:19 am
Sample : S1484-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:49:34 2004

Vial: 27
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:49:30 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

① ANALYTE OVERRANGE, REPORT FROM DILUTION. JAC 4/27/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.34	164	273156	2002.000 ng/µl	0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.40	136	271574m	1056.693 ng/µl	0.00
Spiked Amount 10005.000			Recovery = 10.56%		
19) Fluorene-d10	27.38	176	318124	1479.611 ng/µl	0.02
Spiked Amount 2076.000			Recovery = 71.27%		
34) Phenanthrene-d10	31.20	188	140788m	654.220 ng/µl	0.02
Spiked Amount 10012.500			Recovery = 6.53%		
64) Chrysene-d12	41.81	240	238949m	1017.222 ng/µl	0.01
Spiked Amount 10020.000			Recovery = 10.15%		
74) Benzo(a)pyrene-d12	47.94	264	386047	1865.964 ng/µl	0.02
Spiked Amount 2064.000			Recovery = 90.41%		

Target Compounds					Qvalue
3) Naphthalene	18.48	128	1691968	5862.430 ng/µl	99
4) C1-Naphthalenes	21.18	142	6622459m	22945.883 ng/µl ①	
5) 2-Methylnaphthalene	21.18	142	4605124m	15956.103 ng/µl ①	
6) 1-Methylnaphthalene	21.59	142	1979551m	6858.864 ng/µl ①	
7) C2-Naphthalenes	24.03	156	13358483m	46285.253 ng/µl ①	
8) 2-Ethylnaphthalene	23.43	156	571000	1978.434 ng/µl ①	97
9) 1-Ethylnaphthalene	23.52	156	166272m	576.109 ng/µl ①	
10) 2,6-Dimethylnaphthalene	23.68	156	4023162m	13939.687 ng/µl ①	
11) 1,5-Dimethylnaphthalene	24.54	156	460712	1596.302 ng/µl ①	84
12) C3-Naphthalenes	26.36	170	11835548m	41008.499 ng/µl	
13) C4-Naphthalenes	29.11	184	5754471m	19938.428 ng/µl	
14) Biphenyl	23.06	154	369919m	1654.849 ng/µl	
15) Acenaphthylene	0.00	152	0	N.D. d	
16) Acenaphthene	25.47	154	129546m	767.138 ng/µl	
17) Dibenzofuran	26.11	168	216556m	934.670 ng/µl	
18) Cadalene	29.17	198	16496m	259.024 ng/µl	
20) Fluorene	27.49	166	239975m	1180.404 ng/µl	
21) C1-Fluorenes	29.86	180	541517m	2663.648 ng/µl	
22) 2-Methylfluorene	29.72	180	121456m	597.426 ng/µl	
23) 1-Methylfluorene	29.86	180	204229m	1004.575 ng/µl	
24) C2-Fluorenes	31.91	194	773106m	3802.803 ng/µl	
25) C3-Fluorenes	33.90	208	563710m	2772.813 ng/µl	
26) Dibenzothiophene	30.80	184	150105m	584.872 ng/µl	
27) C1-Dibenzothiophenes	32.57	198	357043m	1391.190 ng/µl	
28) 4-Methyldibenzothiophene	32.57	198	145120m	565.449 ng/µl	
29) 2/3-Methyldibenzothiophene	32.93	198	119026m	463.775 ng/µl	
30) 1-Methyldibenzothiophene	33.34	198	40898	159.356 ng/µl	100
31) C2-Dibenzothiophenes	34.63	212	324471m	1264.276 ng/µl	
32) C3-Dibenzothiophenes	36.08	226	200835m	782.538 ng/µl	
33) C4-Dibenzothiophenes	37.79	240	87092m	339.347 ng/µl	
35) Phenanthrene	31.30	178	791248m	2721.593 ng/µl	
36) Anthracene	31.47	178	97677m	387.721 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.37	192	1585548m	5453.684 ng/µl	
38) 3-Methylphenanthrene	33.25	192	452261m	1555.607 ng/µl	
39) 2/4-Methylphenanthrene	33.37	192	505809m	1739.791 ng/µl	
40) 2-Methylanthracene	33.53	192	77033m	264.964 ng/µl	
41) 9-Methylphenanthrene	33.71	192	304452m	1047.200 ng/µl	
42) 1-Methylphenanthrene	33.80	192	206881m	711.592 ng/µl	
43) C2-Phenanthrenes/Anthracen	35.54	206	1695566m	5832.105 ng/µl	
44) 2,7-Dimethylphenanthrene	35.32	206	139746m	480.673 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

246

Data File : H:\E\DATA\SE0041\W8656.D
Acq On : 22 Apr 2004 12:19 am
Sample : S1484-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:49:34 2004

Vial: 27
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:49:30 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45) 1,7-Dimethylphenanthrene	35.76	206	114263m	393.021 ng/µl	
46) C3-Phenanthrenes/Anthracen	37.39	220	902560m	3104.464 ng/µl	
47) C4-Phenanthrenes/Anthracen	39.61	234	341288m	1173.901 ng/µl	
48) Dehydroabietin(e)	35.20	256	4045m	178.774 ng/µl	
49) Retene	38.31	234	19706m	318.329 ng/µl	
50) Benzo(b)fluorene	38.60	216	20032m	109.516 ng/µl	
51) Fluoranthene	36.06	202	243178m	804.057 ng/µl	
52) Pyrene	36.94	202	267549	856.351 ng/µl	98
53) C1-Fluoranthenes/Pyrenes	39.11	216	266348m	852.507 ng/µl	
54) C2-Fluoranthenes/Pyrenes	40.71	230	197476m	632.067 ng/µl	
55) C3-Fluoranthenes/Pyrenes	42.31	244	131133m	419.721 ng/µl	
56) Benzo(b)naphtho(2,1-d)thio	40.81	234	27588	103.112 ng/µl	100
57) Benzo(b)naphtho(1,2-d)thio	41.15	234	5954	22.253 ng/µl	100
58) Benzo(b)naphtho(2,3-d)thio	41.46	234	9499m	35.503 ng/µl	
59) C1-Benzo(b)naphthothiophen	42.23	248	29926m	111.850 ng/µl	
60) C2-Benzo(b)naphthothiophen	43.80	262	23521m	87.911 ng/µl	
61) C3-Benzo(b)naphthothiophen	46.47	276	18714m	69.945 ng/µl	
62) C4-Benzo(b)naphthothiophen	48.05	290	9523m	35.593 ng/µl	
63) Benzo(a)anthracene	41.75	228	158557m	546.748 ng/µl	
65) Chrysene	41.90	228	175311m	589.314 ng/µl	
66) C1-Chrysenes	43.43	242	86828m	291.875 ng/µl	
67) C2-Chrysenes	45.46	256	55069m	185.116 ng/µl	
68) C3-Chrysenes	46.92	270	41958m	141.043 ng/µl	
69) C4-Chrysenes	50.20	284	19384m	65.160 ng/µl	
70) Benzo(b)fluoranthene	46.39	252	194236	666.636 ng/µl	99
71) Benzo(j/k)fluoranthene	46.49	252	181601m	604.839 ng/µl	
72) Benzo(a)fluoranthene	46.93	252	33391m	134.442 ng/µl	
73) Benzo(e)pyrene	47.80	252	157095	568.121 ng/µl	95
75) Benzo(a)pyrene	48.07	252	164714	571.349 ng/µl	97
76) Perylene	48.54	252	44877	160.719 ng/µl	96
77) Indeno(1,2,3-cd)pyrene	54.60	276	133356m	535.008 ng/µl	
78) Dibenz(a,h)anthracene	54.70	278	41385m	159.393 ng/µl	
79) Benzo(g,h,i)perylene	55.79	276	154599	514.023 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

247

Data File : H:\E\DATA\SE0041\W8657.D
Acq On : 22 Apr 2004 1:45 am
Sample : S1485-P(7)
Misc :
Integration Params: RTEINT.P
Print Time: Apr 22 09:48:39 2004

Vial: 28
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

① ANALYTE OVERCAL, REPORT FROM DILUTION.

4/27/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	256332m	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	177892m	737.607 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 36.86%		
19) Fluorene-d10	27.36	176	290117m	1437.911 ng/µl	0.00
Spiked Amount 2076.000			Recovery = 69.26%		
34) Phenanthrene-d10	31.19	188	171258	848.041 ng/µl	0.01
Spiked Amount 1988.500			Recovery = 42.65%		
64) Chrysene-d12	41.84	240	216682m	982.972 ng/µl	0.04
Spiked Amount 2004.000			Recovery = 49.05%		
74) Benzo(a)pyrene-d12	48.03	264	407789	2100.421 ng/µl	0.10
Spiked Amount 2064.000			Recovery = 101.76%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	197418m	728.921 ng/µl	
4) C1-Naphthalenes	21.15	142	81376m	300.462 ng/µl	
5) 2-Methylnaphthalene	21.15	142	81243	299.971 ng/µl	97
6) 1-Methylnaphthalene	21.57	142	33970m	125.426 ng/µl	
7) C2-Naphthalenes	23.65	156	120510m	444.955 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	6646m	24.539 ng/µl	
9) 1-Ethylnaphthalene	23.50	156	2866m	10.582 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	31044m	114.623 ng/µl	
11) 1,5-Dimethylnaphthalene	24.52	156	3898m	14.392 ng/µl	
12) C3-Naphthalenes	27.36	170	136902m	505.479 ng/µl	
13) C4-Naphthalenes	28.65	184	107822m	398.108 ng/µl	
14) Biphenyl	23.05	154	36227m	172.700 ng/µl	
15) Acenaphthylene	24.72	152	1536171m	5777.596 ng/µl	
16) Acenaphthene	25.46	154	44863m	283.104 ng/µl	
17) Dibenzofuran	26.10	168	127463m	586.246 ng/µl	
18) Cadalene	29.16	198	1812m	30.320 ng/µl	
20) Fluorene	27.47	166	165700m	868.551 ng/µl	
21) C1-Fluorenes	29.70	180	60226m	315.687 ng/µl	
22) 2-Methylfluorene	29.70	180	14715m	77.132 ng/µl	
23) 1-Methylfluorene	29.85	180	14819m	77.677 ng/µl	
24) C2-Fluorenes	32.64	194	134873m	706.965 ng/µl	
25) C3-Fluorenes	34.56	208	796658m	4175.847 ng/µl	
26) Dibenzothiophene	30.78	184	63858m	265.148 ng/µl	
27) C1-Dibenzothiophenes	32.56	198	101272m	420.497 ng/µl	
28) 4-Methyldibenzothiophene	32.56	198	28019	116.339 ng/µl	96
29) 2/3-Methyldibenzothiophene	32.92	198	26562m	110.290 ng/µl	
30) 1-Methyldibenzothiophene	33.33	198	7991	33.180 ng/µl	91
31) C2-Dibenzothiophenes	34.27	212	151932m	630.846 ng/µl	
32) C3-Dibenzothiophenes	36.09	226	165098m	685.513 ng/µl	
33) C4-Dibenzothiophenes	38.27	240	99890m	414.759 ng/µl	
35) Phenanthrene	31.28	178	1569742	5753.695 ng/µl	100
36) Anthracene	31.47	178	2752380m	11642.416 ng/µl ①	
37) C1-Phenanthrenes/Anthracen	33.52	192	1211678m	4441.255 ng/µl	
38) 3-Methylphenanthrene	33.25	192	123454m	452.505 ng/µl	
39) 2/4-Methylphenanthrene	33.36	192	168650m	618.166 ng/µl	
40) 2-Methylanthracene	33.52	192	372682m	1366.020 ng/µl	
41) 9-Methylphenanthrene	33.71	192	282404m	1035.117 ng/µl	
42) 1-Methylphenanthrene	33.80	192	215912m	791.399 ng/µl	
43) C2-Phenanthrenes/Anthracen	35.54	206	1388170m	5088.165 ng/µl	
44) 2,7-Dimethylphenanthrene	35.31	206	127239m	466.379 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8657.D
Acq On : 22 Apr 2004 1:45 am
Sample : S1485-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:39 2004

Vial: 28
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.77	206	151487m	555.257 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.39	220	1035333m	3794.885 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.22	234	537741m	1971.023 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.32	234	47533m	818.241 ng/µl	
50)	Benzo(b)fluorene	38.61	216	319233m	1859.814 ng/µl	
51)	Fluoranthene	36.10	202	10912522m	38449.941 ng/µl (1)	
52)	Pyrene	36.99	202	12893486	43977.125 ng/µl (1)	89
53)	C1-Fluoranthenes/Pyrenes	39.13	216	8726749m	29765.211 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.44	230	5888192m	20083.456 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.96	244	4620737m	15760.418 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.83	234	1098924m	4376.881 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	41.17	234	288385	1148.602 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.46	234	299199m	1191.673 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.50	248	1159313m	4617.403 ng/µl	
60)	C2-Benzo(b)naphthothiophen	44.23	262	543186m	2163.444 ng/µl	
61)	C3-Benzo(b)naphthothiophen	45.94	276	371474m	1479.536 ng/µl	
62)	C4-Benzo(b)naphthothiophen	47.92	290	90858m	361.876 ng/µl	
63)	Benzo(a)anthracene	41.79	228	6239150m	22926.356 ng/µl (1)	
65)	Chrysene	41.97	228	10761979m	38551.179 ng/µl (1)	
66)	C1-Chrysenes	43.46	242	4365402m	15637.588 ng/µl	
67)	C2-Chrysenes	45.49	256	1849287m	6624.450 ng/µl	
68)	C3-Chrysenes	46.65	270	1336907m	4789.021 ng/µl	
69)	C4-Chrysenes	47.67	284	892572m	3197.340 ng/µl	
70)	Benzo(b)fluoranthene	46.52	252	12981467m	47477.811 ng/µl (1)	
71)	Benzo(j/k)fluoranthene	46.65	252	8620064m	30594.264 ng/µl (1)	
72)	Benzo(a)fluoranthene	46.99	252	1074693	4611.020 ng/µl	98
73)	Benzo(e)pyrene	47.92	252	6916103	26653.090 ng/µl (1)	99
75)	Benzo(a)pyrene	48.18	252	3882194m	14350.136 ng/µl (1)	
76)	Perylene	48.61	252	1229998	4694.144 ng/µl	99
77)	Indeno(1,2,3-cd)pyrene	54.71	276	4049343m	17311.716 ng/µl (1)	
78)	Dibenz(a,h)anthracene	54.77	278	1205824m	4948.992 ng/µl	
79)	Benzo(g,h,i)perylene	55.90	276	3380041	11975.829 ng/µl (1)	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8658.D
Acq On : 22 Apr 2004 3:11 am
Sample : S1486-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:49:42 2004

Vial: 29
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:49:30 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

① ANALYTE OVERCAL, REPORT FROM DILUTION.

jm 4/27/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.34	164	253727	2002.000 ng/µl	0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	113552m	475.663 ng/µl	0.00
Spiked Amount 10005.000			Recovery = 4.75%		
19) Fluorene-d10	27.38	176	295797	1481.115 ng/µl	0.02
Spiked Amount 2076.000			Recovery = 71.34%		
34) Phenanthrene-d10	31.20	188	54763m	273.961 ng/µl	0.02
Spiked Amount 10012.500			Recovery = 2.74%		
64) Chrysene-d12	41.81	240	99132m	454.327 ng/µl	0.01
Spiked Amount 10020.000			Recovery = 4.53%		
74) Benzo(a)pyrene-d12	47.95	264	373773	1944.979 ng/µl	0.03
Spiked Amount 2064.000			Recovery = 94.23%		

Target Compounds					Qvalue
3) Naphthalene	18.48	128	850253m	3171.595 ng/µl	
4) C1-Naphthalenes	21.17	142	3829043m	14283.012 ng/µl	
5) 2-Methylnaphthalene	21.17	142	2310100m	8617.084 ng/µl	
6) 1-Methylnaphthalene	21.58	142	1496217m	5581.156 ng/µl	
7) C2-Naphthalenes	24.02	156	8940197m	33348.527 ng/µl ①	
8) 2-Ethylnaphthalene	23.42	156	353401	1318.249 ng/µl ①	90
9) 1-Ethylnaphthalene	23.51	156	113272m	422.525 ng/µl ①	
10) 2,6-Dimethylnaphthalene	23.67	156	2483381m	9263.453 ng/µl ①	
11) 1,5-Dimethylnaphthalene	24.54	156	325373m	1213.699 ng/µl ①	
12) C3-Naphthalenes	26.36	170	8765694m	32697.599 ng/µl	
13) C4-Naphthalenes	29.11	184	4331954m	16158.960 ng/µl	
14) Biphenyl	23.05	154	166623m	802.474 ng/µl	
15) Acenaphthylene	24.73	152	147436m	560.205 ng/µl	
16) Acenaphthene	25.47	154	101083m	644.424 ng/µl	
17) Dibenzofuran	26.11	168	104986m	487.824 ng/µl	
18) Cadalene	29.17	198	13081m	221.130 ng/µl	
20) Fluorene	27.48	166	159850m	846.489 ng/µl	
21) C1-Fluorenes	29.86	180	375648m	1989.253 ng/µl	
22) 2-Methylfluorene	29.71	180	74401	393.992 ng/µl	89
23) 1-Methylfluorene	29.86	180	136199m	721.245 ng/µl	
24) C2-Fluorenes	31.81	194	563394m	2983.466 ng/µl	
25) C3-Fluorenes	33.90	208	411362m	2178.377 ng/µl	
26) Dibenzothiophene	30.80	184	90475m	379.523 ng/µl	
27) C1-Dibenzothiophenes	32.57	198	237170m	994.878 ng/µl	
28) 4-Methyldibenzothiophene	32.57	198	93440m	391.961 ng/µl	
29) 2/3-Methyldibenzothiophene	32.93	198	77617m	325.587 ng/µl	
30) 1-Methyldibenzothiophene	33.34	198	26798	112.412 ng/µl	98
31) C2-Dibenzothiophenes	34.62	212	228765m	959.621 ng/µl	
32) C3-Dibenzothiophenes	36.08	226	159016m	667.038 ng/µl	
33) C4-Dibenzothiophenes	37.79	240	77255m	324.068 ng/µl	
35) Phenanthrene	31.29	178	643034m	2381.160 ng/µl	
36) Anthracene	31.47	178	131272m	560.974 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.37	192	1065784m	3946.607 ng/µl	
38) 3-Methylphenanthrene	33.25	192	305289m	1130.488 ng/µl	
39) 2/4-Methylphenanthrene	33.37	192	313896m	1162.359 ng/µl	
0) 2-Methylanthracene	33.52	192	60059m	222.399 ng/µl	
1) 9-Methylphenanthrene	33.70	192	214635m	794.795 ng/µl	
42) 1-Methylphenanthrene	33.80	192	137407m	508.819 ng/µl	
43) C2-Phenanthrenes/Anthracen	35.54	206	1200294m	4444.699 ng/µl	
44) 2,7-Dimethylphenanthrene	35.32	206	87308m	323.302 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8658.D
Acq On : 22 Apr 2004 3:11 am
Sample : S1486-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:49:42 2004

Vial: 29
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:49:30 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.76	206	82383m	305.065 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.39	220	682061m	2525.677 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.60	234	269284m	997.161 ng/µl	
48)	Dehydroabietin(e)	35.19	256	6581m	313.129 ng/µl	
49)	Retene	38.31	234	28235m	491.032 ng/µl	
50)	Benzo(b)fluorene	38.60	216	53006m	311.977 ng/µl	
51)	Fluoranthene	36.06	202	469772m	1672.222 ng/µl	
52)	Pyrene	36.94	202	434559m	1497.412 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.36	216	397677m	1370.323 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	40.71	230	220344m	759.266 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.31	244	138540m	477.384 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.81	234	41935	168.737 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.16	234	9009	36.250 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.45	234	15136m	60.904 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.23	248	40979m	164.890 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.80	262	33849m	136.201 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.47	276	25107m	101.025 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.10	290	14013m	56.385 ng/µl	
63)	Benzo(a)anthracene	41.75	228	245723m	912.203 ng/µl	
65)	Chrysene	41.91	228	287275m	1039.632 ng/µl	
66)	C1-Chrysenes	43.43	242	144187m	521.804 ng/µl	
67)	C2-Chrysenes	45.47	256	80670m	291.940 ng/µl	
68)	C3-Chrysenes	47.72	270	47652m	172.450 ng/µl	
69)	C4-Chrysenes	50.21	284	24496m	88.650 ng/µl	
70)	Benzo(b)fluoranthene	46.40	252	262908	971.420 ng/µl	100
71)	Benzo(j/k)fluoranthene	46.50	252	247087m	885.963 ng/µl	
72)	Benzo(a)fluoranthene	46.93	252	62198	269.603 ng/µl	91
73)	Benzo(e)pyrene	47.81	252	212208m	826.198 ng/µl	
75)	Benzo(a)pyrene	48.08	252	227863	850.920 ng/µl	99
76)	Perylene	48.55	252	69549	268.151 ng/µl	98
77)	Indeno(1,2,3-cd)pyrene	54.61	276	186408m	805.112 ng/µl	
78)	Dibenz(a,h)anthracene	54.71	278	53707m	222.690 ng/µl	
79)	Benzo(g,h,i)perylene	55.80	276	210471	753.376 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8659.D
Acq On : 22 Apr 2004 4:36 am
Sample : S1491-P(7)
Misc :
Integration Params: RTEINT.P
Print Time: Apr 22 09:48:41 2004

Vial: 30
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

① ANALYTE OVERCAL, REPORT FROM DILUTION.

4/27/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	245424	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	94561m	409.512 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 20.47%		
19) Fluorene-d10	27.36	176	276633	1432.019 ng/µl	0.00
Spiked Amount 2076.000			Recovery = 68.98%		
34) Phenanthrene-d10	31.19	188	91216	471.762 ng/µl	0.01
Spiked Amount 1988.500			Recovery = 23.72%		
64) Chrysene-d12	41.82	240	96504m	457.246 ng/µl	0.02
Spiked Amount 2004.000			Recovery = 22.82%		
74) Benzo(a)pyrene-d12	47.97	264	399533	2149.361 ng/µl	0.05
Spiked Amount 2064.000			Recovery = 104.14%		
Target Compounds					Qvalue
3) Naphthalene	18.47	128	82698	318.914 ng/µl	100
4) C1-Naphthalenes	21.15	142	231764m	893.769 ng/µl	
5) 2-Methylnaphthalene	21.15	142	137463m	530.109 ng/µl	
6) 1-Methylnaphthalene	21.57	142	91592	353.213 ng/µl	98
7) C2-Naphthalenes	23.65	156	544449m	2099.599 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	20725	79.923 ng/µl	91
9) 1-Ethylnaphthalene	23.50	156	7376m	28.445 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	173307m	668.337 ng/µl	
11) 1,5-Dimethylnaphthalene	24.52	156	20263	78.142 ng/µl	81
12) C3-Naphthalenes	26.33	170	516860m	1993.206 ng/µl	
13) C4-Naphthalenes	29.10	184	250251m	965.062 ng/µl	
14) Biphenyl	23.04	154	19725m	98.212 ng/µl	
15) Acenaphthylene	24.72	152	338216m	1328.580 ng/µl	
16) Acenaphthene	25.46	154	36695m	241.852 ng/µl	
17) Dibenzofuran	26.10	168	43251m	207.768 ng/µl	
18) Cadalene	29.16	198	1122m	19.609 ng/µl	
20) Fluorene	27.47	166	62020m	339.539 ng/µl	
21) C1-Fluorenes	29.85	180	47160m	258.186 ng/µl	
22) 2-Methylfluorene	29.70	180	11870m	64.984 ng/µl	
23) 1-Methylfluorene	29.85	180	13911m	76.158 ng/µl	
24) C2-Fluorenes	32.64	194	76867m	420.822 ng/µl	
25) C3-Fluorenes	34.55	208	216072m	1182.924 ng/µl	
26) Dibenzothiophene	30.78	184	65673	284.804 ng/µl	97
27) C1-Dibenzothiophenes	32.56	198	86056m	373.199 ng/µl	
28) 4-Methyldibenzothiophene	32.56	198	83843m	363.602 ng/µl	
29) 2/3-Methyldibenzothiophene	32.89	198	24742m	107.299 ng/µl	
30) 1-Methyldibenzothiophene	33.33	198	9011	39.078 ng/µl	91
31) C2-Dibenzothiophenes	34.62	212	84544m	366.642 ng/µl	
32) C3-Dibenzothiophenes	36.08	226	67399m	292.289 ng/µl	
33) C4-Dibenzothiophenes	37.79	240	39247m	170.203 ng/µl	
35) Phenanthrene	31.28	178	964115	3690.908 ng/µl	99
36) Anthracene	31.46	178	426254m	1883.168 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.37	192	639920m	2449.797 ng/µl	
38) 3-Methylphenanthrene	33.25	192	160774m	615.489 ng/µl	
39) 2/4-Methylphenanthrene	33.37	192	166145m	636.051 ng/µl	
0) 2-Methylanthracene	33.52	192	64372m	246.434 ng/µl	
1) 9-Methylphenanthrene	33.70	192	140954m	539.612 ng/µl	
2) 1-Methylphenanthrene	33.80	192	90352m	345.893 ng/µl	
43) C2-Phenanthrenes/Anthracen	35.54	206	529596m	2027.445 ng/µl	
44) 2,7-Dimethylphenanthrene	35.31	206	31241m	119.599 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8659.D
Acq On : 22 Apr 2004 4:36 am
Sample : S1491-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:41 2004

Vial: 30
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.76	206	33359m	127.708 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.39	220	265035m	1014.630 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.61	234	91348m	349.706 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.32	234	4941m	88.836 ng/µl	
50)	Benzo(b)fluorene	38.60	216	283726m	1726.421 ng/µl	
51)	Fluoranthene	36.08	202	3654575m	13449.100 ng/µl	
52)	Pyrene	36.95	202	3013011m	10733.540 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.36	216	1660579m	5915.641 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	41.23	230	871017m	3102.908 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.32	244	370496m	1319.854 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.82	234	207707	864.040 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.16	234	63458	263.979 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.46	234	72077m	299.833 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.23	248	188085m	782.415 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.82	262	119986m	499.130 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.17	276	84496m	351.495 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.10	290	31139m	129.535 ng/µl	
63)	Benzo(a)anthracene	41.76	228	768406m	2949.077 ng/µl	
65)	Chrysene	41.92	228	1310565m	4903.316 ng/µl	
66)	C1-Chrysenes	43.44	242	618094m	2312.522 ng/µl	
67)	C2-Chrysenes	45.47	256	278520m	1042.048 ng/µl	
68)	C3-Chrysenes	46.58	270	136434m	510.451 ng/µl	
69)	C4-Chrysenes	47.64	284	88100m	329.615 ng/µl	
70)	Benzo(b)fluoranthene	46.42	252	1427353	5452.355 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.51	252	1362416	5050.392 ng/µl	99
72)	Benzo(a)fluoranthene	46.95	252	252380	1130.976 ng/µl	96
73)	Benzo(e)pyrene	47.83	252	998245m	4017.992 ng/µl	
75)	Benzo(a)pyrene	48.11	252	967128	3733.778 ng/µl	97
76)	Perylene	48.57	252	240174	957.335 ng/µl	97
77)	Indeno(1,2,3-cd)pyrene	54.65	276	720140m	3215.572 ng/µl	
78)	Dibenz(a,h)anthracene	54.73	278	167078m	716.206 ng/µl	
79)	Benzo(g,h,i)perylene	55.84	276	716633	2651.955 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

253

Data File : H:\E\DATA\SE0041\W8660.D
Acq On : 22 Apr 2004 6:01 am
Sample : S1505-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:43 2004

Vial: 31
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	239622m	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	126953	563.103 ng/µl	-0.01
Spiked Amount 2001.000			Recovery	= 28.14%	
19) Fluorene-d10	27.36	176	275244	1459.328 ng/µl	0.00
Spiked Amount 2076.000			Recovery	= 70.30%	
34) Phenanthrene-d10	31.19	188	132683m	702.842 ng/µl	0.01
Spiked Amount 1988.500			Recovery	= 35.35%	
64) Chrysene-d12	41.82	240	135367	656.912 ng/µl	0.02
Spiked Amount 2004.000			Recovery	= 32.78%	
74) Benzo(a)pyrene-d12	47.96	264	392993	2165.369 ng/µl	0.04
Spiked Amount 2064.000			Recovery	= 104.91%	

Target Compounds					Qvalue
3) Naphthalene	18.47	128	59080	233.351 ng/µl	99
4) C1-Naphthalenes	21.57	142	70543m	278.627 ng/µl	
5) 2-Methylnaphthalene	21.15	142	34290	135.437 ng/µl	99
6) 1-Methylnaphthalene	21.57	142	34575	136.563 ng/µl	98
7) C2-Naphthalenes	23.65	156	142428m	562.555 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	5405m	21.348 ng/µl	
9) 1-Ethylnaphthalene	23.50	156	1970m	7.781 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	45078	178.047 ng/µl	98
11) 1,5-Dimethylnaphthalene	24.52	156	6267	24.753 ng/µl	90
12) C3-Naphthalenes	27.36	170	137568m	543.359 ng/µl	
13) C4-Naphthalenes	29.10	184	57194m	225.902 ng/µl	
14) Biphenyl	23.05	154	16462m	83.950 ng/µl	
15) Acenaphthylene	24.71	152	453686m	1825.321 ng/µl	
16) Acenaphthene	25.46	154	35709m	241.052 ng/µl	
17) Dibenzofuran	26.10	168	48651m	239.367 ng/µl	
18) Cadalene	29.17	198	804m	14.391 ng/µl	
20) Fluorene	27.47	166	84580m	474.260 ng/µl	
21) C1-Fluorenes	29.70	180	58128m	325.937 ng/µl	
22) 2-Methylfluorene	29.70	180	16787m	94.129 ng/µl	
23) 1-Methylfluorene	29.85	180	14806m	83.021 ng/µl	
24) C2-Fluorenes	32.64	194	94368m	529.144 ng/µl	
25) C3-Fluorenes	34.56	208	231863m	1300.111 ng/µl	
26) Dibenzothiophene	30.78	184	117370m	521.323 ng/µl	
27) C1-Dibenzothiophenes	32.56	198	146269m	649.684 ng/µl	
28) 4-Methyldibenzothiophene	32.56	198	51326m	227.975 ng/µl	
29) 2/3-Methyldibenzothiophene	32.89	198	44410m	197.256 ng/µl	
30) 1-Methyldibenzothiophene	33.33	198	14453	64.196 ng/µl	92
31) C2-Dibenzothiophenes	34.62	212	126194m	560.517 ng/µl	
32) C3-Dibenzothiophenes	36.08	226	74109m	329.170 ng/µl	
33) C4-Dibenzothiophenes	37.79	240	32535m	144.511 ng/µl	
35) Phenanthrene	31.28	178	1944344	7623.735 ng/µl	100
36) Anthracene	31.46	178	443594m	2007.227 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.37	192	1231173m	4827.405 ng/µl	
38) 3-Methylphenanthrene	33.25	192	336696m	1320.178 ng/µl	
39) 2/4-Methylphenanthrene	33.37	192	346876m	1360.094 ng/µl	
40) 2-Methylanthracene	33.52	192	78782m	308.903 ng/µl	
41) 9-Methylphenanthrene	33.70	192	246833m	967.827 ng/µl	
42) 1-Methylphenanthrene	33.80	192	188438	738.862 ng/µl	97
43) C2-Phenanthrenes/Anthracen	35.54	206	849056m	3329.132 ng/µl	
44) 2,7-Dimethylphenanthrene	35.32	206	56749m	222.512 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8660.D
Acq On : 22 Apr 2004 6:01 am
Sample : S1505-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:43 2004

Vial: 31
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.76	206	60956m	239.007 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.39	220	346636m	1359.153 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.61	234	99964m	391.957 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.32	234	3277m	60.345 ng/µl	
50)	Benzo(b)fluorene	38.60	216	123161m	767.558 ng/µl	
51)	Fluoranthene	36.07	202	2575585m	9707.839 ng/µl	
52)	Pyrene	36.95	202	2684909	9796.302 ng/µl	98
53)	C1-Fluoranthenes/Pyrenes	38.76	216	1693107m	6177.561 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	41.23	230	1206435m	4401.863 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.32	244	486768m	1776.048 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.82	234	198665	846.437 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.16	234	51287	218.515 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.46	234	56659m	241.403 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.23	248	207214m	882.861 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.81	262	136831m	582.985 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.47	276	98892m	421.342 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.08	290	41581m	177.161 ng/µl	
63)	Benzo(a)anthracene	41.76	228	870380m	3421.327 ng/µl	
65)	Chrysene	41.92	228	1453058	5568.069 ng/µl	99
66)	C1-Chrysenes	43.44	242	807505m	3094.332 ng/µl	
67)	C2-Chrysenes	45.47	256	401553m	1538.737 ng/µl	
68)	C3-Chrysenes	46.59	270	177401m	679.795 ng/µl	
69)	C4-Chrysenes	47.63	284	98283m	376.617 ng/µl	
70)	Benzo(b)fluoranthene	46.41	252	1289062	5043.324 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.51	252	1194224m	4534.104 ng/µl	
72)	Benzo(a)fluoranthene	46.94	252	265235	1217.362 ng/µl	96
73)	Benzo(e)pyrene	47.83	252	1023988m	4221.406 ng/µl	
75)	Benzo(a)pyrene	48.11	252	1073497m	4244.786 ng/µl	
76)	Perylene	48.57	252	235752	962.462 ng/µl	98
77)	Indeno(1,2,3-cd)pyrene	54.65	276	800518m	3661.026 ng/µl	
78)	Dibenz(a,h)anthracene	54.75	278	199648m	876.544 ng/µl	
79)	Benzo(g,h,i)perylene	55.85	276	839927m	3183.474 ng/µl	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8661.D
Acq On : 22 Apr 2004 7:27 am
Sample : S1505DUP-P(7)
ɜc :
Integration Params: RTEINT.P
nt Time: Apr 22 09:48:45 2004

Vial: 32
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	232039	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	111011	508.483 ng/µl	0.00
Spiked Amount 2001.000			Recovery = 25.41%		
19) Fluorene-d10	27.37	176	264716	1449.376 ng/µl	0.01
Spiked Amount 2076.000			Recovery = 69.82%		
34) Phenanthrene-d10	31.19	188	119288	652.536 ng/µl	0.01
Spiked Amount 1988.500			Recovery = 32.82%		
64) Chrysene-d12	41.82	240	122091m	611.849 ng/µl	0.02
Spiked Amount 2004.000			Recovery = 30.53%		
74) Benzo(a)pyrene-d12	47.96	264	378761	2155.153 ng/µl	0.04
Spiked Amount 2064.000			Recovery = 104.42%		
Target Compounds					Qvalue
3) Naphthalene	18.47	128	48655	198.455 ng/µl	100
4) C1-Naphthalenes	21.15	142	57680m	235.267 ng/µl	
5) 2-Methylnaphthalene	21.15	142	28563	116.504 ng/µl	98
6) 1-Methylnaphthalene	21.57	142	27284	111.287 ng/µl	97
7) C2-Naphthalenes	23.65	156	118805m	484.585 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	4537m	18.506 ng/µl	
9) 1-Ethylnaphthalene	23.50	156	1619m	6.604 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	39794	162.313 ng/µl	98
11) 1,5-Dimethylnaphthalene	24.52	156	5266	21.479 ng/µl	95
12) C3-Naphthalenes	27.36	170	122753m	500.688 ng/µl	
13) C4-Naphthalenes	29.10	184	48769m	198.920 ng/µl	
14) Biphenyl	23.05	154	13692m	72.105 ng/µl	
15) Acenaphthylene	24.72	152	388836m	1615.533 ng/µl	
16) Acenaphthene	25.46	154	26763	186.567 ng/µl	100
17) Dibenzofuran	26.10	168	39982m	203.143 ng/µl	
18) Cadalene	29.16	198	642m	11.867 ng/µl	
20) Fluorene	27.47	166	67317m	389.798 ng/µl	
21) C1-Fluorenes	29.71	180	48254m	279.414 ng/µl	
22) 2-Methylfluorene	29.71	180	14246m	82.491 ng/µl	
23) 1-Methylfluorene	29.85	180	12522m	72.508 ng/µl	
24) C2-Fluorenes	32.64	194	81620m	472.619 ng/µl	
25) C3-Fluorenes	34.56	208	201293m	1165.583 ng/µl	
26) Dibenzothiophene	30.78	184	97805m	448.618 ng/µl	
27) C1-Dibenzothiophenes	32.56	198	126377m	579.674 ng/µl	
28) 4-Methyldibenzothiophene	32.56	198	43656m	200.244 ng/µl	
29) 2/3-Methyldibenzothiophene	32.89	198	39386m	180.658 ng/µl	
30) 1-Methyldibenzothiophene	33.33	198	12636	57.960 ng/µl	92
31) C2-Dibenzothiophenes	34.62	212	106068m	486.519 ng/µl	
32) C3-Dibenzothiophenes	36.08	226	61424m	281.743 ng/µl	
33) C4-Dibenzothiophenes	37.79	240	25354m	116.295 ng/µl	
35) Phenanthrene	31.29	178	1662358	6731.083 ng/µl	100
36) Anthracene	31.46	178	381000m	1780.334 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.37	192	1059743m	4291.024 ng/µl	
38) 3-Methylphenanthrene	33.25	192	285514m	1156.080 ng/µl	
39) 2/4-Methylphenanthrene	33.37	192	307597m	1245.496 ng/µl	
40) 2-Methylanthracene	33.52	192	67848m	274.725 ng/µl	
41) 9-Methylphenanthrene	33.70	192	215747m	873.585 ng/µl	
42) 1-Methylphenanthrene	33.80	192	166254	673.182 ng/µl	96
43) C2-Phenanthrenes/Anthracen	35.54	206	735485m	2978.065 ng/µl	
44) 2,7-Dimethylphenanthrene	35.32	206	50484m	204.416 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8661.D
Acq On : 22 Apr 2004 7:27 am
Sample : S1505DUP-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 22 09:48:45 2004

Vial: 32
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Thu Apr 22 09:44:40 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.76	206	55491m	224.690 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.39	220	306539m	1241.212 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.61	234	91781m	371.632 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.32	234	3438m	65.378 ng/µl	
50)	Benzo(b)fluorene	38.60	216	108120m	695.840 ng/µl	
51)	Fluoranthene	36.07	202	2233036m	8691.768 ng/µl	
52)	Pyrene	36.95	202	2345723m	8838.428 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.76	216	1482041m	5584.169 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	41.23	230	1053999m	3971.353 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	42.32	244	420247m	1583.445 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.82	234	169315	744.962 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.16	234	43602	191.843 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.45	234	47904m	210.771 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.23	248	178065m	783.461 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.81	262	116889m	514.295 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.47	276	80046m	352.191 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.09	290	35646m	156.837 ng/µl	
63)	Benzo(a)anthracene	41.76	228	726940m	2950.870 ng/µl	
65)	Chrysene	41.92	228	1272031m	5033.674 ng/µl	
66)	C1-Chrysenes	43.44	242	696589m	2756.538 ng/µl	
67)	C2-Chrysenes	45.47	256	348201m	1377.899 ng/µl	
68)	C3-Chrysenes	46.58	270	150709m	596.385 ng/µl	
69)	C4-Chrysenes	47.62	284	80529m	318.669 ng/µl	
70)	Benzo(b)fluoranthene	46.42	252	1134649	4584.271 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.51	252	1031864	4045.701 ng/µl	98
72)	Benzo(a)fluoranthene	46.94	252	226830	1075.115 ng/µl	97
73)	Benzo(e)pyrene	47.83	252	890975m	3793.093 ng/µl	
75)	Benzo(a)pyrene	48.11	252	911463m	3721.857 ng/µl	
76)	Perylene	48.56	252	200625	845.822 ng/µl	97
77)	Indeno(1,2,3-cd)pyrene	54.65	276	694834m	3281.546 ng/µl	
78)	Dibenz(a,h)anthracene	54.75	278	167294m	758.499 ng/µl	
79)	Benzo(g,h,i)perylene	55.84	276	723505	2831.829 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8662.D
Acq On : 22 Apr 2004 8:52 am
Sample : S1509-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 17:39:49 2004

Vial: 33
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 17:39:45 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	234374	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	88511	401.383 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 20.06%		
19) Fluorene-d10	27.37	176	267281	1448.840 ng/µl	0.01
Spiked Amount 2076.000			Recovery = 69.79%		
34) Phenanthrene-d10	31.19	188	84980m	460.231 ng/µl	0.01
Spiked Amount 1988.500			Recovery = 23.14%		
64) Chrysene-d12	41.82	240	86444	428.891 ng/µl	0.02
Spiked Amount 2004.000			Recovery = 21.40%		
74) Benzo(a)pyrene-d12	47.97	264	375731	2116.612 ng/µl	0.05
Spiked Amount 2064.000			Recovery = 102.55%		

Target Compounds					Qvalue
3) Naphthalene	18.48	128	64825m	261.776 ng/µl	
4) C1-Naphthalenes	21.16	142	54007m	218.091 ng/µl	
5) 2-Methylnaphthalene	21.16	142	31596m	127.591 ng/µl	
6) 1-Methylnaphthalene	21.58	142	21247	85.799 ng/µl	97
7) C2-Naphthalenes	24.00	156	56011m	226.183 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	4174	16.855 ng/µl#	83
9) 1-Ethylnaphthalene	23.51	156	1120m	4.523 ng/µl	
10) 2,6-Dimethylnaphthalene	23.66	156	12464	50.332 ng/µl	97
11) 1,5-Dimethylnaphthalene	24.53	156	2549m	10.293 ng/µl	
12) C3-Naphthalenes	27.37	170	79502m	321.044 ng/µl	
13) C4-Naphthalenes	28.66	184	102756m	414.948 ng/µl	
14) Biphenyl	23.05	154	10823m	56.429 ng/µl	
15) Acenaphthylene	24.72	152	39014m	160.480 ng/µl	
16) Acenaphthene	25.46	154	96342m	664.915 ng/µl	
17) Dibenzofuran	26.10	168	65381m	328.883 ng/µl	
18) Cadalene	29.17	198	1488m	27.231 ng/µl	
20) Fluorene	27.48	166	89814m	514.885 ng/µl	
21) C1-Fluorenes	29.71	180	25484m	146.094 ng/µl	
22) 2-Methylfluorene	29.71	180	8409m	48.207 ng/µl	
23) 1-Methylfluorene	29.85	180	6914m	39.637 ng/µl	
24) C2-Fluorenes	32.05	194	52356m	300.146 ng/µl	
25) C3-Fluorenes	34.56	208	105558m	605.142 ng/µl	
26) Dibenzothiophene	30.78	184	66155	300.421 ng/µl	99
27) C1-Dibenzothiophenes	32.57	198	67386m	306.011 ng/µl	
28) 4-Methyldibenzothiophene	32.57	198	21871m	99.320 ng/µl	
29) 2/3-Methyldibenzothiophene	32.89	198	19345m	87.849 ng/µl	
30) 1-Methyldibenzothiophene	33.33	198	9337	42.401 ng/µl	94
31) C2-Dibenzothiophenes	34.27	212	76081m	345.496 ng/µl	
32) C3-Dibenzothiophenes	36.08	226	57013m	258.905 ng/µl	
33) C4-Dibenzothiophenes	37.79	240	28664m	130.168 ng/µl	
35) Phenanthrene	31.28	178	1092949	4381.389 ng/µl	100
36) Anthracene	31.46	178	252357m	1167.464 ng/µl	
37) C1-Phenanthrenes/Anthracen	33.37	192	357537m	1433.286 ng/µl	
38) 3-Methylphenanthrene	33.25	192	87200m	349.565 ng/µl	
39) 2/4-Methylphenanthrene	33.37	192	103170m	413.586 ng/µl	
40) 2-Methylanthracene	33.52	192	34203m	137.112 ng/µl	
41) 9-Methylphenanthrene	33.70	192	71238m	285.577 ng/µl	
42) 1-Methylphenanthrene	33.80	192	55171m	221.168 ng/µl	
43) C2-Phenanthrenes/Anthracen	35.54	206	229436m	919.758 ng/µl	
44) 2,7-Dimethylphenanthrene	35.09	206	20409m	81.815 ng/µl	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8662.D
Acq On : 22 Apr 2004 8:52 am
Sample : S1509-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 17:39:49 2004

Vial: 33
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 17:39:45 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	35.76	206	17173m	68.843 ng/µl	
46)	C3-Phenanthrenes/Anthracen	37.39	220	103019m	412.980 ng/µl	
47)	C4-Phenanthrenes/Anthracen	39.61	234	37435m	150.069 ng/µl	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	38.31	234	2115m	39.819 ng/µl	
50)	Benzo(b)fluorene	38.60	216	70574m	449.676 ng/µl	
51)	Fluoranthene	36.07	202	1639421m	6317.633 ng/µl	
52)	Pyrene	36.94	202	1392612m	5194.934 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	38.36	216	610177m	2276.175 ng/µl	
54)	C2-Fluoranthenes/Pyrenes	41.23	230	407057m	1518.466 ng/µl	
55)	C3-Fluoranthenes/Pyrenes	41.77	244	169928m	633.891 ng/µl	
56)	Benzo(b)naphtho(2,1-d)thio	40.82	234	92672	403.682 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	41.16	234	23333	101.639 ng/µl	100
58)	Benzo(b)naphtho(2,3-d)thio	41.46	234	30488m	132.807 ng/µl	
59)	C1-Benzo(b)naphthothiophen	42.23	248	83852m	365.261 ng/µl	
60)	C2-Benzo(b)naphthothiophen	43.82	262	58654m	255.498 ng/µl	
61)	C3-Benzo(b)naphthothiophen	46.48	276	53270m	232.045 ng/µl	
62)	C4-Benzo(b)naphthothiophen	48.08	290	32979m	143.657 ng/µl	
63)	Benzo(a)anthracene	41.76	228	630425m	2533.590 ng/µl	
65)	Chrysene	41.92	228	734295m	2876.799 ng/µl	
66)	C1-Chrysenes	43.44	242	268125m	1050.452 ng/µl	
67)	C2-Chrysenes	45.47	256	118370m	463.746 ng/µl	
68)	C3-Chrysenes	46.59	270	75850m	297.163 ng/µl	
69)	C4-Chrysenes	47.62	284	44182m	173.095 ng/µl	
70)	Benzo(b)fluoranthene	46.41	252	603733	2414.934 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.51	252	641419	2489.802 ng/µl	97
72)	Benzo(a)fluoranthene	46.95	252	104589m	490.786 ng/µl	
73)	Benzo(e)pyrene	47.83	252	438420m	1847.863 ng/µl	
75)	Benzo(a)pyrene	48.10	252	553668m	2238.317 ng/µl	
76)	Perylene	48.57	252	142721	595.708 ng/µl	96
77)	Indeno(1,2,3-cd)pyrene	54.64	276	376593m	1760.845 ng/µl	
78)	Dibenz(a,h)anthracene	54.73	278	96911m	435.010 ng/µl	
79)	Benzo(g,h,i)perylene	55.83	276	362301	1403.934 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8665.D
Acq On : 22 Apr 2004 2:25 pm
Sample : S1438-P(7)
SC :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:27:53 2004

Vial: 36
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

IN VIAL DILUTION.

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	71835m	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	0.00	136	0d	0.000 ng/µl	
Spiked Amount 2001.000			Recovery	= 0.00%	
19) Fluorene-d10	0.00	176	0d	0.000 ng/µl	
Spiked Amount 2076.000			Recovery	= 0.00%	
34) Phenanthrene-d10	0.00	188	0d	0.000 ng/µl	
Spiked Amount 1988.500			Recovery	= 0.00%	
64) Chrysene-d12	0.00	240	0d	0.000 ng/µl	
Spiked Amount 2004.000			Recovery	= 0.00%	
74) Benzo(a)pyrene-d12	0.00	264	0d	0.000 ng/µl	
Spiked Amount 2064.000			Recovery	= 0.00%	

Target Compounds					Qvalue
3) Naphthalene	0.00	128	0	N.D. d	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	0.00	152	0	N.D. d	
16) Acenaphthene	0.00	154	0	N.D. d	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	0.00	166	0	N.D. d	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	0.00	178	0	N.D. d	
36) Anthracene	0.00	178	0	N.D. d	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

260

Data File : H:\E\DATA\SE0041\W8665.D
Acq On : 22 Apr 2004 2:25 pm
Sample : S1438-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:27:53 2004

Vial: 36
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.06	202	1086556m	13661.217 ng/µl	
52)	Pyrene	36.94	202	1187021m	14447.131 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	0.00	228	0	N.D. d	
65)	Chrysene	41.91	228	939759	12012.371 ng/µl	100
66)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.40	252	788308	10287.967 ng/µl	99
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D. d	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	0.00	252	0	N.D. d	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D. d	
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D. d	
79)	Benzo(g,h,i)perylene	0.00	276	0	N.D. d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

261

Data File : H:\E\DATA\SE0041\W8666.D
Acq On : 22 Apr 2004 3:49 pm
Sample : S1471-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:27:55 2004

Vial: 37
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 14:27:19 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

IN VIAL DILUTION. JAR 4/28/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	78168	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	0.00	136	0d	0.000 ng/µl	
Spiked Amount 2001.000			Recovery	= 0.00%	
19) Fluorene-d10	0.00	176	0d	0.000 ng/µl	
Spiked Amount 2076.000			Recovery	= 0.00%	
34) Phenanthrene-d10	0.00	188	0d	0.000 ng/µl	
Spiked Amount 1988.500			Recovery	= 0.00%	
64) Chrysene-d12	0.00	240	0d	0.000 ng/µl	
Spiked Amount 2004.000			Recovery	= 0.00%	
74) Benzo(a)pyrene-d12	0.00	264	0d	0.000 ng/µl	
Spiked Amount 2064.000			Recovery	= 0.00%	
Target Compounds					Qvalue
3) Naphthalene	0.00	128	0	N.D. d	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	0.00	152	0	N.D. d	
16) Acenaphthene	0.00	154	0	N.D. d	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	0.00	166	0	N.D. d	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.27	178	856677	10296.970 ng/µl	99
36) Anthracene	0.00	178	0	N.D. d	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8666.D
Acq On : 22 Apr 2004 3:49 pm
Sample : S1471-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:27:55 2004

Vial: 37
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 14:27:19 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.06	202	966315m	11165.112 ng/µl	
52)	Pyrene	36.93	202	967184	10817.811 ng/µl	98
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	0.00	228	0	N.D. d	
5)	Chrysene	0.00	228	0	N.D. d	
66)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	0.00	252	0	N.D. d	
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D. d	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	0.00	252	0	N.D. d	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D. d	
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D. d	
79)	Benzo(g,h,i)perylene	0.00	276	0	N.D. d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8667.D
Acq On : 22 Apr 2004 5:14 pm
Sample : S1483-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:27:57 2004

Vial: 38
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 14:27:19 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

IN-VIAL DILUTION
4/28/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	56259	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	0.00	136	0d	0.000 ng/µl	
Spiked Amount 2001.000			Recovery	= 0.00%	
19) Fluorene-d10	0.00	176	0d	0.000 ng/µl	
Spiked Amount 2076.000			Recovery	= 0.00%	
34) Phenanthrene-d10	0.00	188	0d	0.000 ng/µl	
Spiked Amount 1988.500			Recovery	= 0.00%	
64) Chrysene-d12	0.00	240	0d	0.000 ng/µl	
Spiked Amount 2004.000			Recovery	= 0.00%	
74) Benzo(a)pyrene-d12	0.00	264	0d	0.000 ng/µl	
Spiked Amount 2064.000			Recovery	= 0.00%	

Target Compounds					Qvalue
3) Naphthalene	0.00	128	0	N.D.	d
4) C1-Naphthalenes	0.00	142	0	N.D.	d
5) 2-Methylnaphthalene	0.00	142	0	N.D.	d
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d
7) C2-Naphthalenes	0.00	156	0	N.D.	d
8) 2-Ethylnaphthalene	0.00	156	0	N.D.	d
9) 1-Ethylnaphthalene	0.00	156	0	N.D.	d
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	d
12) C3-Naphthalenes	0.00	170	0	N.D.	d
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D.	d
15) Acenaphthylene	0.00	152	0	N.D.	d
16) Acenaphthene	0.00	154	0	N.D.	d
17) Dibenzofuran	0.00	168	0	N.D.	d
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	0.00	166	0	N.D.	d
21) C1-Fluorenes	0.00	180	0	N.D.	d
22) 2-Methylfluorene	0.00	180	0	N.D.	d
23) 1-Methylfluorene	0.00	180	0	N.D.	d
24) C2-Fluorenes	0.00	194	0	N.D.	d
25) C3-Fluorenes	0.00	208	0	N.D.	d
26) Dibenzothiophene	0.00	184	0	N.D.	d
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	d
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	d
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	d
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	d
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	d
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	0.00	178	0	N.D.	d
36) Anthracene	0.00	178	0	N.D.	d
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d
40) 2-Methylanthracene	0.00	192	0	N.D.	d
41) 9-Methylphenanthrene	0.00	192	0	N.D.	d
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8667.D
Acq On : 22 Apr 2004 5:14 pm
Sample : S1483-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:27:57 2004

Vial: 38
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 14:27:19 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.06	202	2019170m	32415.613 ng/µl	
52)	Pyrene	36.94	202	1744079	27104.004 ng/µl	99
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	0.00	228	0	N.D. d	
65)	Chrysene	41.91	228	1011101m	16502.543 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.40	252	779086	12982.644 ng/µl	98
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D. d	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	0.00	252	0	N.D. d	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D. d	
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D. d	
79)	Benzo(g,h,i)perylene	0.00	276	0	N.D. d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8668.D
Acq On : 22 Apr 2004 6:38 pm
Sample : S1484-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:28:15 2004

Vial: 39
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 14:28:09 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

IN-VIAL DILUTION.

4/28/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	75350	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	0.00	136	0d	0.000 ng/µl	
Spiked Amount 10005.000			Recovery =	0.00%	
19) Fluorene-d10	0.00	176	0d	0.000 ng/µl	
Spiked Amount 2076.000			Recovery =	0.00%	
34) Phenanthrene-d10	0.00	188	0d	0.000 ng/µl	
Spiked Amount 10012.500			Recovery =	0.00%	
64) Chrysene-d12	0.00	240	0d	0.000 ng/µl	
Spiked Amount 10020.000			Recovery =	0.00%	
74) Benzo(a)pyrene-d12	0.00	264	0d	0.000 ng/µl	
Spiked Amount 2064.000			Recovery =	0.00%	

Target Compounds					Qvalue
3) Naphthalene	0.00	128	0	N.D. d	
4) C1-Naphthalenes	21.16	142	1874315m	23542.662 ng/µl	
5) 2-Methylnaphthalene	21.16	142	1306974m	16416.476 ng/µl	
6) 1-Methylnaphthalene	21.58	142	555242m	6974.214 ng/µl	
7) C2-Naphthalenes	24.00	156	3757492m	47196.637 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	153589	1929.182 ng/µl#	84
9) 1-Ethylnaphthalene	23.50	156	48720m	611.956 ng/µl	
10) 2,6-Dimethylnaphthalene	23.66	156	1139461m	14312.400 ng/µl	
11) 1,5-Dimethylnaphthalene	24.53	156	142827m	1794.004 ng/µl	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D. d	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	0.00	152	0	N.D. d	
16) Acenaphthene	0.00	154	0	N.D. d	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	0.00	166	0	N.D. d	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	0.00	178	0	N.D. d	
36) Anthracene	0.00	178	0	N.D. d	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
41) 2-Methylanthracene	0.00	192	0	N.D. d	
42) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8668.D
Acq On : 22 Apr 2004 6:38 pm
Sample : S1484-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:28:15 2004

Vial: 39
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 14:28:09 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	0.00	202	0	N.D. d	
52)	Pyrene	0.00	202	0	N.D. d	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	0.00	228	0	N.D. d	
65)	Chrysene	0.00	228	0	N.D. d	
66)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	0.00	252	0	N.D. d	
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D. d	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	0.00	252	0	N.D. d	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D. d	
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D. d	
79)	Benzo(g,h,i)perylene	0.00	276	0	N.D. d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

267

Data File : H:\E\DATA\SE0041\W8669.D
Acq On : 22 Apr 2004 8:03 pm
Sample : S1485-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:27:59 2004

Vial: 40
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 14:27:19 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

IN-VIAL DILUTION.

4/28/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	51865m	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	0.00	136	0d	0.000 ng/µl	
Spiked Amount 2001.000			Recovery	= 0.00%	
19) Fluorene-d10	0.00	176	0d	0.000 ng/µl	
Spiked Amount 2076.000			Recovery	= 0.00%	
34) Phenanthrene-d10	0.00	188	0d	0.000 ng/µl	
Spiked Amount 1988.500			Recovery	= 0.00%	
64) Chrysene-d12	0.00	240	0d	0.000 ng/µl	
Spiked Amount 2004.000			Recovery	= 0.00%	
74) Benzo(a)pyrene-d12	0.00	264	0d	0.000 ng/µl	
Spiked Amount 2064.000			Recovery	= 0.00%	
Target Compounds					Qvalue
3) Naphthalene	0.00	128	0	N.D.	d
4) C1-Naphthalenes	0.00	142	0	N.D.	d
5) 2-Methylnaphthalene	0.00	142	0	N.D.	d
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d
7) C2-Naphthalenes	0.00	156	0	N.D.	d
8) 2-Ethylnaphthalene	0.00	156	0	N.D.	d
9) 1-Ethylnaphthalene	0.00	156	0	N.D.	d
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	d
12) C3-Naphthalenes	0.00	170	0	N.D.	d
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D.	d
15) Acenaphthylene	0.00	152	0	N.D.	d
16) Acenaphthene	0.00	154	0	N.D.	d
17) Dibenzofuran	0.00	168	0	N.D.	d
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	0.00	166	0	N.D.	d
21) C1-Fluorenes	0.00	180	0	N.D.	d
22) 2-Methylfluorene	0.00	180	0	N.D.	d
23) 1-Methylfluorene	0.00	180	0	N.D.	d
24) C2-Fluorenes	0.00	194	0	N.D.	d
25) C3-Fluorenes	0.00	208	0	N.D.	d
26) Dibenzothiophene	0.00	184	0	N.D.	d
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	d
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	d
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	d
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	d
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	d
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	d
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	d
35) Phenanthrene	0.00	178	0	N.D.	d
36) Anthracene	31.46	178	541052m	11311.030 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d
0) 2-Methylanthracene	0.00	192	0	N.D.	d
1) 9-Methylphenanthrene	0.00	192	0	N.D.	d
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8669.D
Acq On : 22 Apr 2004 8:03 pm
Sample : S1485-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:27:59 2004

Vial: 40
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 14:27:19 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.06	202	2397190m	41744.709 ng/µl	
52)	Pyrene	36.94	202	2853198m	48096.872 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.75	228	1259362m	22871.183 ng/µl	
65)	Chrysene	41.91	228	2219292m	39290.578 ng/µl	
66)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.41	252	2401599	43410.607 ng/µl	100
71)	Benzo(j/k)fluoranthene	46.52	252	2127829m	37324.559 ng/µl	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	47.82	252	1395833m	26585.695 ng/µl	
75)	Benzo(a)pyrene	48.09	252	767987m	14030.110 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.61	276	768836m	16244.925 ng/µl	
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D. d	
79)	Benzo(g,h,i)perylene	55.80	276	652379m	11423.838 ng/µl	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8670.D
Acq On : 22 Apr 2004 9:28 pm
Sample : S1486-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:28:23 2004

Vial: 41
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 14:28:09 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

IN-VIAL DILUTION.
4/29/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.33	164	77675	2002.000 ng/µl	0.00
System Monitoring Compounds					
2) Naphthalene-d8	0.00	136	0d	0.000 ng/µl	
Spiked Amount 10005.000			Recovery =	0.00%	
19) Fluorene-d10	0.00	176	0d	0.000 ng/µl	
Spiked Amount 2076.000			Recovery =	0.00%	
34) Phenanthrene-d10	0.00	188	0d	0.000 ng/µl	
Spiked Amount 10012.500			Recovery =	0.00%	
64) Chrysene-d12	0.00	240	0d	0.000 ng/µl	
Spiked Amount 10020.000			Recovery =	0.00%	
74) Benzo(a)pyrene-d12	0.00	264	0d	0.000 ng/µl	
Spiked Amount 2064.000			Recovery =	0.00%	

Target Compounds					Qvalue
3) Naphthalene	0.00	128	0	N.D. d	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	24.00	156	2767098m	33716.270 ng/µl	
8) 2-Ethylnaphthalene	23.41	156	104598	1274.496 ng/µl	96
9) 1-Ethylnaphthalene	23.50	156	37886m	461.630 ng/µl	
10) 2,6-Dimethylnaphthalene	23.65	156	769476m	9375.837 ng/µl	
11) 1,5-Dimethylnaphthalene	24.52	156	108348	1320.188 ng/µl	86
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D. d	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	0.00	152	0	N.D. d	
16) Acenaphthene	0.00	154	0	N.D. d	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	0.00	166	0	N.D. d	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	0.00	178	0	N.D. d	
36) Anthracene	0.00	178	0	N.D. d	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
0) 2-Methylanthracene	0.00	192	0	N.D. d	
1) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

270

Data File : H:\E\DATA\SE0041\W8670.D
Acq On : 22 Apr 2004 9:28 pm
Sample : S1486-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 23 14:28:23 2004

Vial: 41
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 23 14:28:09 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45) 1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46) C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47) C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48) Dehydroabietin(e)	0.00	256	0	N.D. d	
49) Retene	0.00	234	0	N.D. d	
50) Benzo(b)fluorene	0.00	216	0	N.D. d	
51) Fluoranthene	0.00	202	0	N.D. d	
52) Pyrene	0.00	202	0	N.D. d	
53) C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54) C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55) C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56) Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57) Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58) Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59) C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60) C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61) C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62) C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63) Benzo(a)anthracene	0.00	228	0	N.D. d	
65) Chrysene	0.00	228	0	N.D. d	
66) C1-Chrysenes	0.00	242	0	N.D. d	
67) C2-Chrysenes	0.00	256	0	N.D. d	
68) C3-Chrysenes	0.00	270	0	N.D.	
69) C4-Chrysenes	0.00	284	0	N.D.	
70) Benzo(b)fluoranthene	0.00	252	0	N.D. d	
71) Benzo(j/k)fluoranthene	0.00	252	0	N.D. d	
72) Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73) Benzo(e)pyrene	0.00	252	0	N.D. d	
75) Benzo(a)pyrene	0.00	252	0	N.D. d	
76) Perylene	0.00	252	0	N.D. d	
77) Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D. d	
78) Dibenz(a,h)anthracene	0.00	278	0	N.D. d	
79) Benzo(g,h,i)perylene	0.00	276	0	N.D. d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Directory: H:\E\DATA\SE0043 jk

Injection Log

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Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	W8709.d	1.	Sim Window Check (3)		27 Apr 2004 16:57
2	2	W8710.d	1.	DCM (3)		27 Apr 2004 18:22
3	3	W8711.d	1.	GD37 (1)		27 Apr 2004 19:48
4	4	W8712.d	1.	S1491-P(7) (2)		27 Apr 2004 21:13
5	5	W8713.d	1.	DCM (3)		27 Apr 2004 22:38
6	3	W8714.d	1.	GD37 (1)		28 Apr 2004 00:03

(1) CONTINUING CALIBRATION FILES RELATED TO THIS BATCH.

(2) SAMPLES PROCESSED FROM BATCH 04-0117. (DILUTION)

(3) NOT USED.

jk
4/28/04

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0043\W8712.D
Acq On : 27 Apr 2004 9:13 pm
Sample : S1491-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 28 09:55:56 2004

Vial: 4
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Wed Apr 28 09:55:41 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

IN VIAL DILUTION.
JM 4/28/04

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	150265	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	0.00	136	0d	0.000 ng/µl	
Spiked Amount 2001.000			Recovery	= 0.00%	
19) Fluorene-d10	0.00	176	0d	0.000 ng/µl	
Spiked Amount 2076.000			Recovery	= 0.00%	
34) Phenanthrene-d10	0.00	188	0d	0.000 ng/µl	
Spiked Amount 1988.500			Recovery	= 0.00%	
64) Chrysene-d12	0.00	240	0d	0.000 ng/µl	
Spiked Amount 2004.000			Recovery	= 0.00%	
74) Benzo(a)pyrene-d12	0.00	264	0d	0.000 ng/µl	
Spiked Amount 2064.000			Recovery	= 0.00%	

Target Compounds					Qvalue
3) Naphthalene	0.00	128	0	N.D.	d
4) C1-Naphthalenes	0.00	142	0	N.D.	d
5) 2-Methylnaphthalene	0.00	142	0	N.D.	d
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d
7) C2-Naphthalenes	0.00	156	0	N.D.	d
8) 2-Ethylnaphthalene	0.00	156	0	N.D.	d
9) 1-Ethylnaphthalene	0.00	156	0	N.D.	d
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	d
12) C3-Naphthalenes	0.00	170	0	N.D.	d
13) C4-Naphthalenes	0.00	184	0	N.D.	d
14) Biphenyl	0.00	154	0	N.D.	d
15) Acenaphthylene	0.00	152	0	N.D.	d
16) Acenaphthene	0.00	154	0	N.D.	d
17) Dibenzofuran	0.00	168	0	N.D.	d
18) Cadalene	0.00	198	0	N.D.	d
20) Fluorene	0.00	166	0	N.D.	d
21) C1-Fluorenes	0.00	180	0	N.D.	d
22) 2-Methylfluorene	0.00	180	0	N.D.	d
23) 1-Methylfluorene	0.00	180	0	N.D.	d
24) C2-Fluorenes	0.00	194	0	N.D.	d
25) C3-Fluorenes	0.00	208	0	N.D.	d
26) Dibenzothiophene	0.00	184	0	N.D.	d
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	d
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	d
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	d
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	d
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	d
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	d
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	d
35) Phenanthrene	0.00	178	0	N.D.	d
36) Anthracene	0.00	178	0	N.D.	d
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d
40) 2-Methylanthracene	0.00	192	0	N.D.	d
41) 9-Methylphenanthrene	0.00	192	0	N.D.	d
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0043\W8712.D
Acq On : 27 Apr 2004 9:13 pm
Sample : S1491-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 28 09:55:56 2004

Vial: 4
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Wed Apr 28 09:55:41 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.06	202	1963073m	11799.184 ng/µl	
52)	Pyrene	0.00	202	0	N.D. d	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	0.00	228	0	N.D. d	
65)	Chrysene	0.00	228	0	N.D. d	
66)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	0.00	252	0	N.D. d	
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D. d	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	0.00	252	0	N.D. d	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D. d	
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D. d	
79)	Benzo(g,h,i)perylene	0.00	276	0	N.D. d	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Injection Log

Directory: H:\E\DATA\SE0044

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Inj	Vial	FileName	Multiplier	SampleName	Injected
1	1	W8715.d	1.	GD37 (3)	30 Apr 2004 14:02
2	1	W8716.d	1.	Column Conditioner (3)	30 Apr 2004 16:20
3	2	W8717.d	1.	DCM (3)	30 Apr 2004 17:49
4	3	W8718.d	1.	GD34 (1)	30 Apr 2004 19:17
5	4	W8719.d	1.	GD35	30 Apr 2004 20:47
6	5	W8720.d	1.	GD36	30 Apr 2004 22:16
7	6	W8721.d	1.	GD37	30 Apr 2004 23:46
8	7	W8722.d	1.	GD38	1 May 2004 01:16
9	8	W8723.d	1.	GD39	1 May 2004 02:46
10	9	W8724.d	1.	GC44 (3)	1 May 2004 04:16
11	10	W8725.d	1.	DCM (3)	1 May 2004 05:45
12	11	W8726.d	1.	BE161PB-P-A-F1(4) (2)	1 May 2004 07:16
13	12	W8727.d	1.	BE279NSC-P(0)	1 May 2004 08:46
14	13	W8728.d	1.	S1430-P-A-F1(8)	1 May 2004 10:15
15	14	W8729.d	1.	S1432-P-A-F1(8)	1 May 2004 11:45
16	15	W8730.d	1.	S1435-P-A-F1(10)	1 May 2004 13:14
17	16	W8731.d	1.	S1438-P-A-F1(8)	1 May 2004 14:43
18	17	W8732.d	1.	S1445-P-A-F1(8)	1 May 2004 16:13
19	18	W8733.d	1.	S1447-P-A-F1(8)	1 May 2004 17:42
20	19	W8734.d	1.	DCM (3)	1 May 2004 19:11
21	20	W8735.d	1.	GD37 (1)	1 May 2004 20:40
22	21	W8736.d	1.	S1457-P-F1(14) (2)	1 May 2004 22:10
23	22	W8737.d	1.	S1466-P-A-F1(8)	1 May 2004 23:39
24	23	W8738.d	1.	S1468-P-A-F1(10)	2 May 2004 01:09
25	24	W8739.d	1.	S1471-P-A-F1(10)	2 May 2004 02:39
26	25	W8740.d	1.	S1474-P-A-F1(10)	2 May 2004 04:08
27	26	W8741.d	1.	S1481-P-A-F1(8)	2 May 2004 05:38
28	27	W8742.d	1.	S1482-P-A-F1(8)	2 May 2004 07:08
29	28	W8743.d	1.	S1483-P-A-F1(8)	2 May 2004 08:37
30	29	W8744.d	1.	DCM (3)	2 May 2004 10:07
31	30	W8745.d	1.	GD37 (1)	2 May 2004 11:36
32	31	W8746.d	1.	S1484-P-A-F1(10) (2)	2 May 2004 13:05
33	32	W8747.d	1.	S1485-P-A-F1(10)	2 May 2004 14:35
34	33	W8748.d	1.	S1486-P-A-F1(10)	2 May 2004 16:04
35	34	W8749.d	1.	S1491-P-A-F1(10)	2 May 2004 17:33
36	35	W8750.d	1.	S1505-P-A-F1(8)	2 May 2004 19:03
37	36	W8751.d	1.	S1505DUP-P-A-F1(8)	2 May 2004 20:32
38	37	W8752.d	1.	S1509-P-A-F1(10)	2 May 2004 22:02
39	38	W8753.d	1.	DCM (3)	2 May 2004 23:32
40	39	W8754.d	1.	GD37 (1)	3 May 2004 01:01

Misc Info

(1) INITIAL AND CONTINUING CALIBRATION FILES RELATED TO THIS BATCH.

(2) SAMPLES PROCESSED FROM BATCH 04-0117 FOR BIOMARKERS.

(3) NOT USED.

5/3/04

03 May 2004 16:34

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8726.D
Acq On : 1 May 2004 7:16 am
Sample : BE161PB-P-A-F1(4)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:28:42 2004

Vial: 11
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:27:28 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	641908	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	89053m	979.765 ng/µl	0.00
Spiked Amount 1000.000			Recovery =	97.98%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D.	
3) Hopane	0.00	191	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8727.D
Acq On : 1 May 2004 8:46 am
Sample : BE279NSC-P(0)
Misc :
Integration Params: rteint.p
Quant Time: May 03 16:25:28 2004

Vial: 12
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 16:25:24 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	425818m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	64841m	1075.404 ng/µl	0.00
Spiked Amount 1000.000			Recovery	= 107.54%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.04	191	117632m	778.730 ng/µl	

✓BL 5-10-04 ✓J.D.H BL 5-10-04

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8728.D
Acq On : 1 May 2004 10:15 am
Sample : S1430-P-A-F1(8)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:28:43 2004

Vial: 13
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:27:28 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorene-d10	29.19	176	658322m	2076.000	ng/µl	0.00
System Monitoring Compounds						
4) 5b(H)-cholane	44.31	217	92431	991.575	ng/µl	0.00
Spiked Amount 1000.000			Recovery =	99.16%		
Target Compounds						Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D.	d	
3) Hopane	56.03	191	273930	1172.970	ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0044\W8729.D
Acq On : 1 May 2004 11:45 am
Sample : S1432-P-A-F1(8)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:28:44 2004

Vial: 14
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:27:28 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	615909	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	87606m	1004.531 ng/µl	0.00
Spiked Amount 1000.000			Recovery	= 100.45%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.04	191	260122	1190.546 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8730.D
Acq On : 1 May 2004 1:14 pm
Sample : S1435-P-A-F1(10)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:29:54 2004

Vial: 15
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:27:28 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	597485m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	42792m	505.803 ng/µl	0.00
Spiked Amount 500.000			Recovery	= 101.16%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.03	191	249886	1178.964 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

280

Data File : H:\E\DATA\SE0044\W8731.D
Acq On : 1 May 2004 2:43 pm
Sample : S1438-P-A-F1(8)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:28:45 2004

Vial: 16
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:27:28 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	557442m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	81218m	1028.961 ng/µl	0.00
Spiked Amount 1000.000			Recovery	= 102.90%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.03	191	151140	764.302 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8733.D
Acq On : 1 May 2004 5:42 pm
Sample : S1447-P-A-F1(8)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:31:26 2004

Vial: 18
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:30:31 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	551922m	1038.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	148872m	952.470 ng/µl	0.00
Spiked Amount 1000.000			Recovery	= 95.25%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.05	191	266183	679.764 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

283

Data File : H:\E\DATA\SE0044\W8736.D
Acq On : 1 May 2004 10:10 pm
Sample : S1457-P-F1(14)
Misc : SID Source 4-1
Integration Params: rteint.p
Quant Time: May 05 15:25:09 2004

Vial: 21
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Wed May 05 15:25:06 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	508444m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	36685	509.556 ng/µl	0.00
Spiked Amount 500.000			Recovery = 101.91%		
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.03	191	176694	979.635 ng/µl	100

5.10.04

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8737.D
Acq On : 1 May 2004 11:39 pm
Sample : S1466-P-A-F1(8)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:31:27 2004

Vial: 22
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:30:31 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorene-d10	29.19	176	551940m	1038.000	ng/µl	0.00
System Monitoring Compounds						
4) 5b(H)-cholane	44.31	217	145401m	930.233	ng/µl	0.00
Spiked Amount 1000.000			Recovery	=	93.02%	
Target Compounds						Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D.	d	
3) Hopane	56.05	191	234861m	599.756	ng/µl	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

285

Data File : H:\E\DATA\SE0044\W8738.D
Acq On : 2 May 2004 1:09 am
Sample : S1468-P-A-F1(10)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:33:07 2004

Vial: 23
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:31:56 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	478486m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	14982m	221.130 ng/µl	0.00
Spiked Amount 200.000			Recovery	= 110.57%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.03	191	111604	657.500 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

286

Data File : H:\E\DATA\SE0044\W8739.D
Acq On : 2 May 2004 2:39 am
Sample : S1471-P-A-F1(10)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:33:08 2004

Vial: 24
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:32:18 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	457015m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	14443	223.189 ng/µl	0.00
Spiked Amount 200.000			Recovery = 111.59%		
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.03	191	132684	818.415 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

287

Data File : H:\E\DATA\SE0044\W8740.D
Acq On : 2 May 2004 4:08 am
Sample : S1474-P-A-F1(10)
Comment :
Integration Params: rteint.p
Quant Time: May 03 13:33:35 2004

Vial: 25
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:33:32 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	494205m	1038.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	132909	949.650 ng/µl	0.00
Spiked Amount 500.000			Recovery	= 189.93%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.05	191	240247	685.183 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

288

Data File : H:\E\DATA\SE0044\W8741.D
Acq On : 2 May 2004 5:38 am
Sample : S1481-P-A-F1(8)
'c :
Integration Params: rteint.p
ant Time: May 03 14:21:14 2004

Vial: 26
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 14:21:05 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	443894m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	62419m	993.079 ng/µl	0.00
Spiked Amount 1000.000			Recovery =	99.31%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.03	191	121262	770.071 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8742.D
Acq On : 2 May 2004 7:08 am
Sample : S1482-P-A-F1(8)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:31:28 2004

Vial: 27
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:30:31 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorene-d10	29.19	176	455569m	1038.000	ng/µl	0.00
System Monitoring Compounds						
4) 5b(H)-cholane	44.33	217	116397m	902.202	ng/µl	0.01
Spiked Amount 1000.000			Recovery =	90.22%		
Target Compounds						Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D.	d	
3) Hopane	56.06	191	552043	1707.947	ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

290

Data File : H:\E\DATA\SE0044\W8743.D
Acq On : 2 May 2004 8:37 am
Sample : S1483-P-A-F1(8)
ɜc :
Integration Params: rteint.p
ant Time: May 03 13:28:46 2004

Vial: 28
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:27:28 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	406010m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	57873	1006.666 ng/µl	0.00
Spiked Amount 1000.000			Recovery	= 100.67%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.05	191	17392	120.753 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8746.D
Acq On : 2 May 2004 1:05 pm
Sample : S1484-P-A-F1(10)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:33:09 2004

Vial: 31
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:32:18 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.20	176	368856m	2076.000 ng/µl	0.01
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	11003m	210.669 ng/µl	0.00
Spiked Amount 200.000			Recovery = 105.33%		
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D.	
3) Hopane	56.03	191	15885	121.399 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8747.D
Acq On : 2 May 2004 2:35 pm
Sample : S1485-P-A-F1(10)
ɜc :
Integration Params: rteint.p
ant Time: May 03 13:29:55 2004

Vial: 32
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:29:11 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	396214m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	29756m	530.385 ng/µl	0.00
Spiked Amount 500.000			Recovery	= 106.08%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.03	191	84678m	602.457 ng/µl	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8748.D
Acq On : 2 May 2004 4:04 pm
Sample : S1486-P-A-F1(10)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:34:18 2004

Vial: 33
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:34:15 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.20	176	359528m	2076.000 ng/µl	0.01
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	5235m	102.832 ng/µl	0.00
Spiked Amount 100.000			Recovery	= 102.83%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.05	191	185131	1451.550 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8749.D
Acq On : 2 May 2004 5:33 pm
Sample : S1491-P-A-F1(10)
ic :
Integration Params: rteint.p
ant Time: May 03 13:34:46 2004

Vial: 34
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:34:15 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	366526m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	12666m	244.051 ng/µl	0.00
Spiked Amount 250.000			Recovery =	97.62%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.03	191	149445	1149.376 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

295

Data File : H:\E\DATA\SE0044\W8750.D
Acq On : 2 May 2004 7:03 pm
Sample : S1505-P-A-F1(8)
ic :
Integration Params: rteint.p
ant Time: May 03 13:28:47 2004

Vial: 35
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:27:28 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	362927m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	52218m	1016.125 ng/µl	0.00
Spiked Amount 1000.000			Recovery	= 101.61%	
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.05	191	168654m	1309.975 ng/µl	

BL 5-10-04

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

296

Data File : H:\E\DATA\SE0044\W8751.D
Acq On : 2 May 2004 8:32 pm
Sample : S1505DUP-P-A-F1(8)
Misc :
Integration Params: rteint.p
Quant Time: May 03 13:28:48 2004

Vial: 36
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 11:27:28 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	356393m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	52094m	1032.297 ng/µl	0.00
Spiked Amount 1000.000			Recovery = 103.23%		
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.05	191	155511	1230.035 ng/µl	100

✓BL 5.10.04

✓RPD BL 5.10.04

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0044\W8752.D
Acq On : 2 May 2004 10:02 pm
Sample : S1509-P-A-F1(10)
'c :
Integration Params: rteint.p
ant Time: May 03 13:34:47 2004

Vial: 37
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0044.RES

Quant Method : H:\E\DATA\ME0044.M (RTE Integrator)
Title : Biomarkers
Last Update : Mon May 03 13:34:27 2004
Response via : Initial Calibration
DataAcq Meth : BIOSIM0

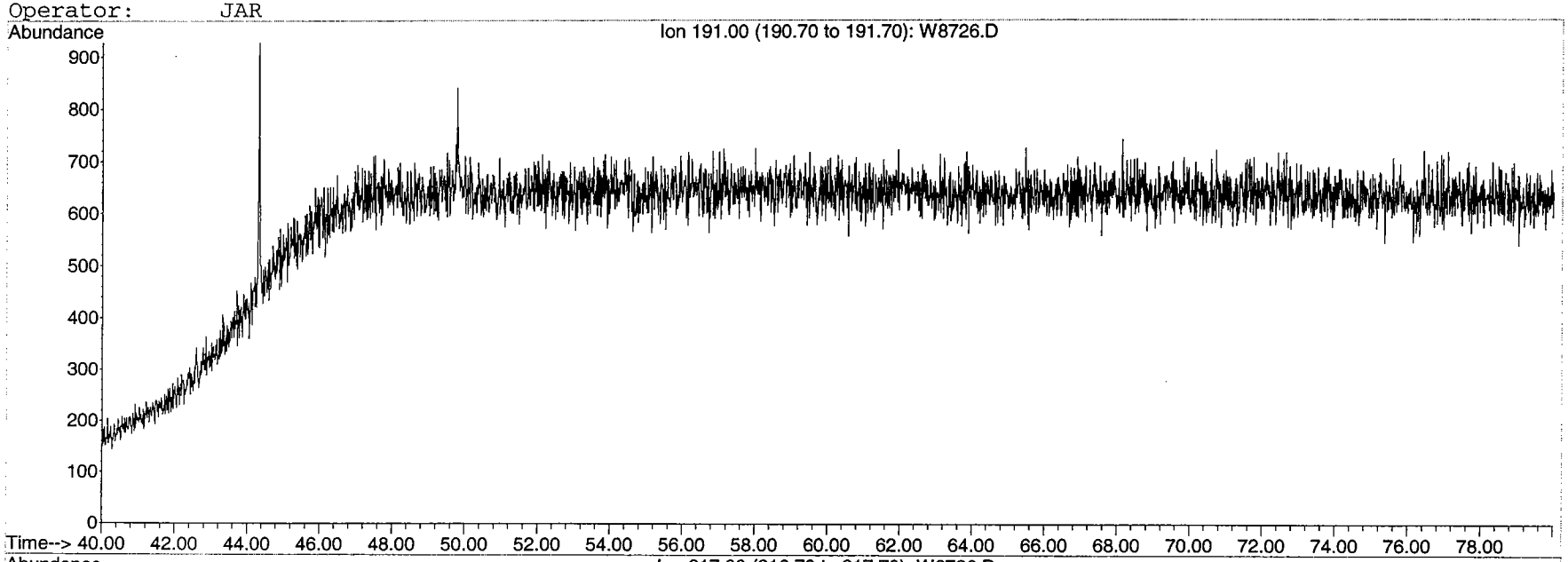
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorene-d10	29.19	176	334128m	2076.000 ng/µl	0.00
System Monitoring Compounds					
4) 5b(H)-cholane	44.31	217	12748m	269.448 ng/µl	0.00
Spiked Amount 250.000			Recovery = 107.78%		
Target Compounds					Qvalue
2) 17B(H),21B(H)-hopane	0.00	191	0	N.D. d	
3) Hopane	56.06	191	127353	1074.439 ng/µl	100

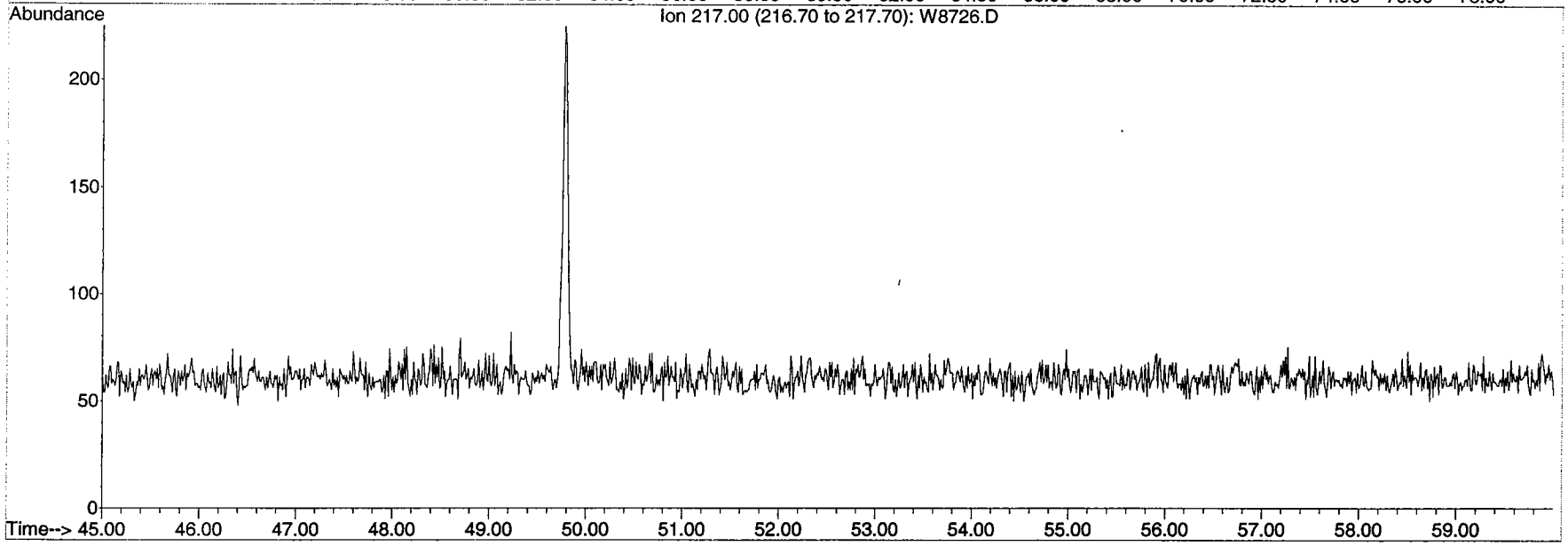
(#) = qualifier out of range (m) = manual integration (+) = signals summed

BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8726.D
Date Acquired: 1 May 2004 7:16 am
Method File: BIOSIM0
Sample Name: BE161PB-P-A-F1(4)
Misc Info: 04-0117 Procedural Blank
Operator: JAR

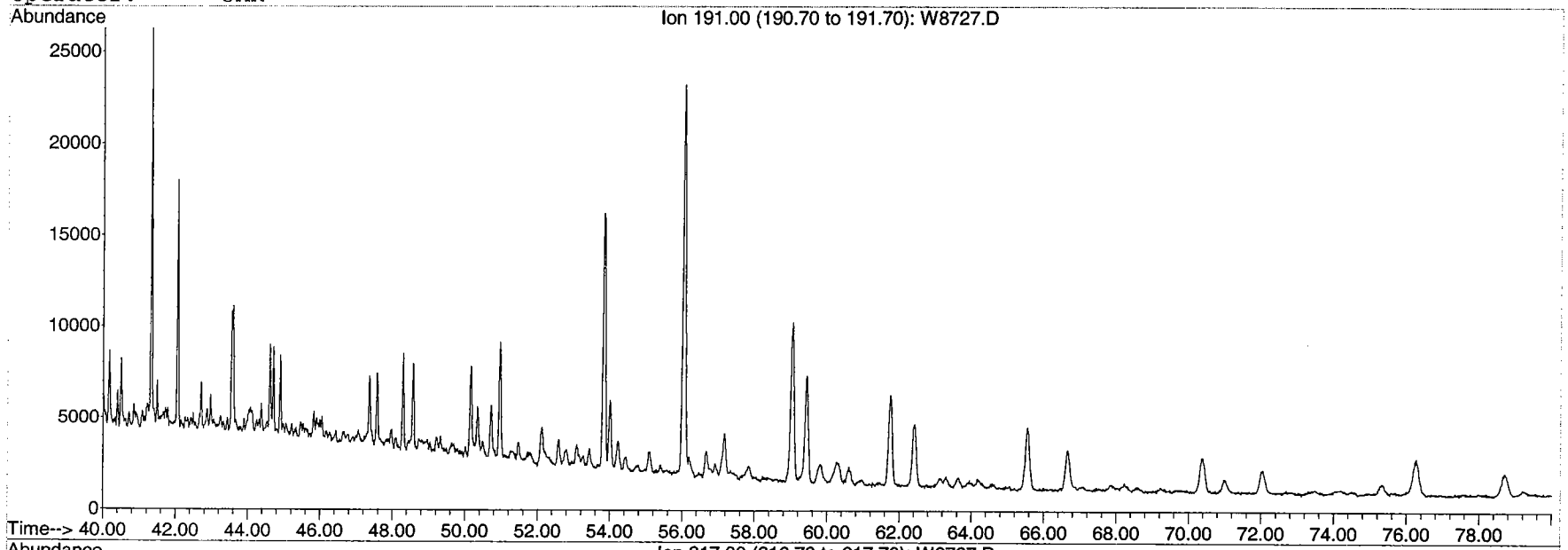


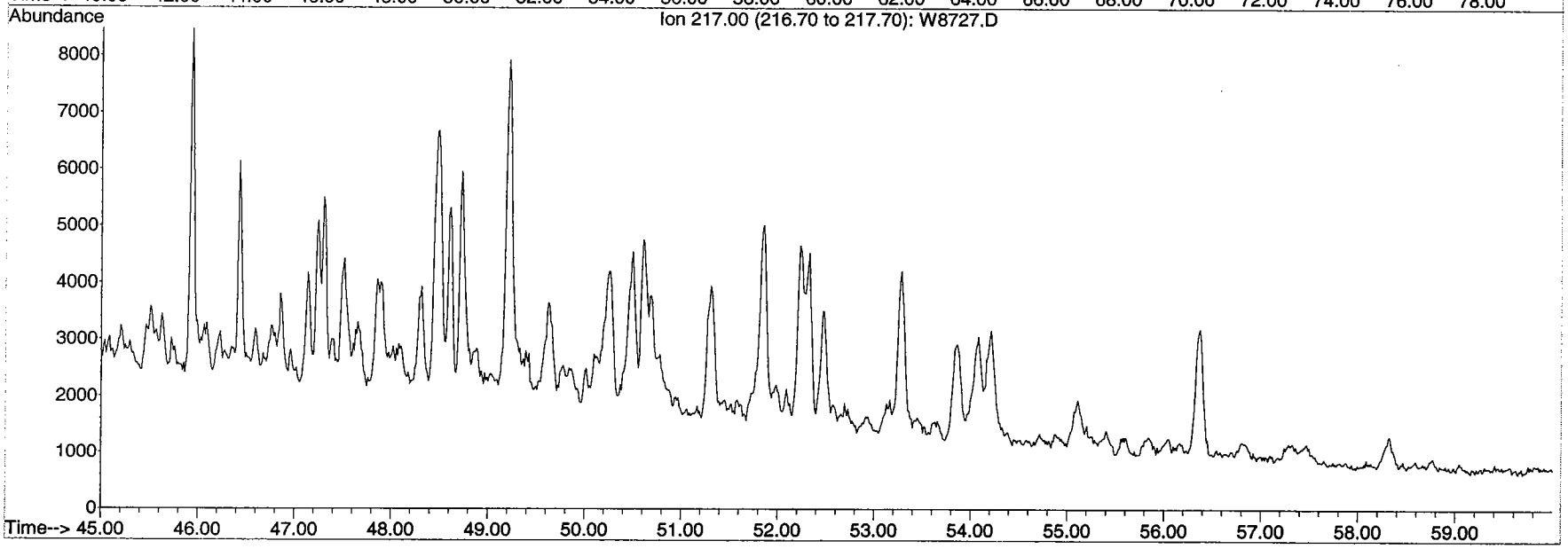


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8727.D
Date Acquired: 1 May 2004 8:46 am
Method File: BIOSIM0
Sample Name: BE279NSC-P(0)
Misc Info: North Slope Crude
Operator: JAR

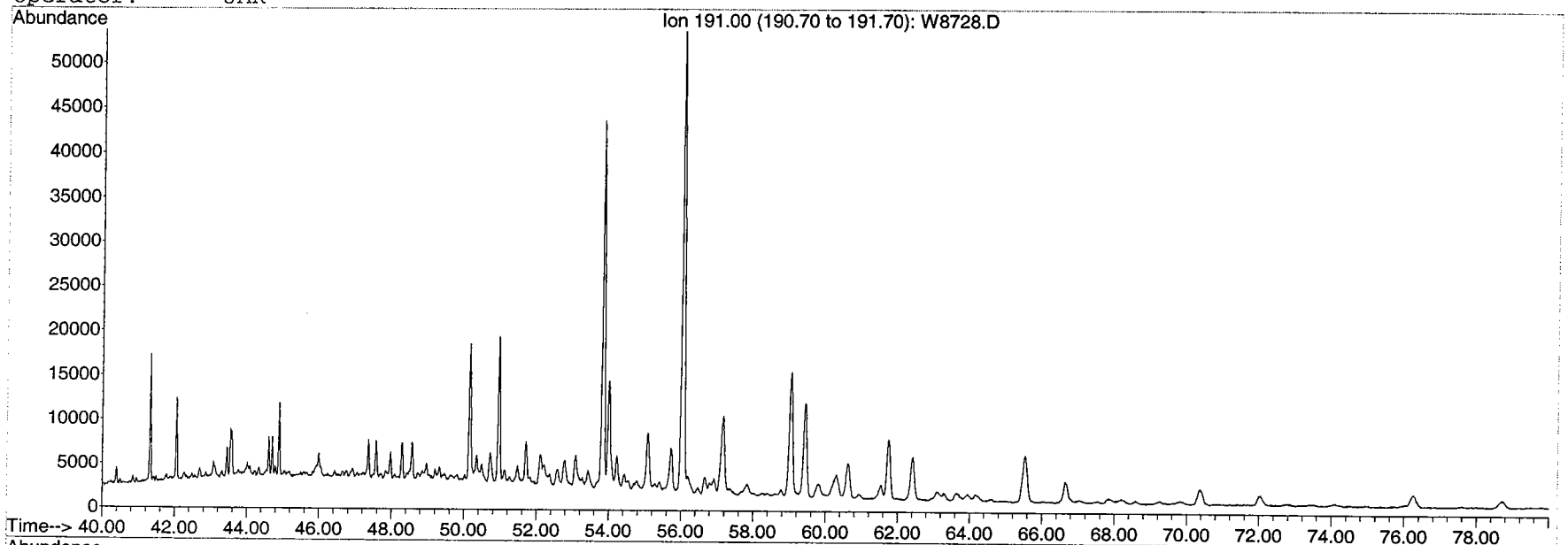


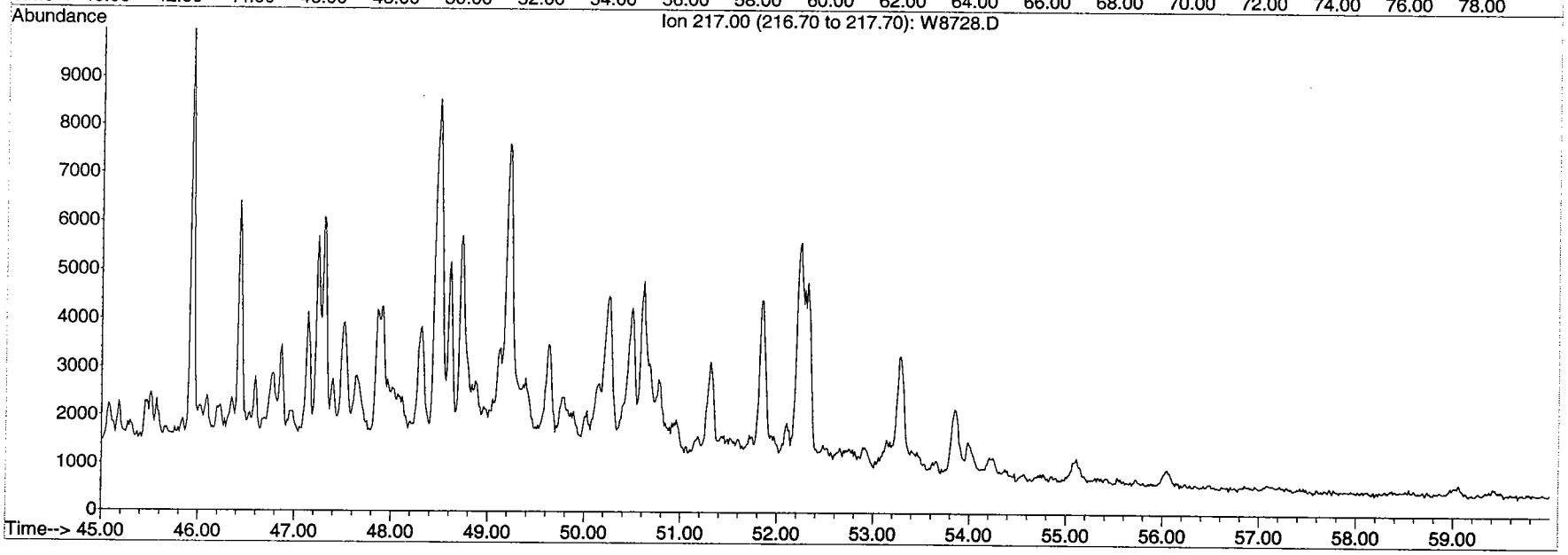


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8728.D
Date Acquired: 1 May 2004 10:15 am
Method File: BIOSIM0
Sample Name: S1430-P-A-F1(8)
Misc Info: Dup3
Operator: JAR

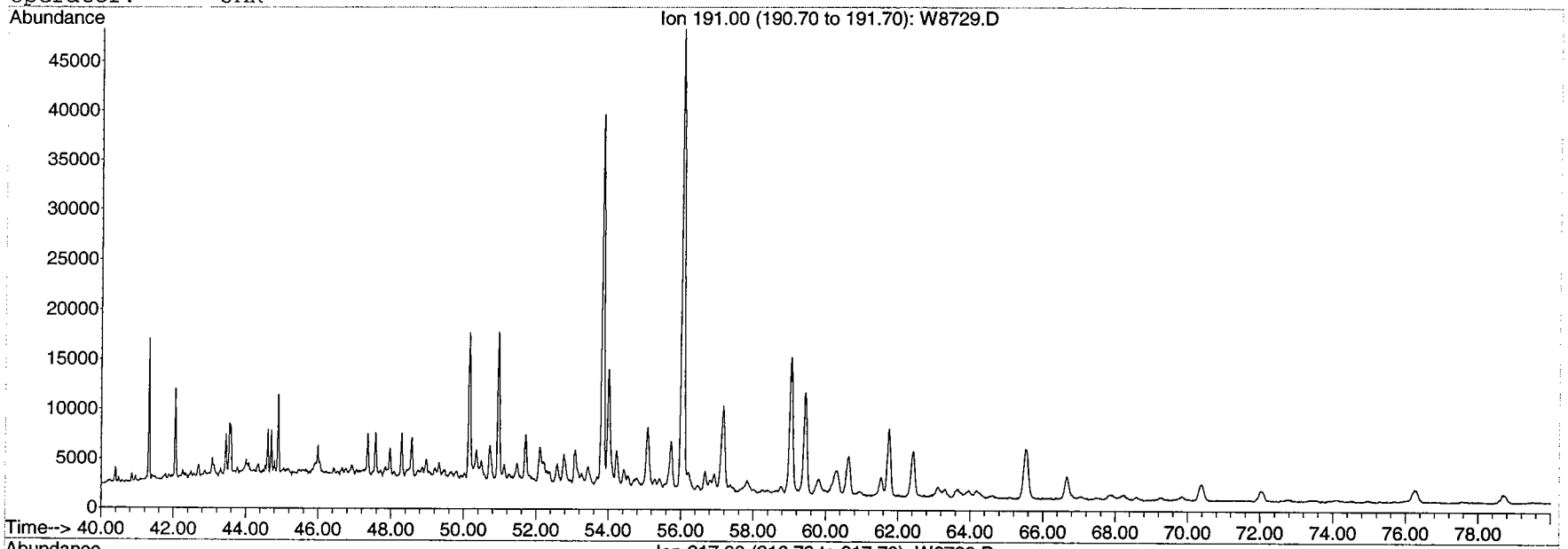


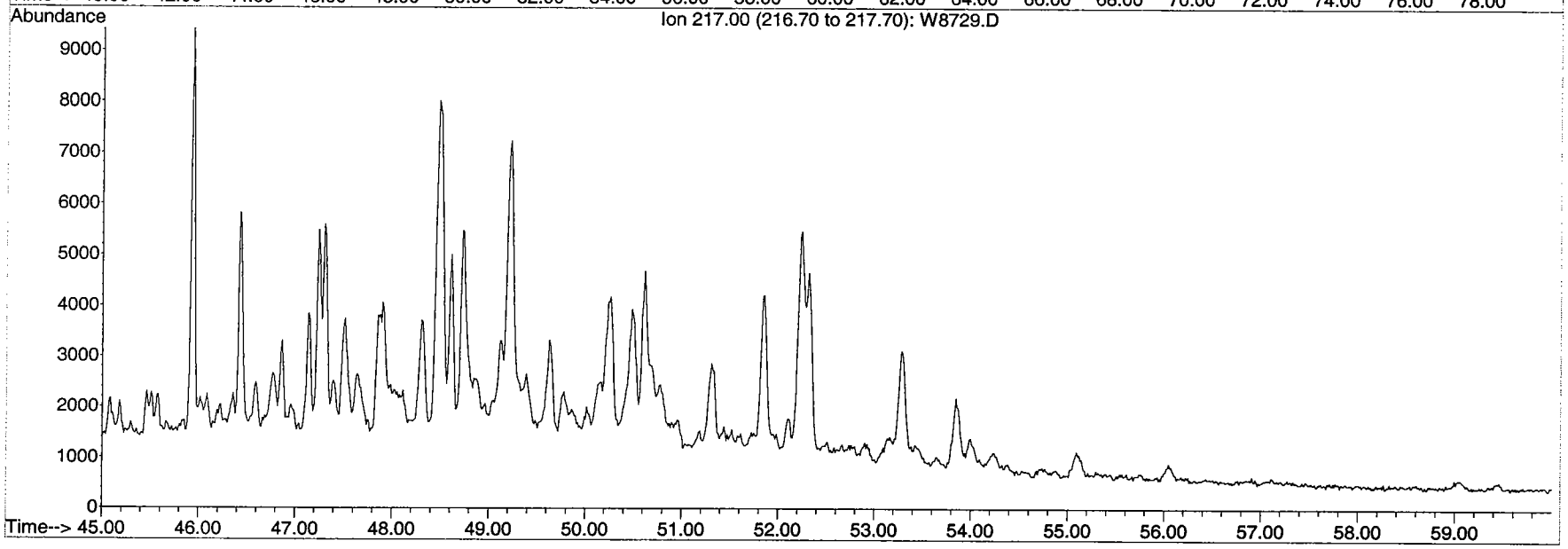


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8729.D
Date Acquired: 1 May 2004 11:45 am
Method File: BIOSIM0
Sample Name: S1432-P-A-F1(8)
Misc Info: AH-06
Operator: JAR

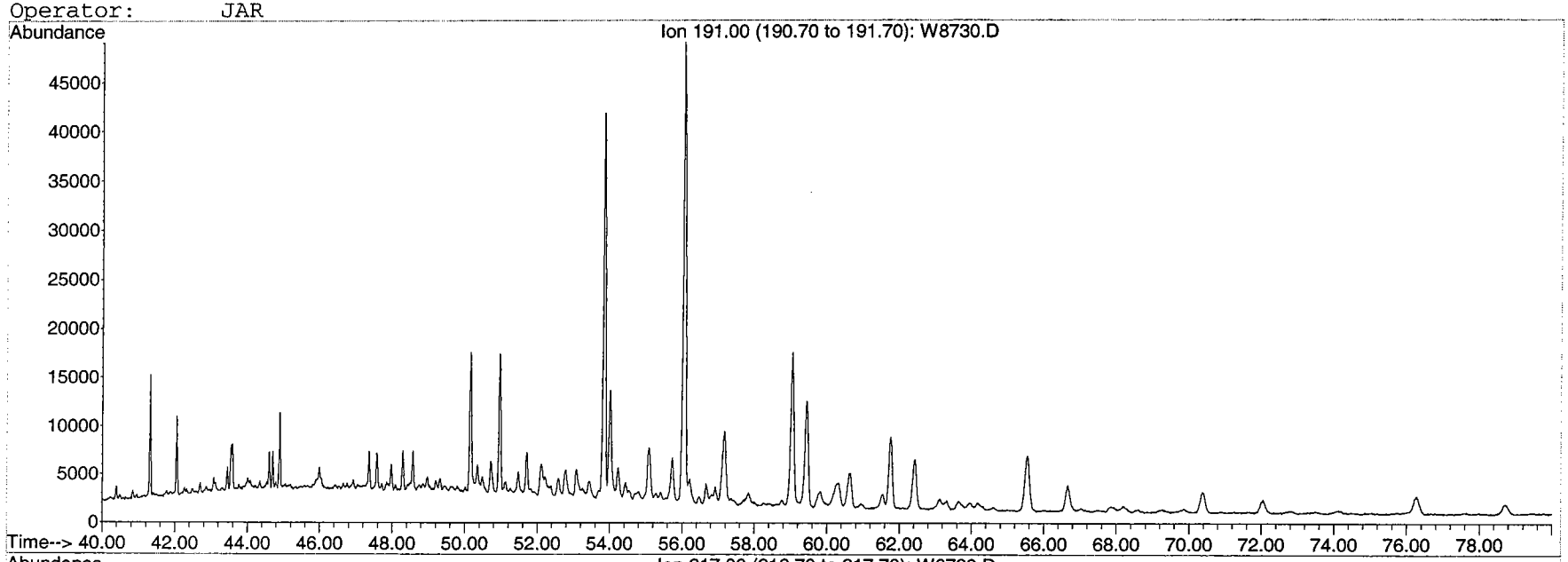


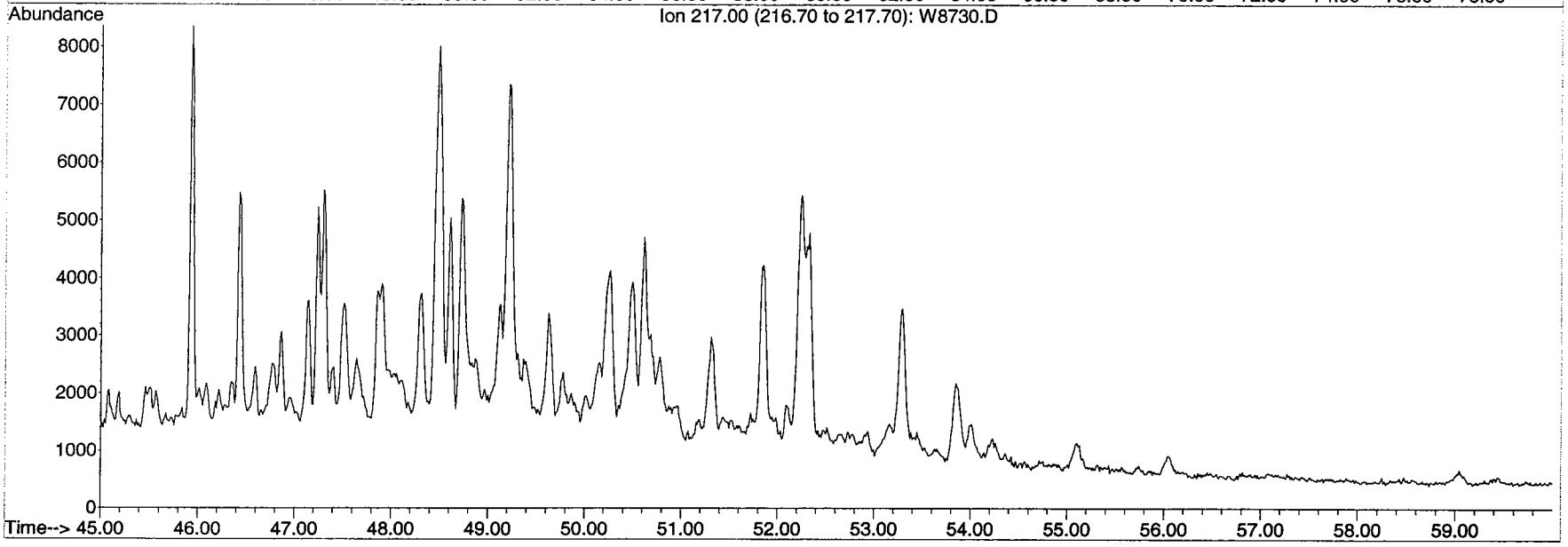


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8730.D
Date Acquired: 1 May 2004 1:14 pm
Method File: BIOSIM0
Sample Name: S1435-P-A-F1(10)
Misc Info: AH-17
Operator: JAR

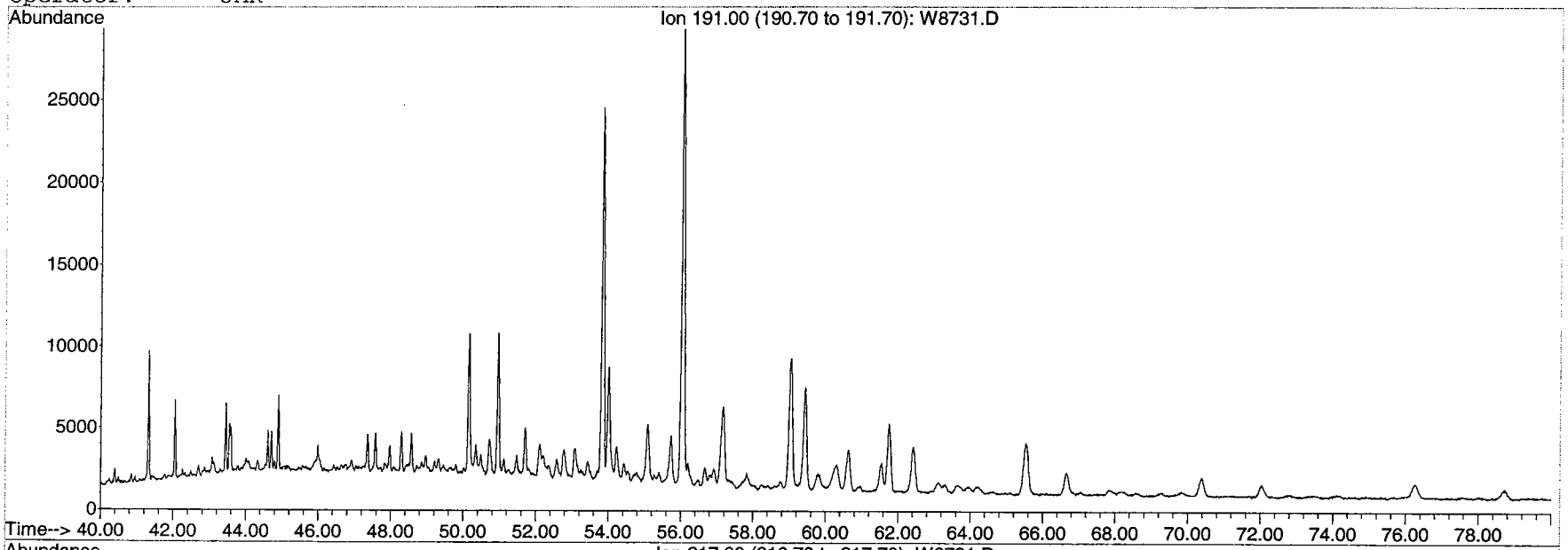


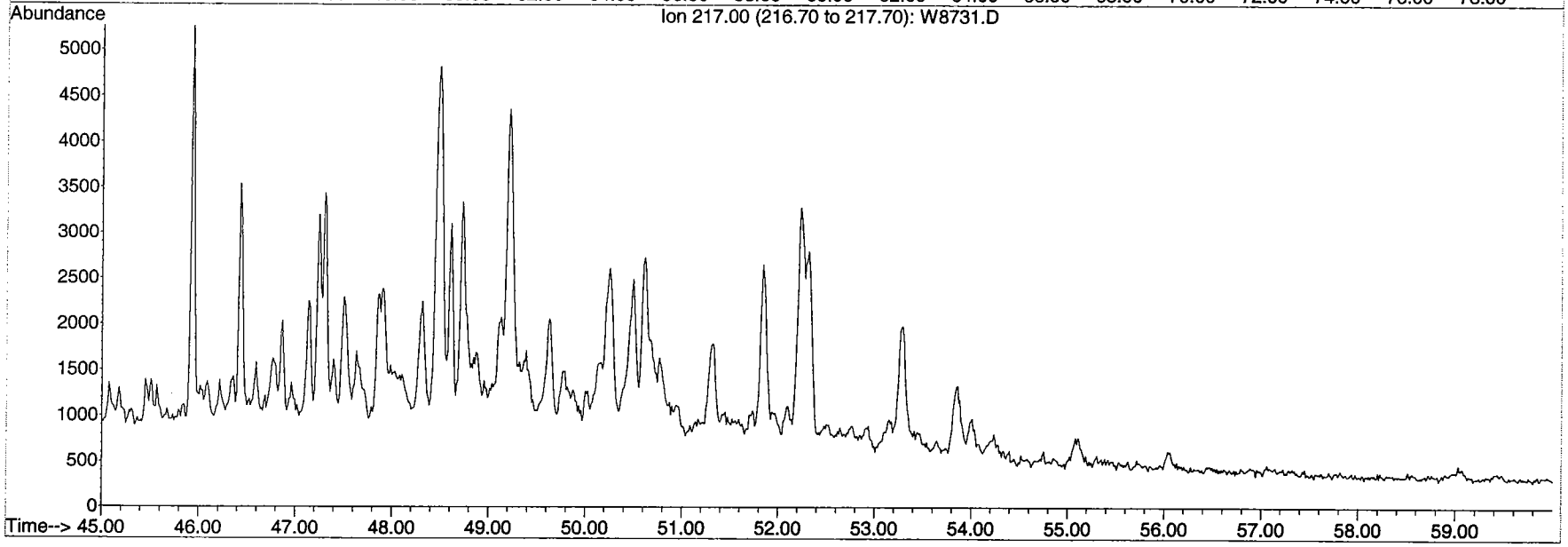


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8731.D
Date Acquired: 1 May 2004 2:43 pm
Method File: BIOSIM0
Sample Name: S1438-P-A-F1(8)
Misc Info: AH-03
Operator: JAR

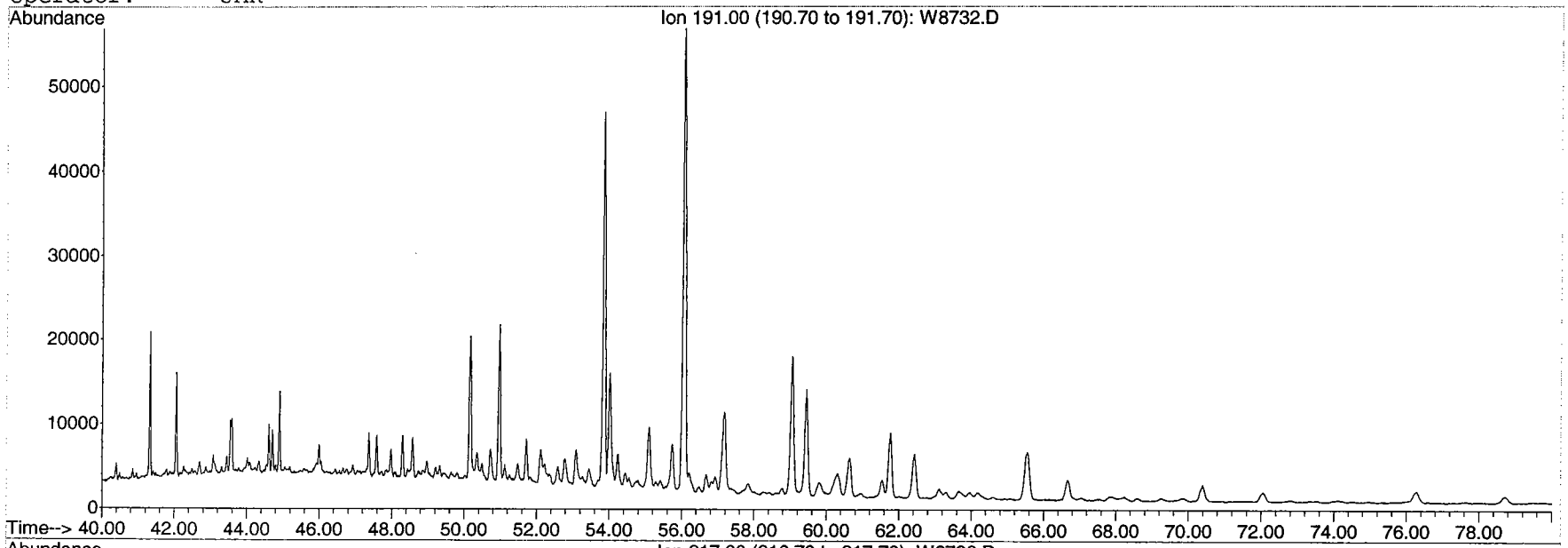


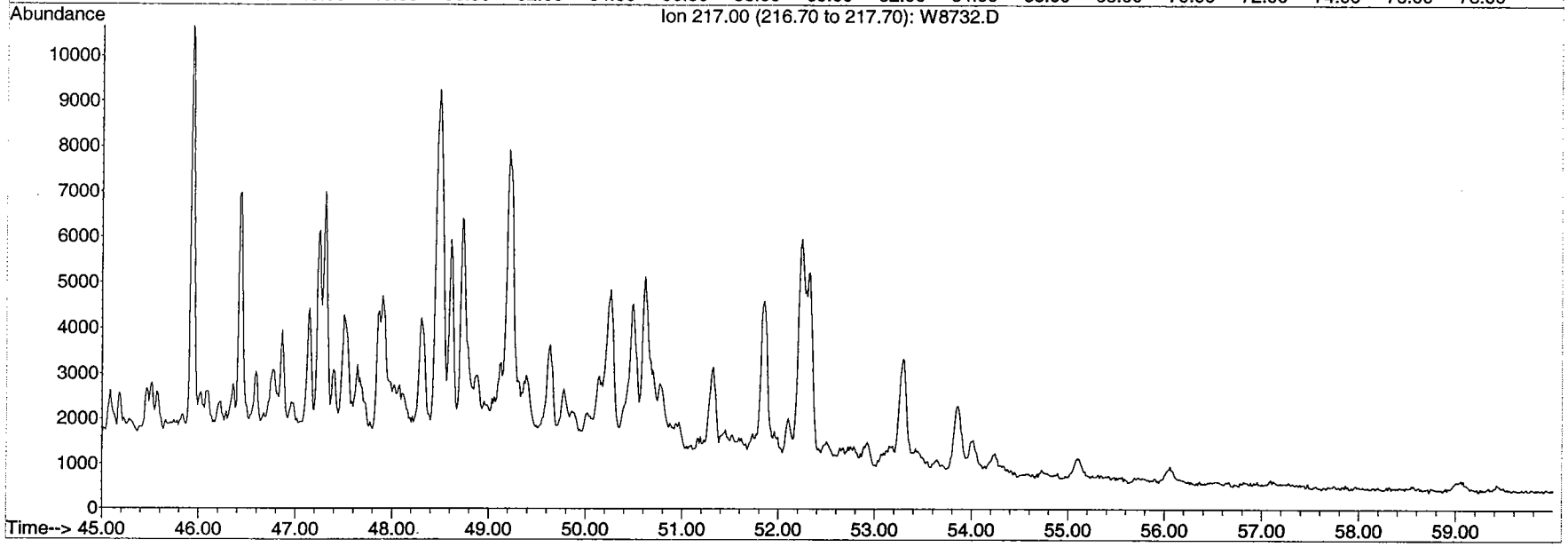


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8732.D
Date Acquired: 1 May 2004 4:13 pm
Method File: BIOSIM0
Sample Name: S1445-P-A-F1(8)
Misc Info: REF 1-4
Operator: JAR

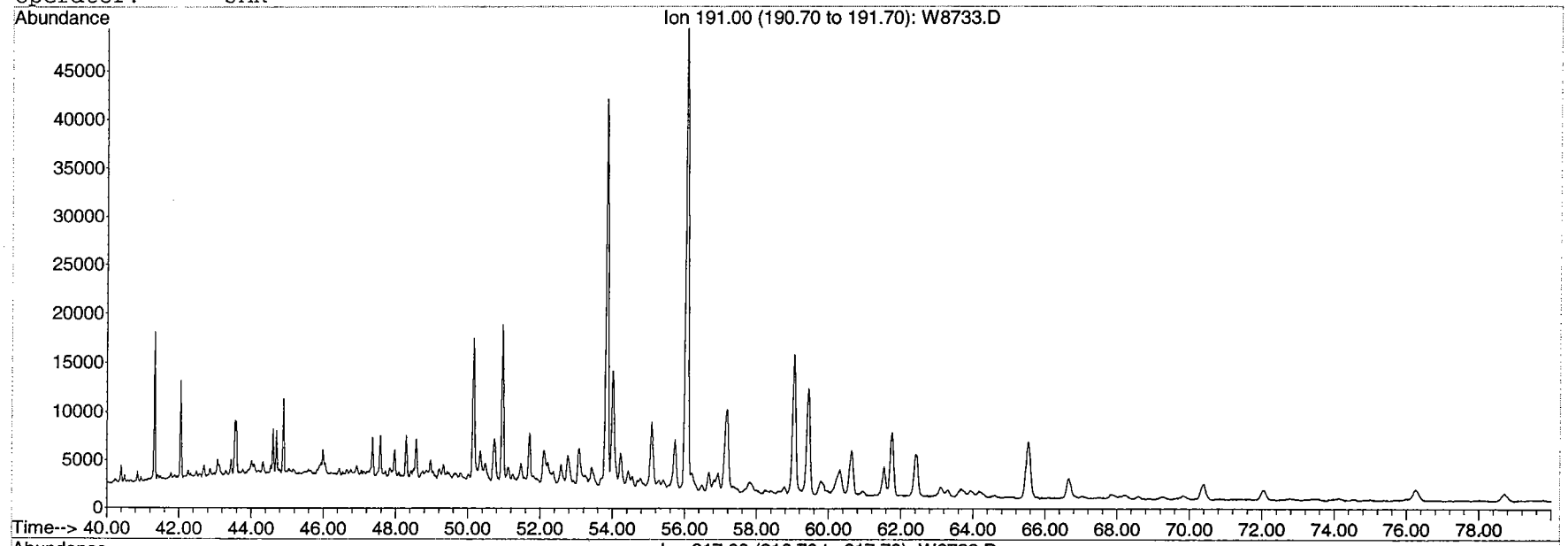


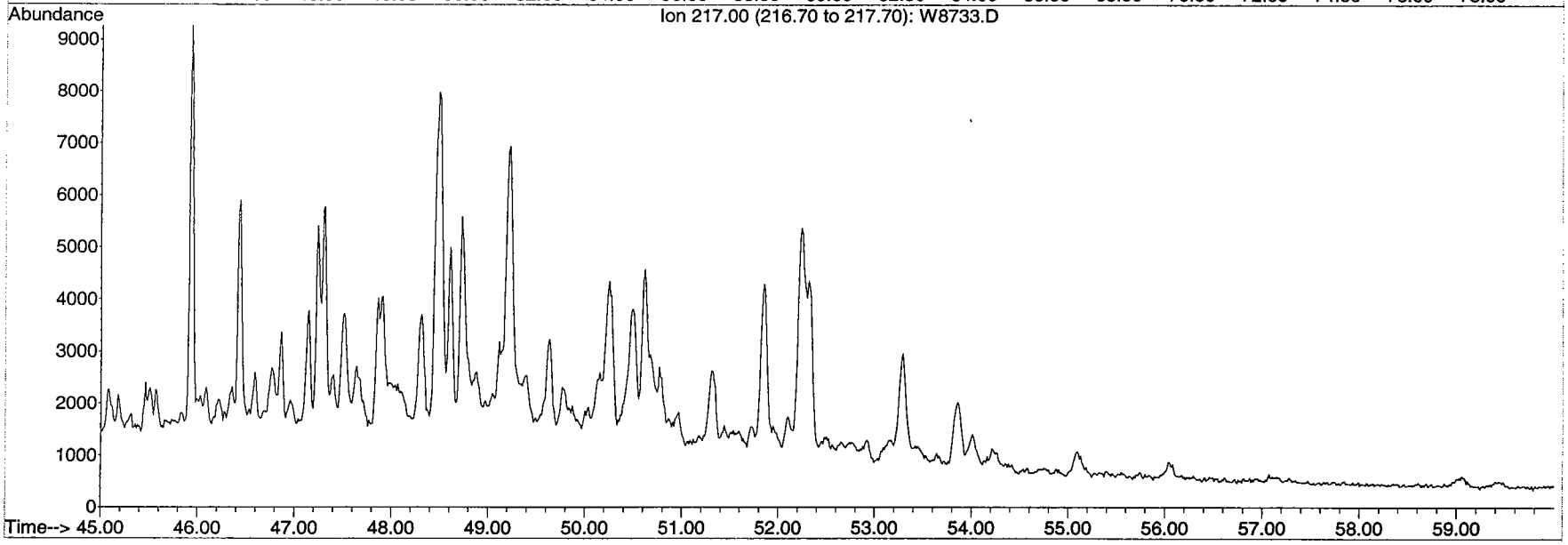


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8733.D
Date Acquired: 1 May 2004 5:42 pm
Method File: BIOSIM0
Sample Name: S1447-P-A-F1(8)
Misc Info: REF 2-1
Operator: JAR

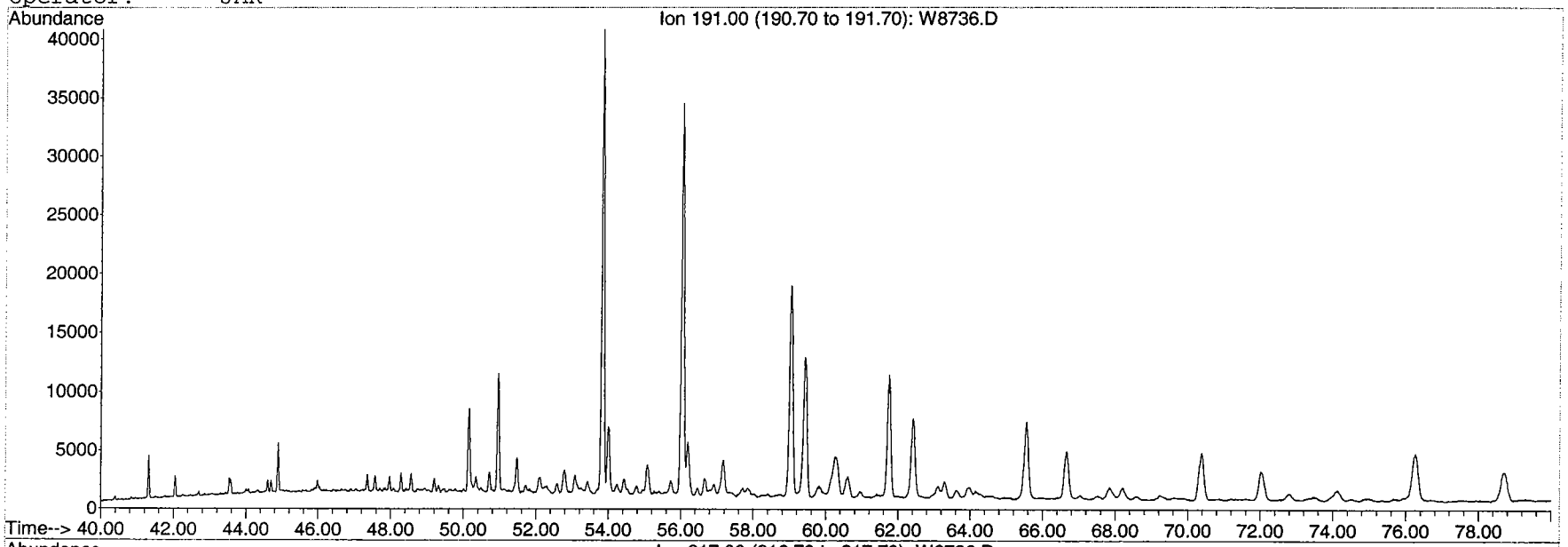


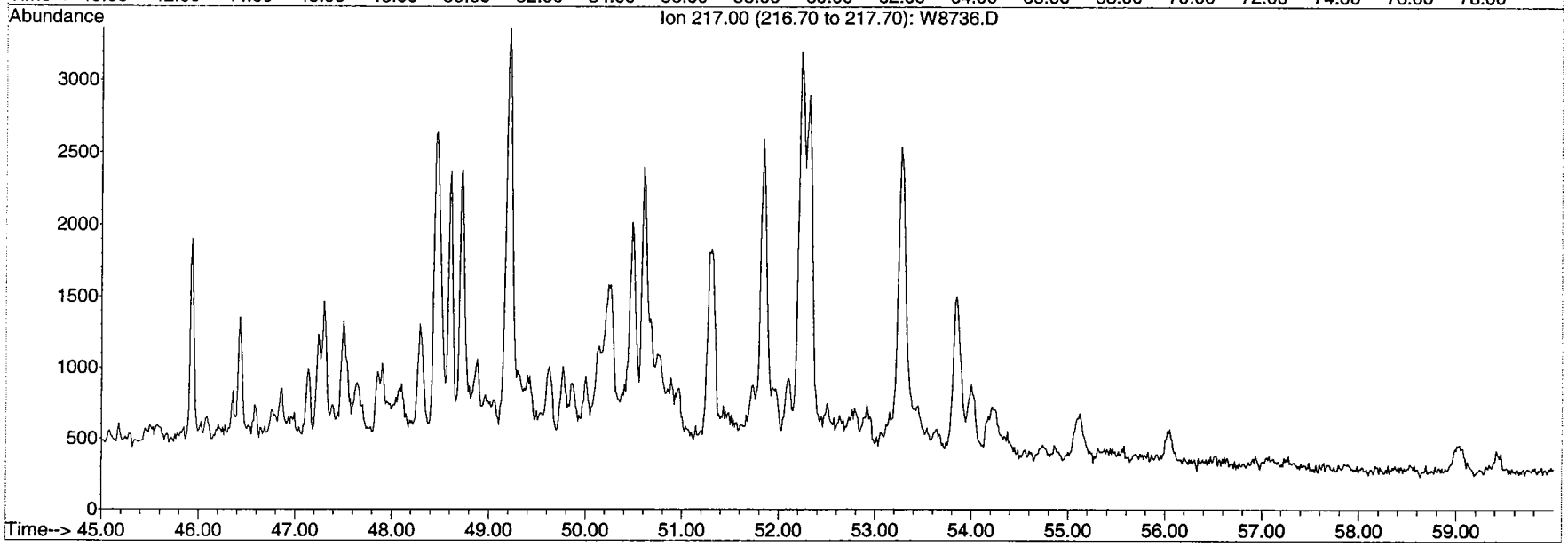


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8736.D
Date Acquired: 1 May 2004 10:10 pm
Method File: BIOSIM0
Sample Name: S1457-P-F1(14)
Misc Info: SID Source 4-1
Operator: JAR

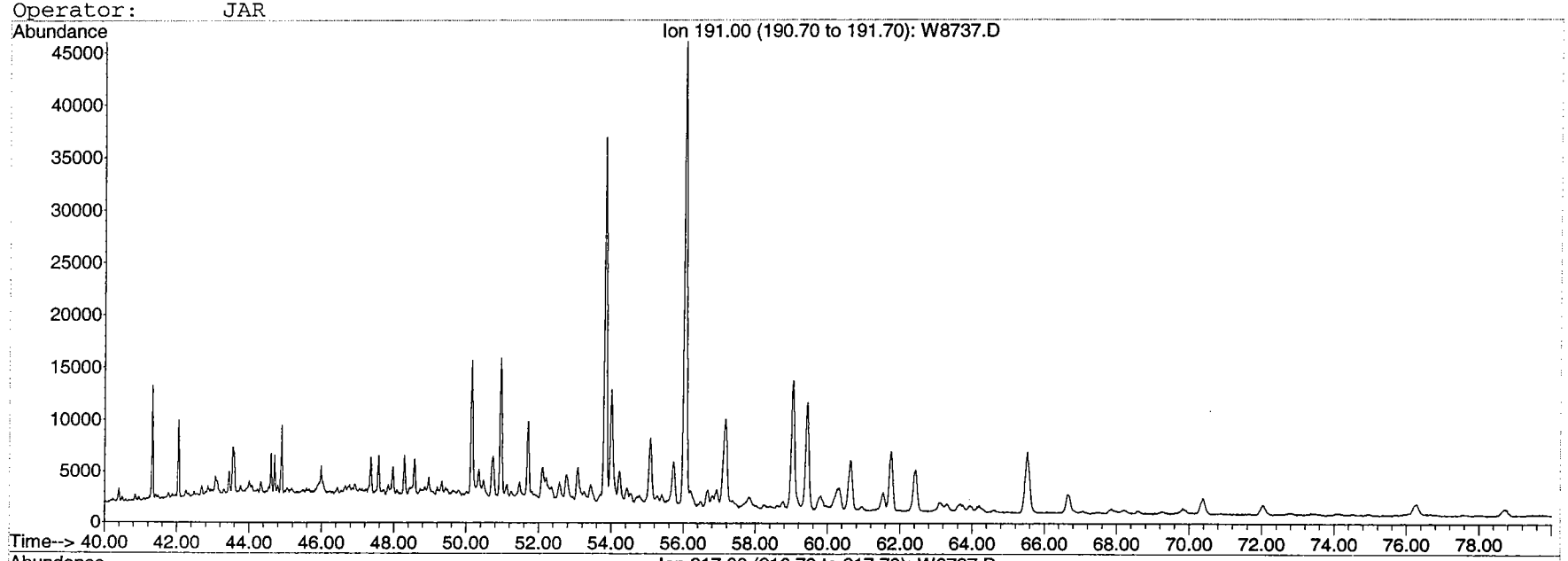


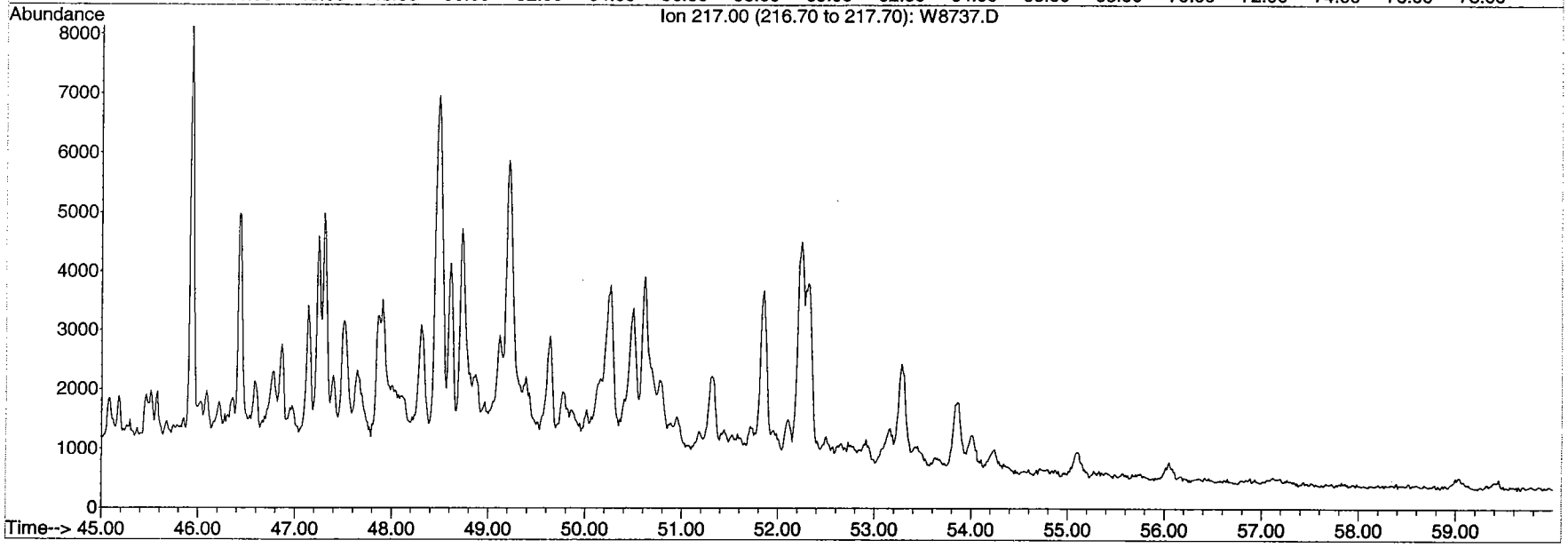


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8737.D
Date Acquired: 1 May 2004 11:39 pm
Method File: BIOSIM0
Sample Name: S1466-P-A-F1(8)
Misc Info: REF 3-2
Operator: JAR

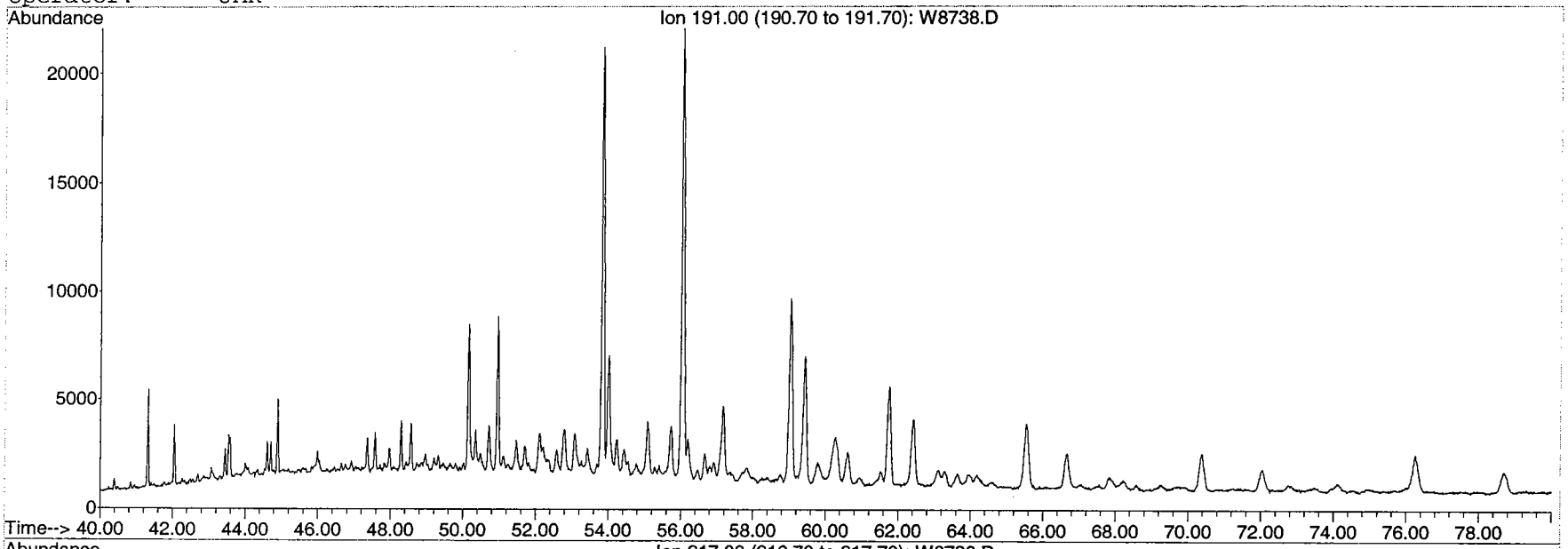


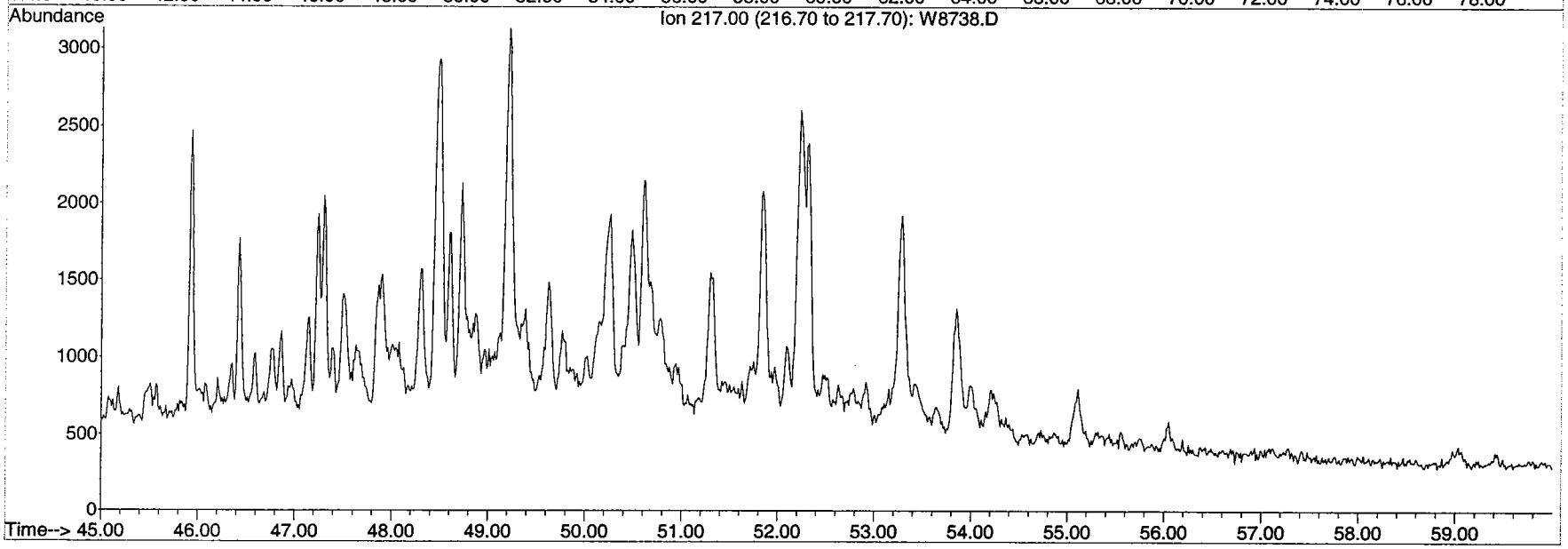


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8738.D
Date Acquired: 2 May 2004 1:09 am
Method File: BIOSIM0
Sample Name: S1468-P-A-F1(10)
Misc Info: AH-28
Operator: JAR

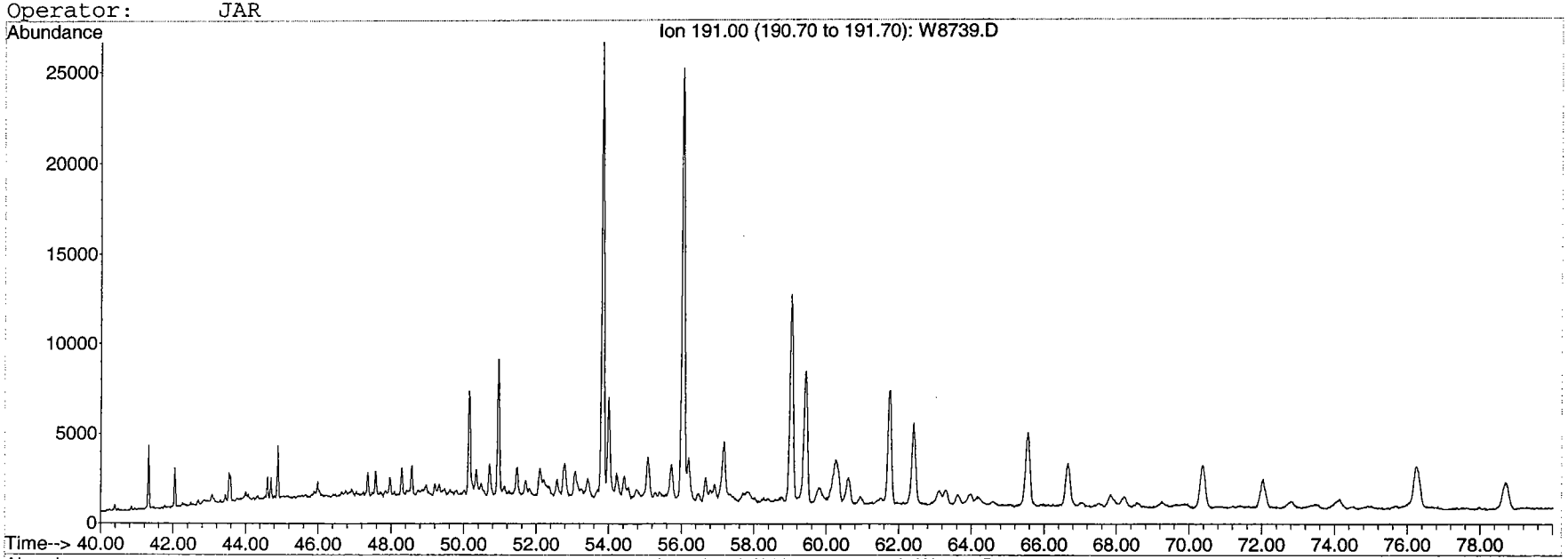


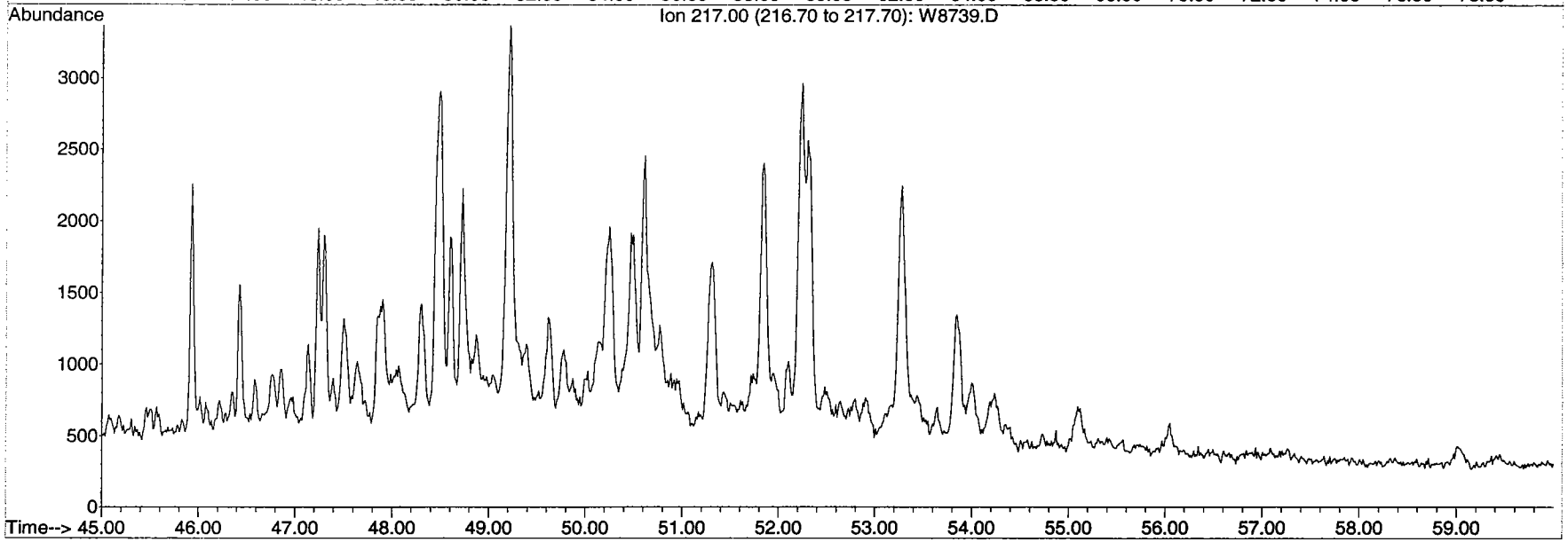


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8739.D
Date Acquired: 2 May 2004 2:39 am
Method File: BIOSIM0
Sample Name: S1471-P-A-F1(10)
Misc Info: AH-49
Operator: JAR

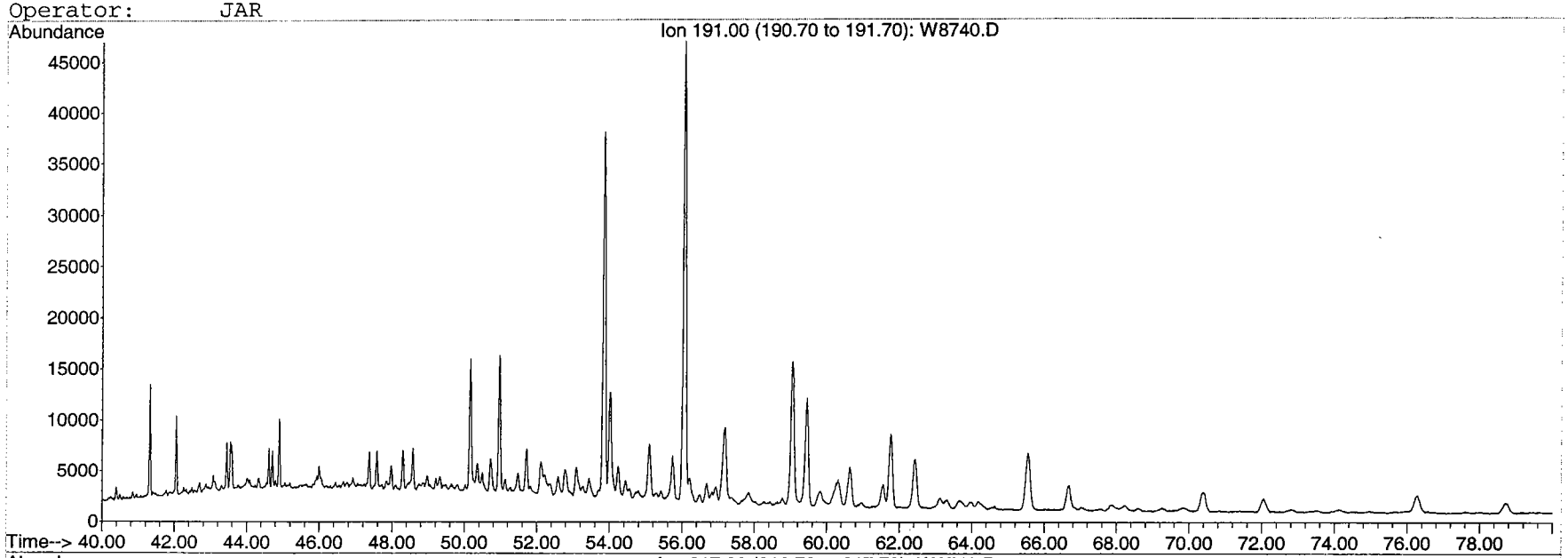


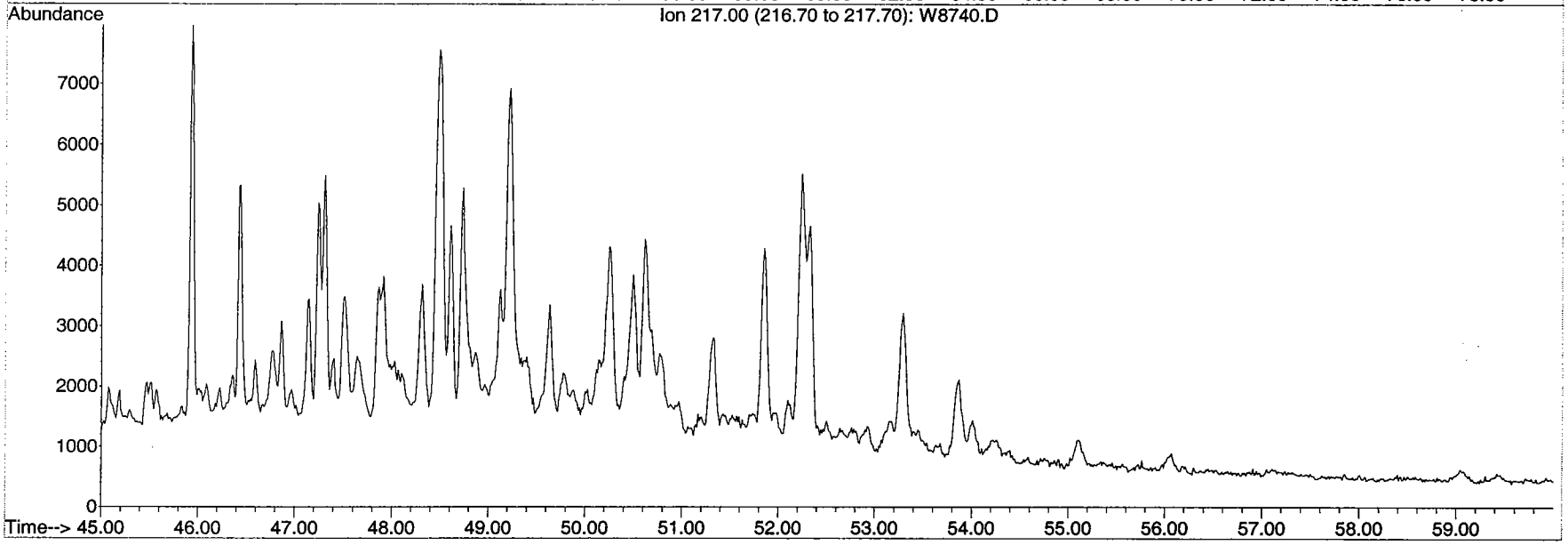


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8740.D
Date Acquired: 2 May 2004 4:08 am
Method File: BIOSIM0
Sample Name: S1474-P-A-F1(10)
Misc Info: AH-45
Operator: JAR

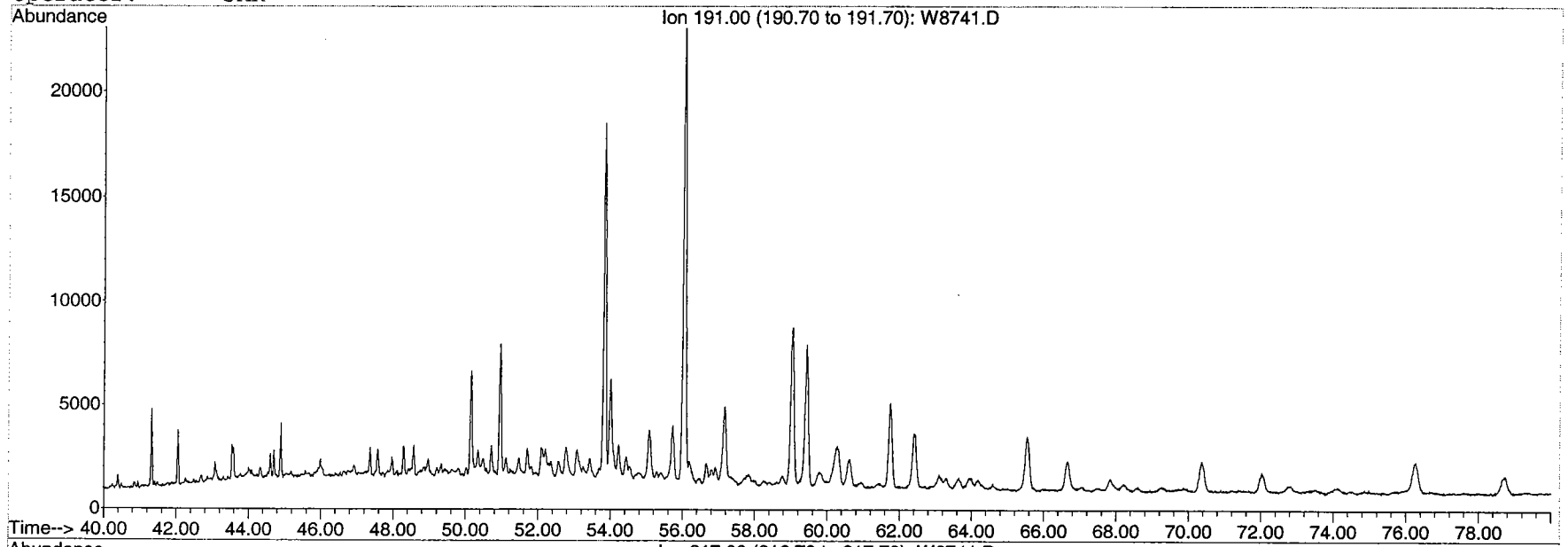


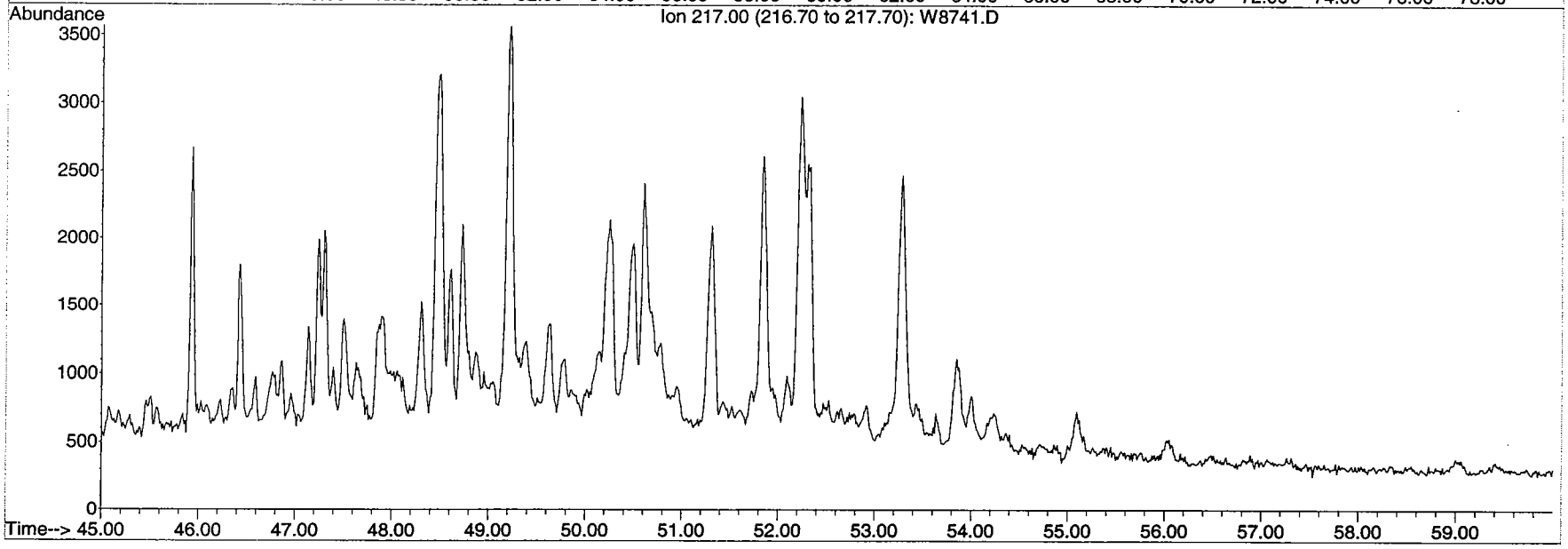


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8741.D
Date Acquired: 2 May 2004 5:38 am
Method File: BIOSIM0
Sample Name: S1481-P-A-F1(8)
Misc Info: Source 3-1
Operator: JAR

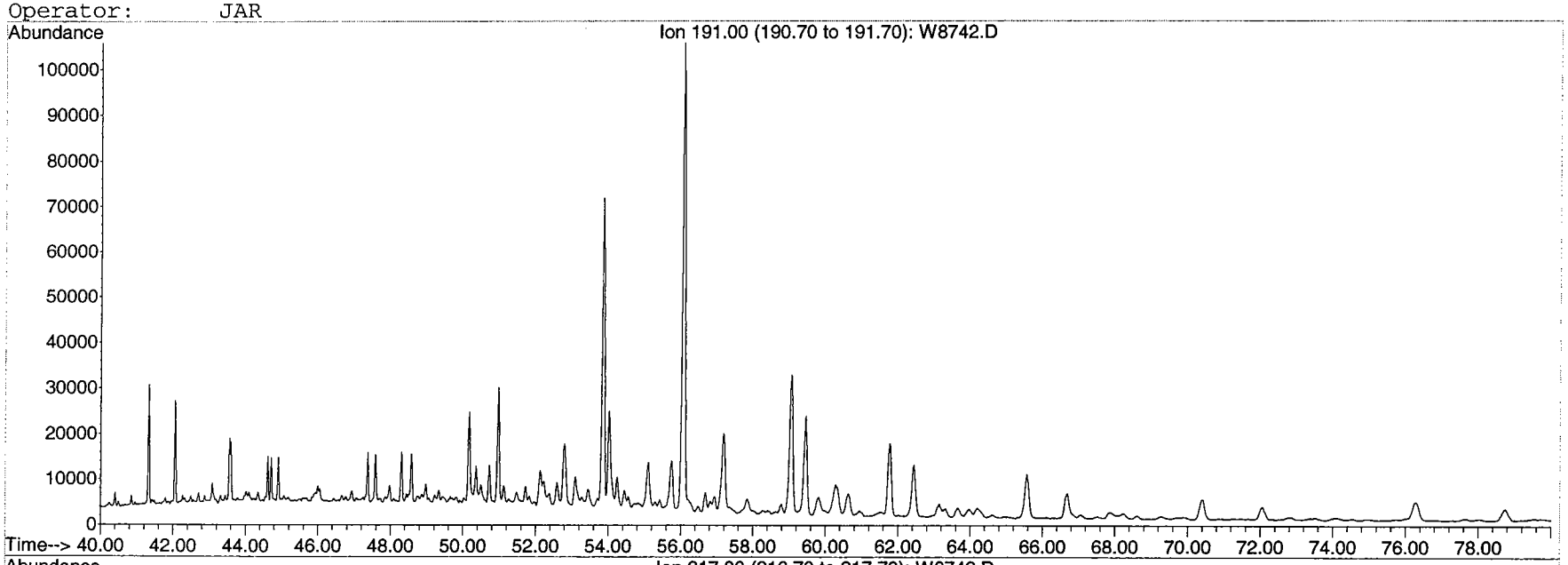


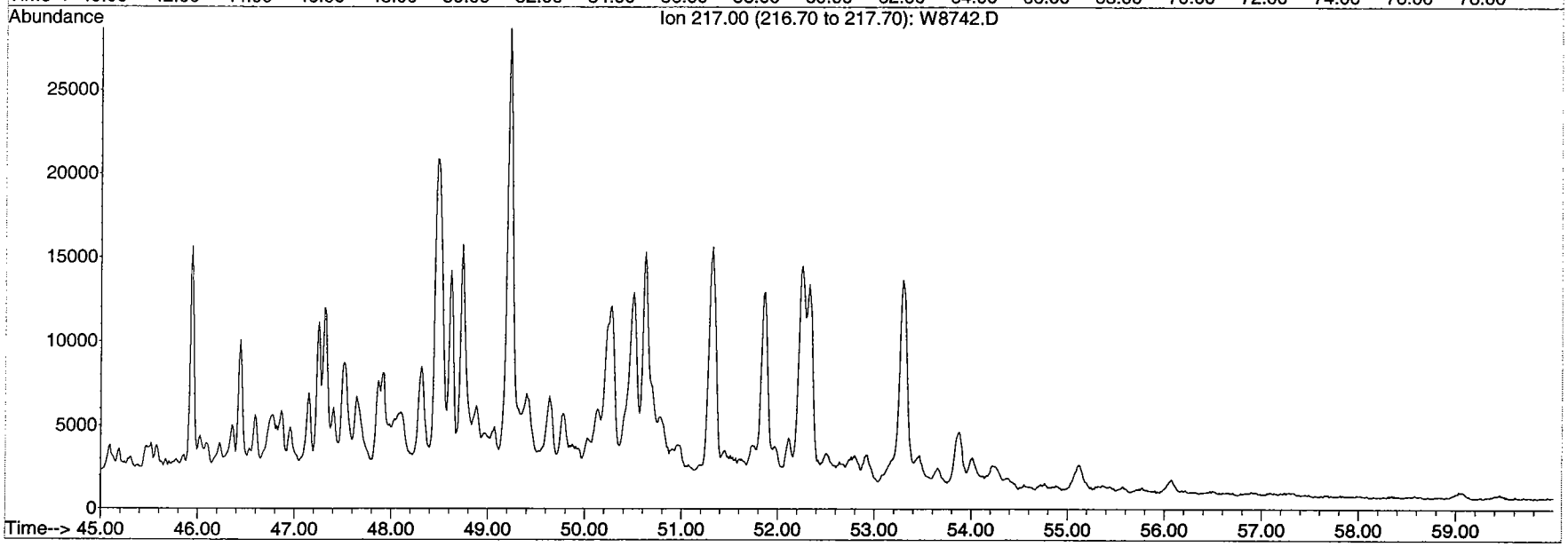


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8742.D
Date Acquired: 2 May 2004 7:08 am
Method File: BIOSIM0
Sample Name: S1482-P-A-F1(8)
Misc Info: Source 3-2
Operator: JAR

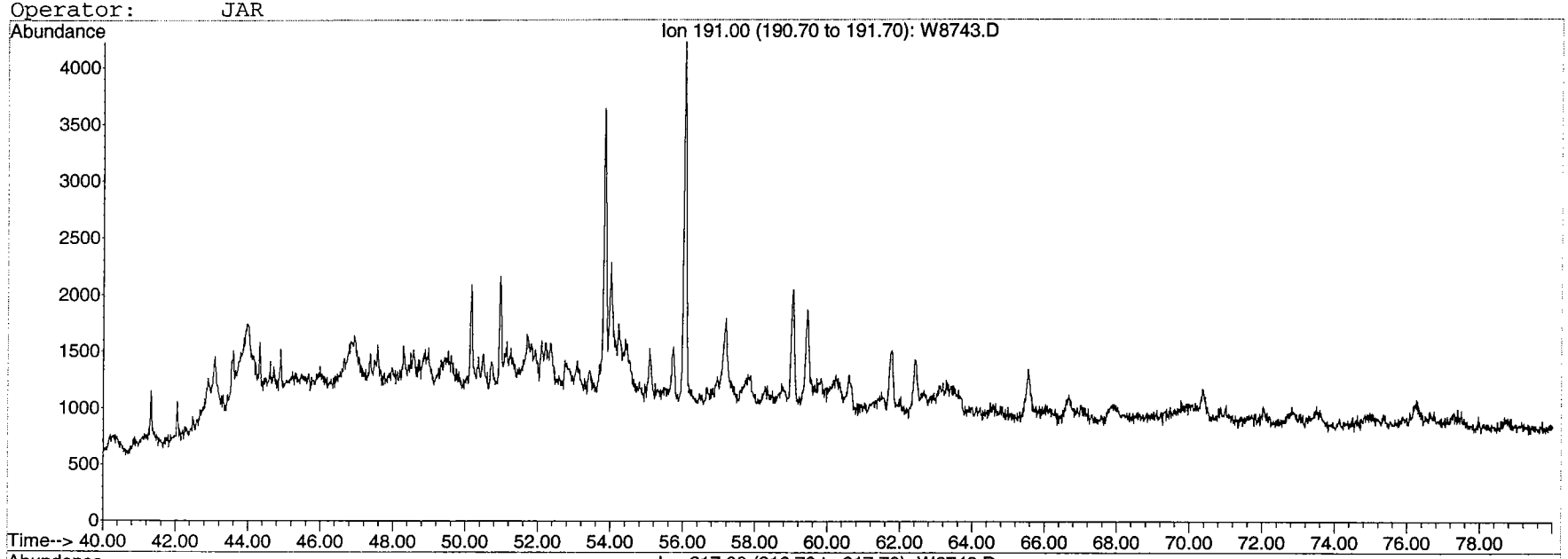


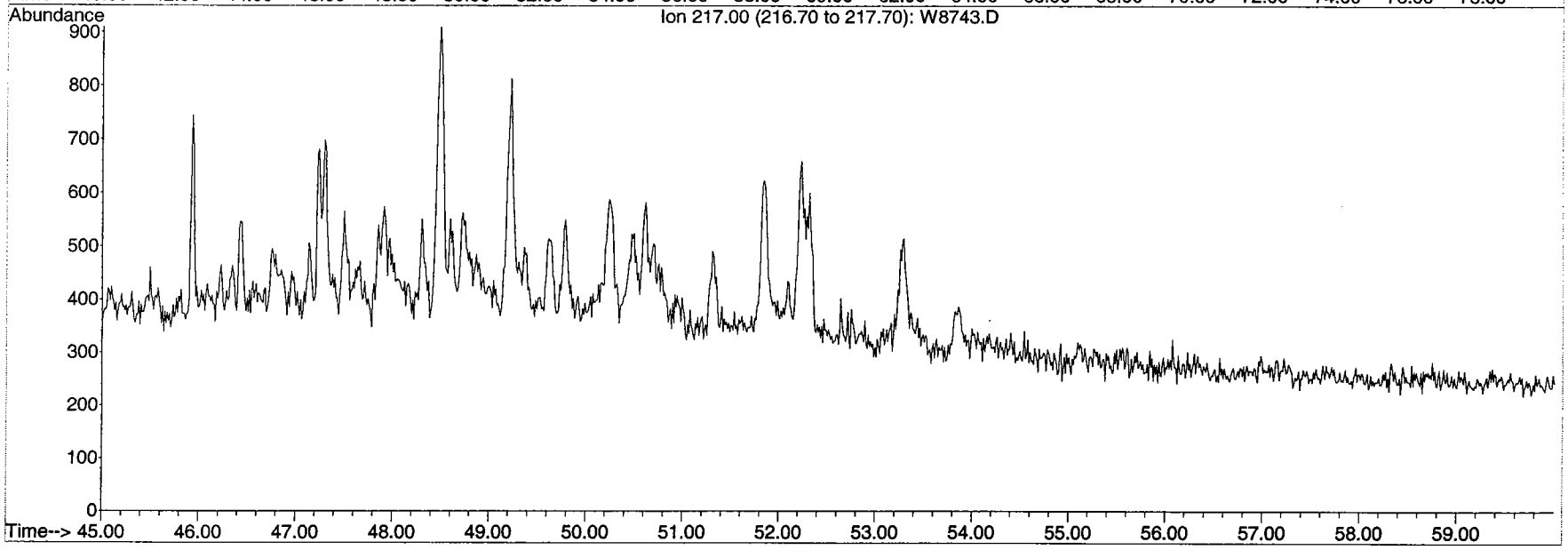


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8743.D
Date Acquired: 2 May 2004 8:37 am
Method File: BIOSIM0
Sample Name: S1483-P-A-F1(8)
Misc Info: Source 1-1
Operator: JAR

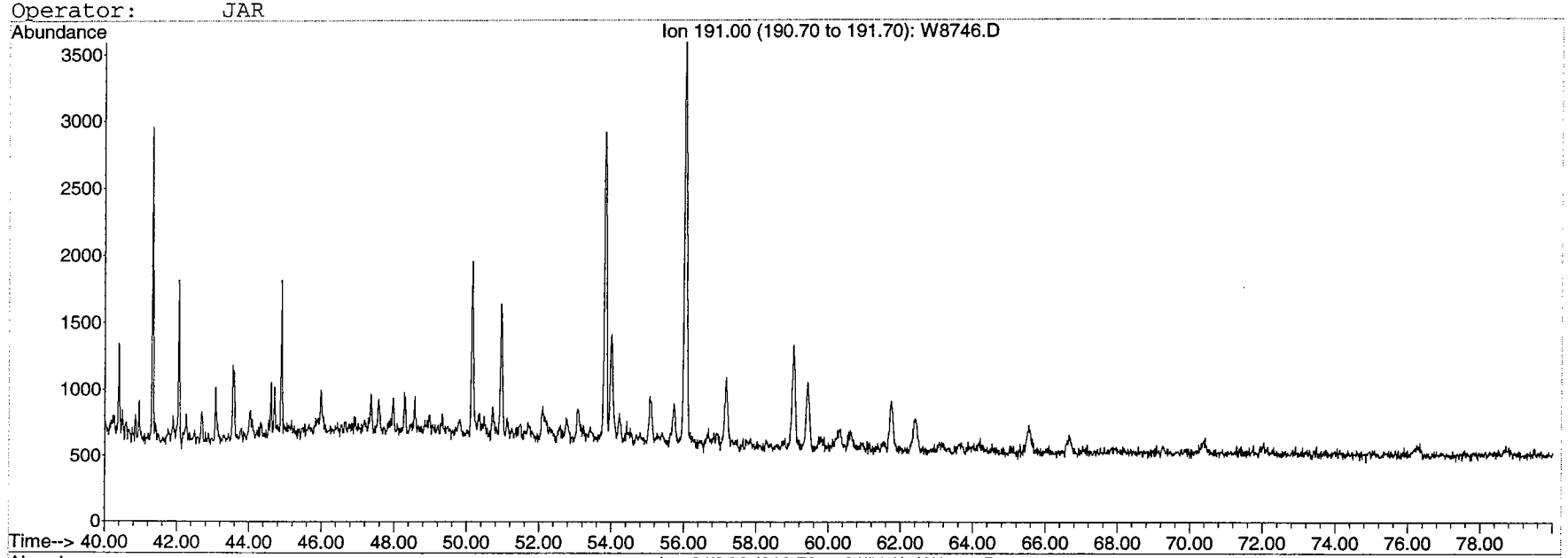


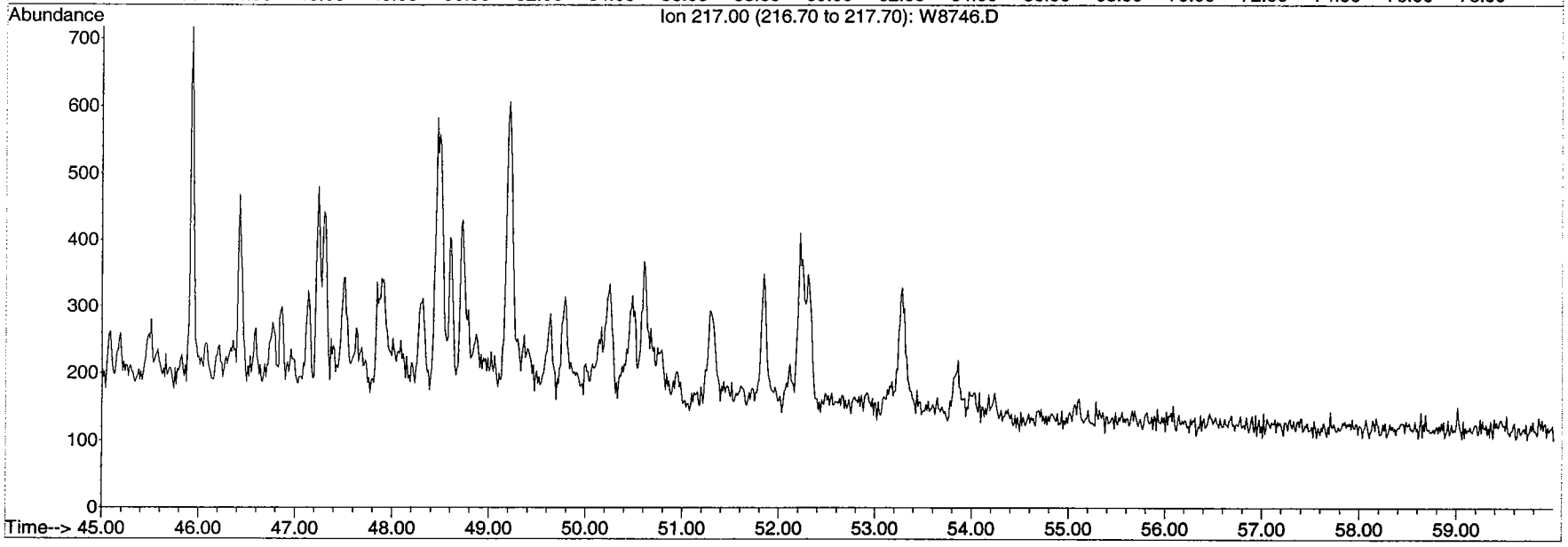


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8746.D
Date Acquired: 2 May 2004 1:05 pm
Method File: BIOSIM0
Sample Name: S1484-P-A-F1(10)
Misc Info: Source 2-1
Operator: JAR

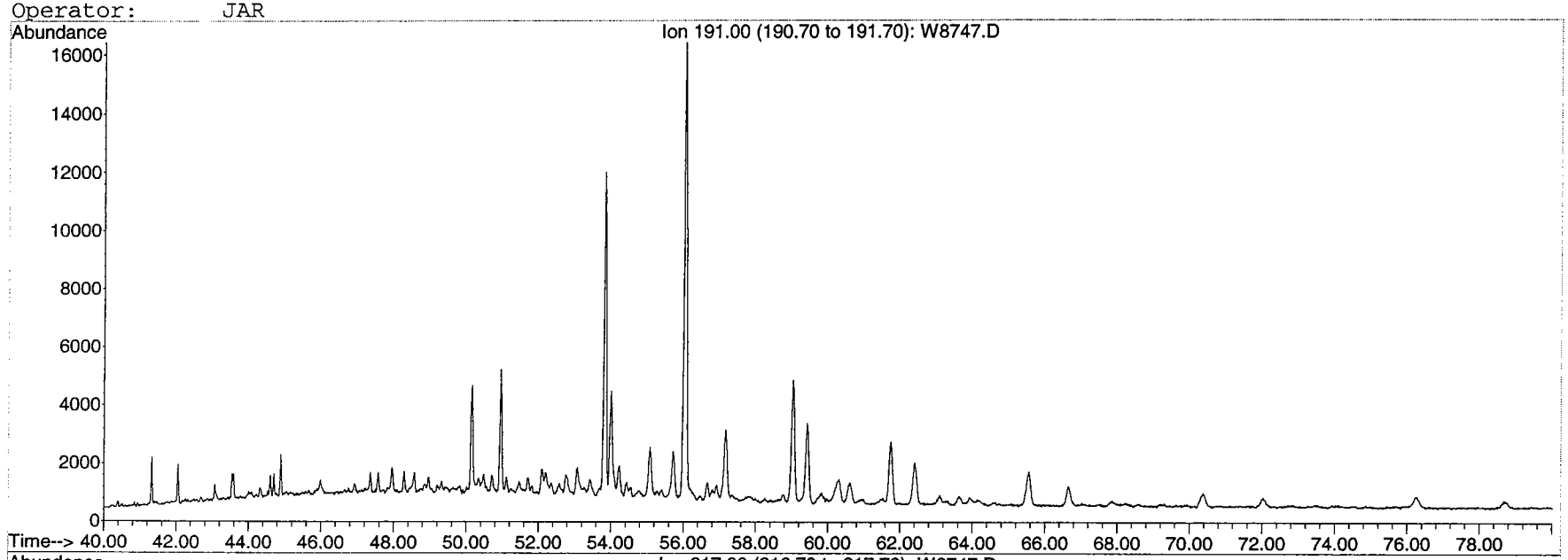


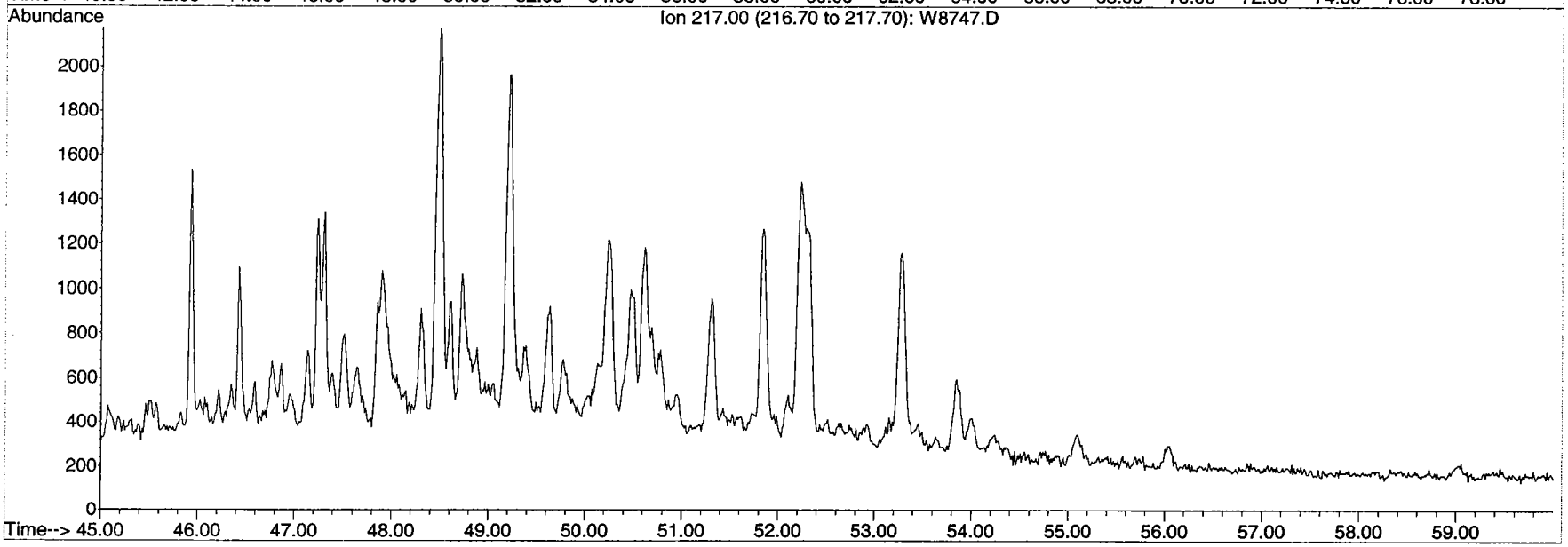


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8747.D
Date Acquired: 2 May 2004 2:35 pm
Method File: BIOSIM0
Sample Name: S1485-P-A-F1(10)
Misc Info: Source 1-2
Operator: JAR

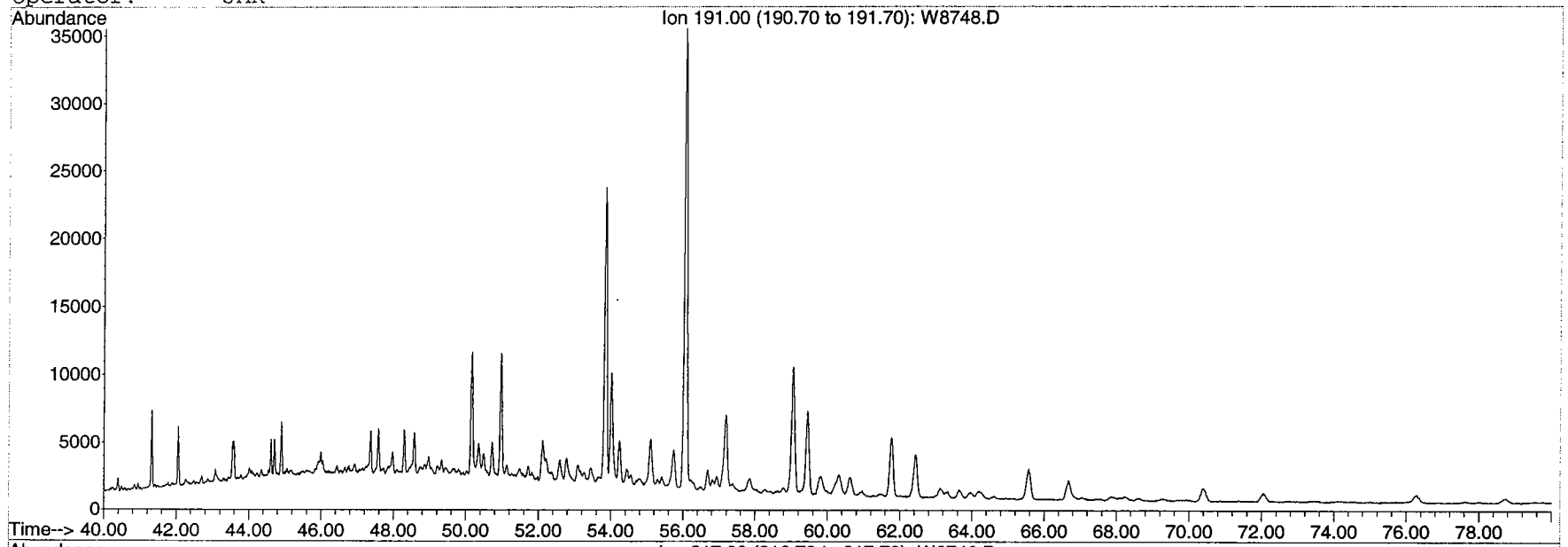


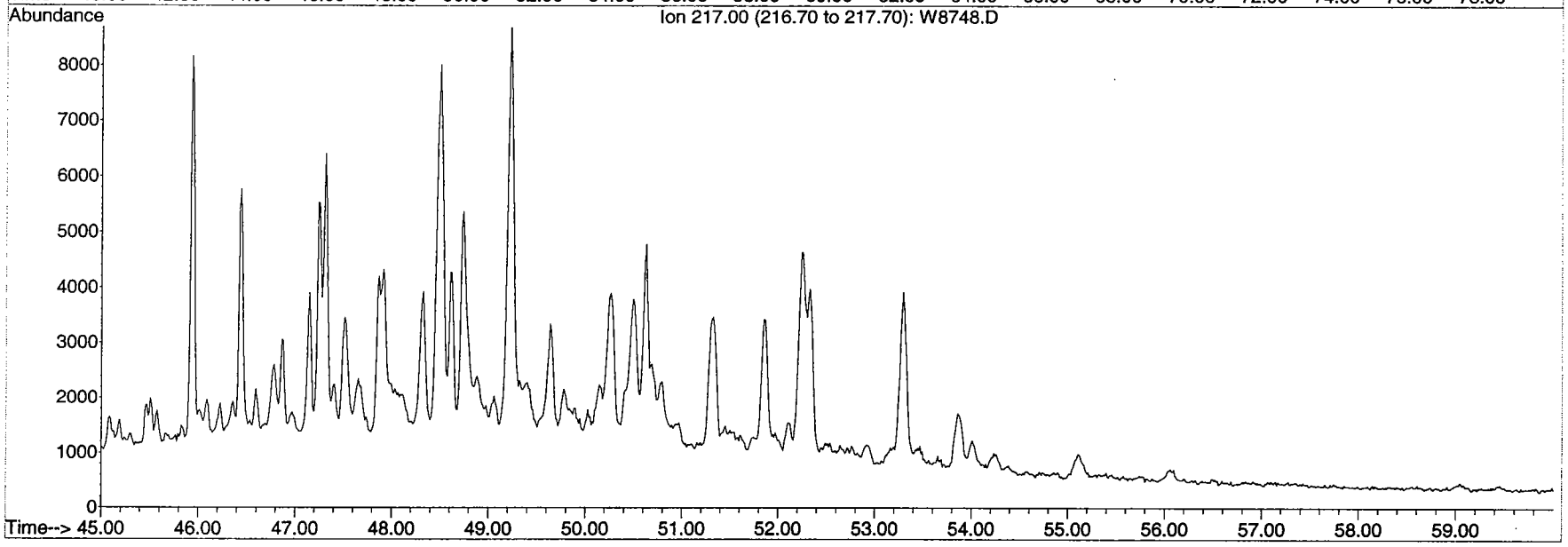


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8748.D
Date Acquired: 2 May 2004 4:04 pm
Method File: BIOSIM0
Sample Name: S1486-P-A-F1(10)
Misc Info: Source 2-2
Operator: JAR

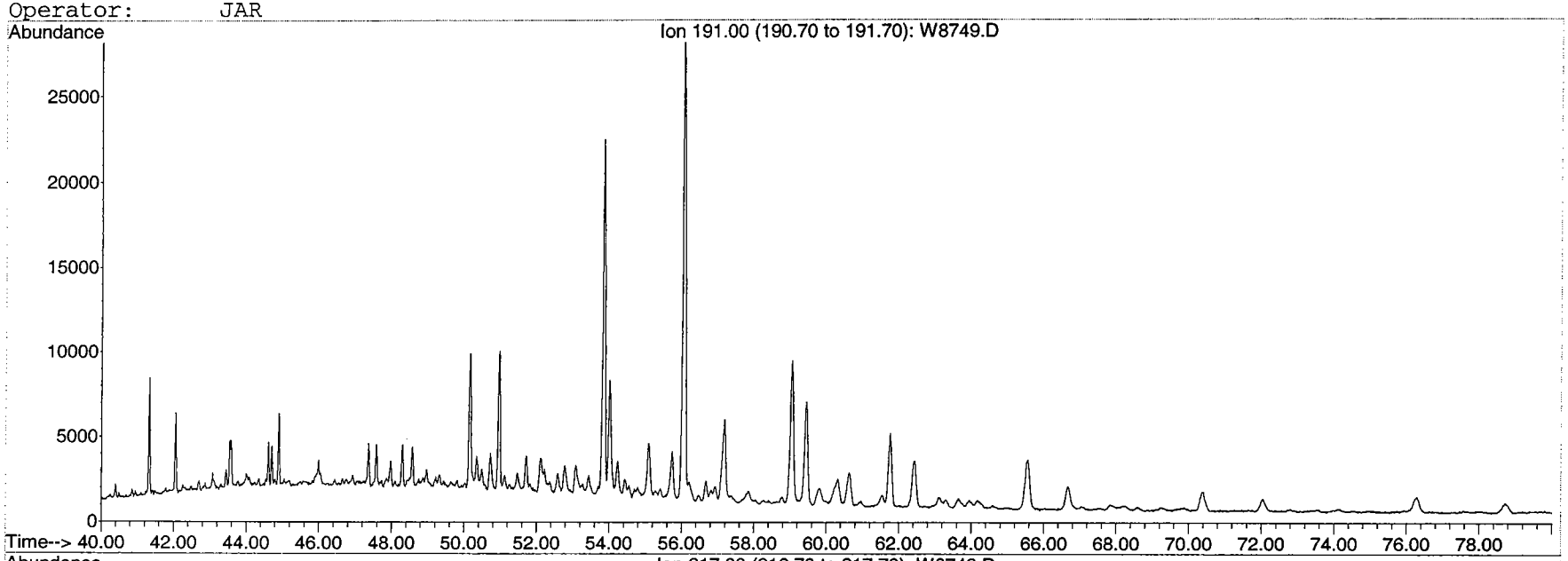


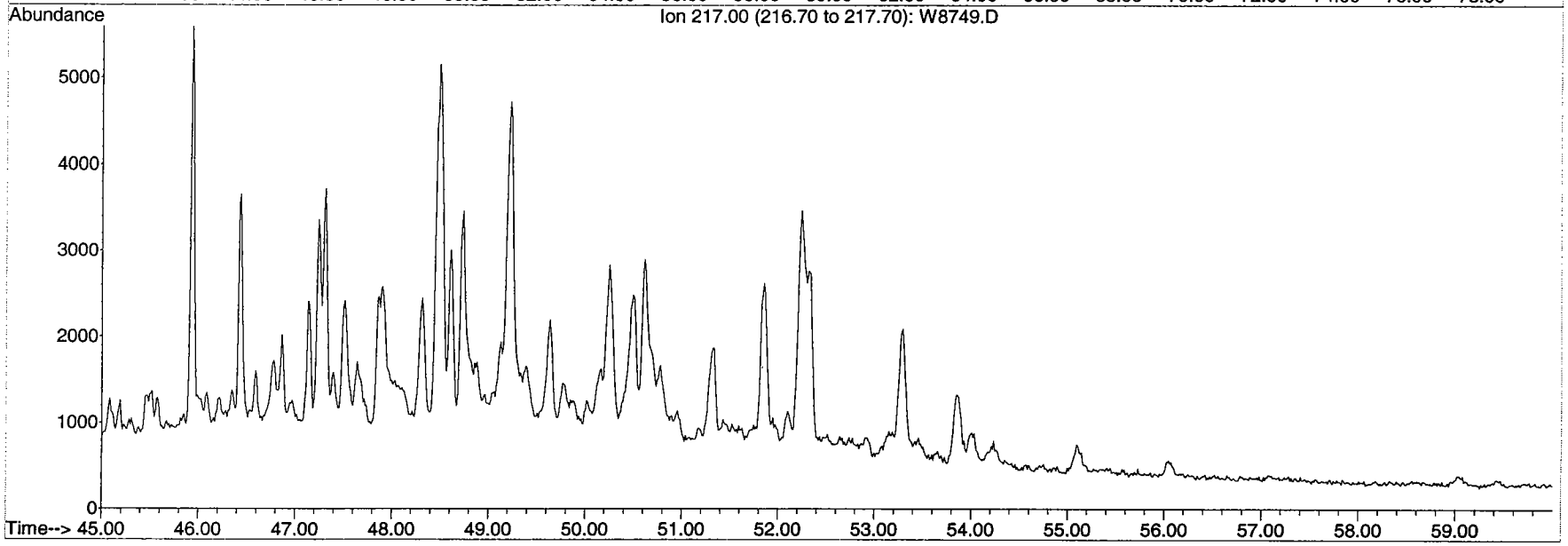


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8749.D
Date Acquired: 2 May 2004 5:33 pm
Method File: BIOSIM0
Sample Name: S1491-P-A-F1(10)
Misc Info: AH-29
Operator: JAR

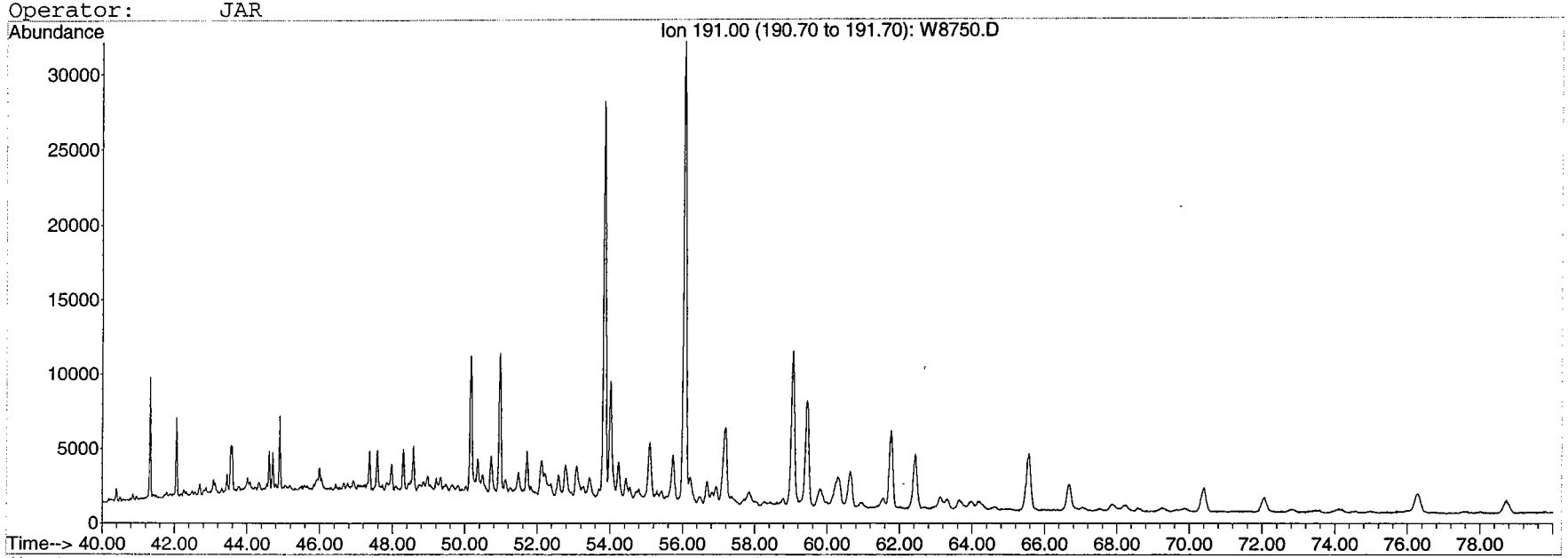


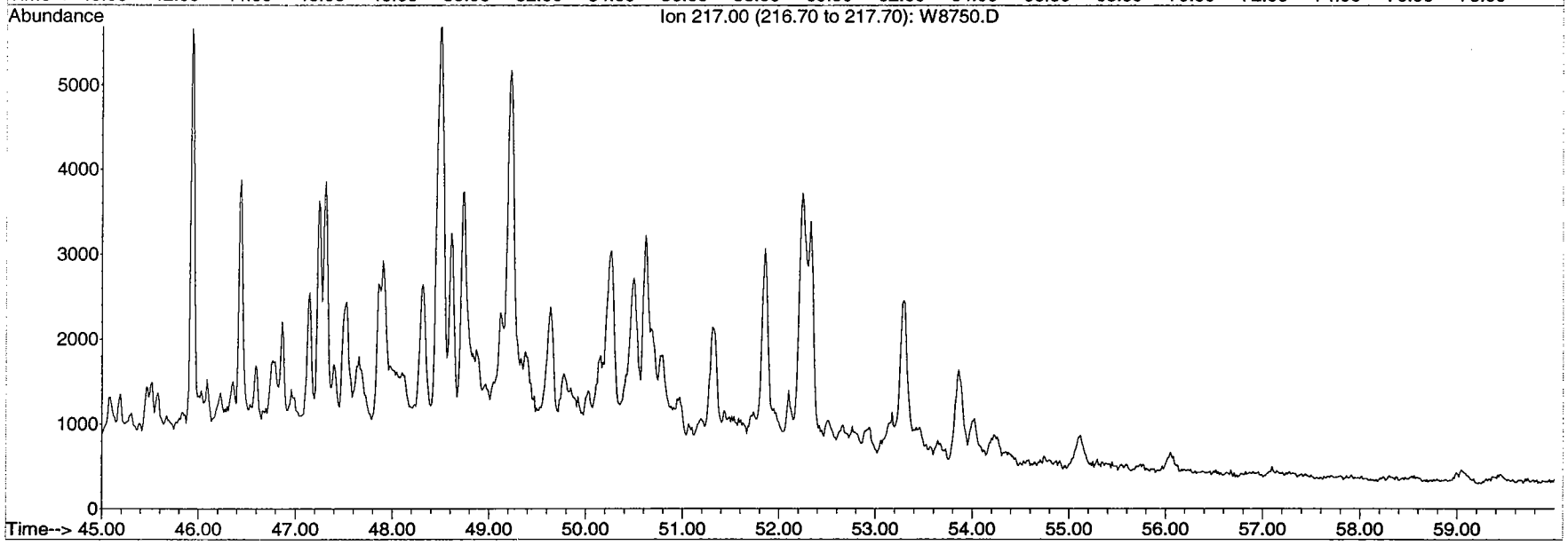


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8750.D
Date Acquired: 2 May 2004 7:03 pm
Method File: BIOSIM0
Sample Name: S1505-P-A-F1(8)
Misc Info: AH-26
Operator: JAR

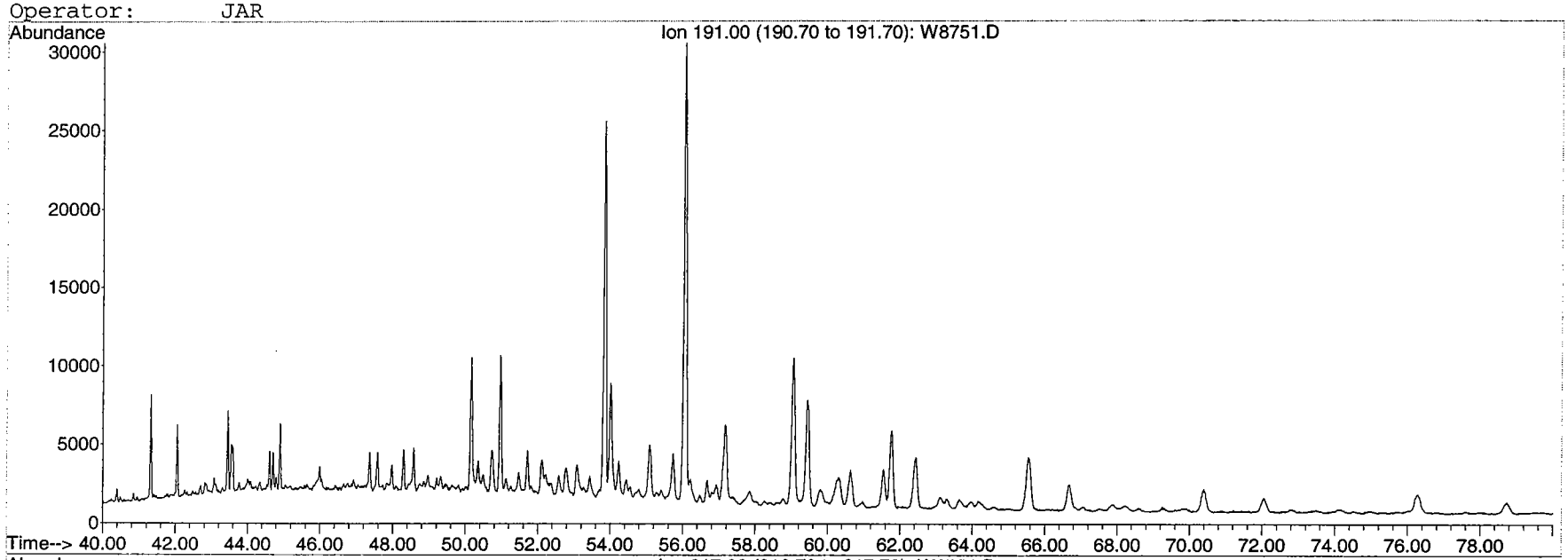


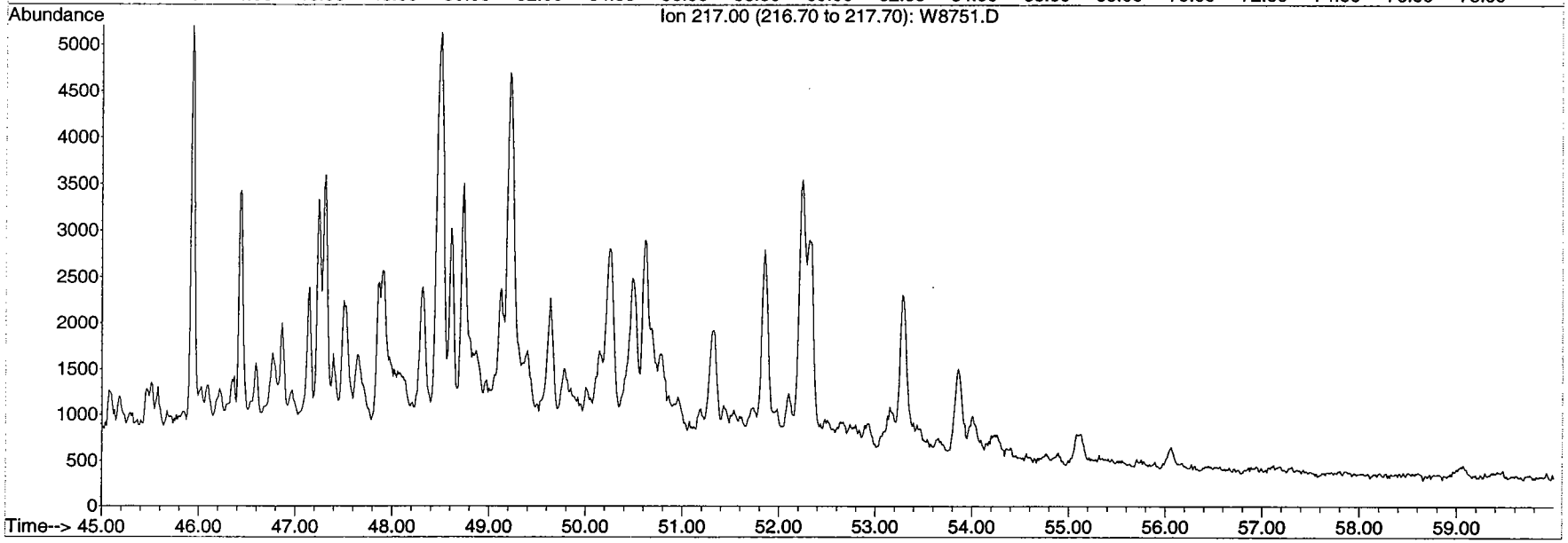


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8751.D
Date Acquired: 2 May 2004 8:32 pm
Method File: BIOSIM0
Sample Name: S1505DUP-P-A-F1(8)
Misc Info: AH-26
Operator: JAR

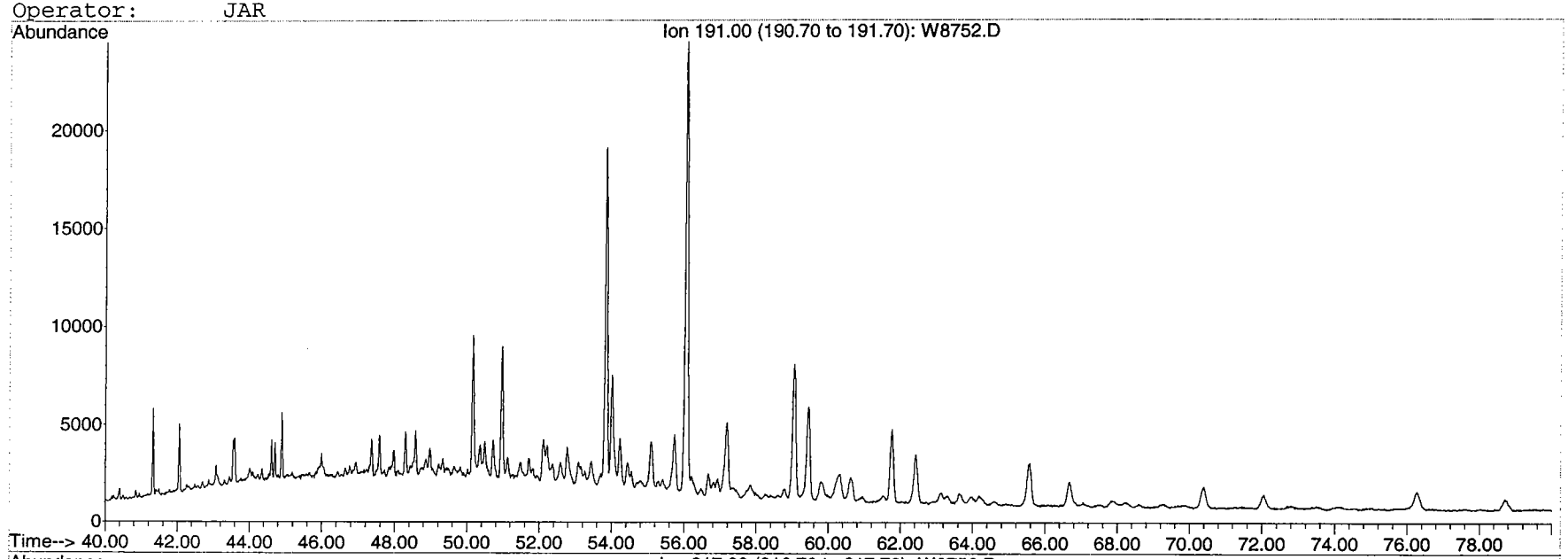


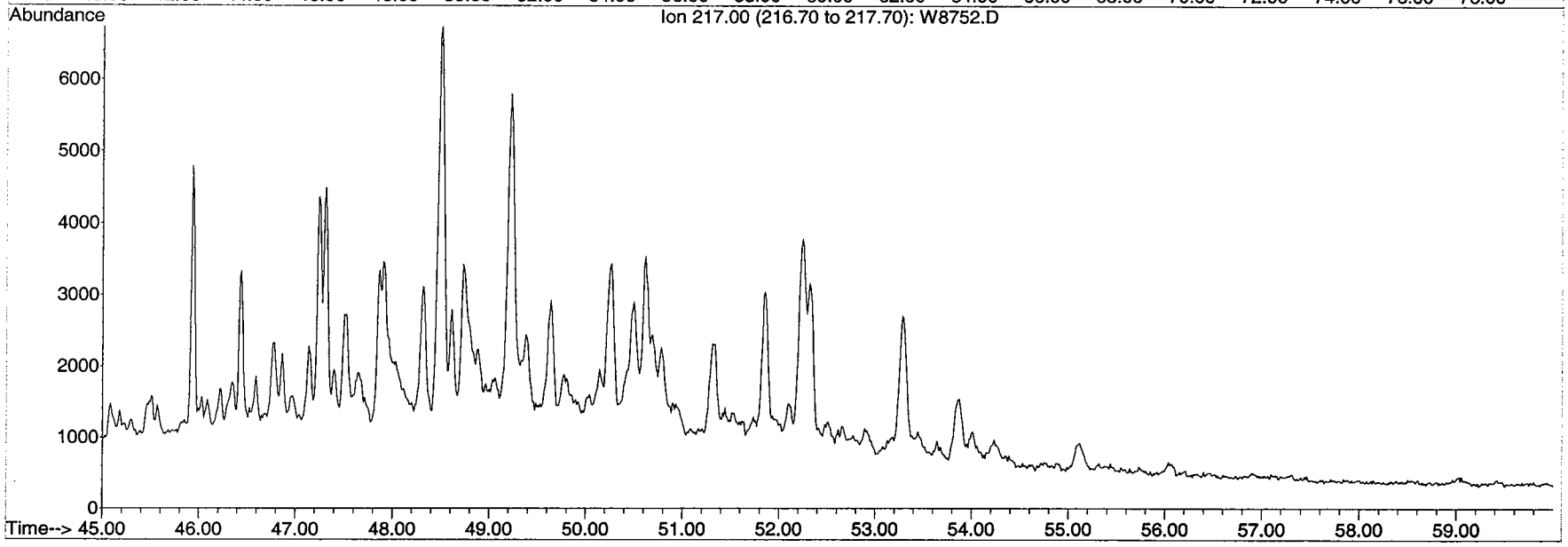


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8752.D
Date Acquired: 2 May 2004 10:02 pm
Method File: BIOSIM0
Sample Name: S1509-P-A-F1(10)
Misc Info: AH-40
Operator: JAR

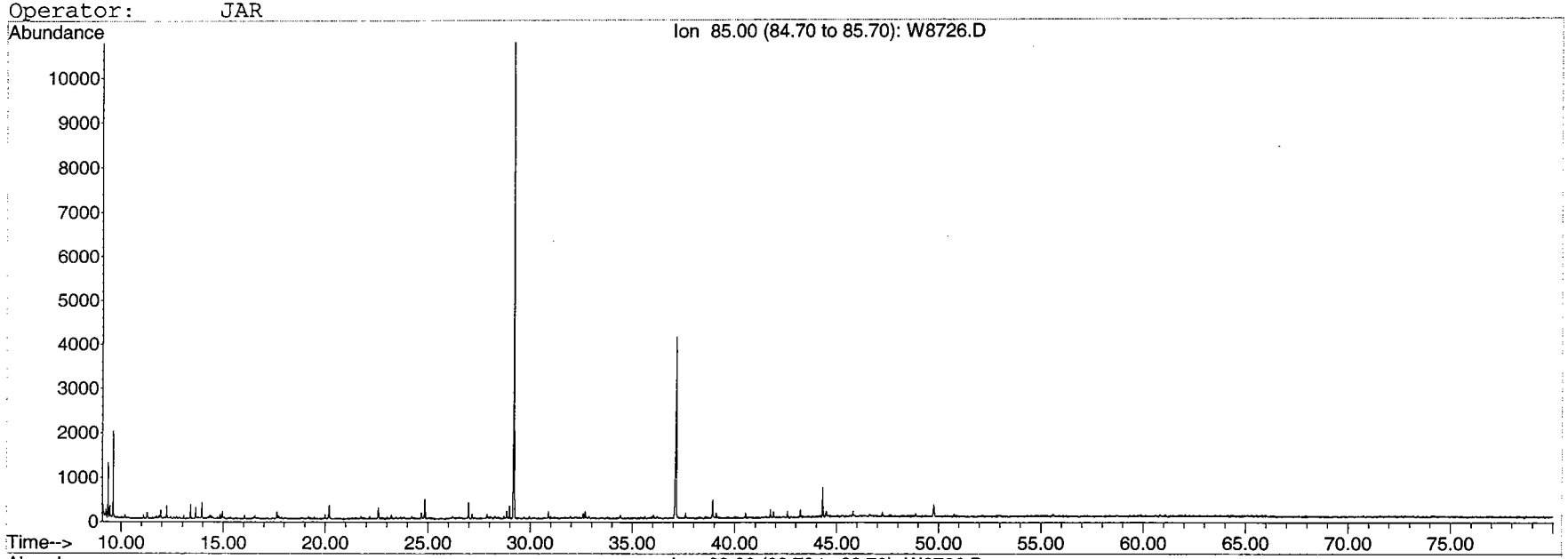


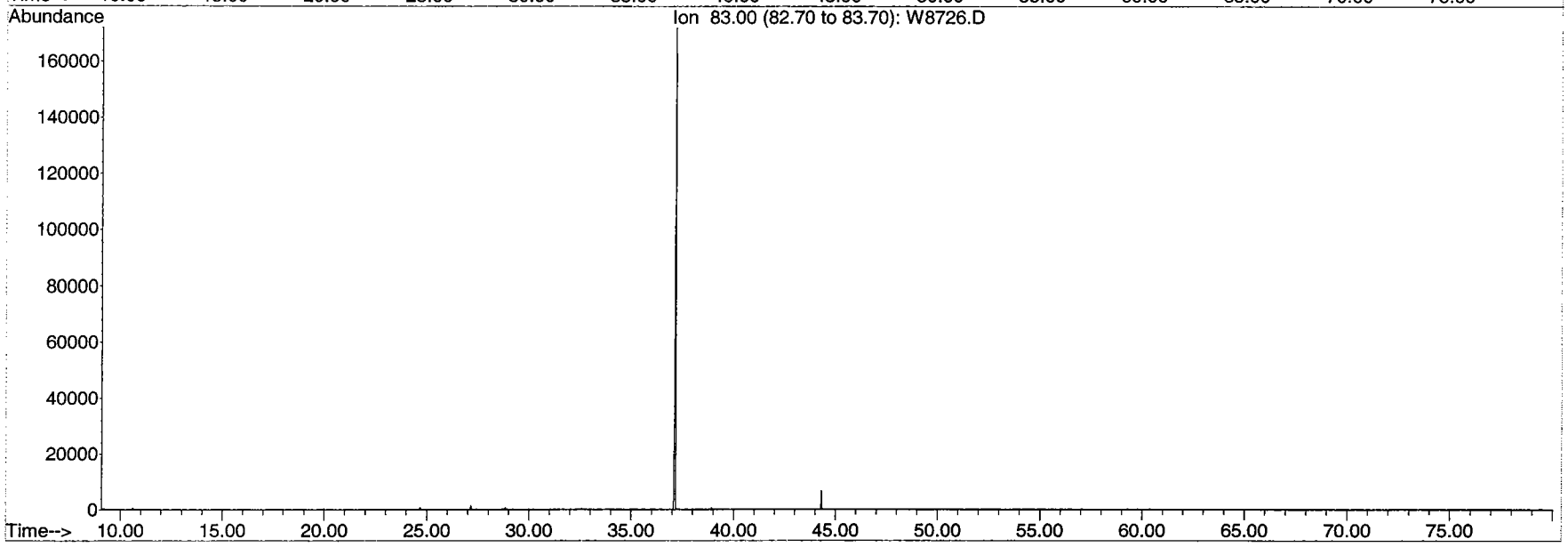


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8726.D
Date Acquired: 1 May 2004 7:16 am
Method File: BIOSIM0
Sample Name: BE161PB-P-A-F1(4)
Misc Info: 04-0117 Procedural Blank
Operator: JAR

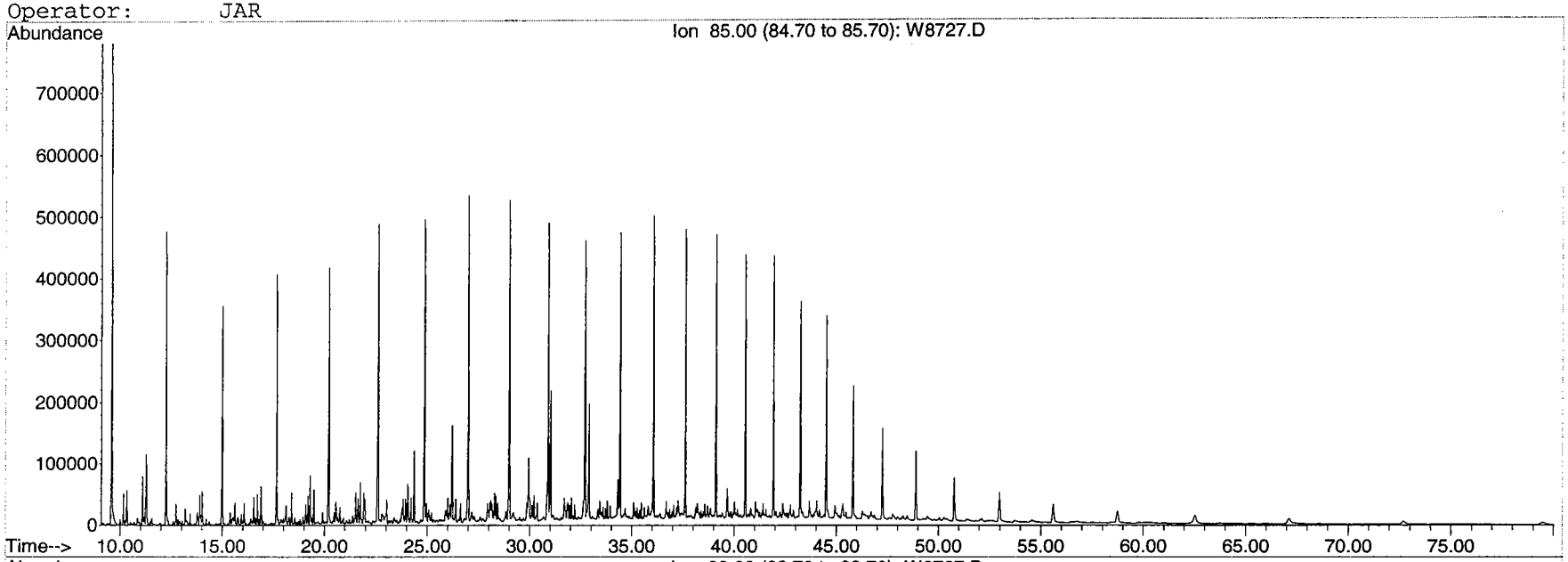


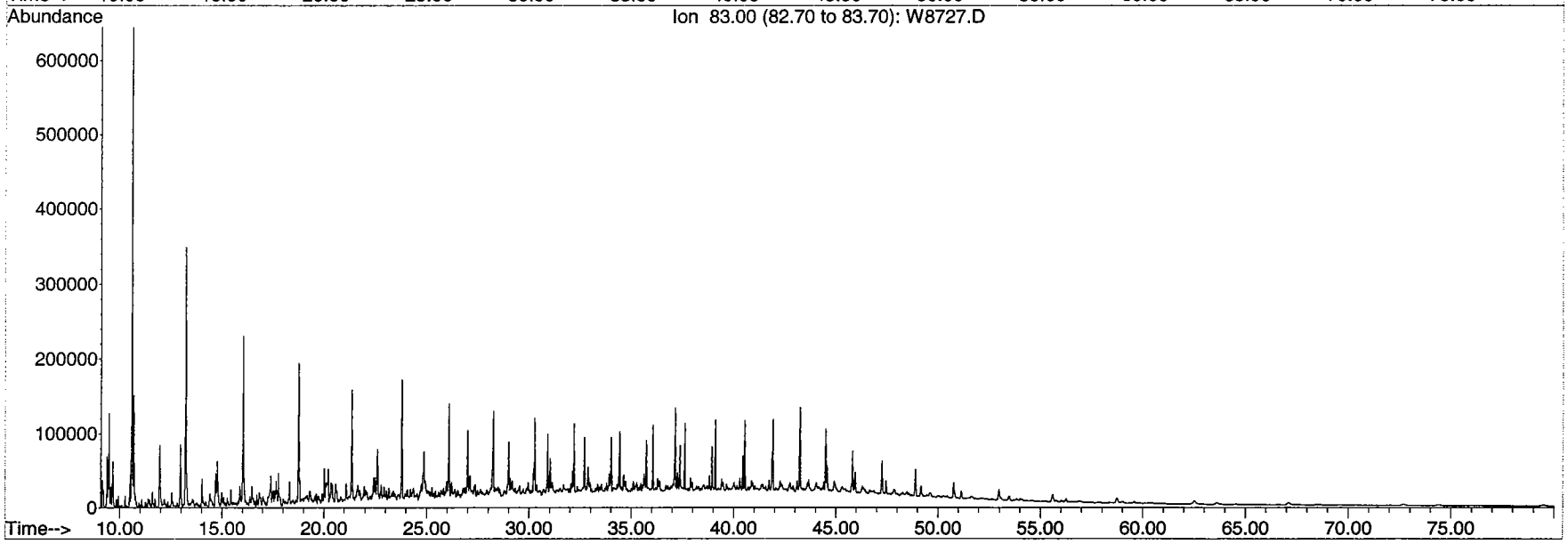


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8727.D
Date Acquired: 1 May 2004 8:46 am
Method File: BIOSIM0
Sample Name: BE279NSC-P(0)
Misc Info: North Slope Crude
Operator: JAR

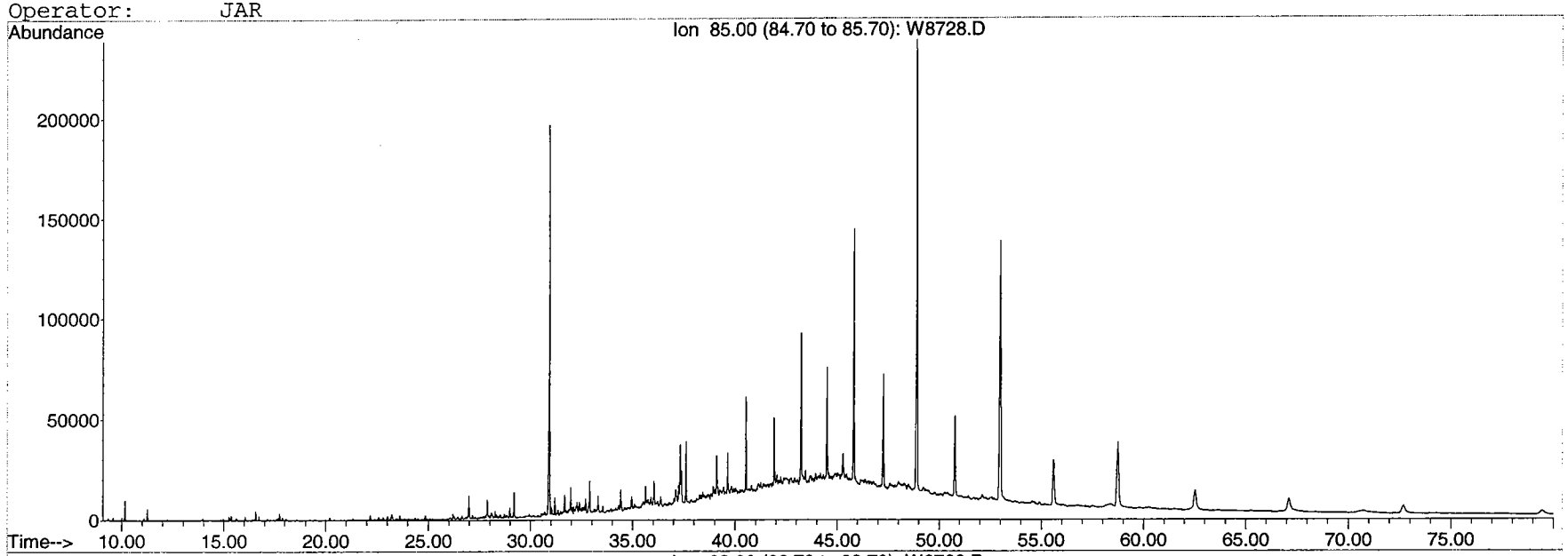


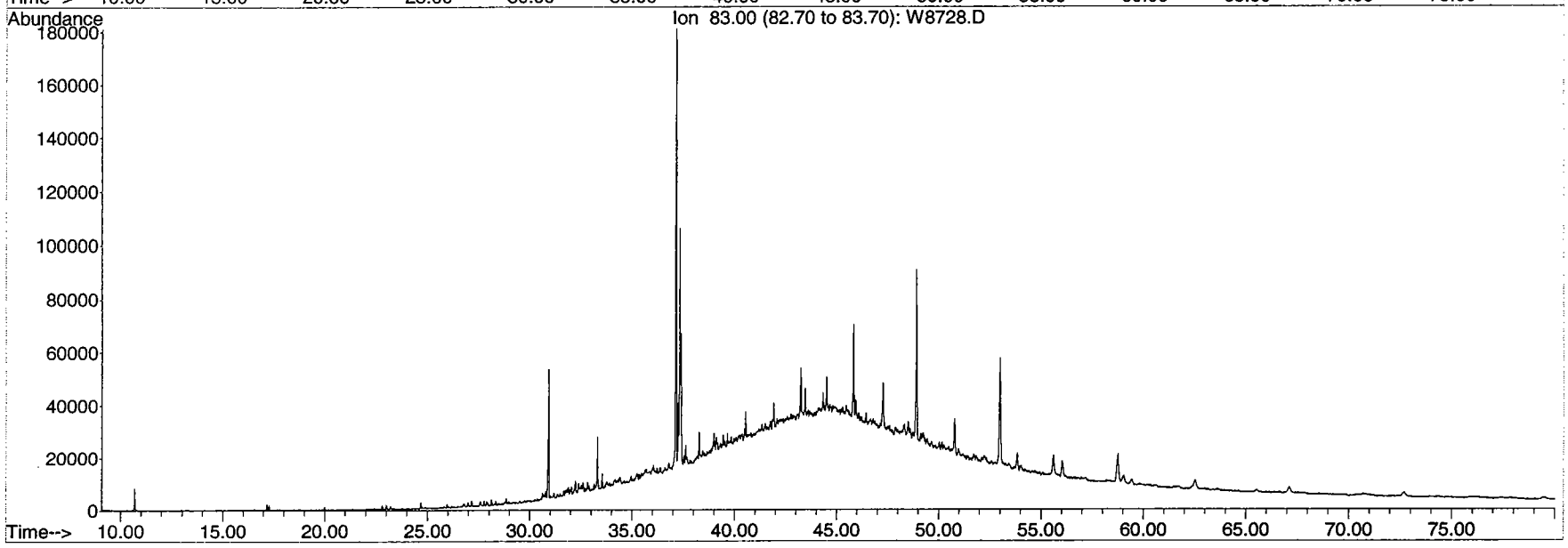


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8728.D
Date Acquired: 1 May 2004 10:15 am
Method File: BIOSIM0
Sample Name: S1430-P-A-F1(8)
Misc Info: Dup3
Operator: JAR

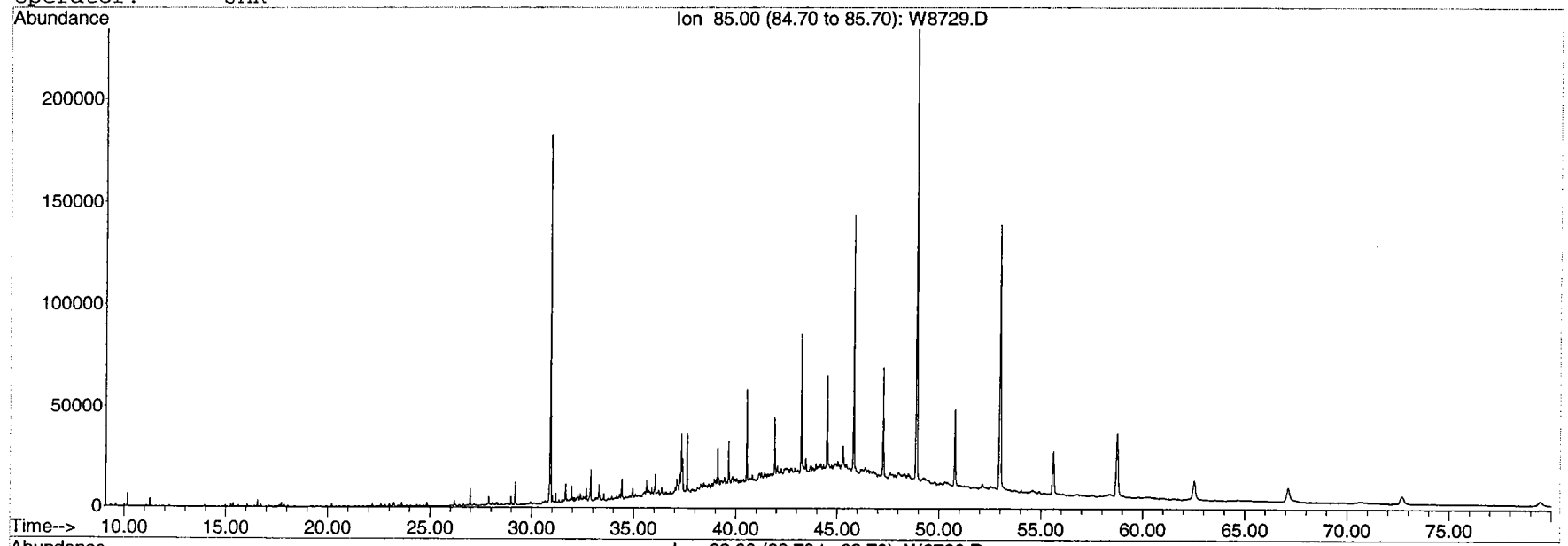


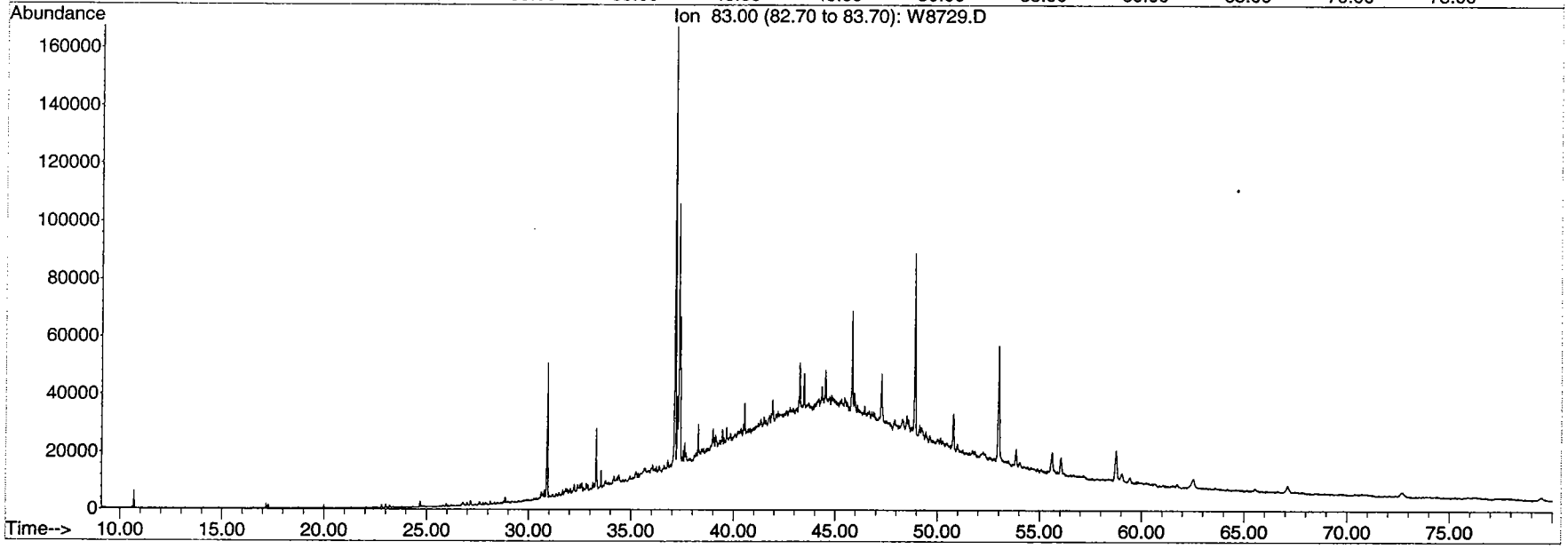


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8729.D
Date Acquired: 1 May 2004 11:45 am
Method File: BIOSIM0
Sample Name: S1432-P-A-F1(8)
Misc Info: AH-06
Operator: JAR

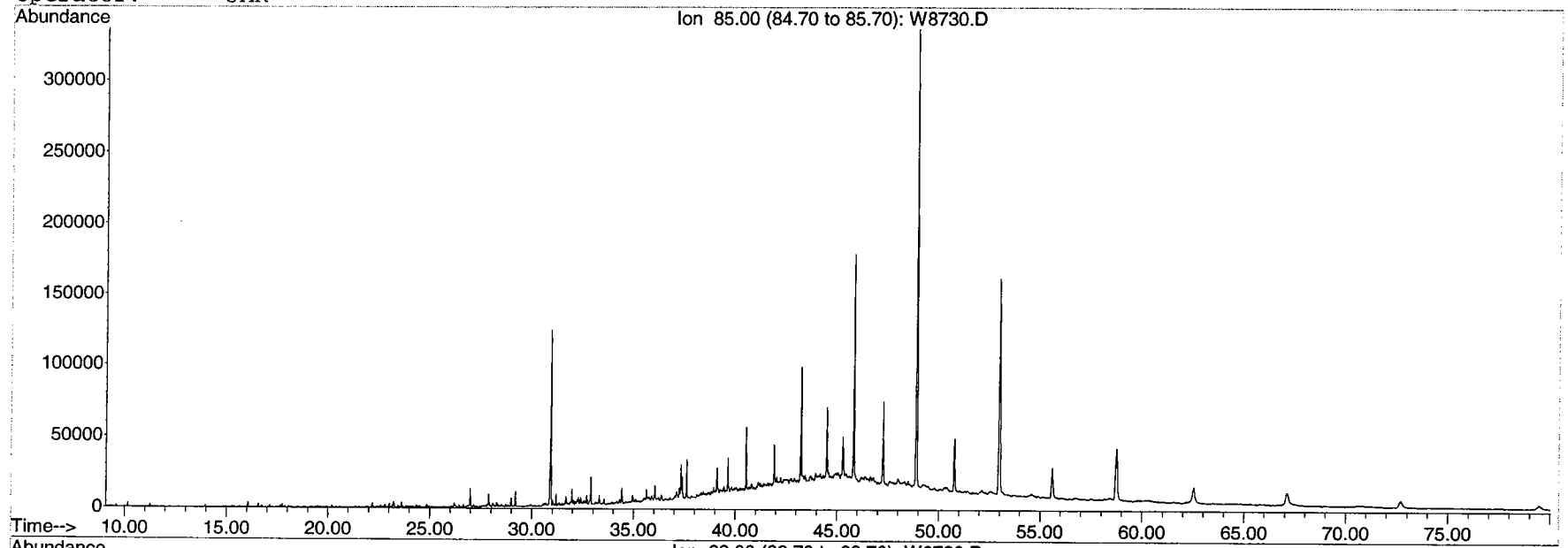


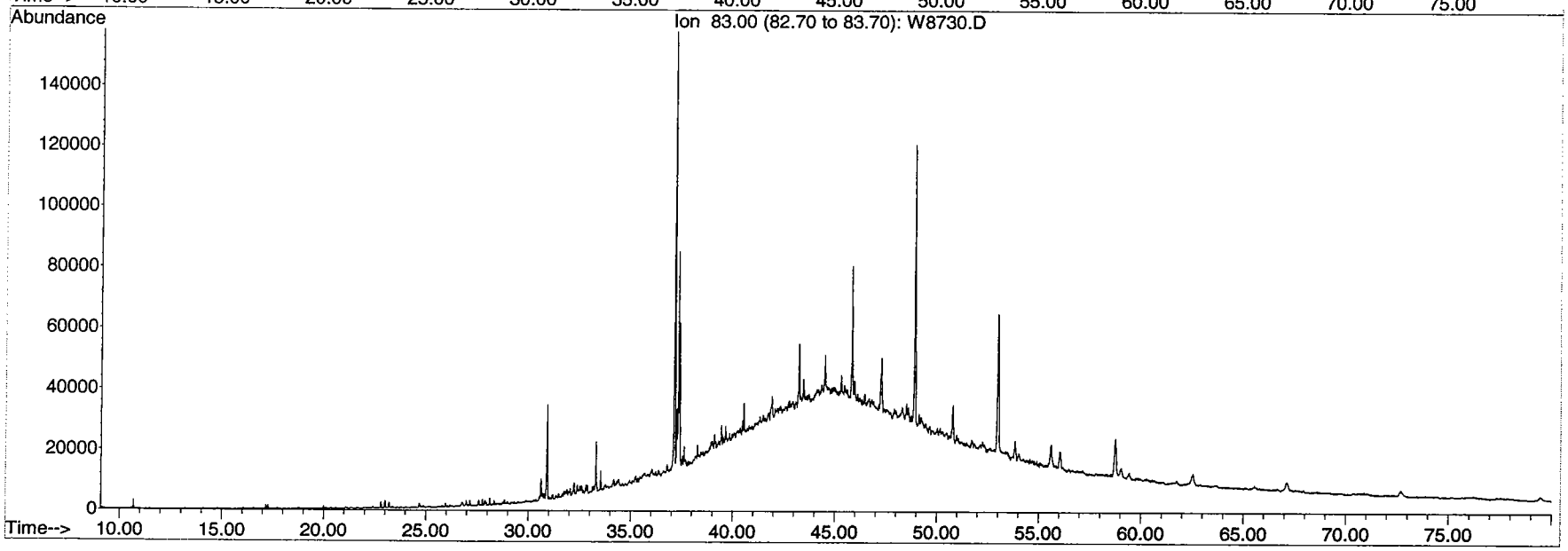


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8730.D
Date Acquired: 1 May 2004 1:14 pm
Method File: BIOSIM0
Sample Name: S1435-P-A-F1(10)
Misc Info: AH-17
Operator: JAR

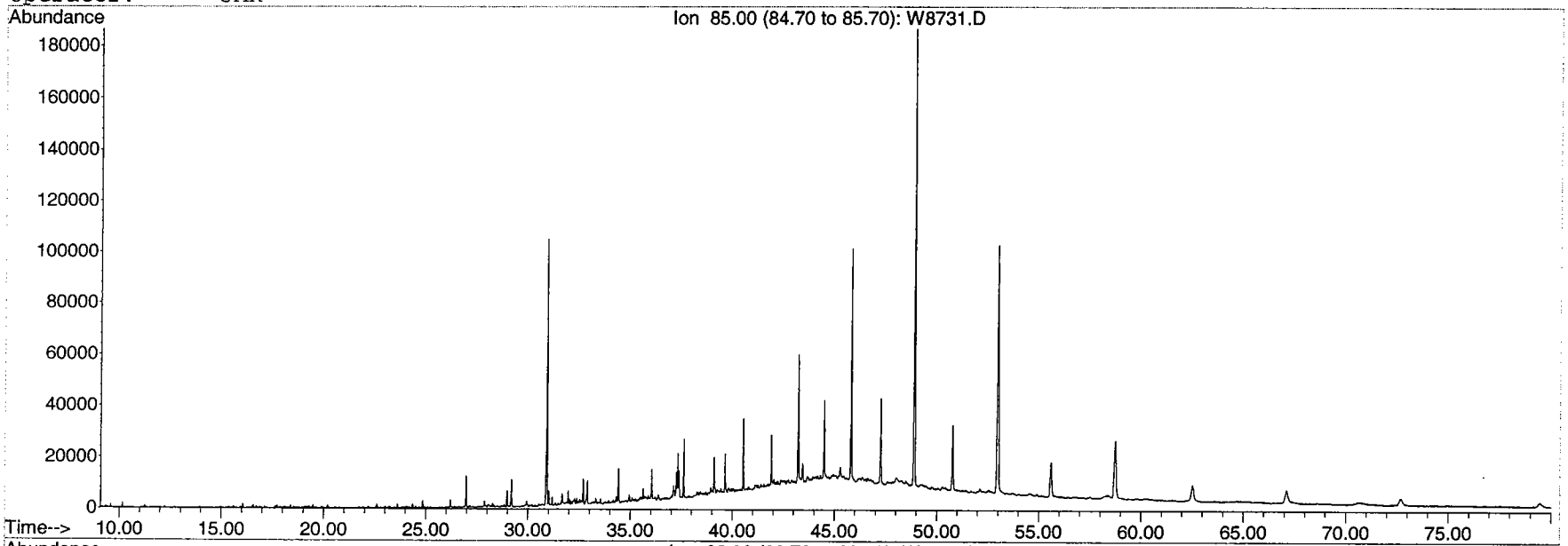


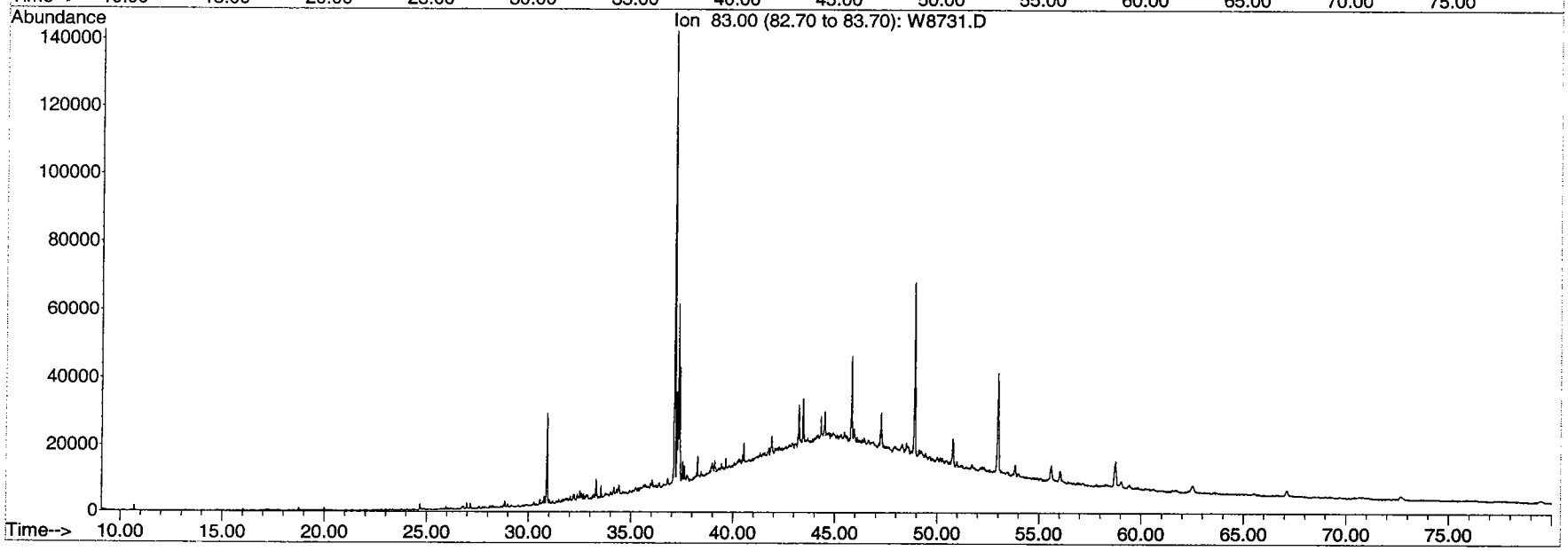


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8731.D
Date Acquired: 1 May 2004 2:43 pm
Method File: BIOSIM0
Sample Name: S1438-P-A-F1(8)
Misc Info: AH-03
Operator: JAR

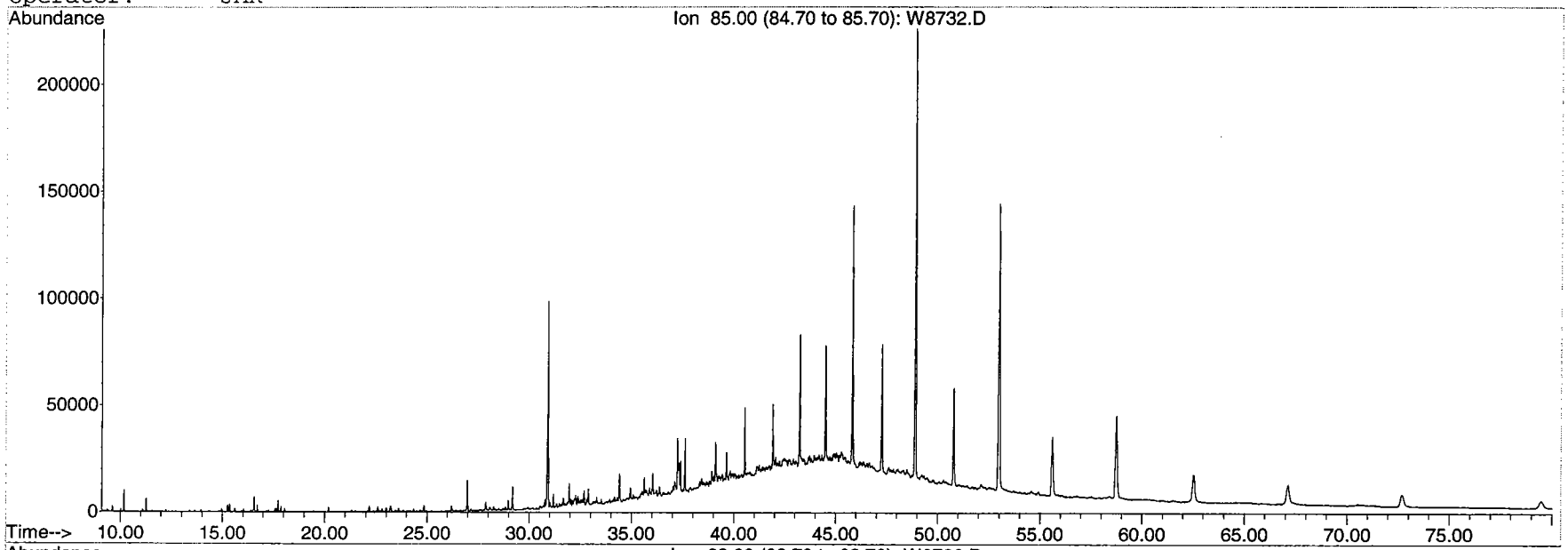


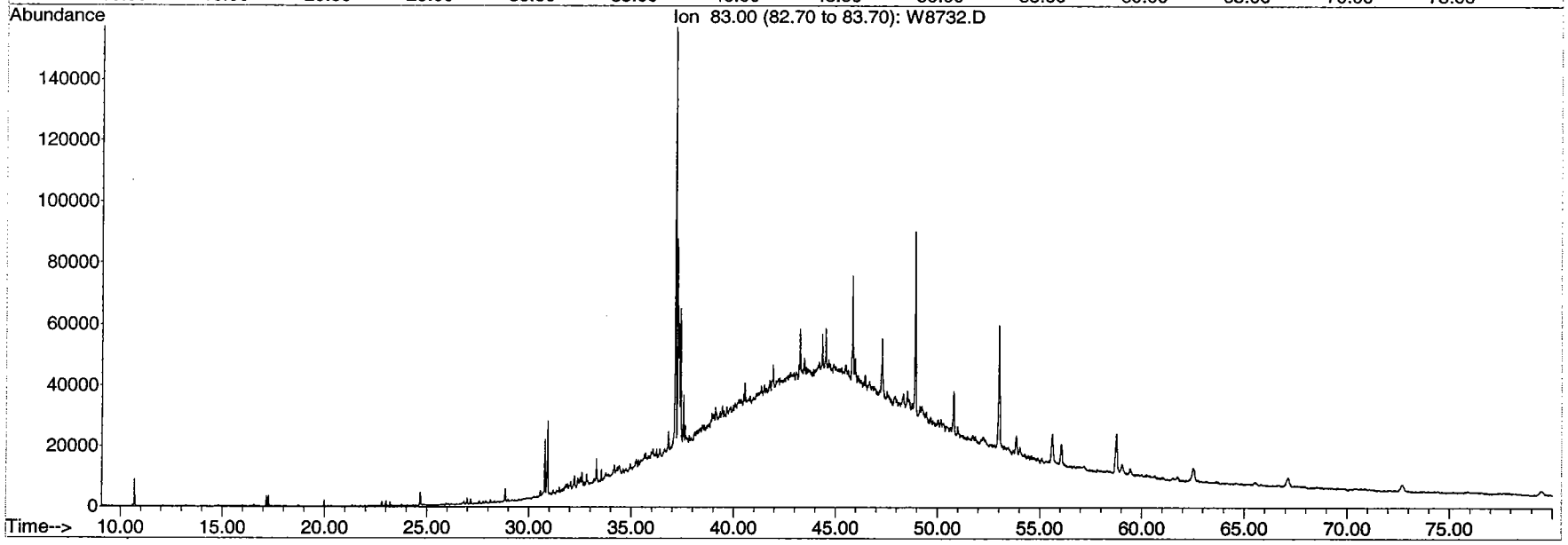


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8732.D
Date Acquired: 1 May 2004 4:13 pm
Method File: BIOSIM0
Sample Name: S1445-P-A-F1(8)
Misc Info: REF 1-4
Operator: JAR

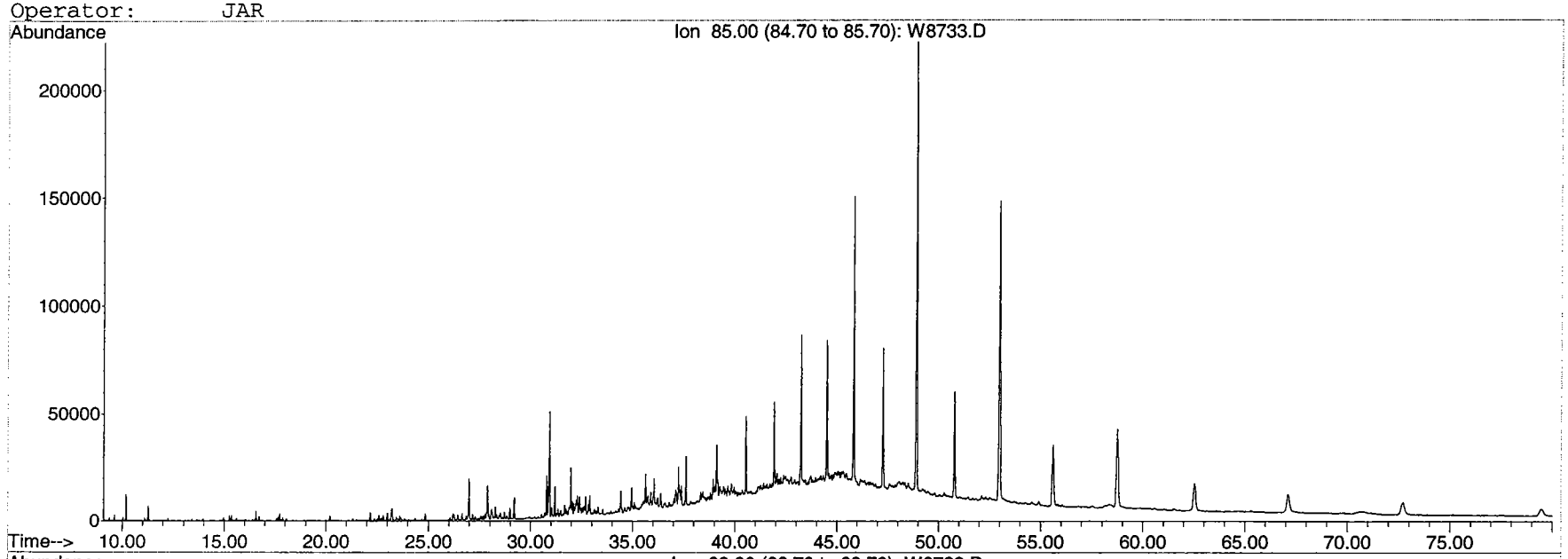


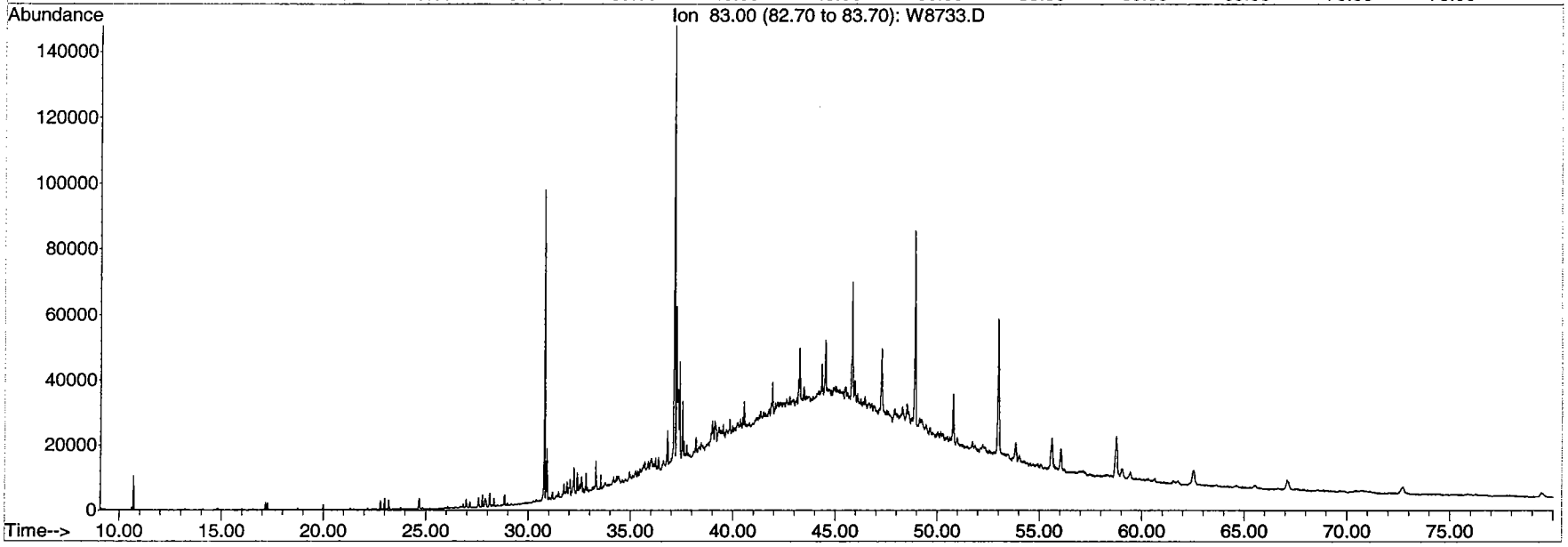


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8733.D
Date Acquired: 1 May 2004 5:42 pm
Method File: BIOSIM0
Sample Name: S1447-P-A-F1(8)
Misc Info: REF 2-1
Operator: JAR

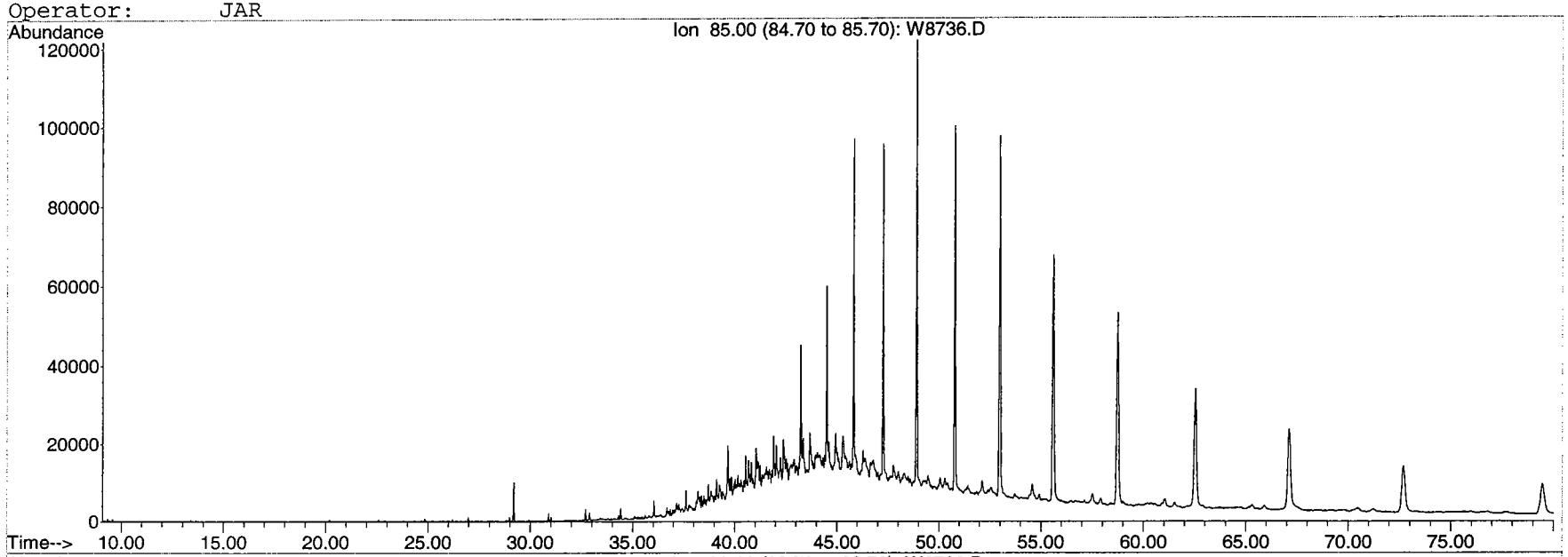


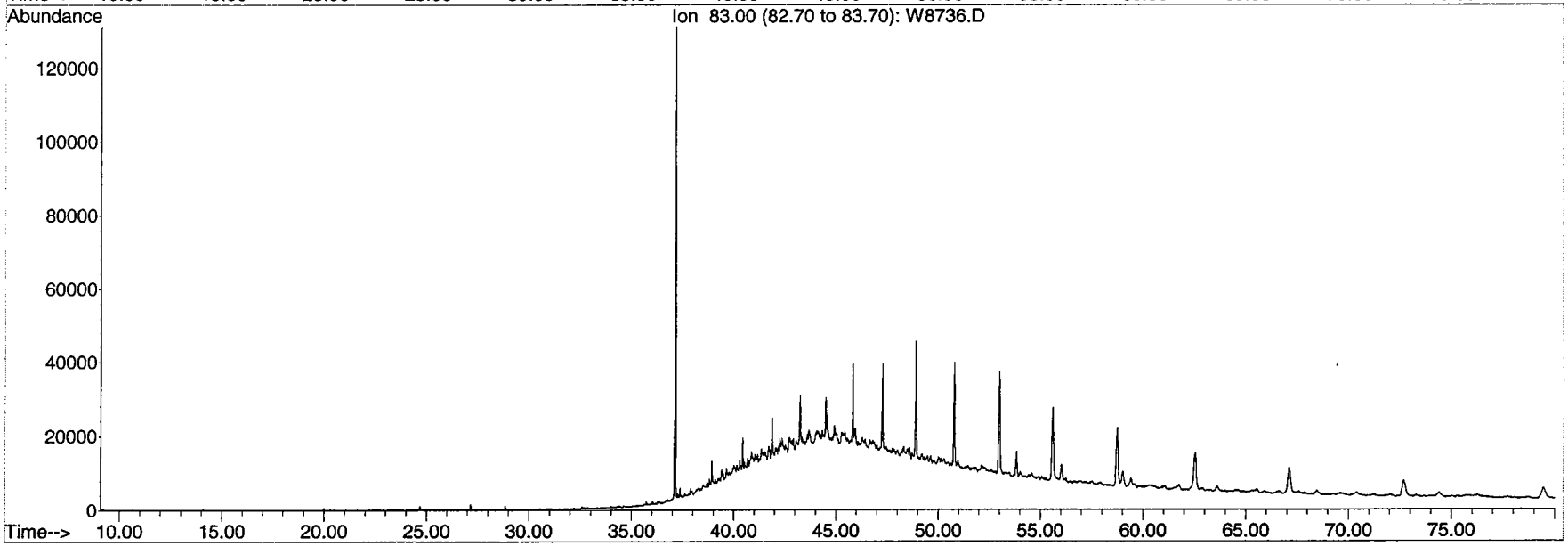


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8736.D
Date Acquired: 1 May 2004 10:10 pm
Method File: BIOSIM0
Sample Name: S1457-P-F1(14)
Misc Info: SID Source 4-1
Operator: JAR

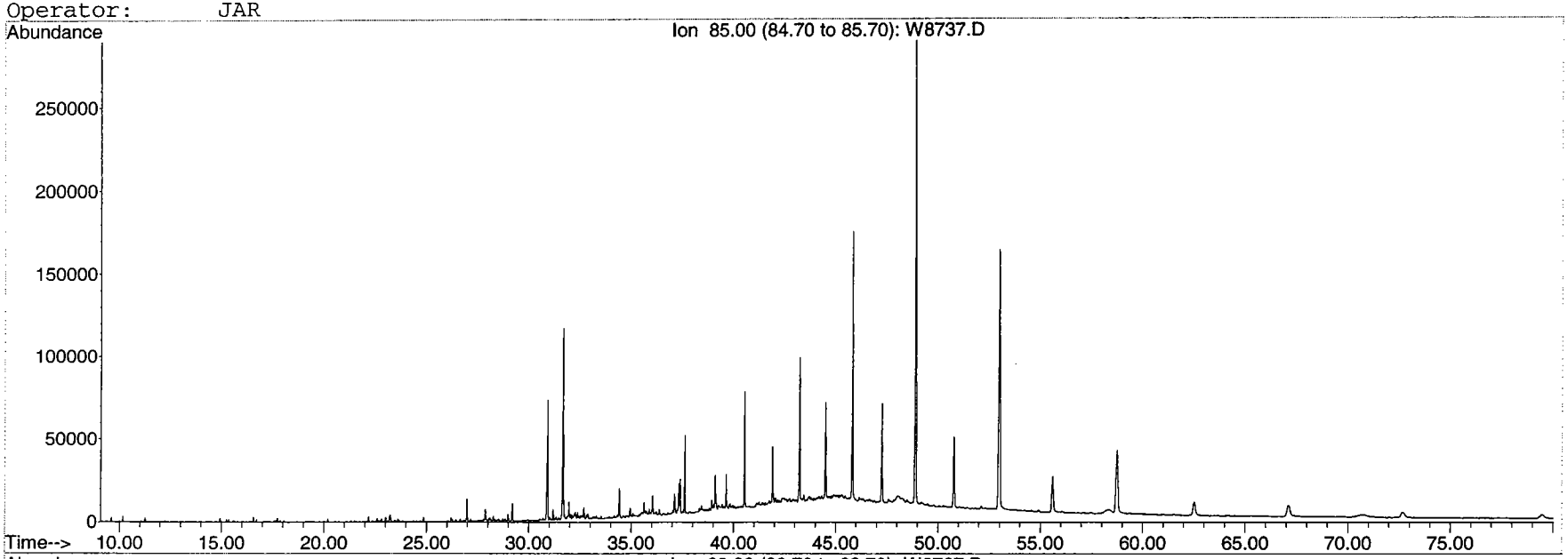


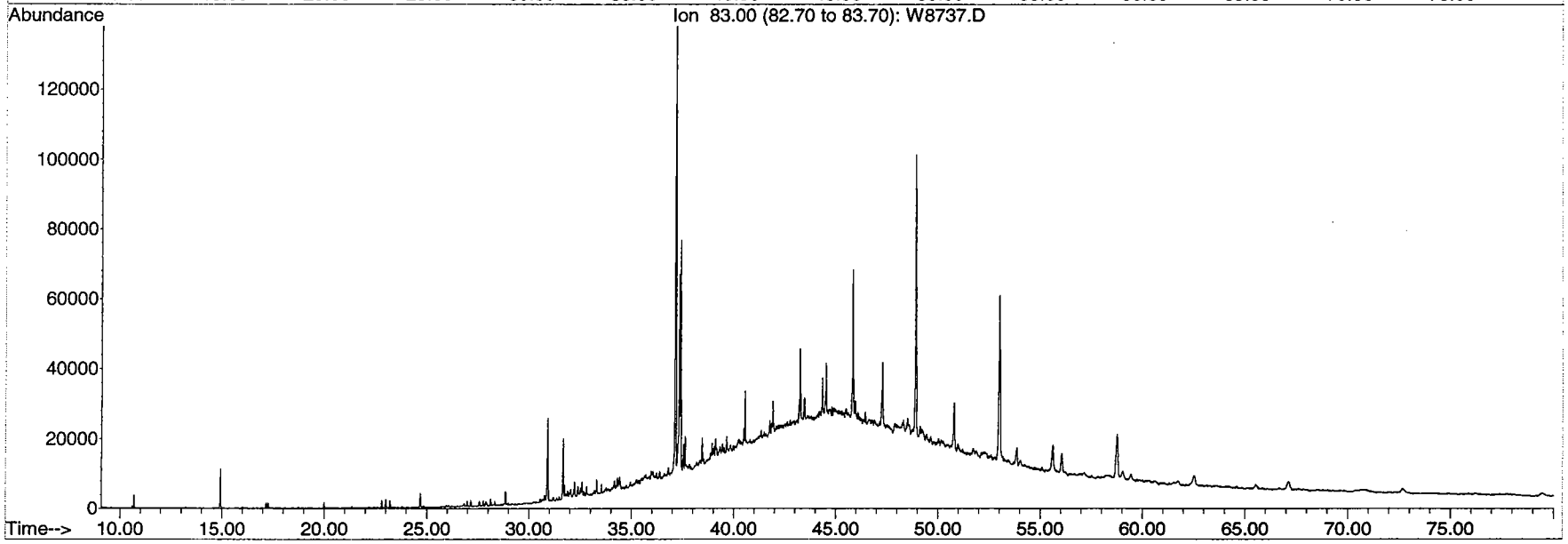


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8737.D
Date Acquired: 1 May 2004 11:39 pm
Method File: BIOSIM0
Sample Name: S1466-P-A-F1(8)
Misc Info: REF 3-2
Operator: JAR

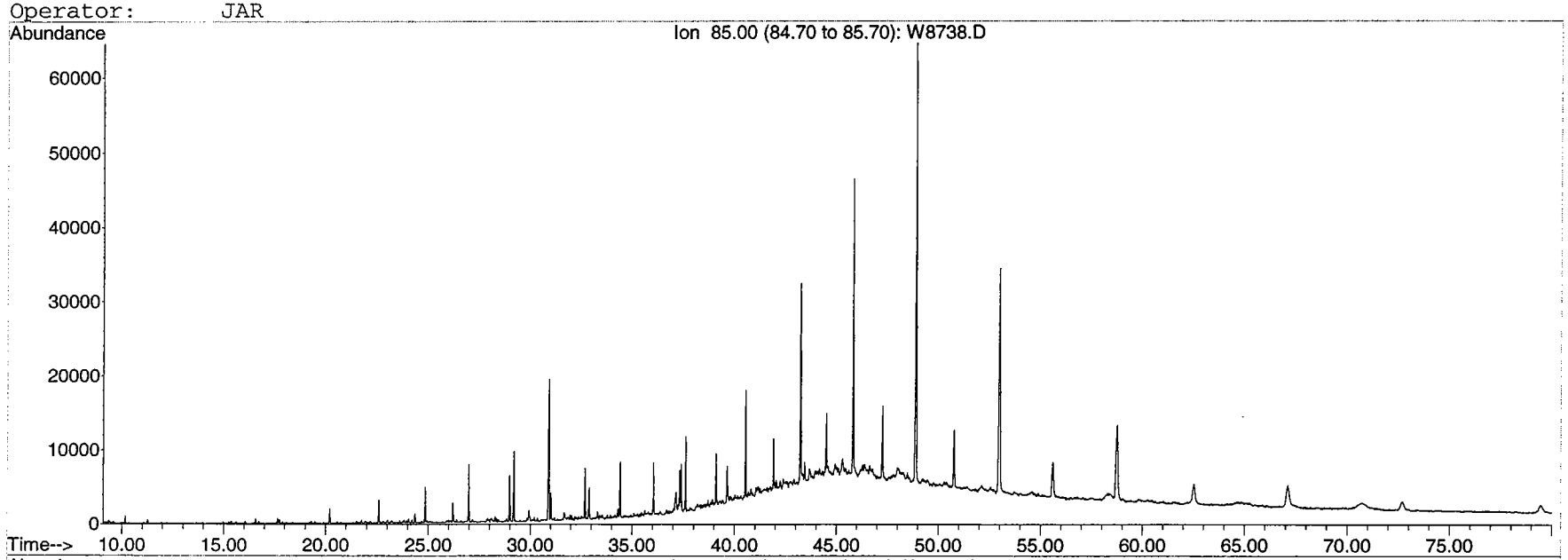


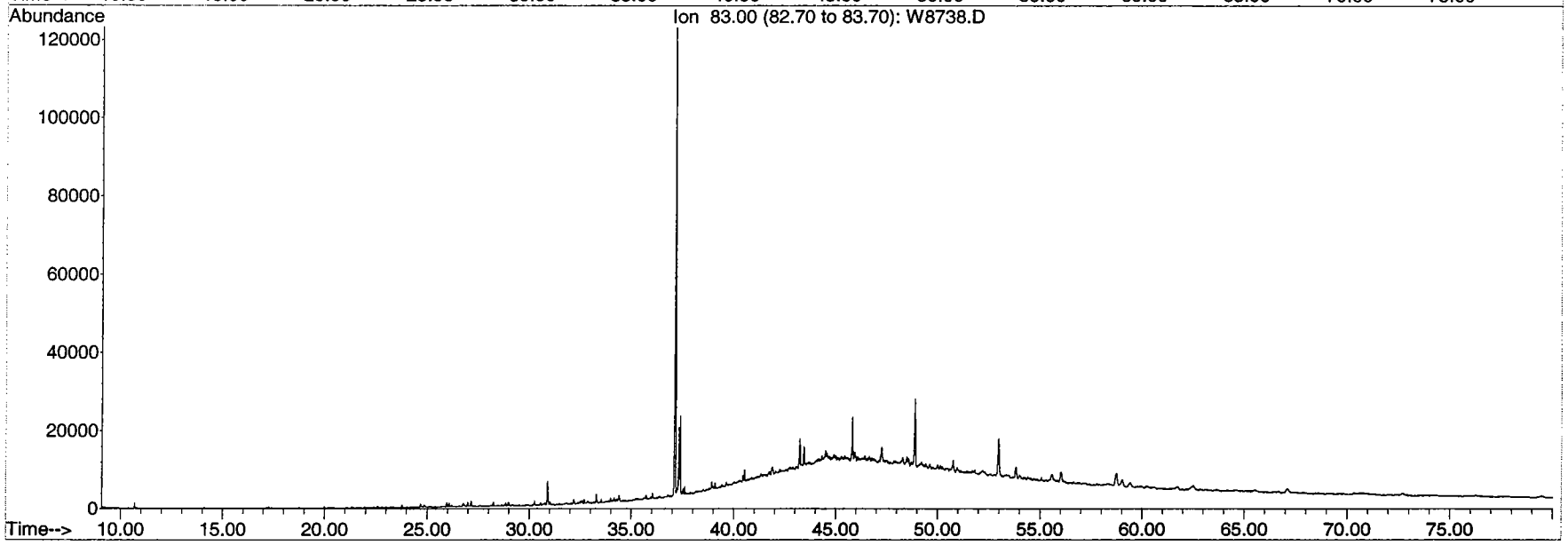


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8738.D
Date Acquired: 2 May 2004 1:09 am
Method File: BIOSIM0
Sample Name: S1468-P-A-F1(10)
Misc Info: AH-28
Operator: JAR

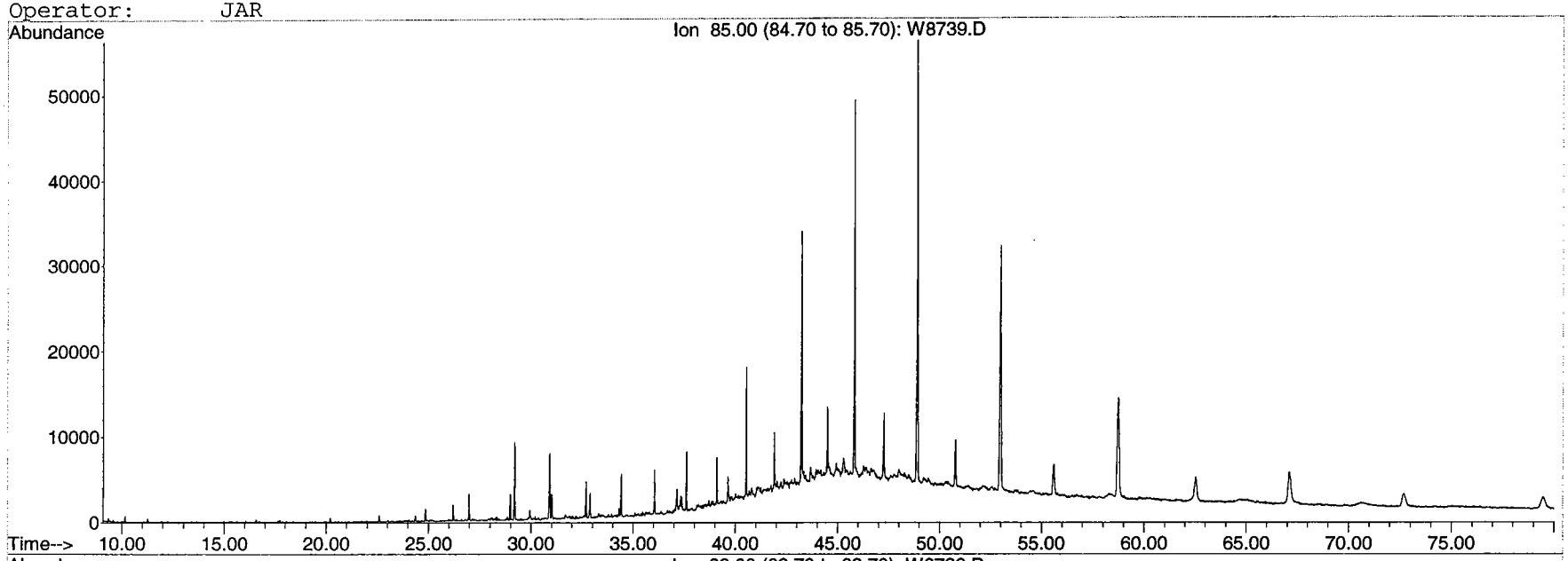


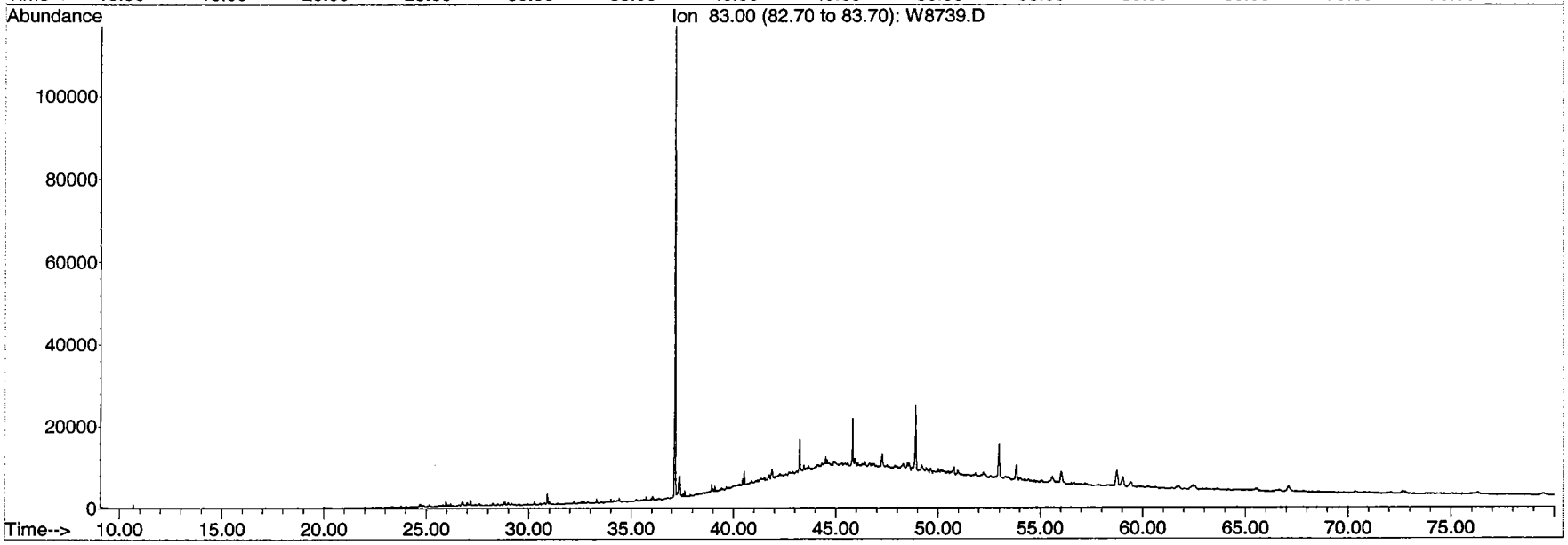


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8739.D
Date Acquired: 2 May 2004 2:39 am
Method File: BIOSIM0
Sample Name: S1471-P-A-F1(10)
Misc Info: AH-49
Operator: JAR

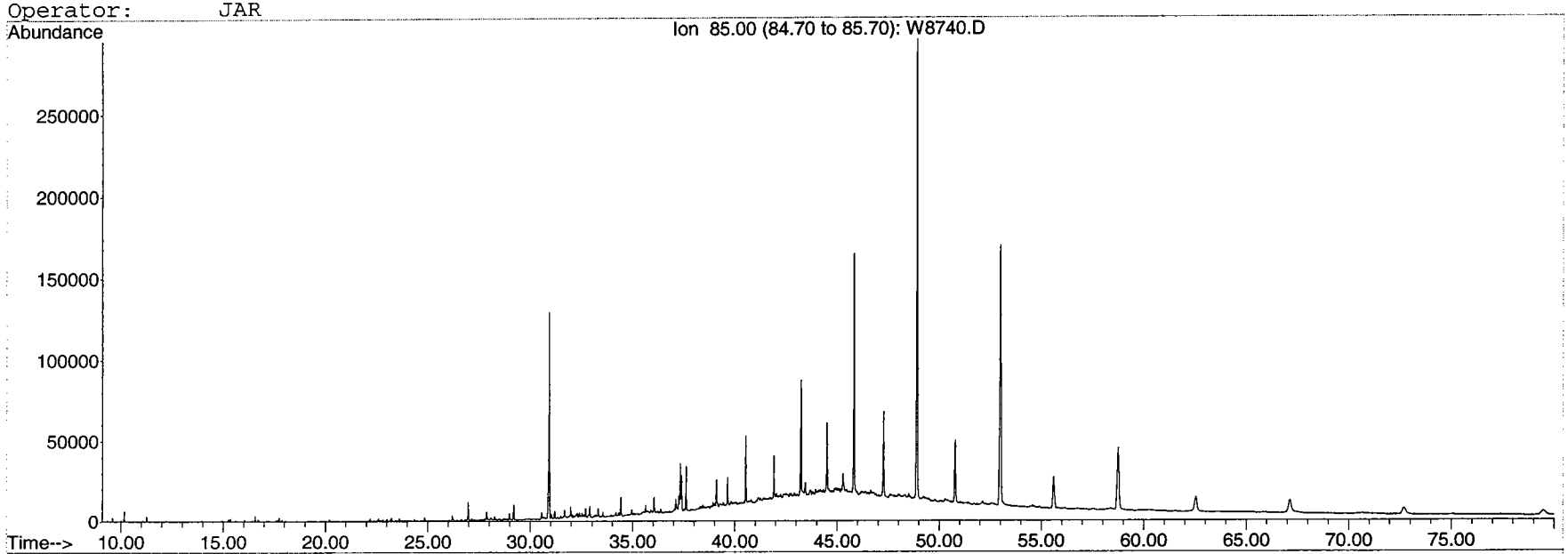


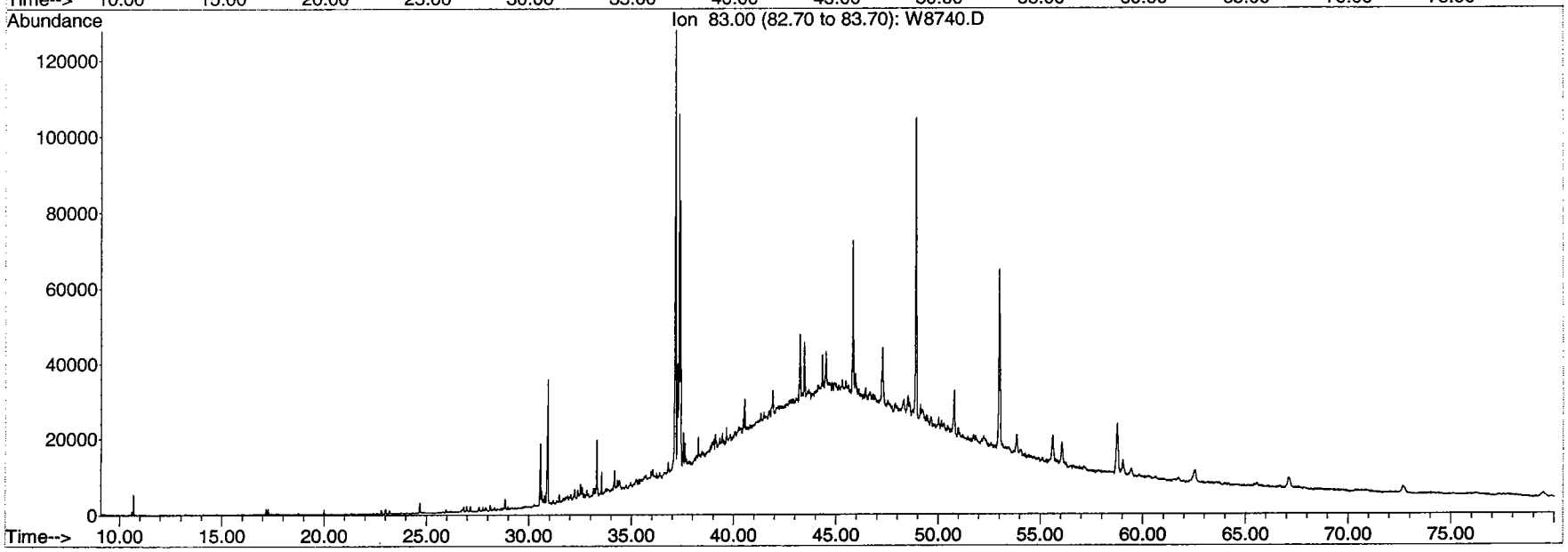


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8740.D
Date Acquired: 2 May 2004 4:08 am
Method File: BIOSIM0
Sample Name: S1474-P-A-F1(10)
Misc Info: AH-45
Operator: JAR

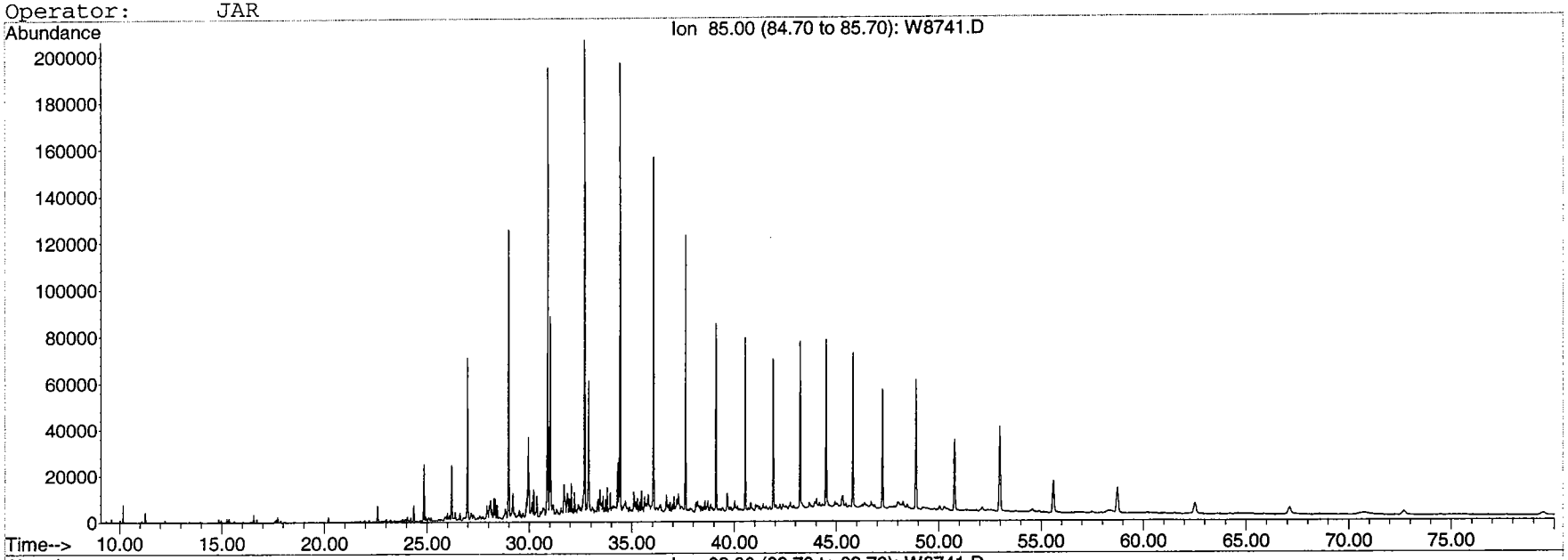


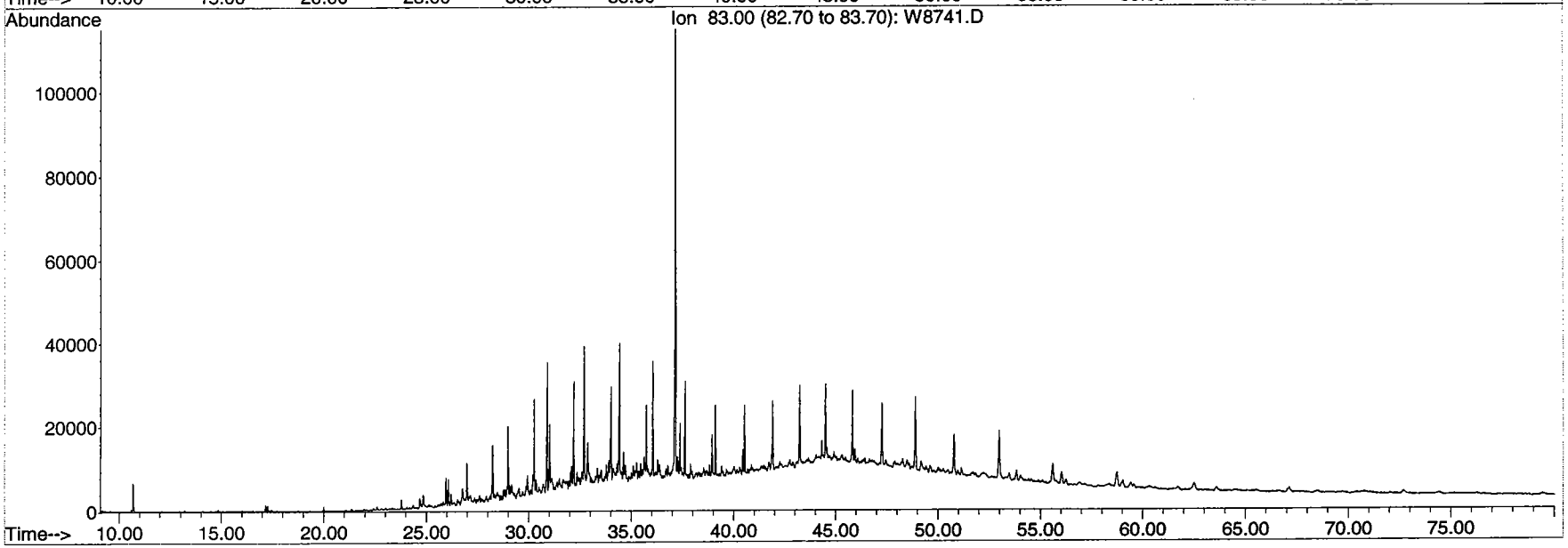


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8741.D
Date Acquired: 2 May 2004 5:38 am
Method File: BIOSIM0
Sample Name: S1481-P-A-F1(8)
Misc Info: Source 3-1
Operator: JAR

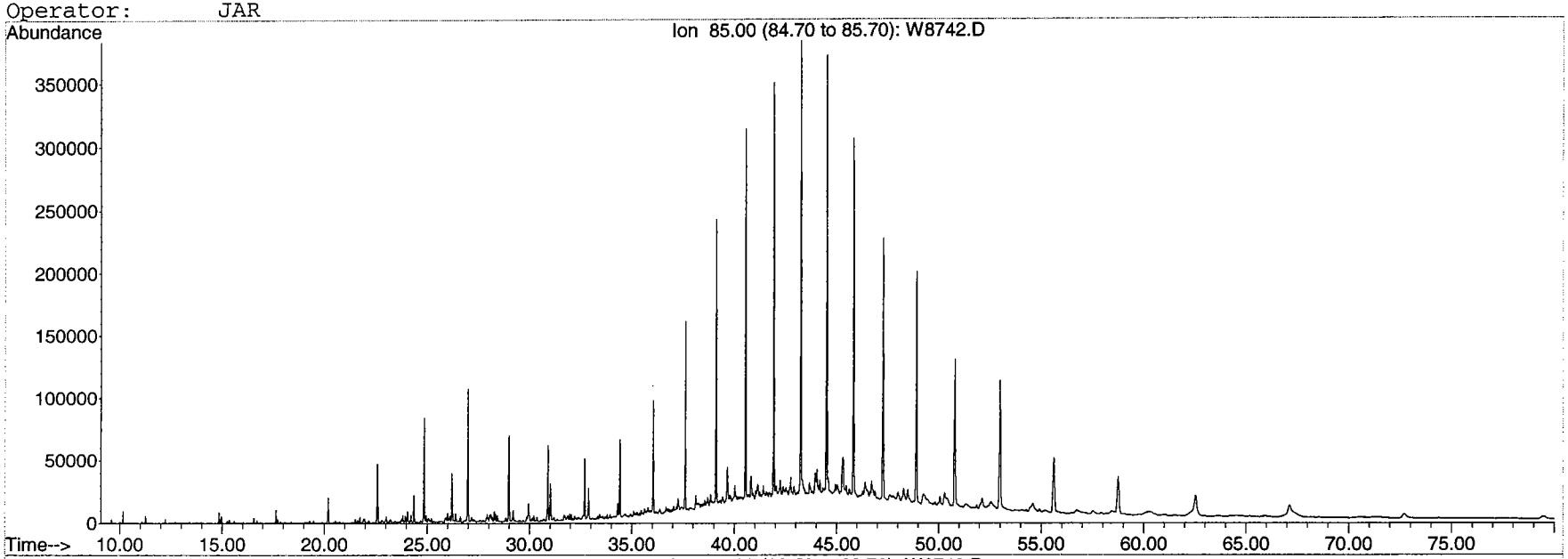


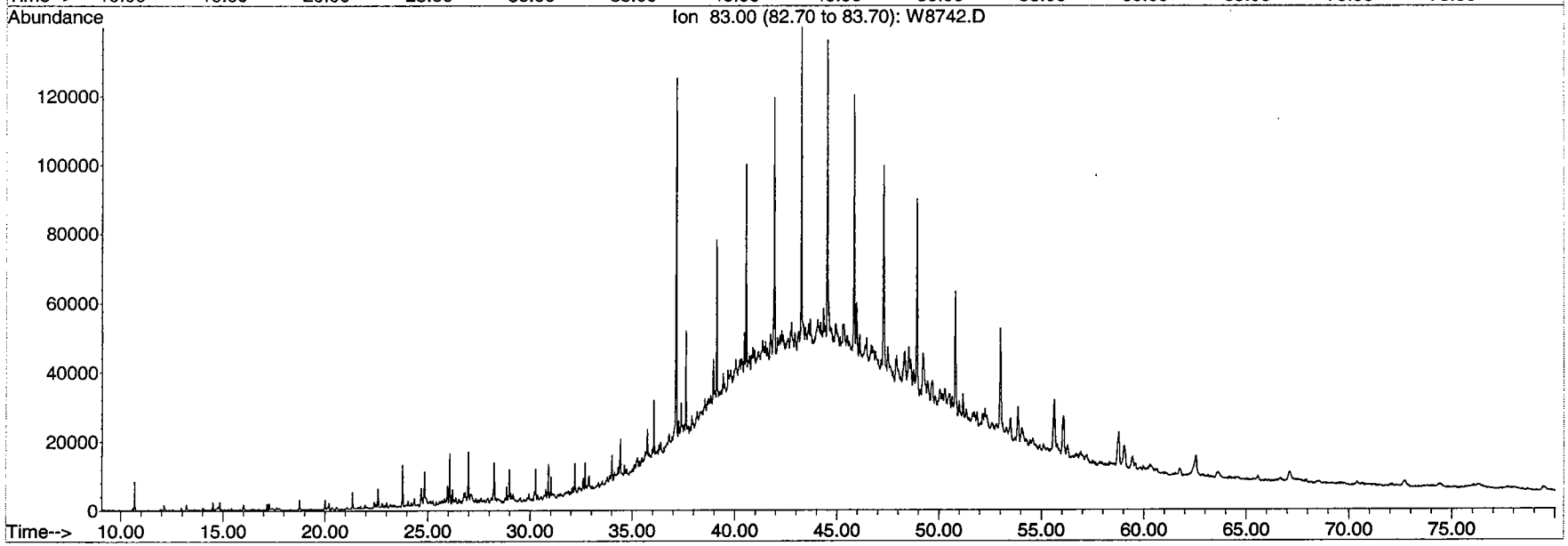


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8742.D
Date Acquired: 2 May 2004 7:08 am
Method File: BIOSIM0
Sample Name: S1482-P-A-F1(8)
Misc Info: Source 3-2
Operator: JAR

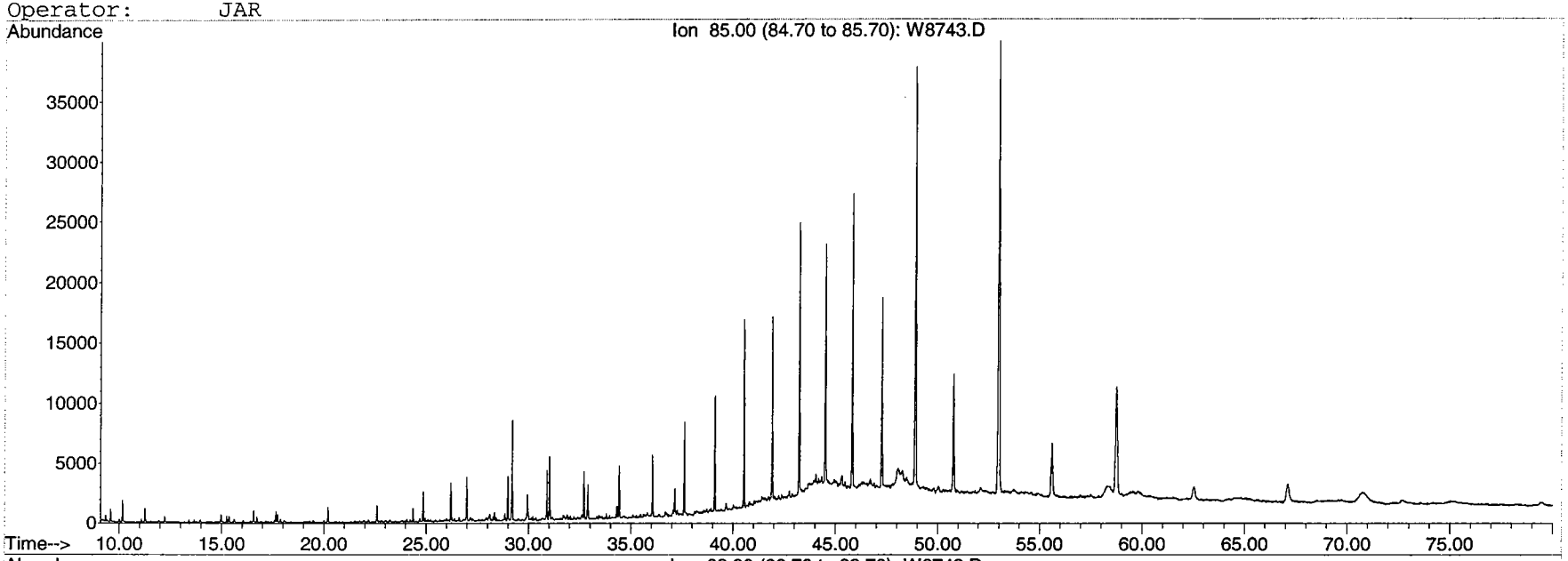


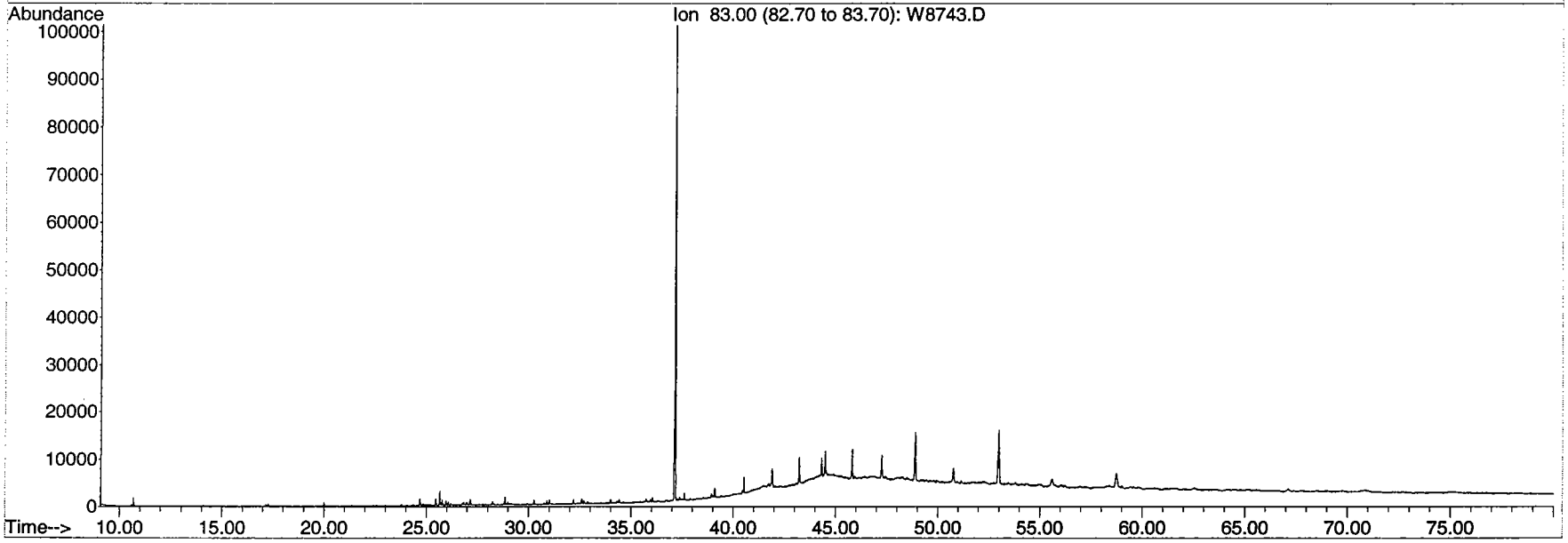


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8743.D
Date Acquired: 2 May 2004 8:37 am
Method File: BIOSIM0
Sample Name: S1483-P-A-F1(8)
Misc Info: Source 1-1
Operator: JAR

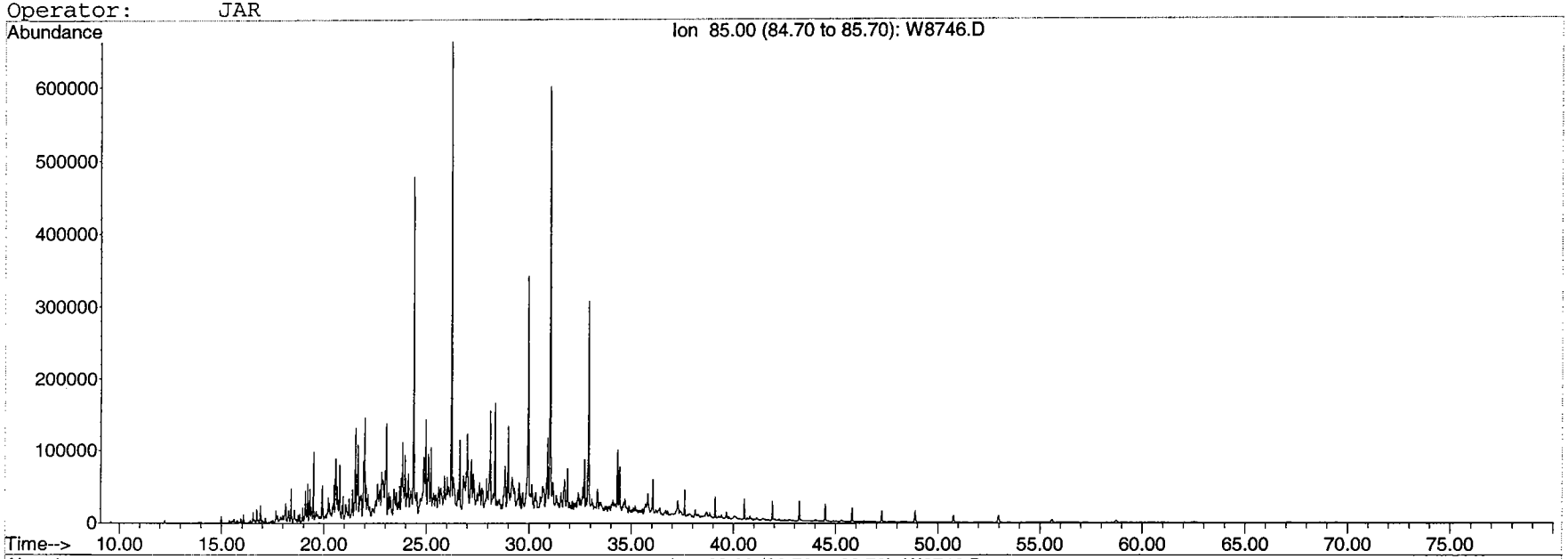


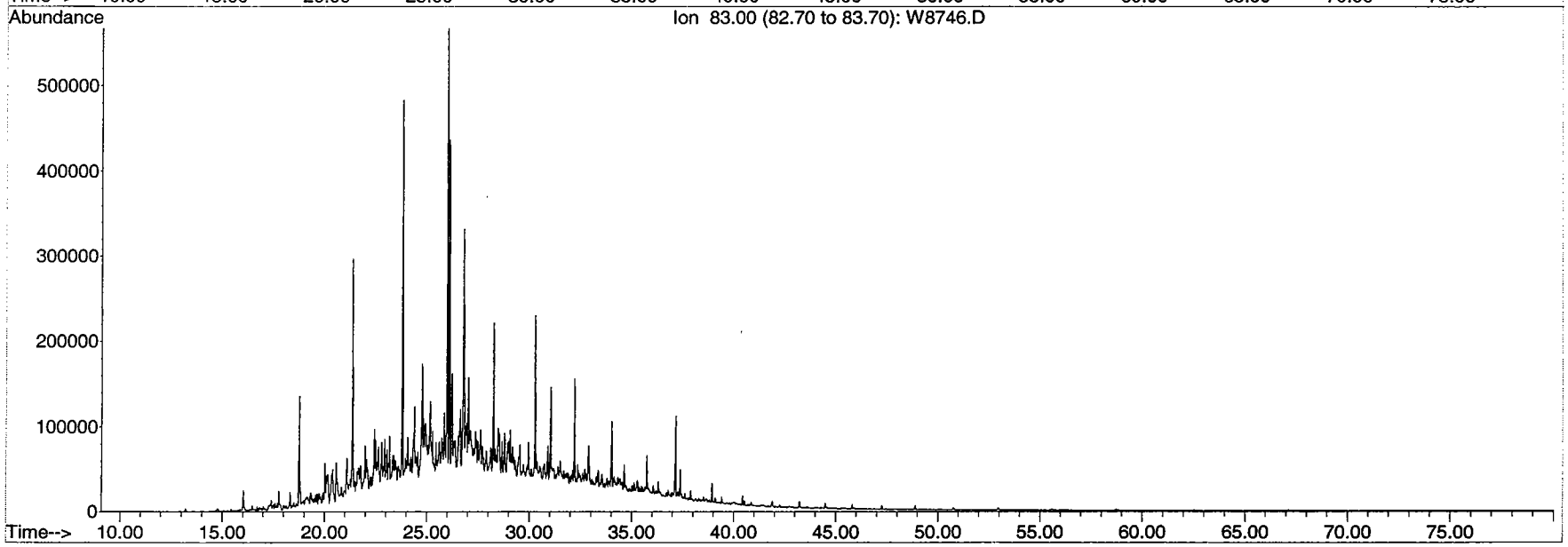


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8746.D
Date Acquired: 2 May 2004 1:05 pm
Method File: BIOSIM0
Sample Name: S1484-P-A-F1(10)
Misc Info: Source 2-1
Operator: JAR

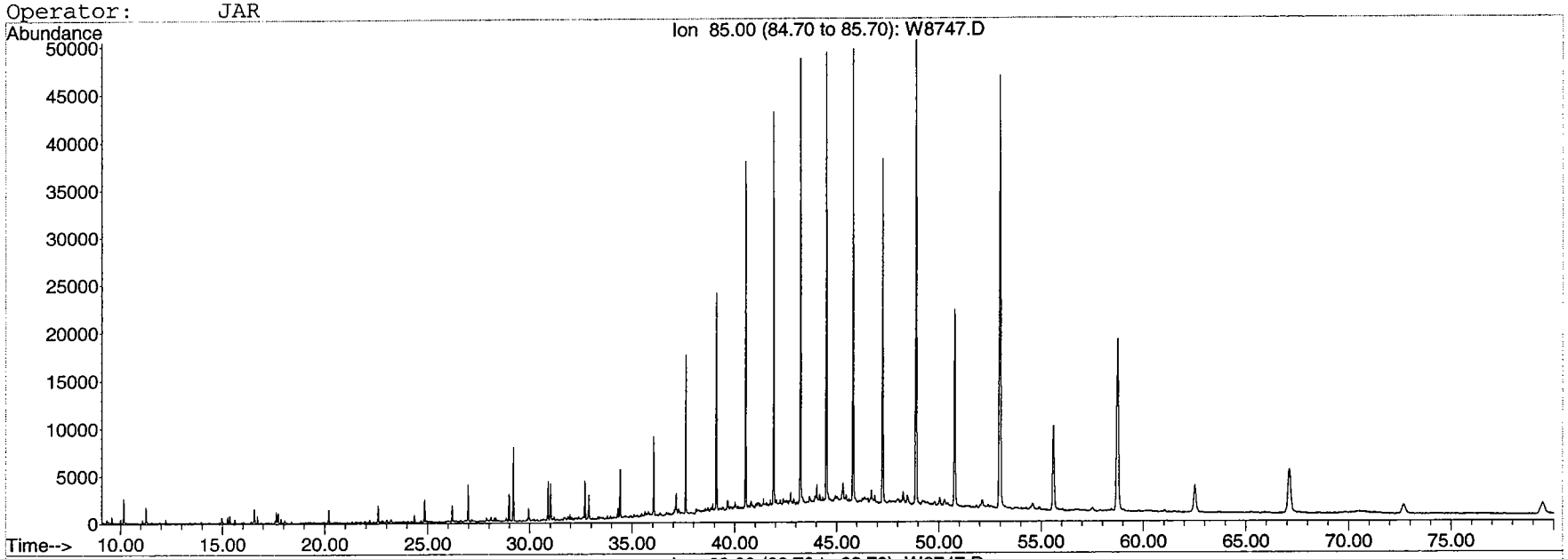


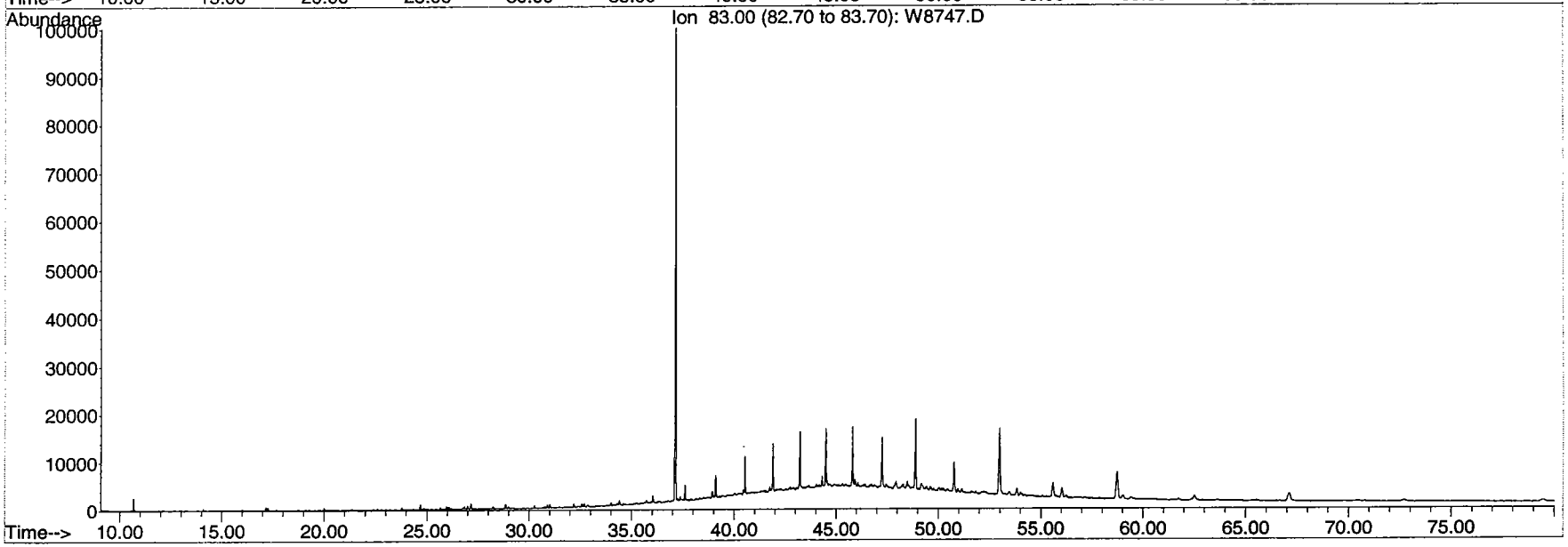


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8747.D
Date Acquired: 2 May 2004 2:35 pm
Method File: BIOSIM0
Sample Name: S1485-P-A-F1(10)
Misc Info: Source 1-2
Operator: JAR

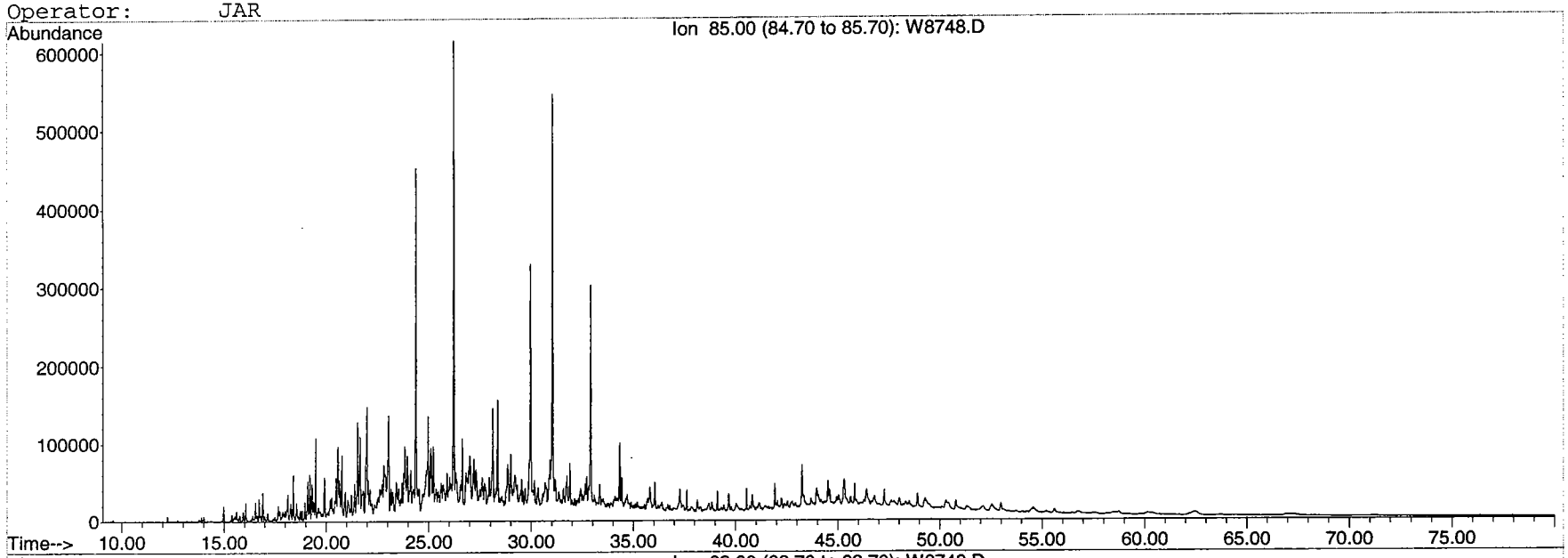


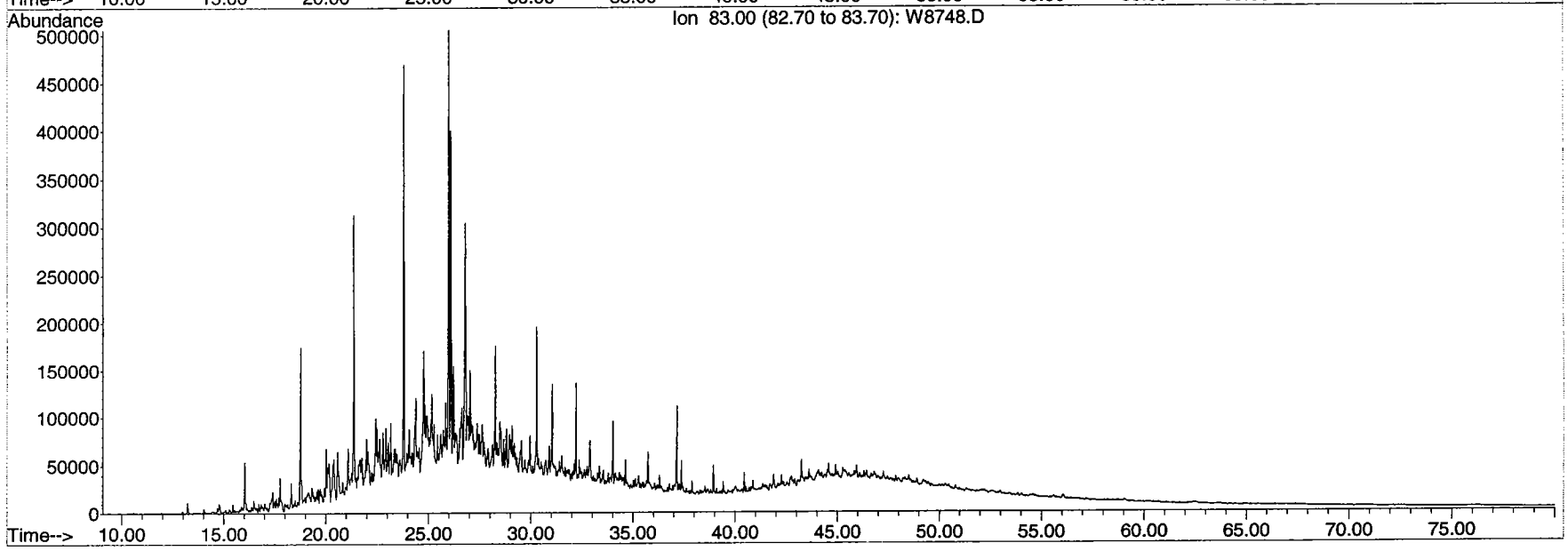


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8748.D
Date Acquired: 2 May 2004 4:04 pm
Method File: BIOSIM0
Sample Name: S1486-P-A-F1(10)
Misc Info: Source 2-2
Operator: JAR

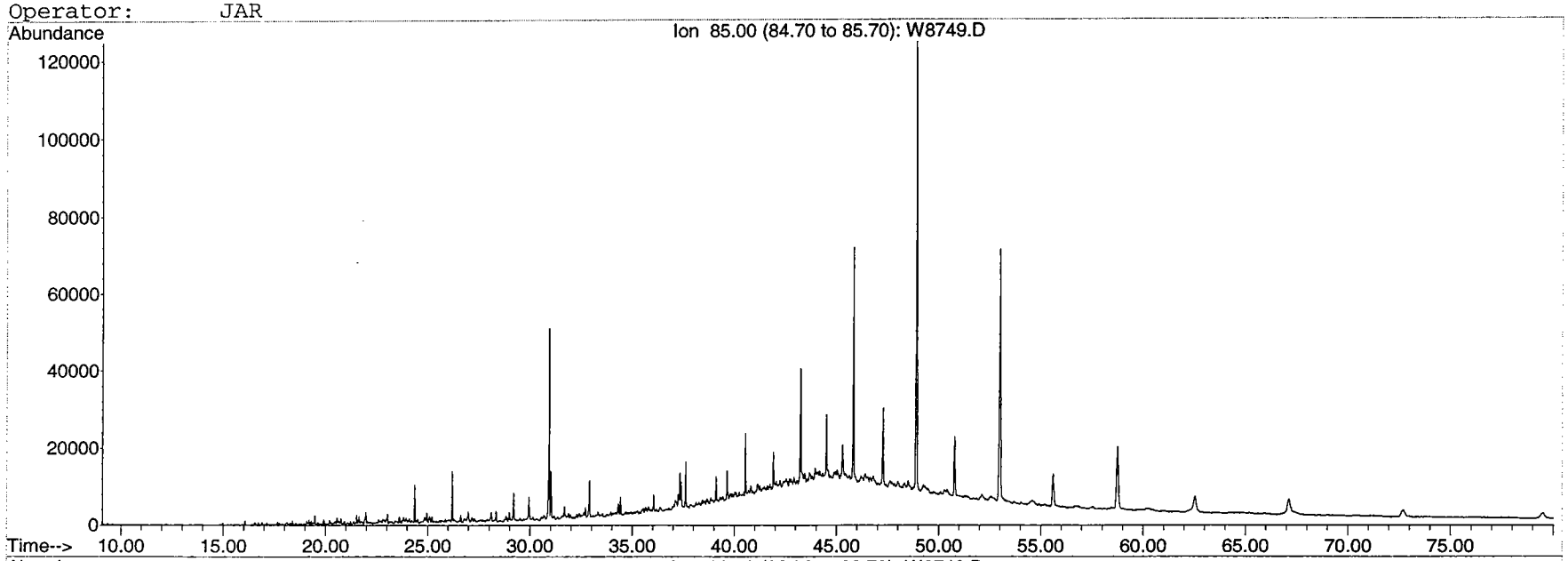


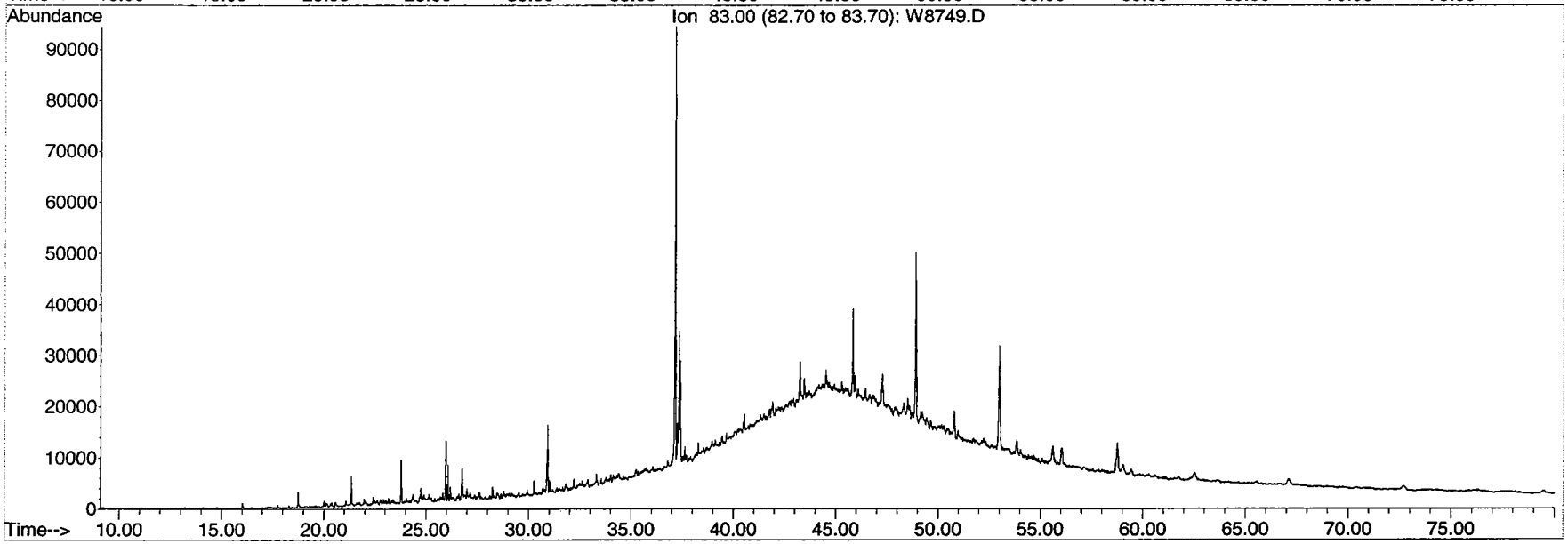


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8749.D
Date Acquired: 2 May 2004 5:33 pm
Method File: BIOSIM0
Sample Name: S1491-P-A-F1(10)
Misc Info: AH-29
Operator: JAR

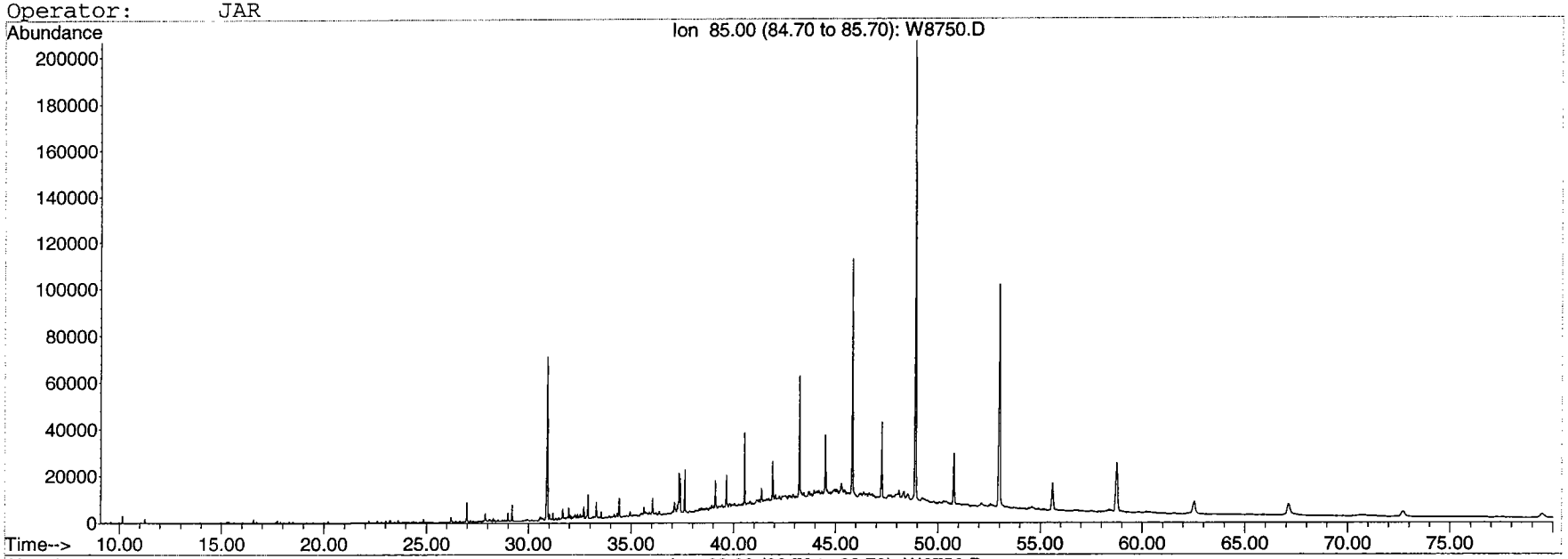


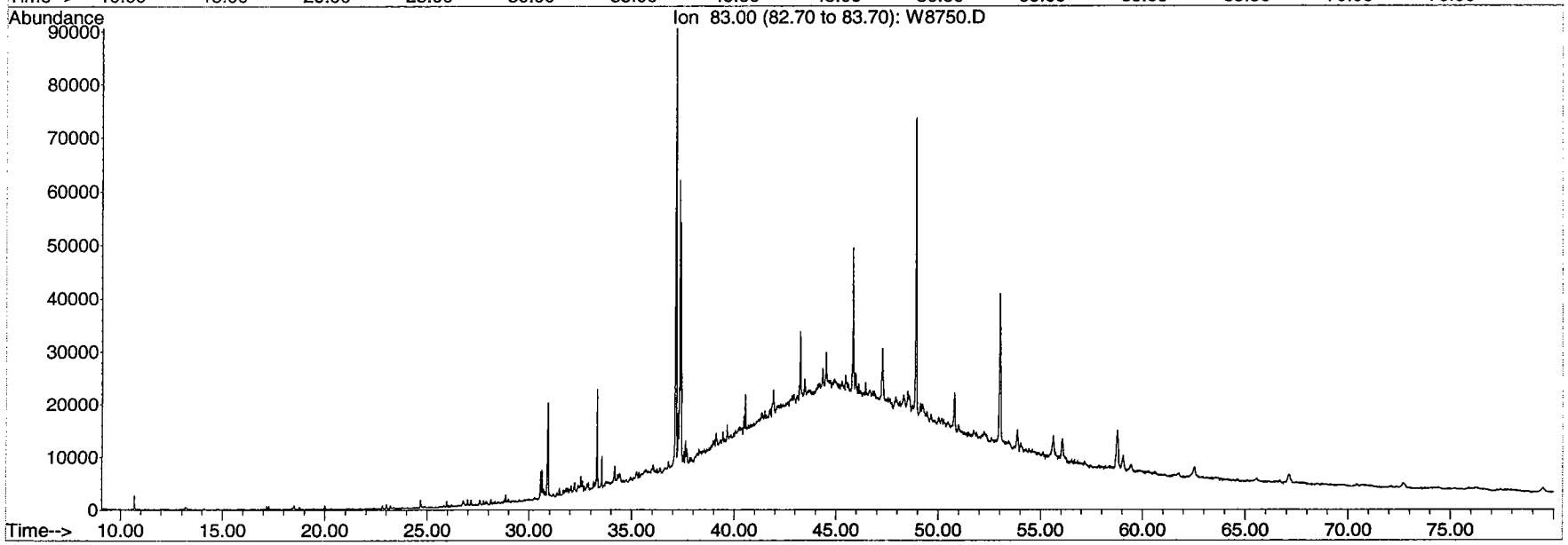


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8750.D
Date Acquired: 2 May 2004 7:03 pm
Method File: BIOSIM0
Sample Name: S1505-P-A-F1(8)
Misc Info: AH-26
Operator: JAR

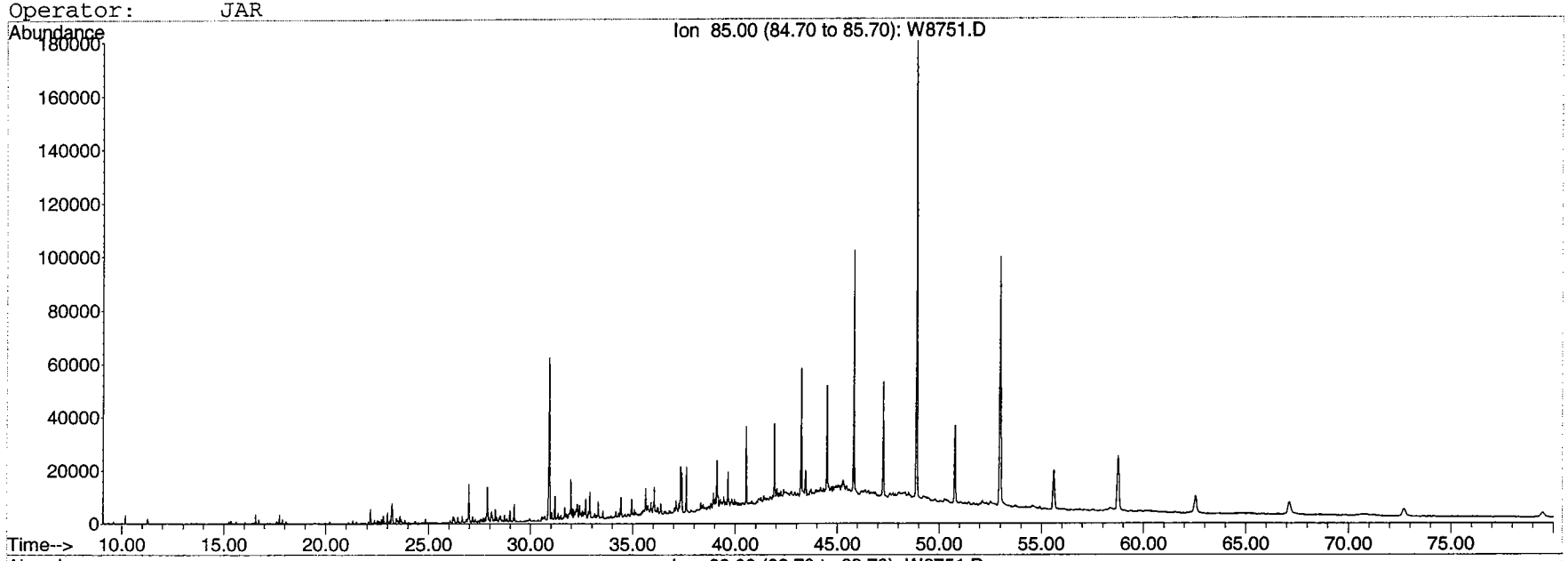


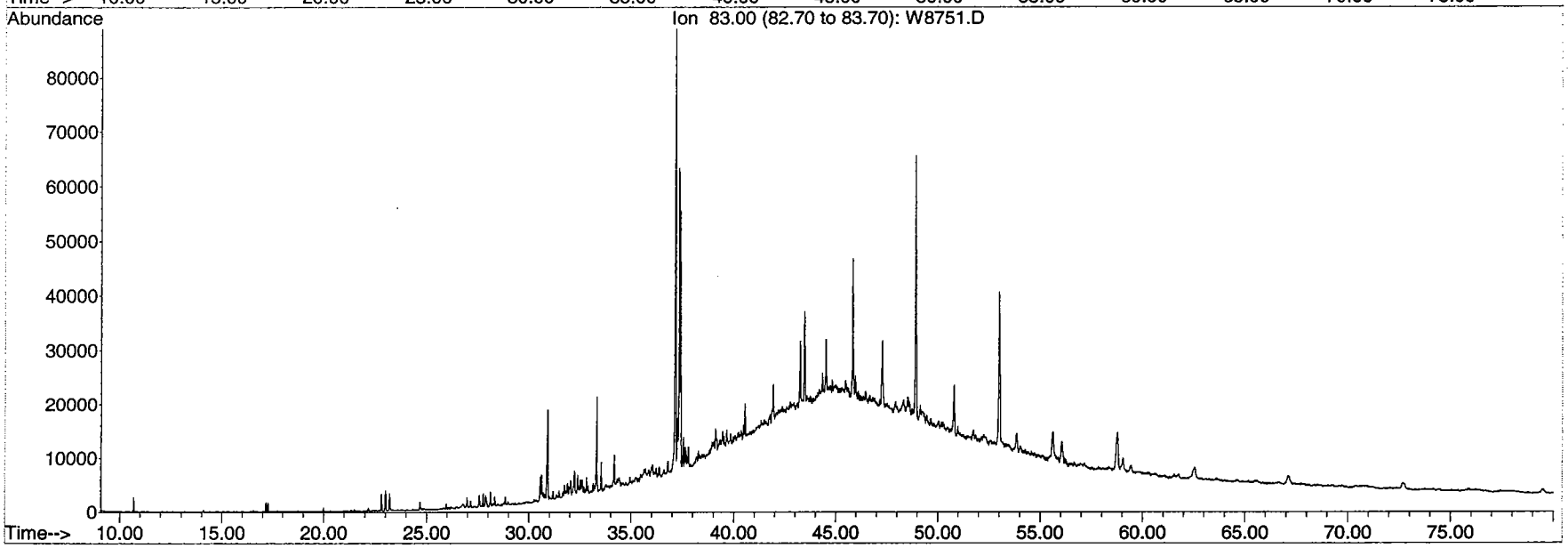


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8751.D
Date Acquired: 2 May 2004 8:32 pm
Method File: BIOSIM0
Sample Name: S1505DUP-P-A-F1(8)
Misc Info: AH-26
Operator: JAR

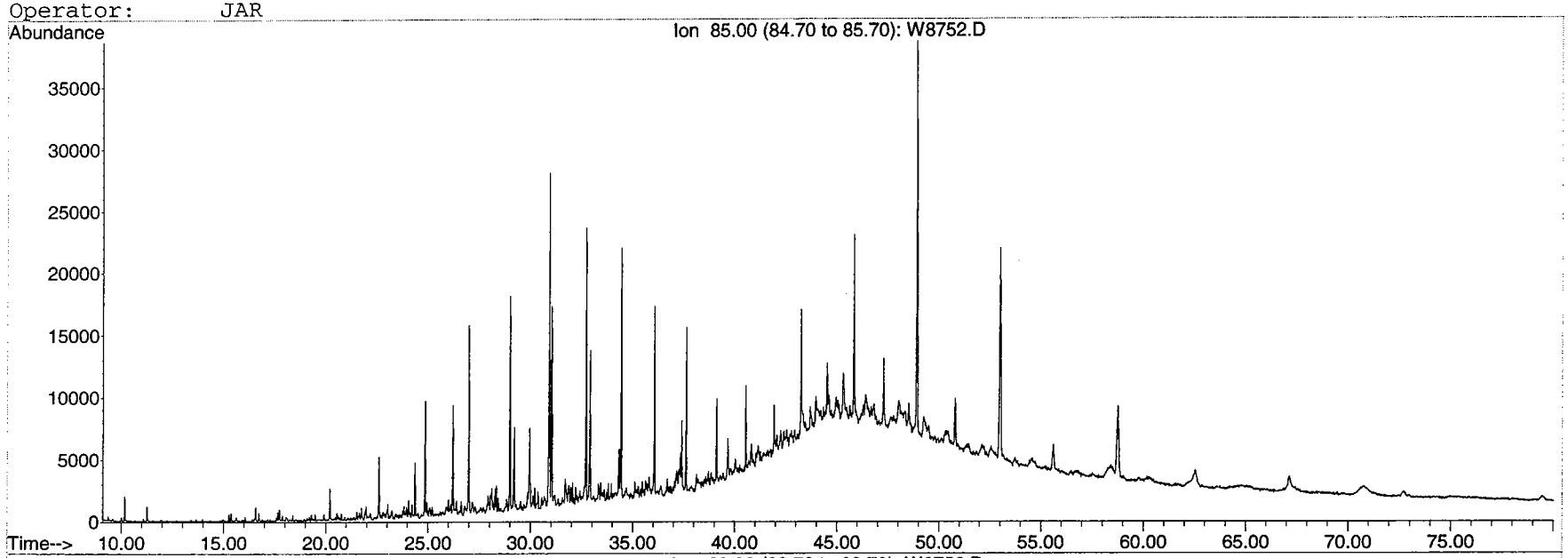


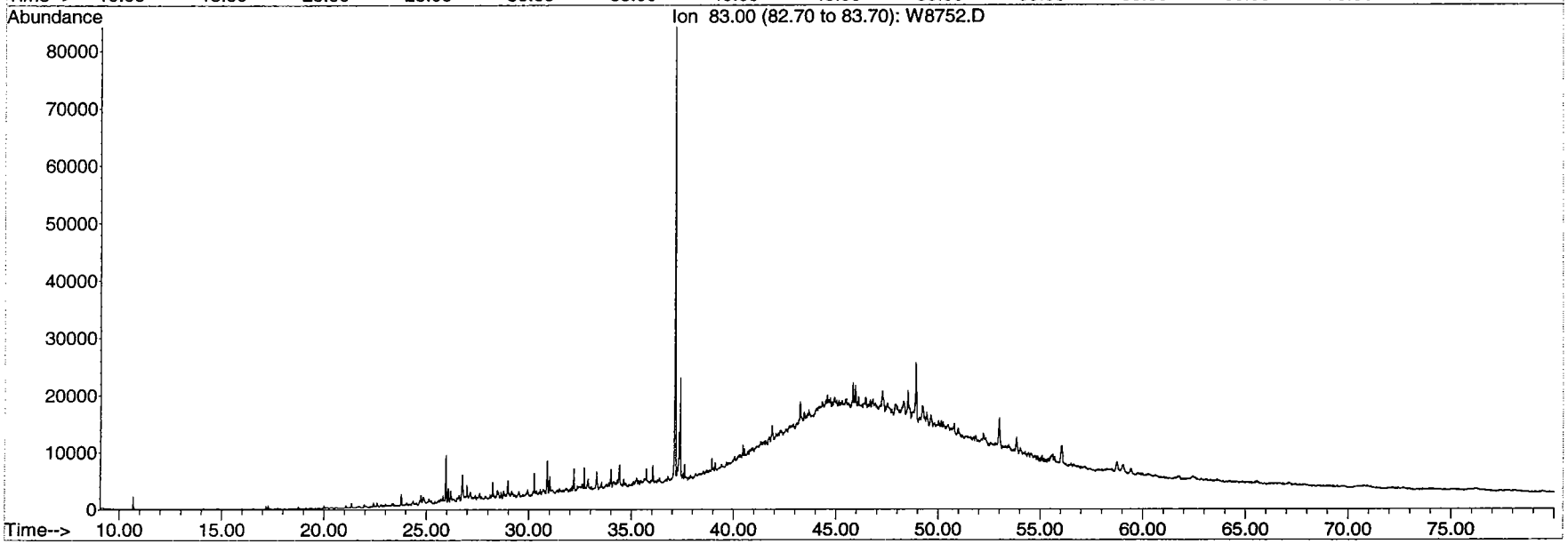


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8752.D
Date Acquired: 2 May 2004 10:02 pm
Method File: BIOSIM0
Sample Name: S1509-P-A-F1(10)
Misc Info: AH-40
Operator: JAR

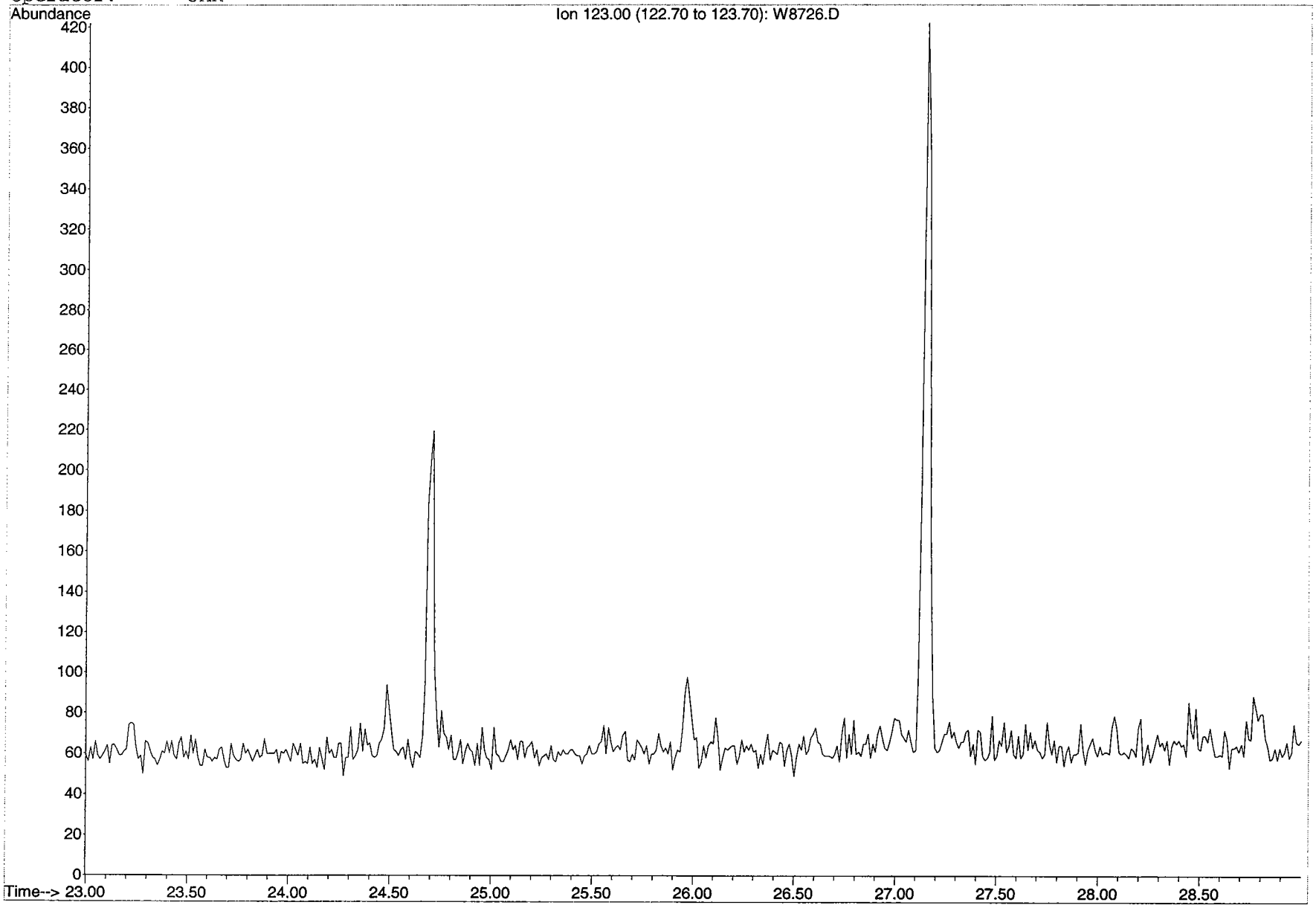




BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

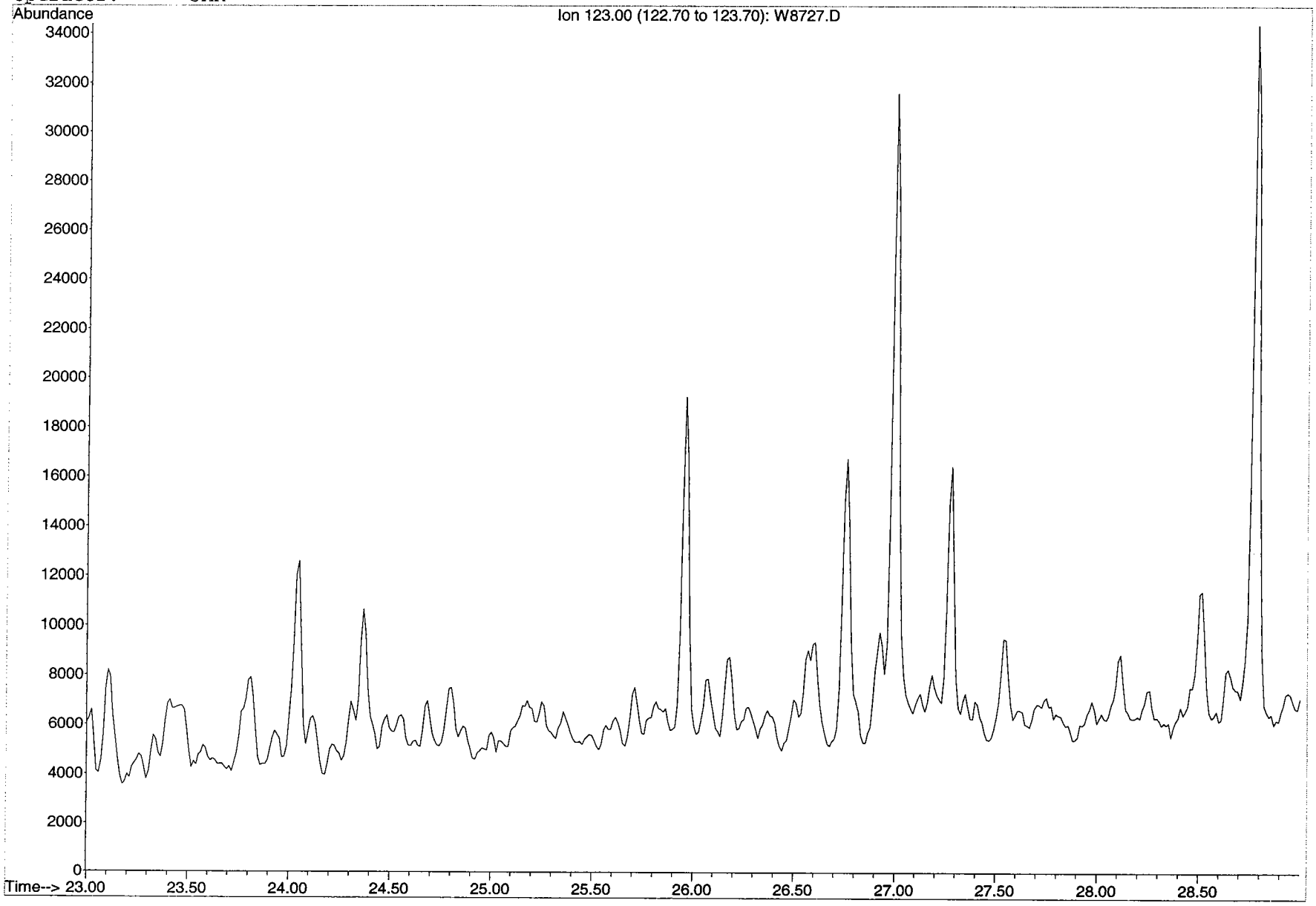
File: H:\E\DATA\SE0044\W8726.D
Date Acquired: 1 May 2004 7:16 am
Method File: BIOSIM0
Sample Name: BE161PB-P-A-F1(4)
Misc Info: 04-0117 Procedural Blank
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

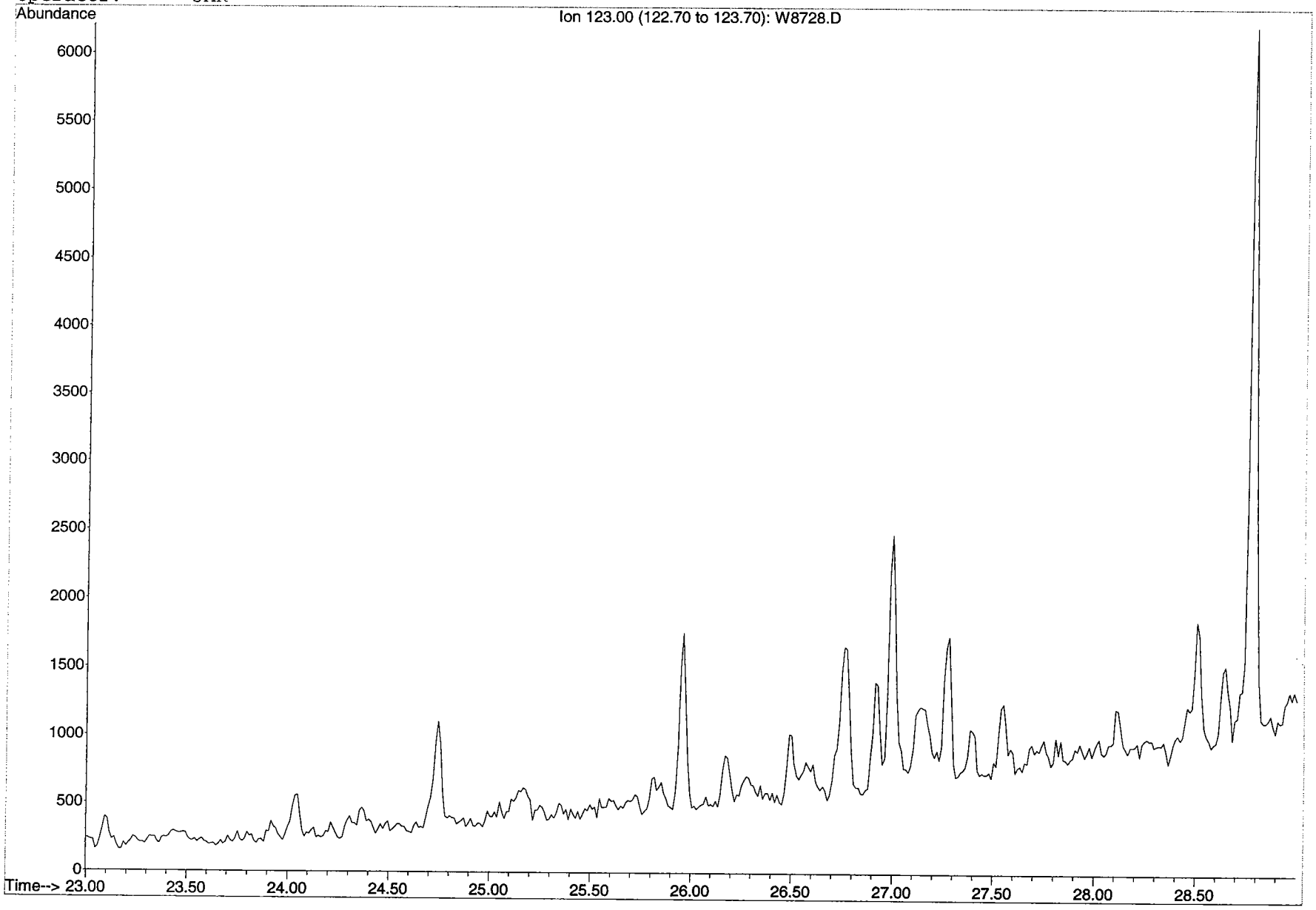
File: H:\E\DATA\SE0044\W8727.D
Date Acquired: 1 May 2004 8:46 am
Method File: BIOSIM0
Sample Name: BE279NSC-P(0)
Misc Info: North Slope Crude
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

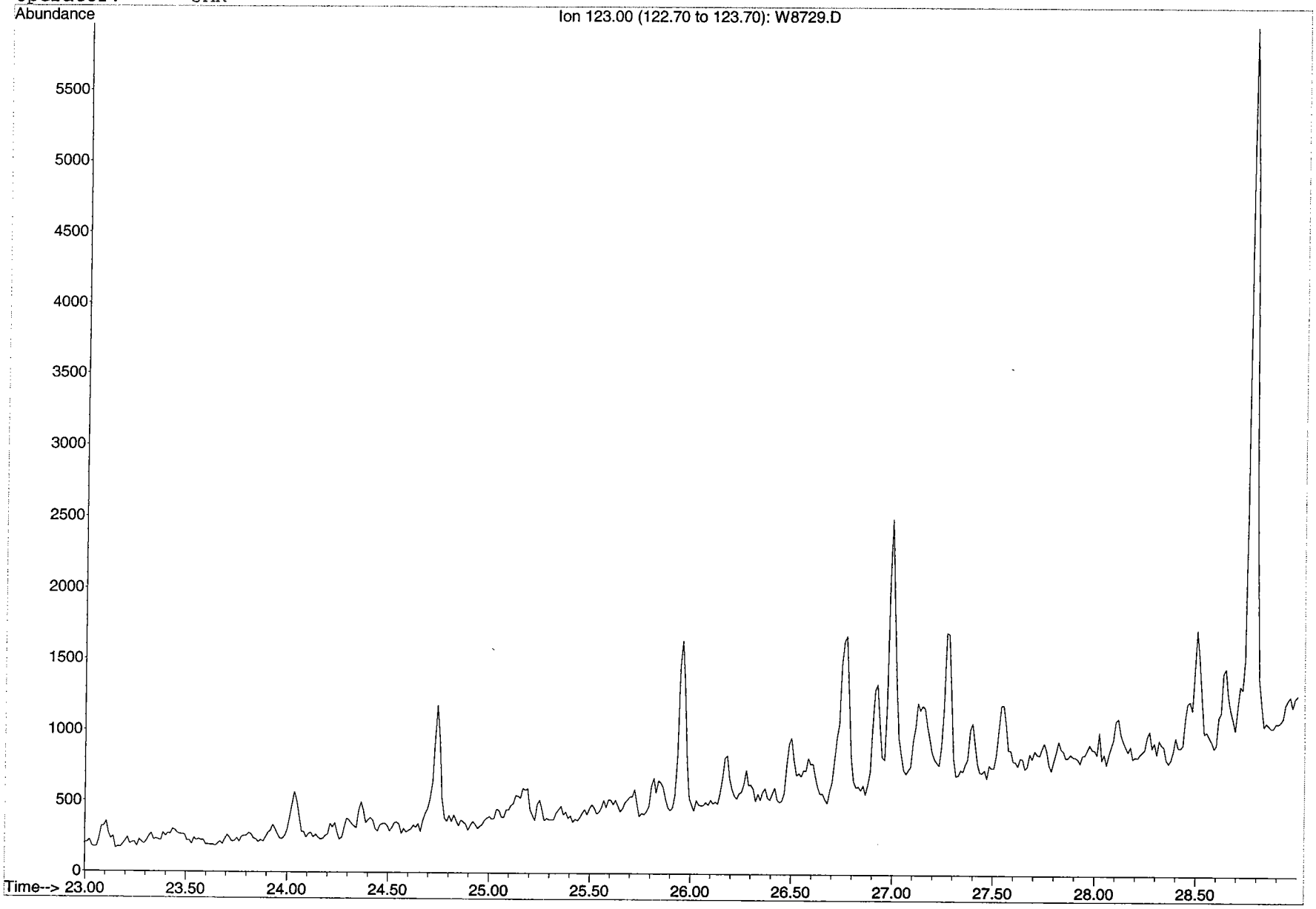
File: H:\E\DATA\SE0044\W8728.D
Date Acquired: 1 May 2004 10:15 am
Method File: BIOSIM0
Sample Name: S1430-P-A-F1(8)
Misc Info: Dup3
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

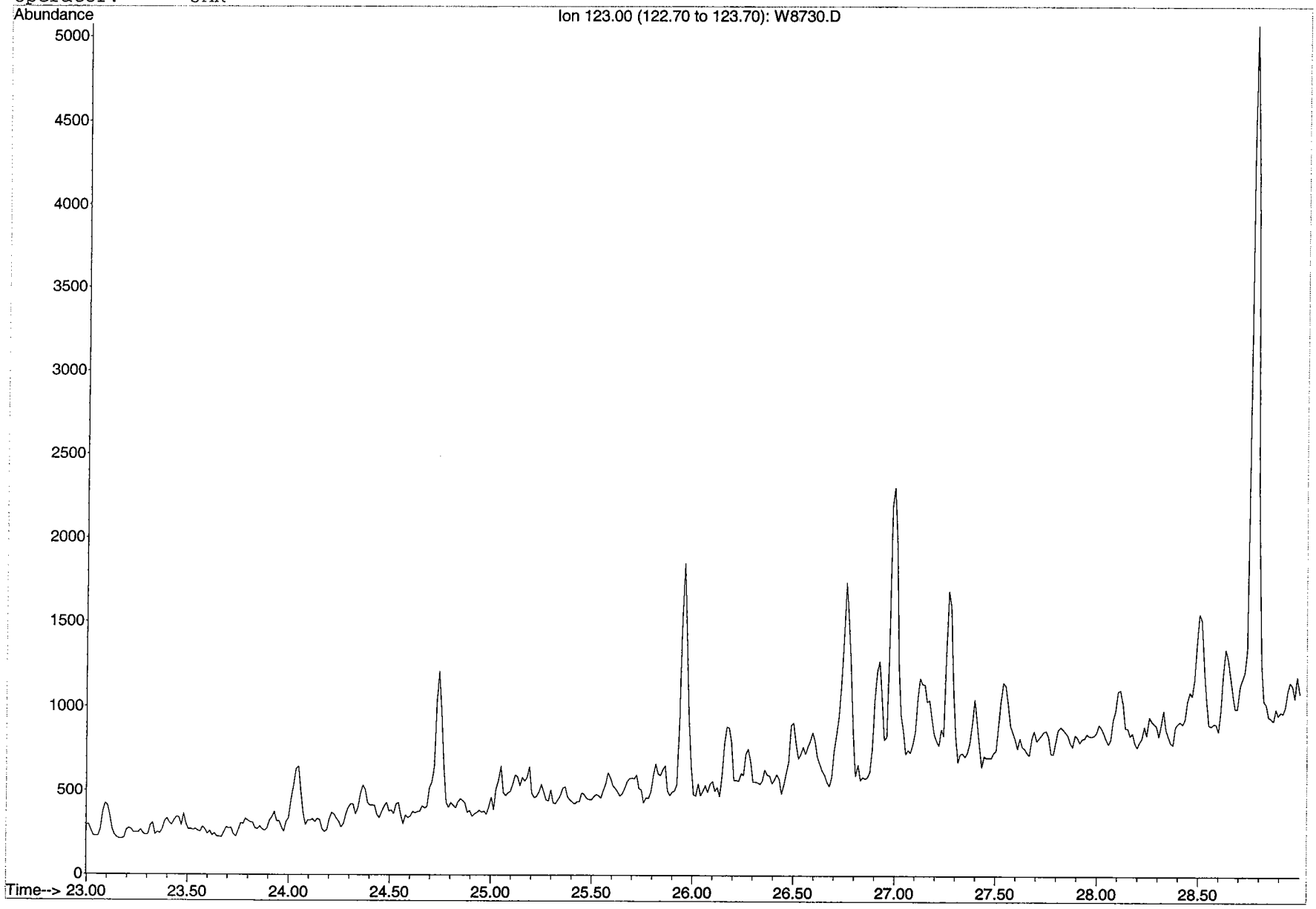
File: H:\E\DATA\SE0044\W8729.D
Date Acquired: 1 May 2004 11:45 am
Method File: BIOSIM0
Sample Name: S1432-P-A-F1(8)
Misc Info: AH-06
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

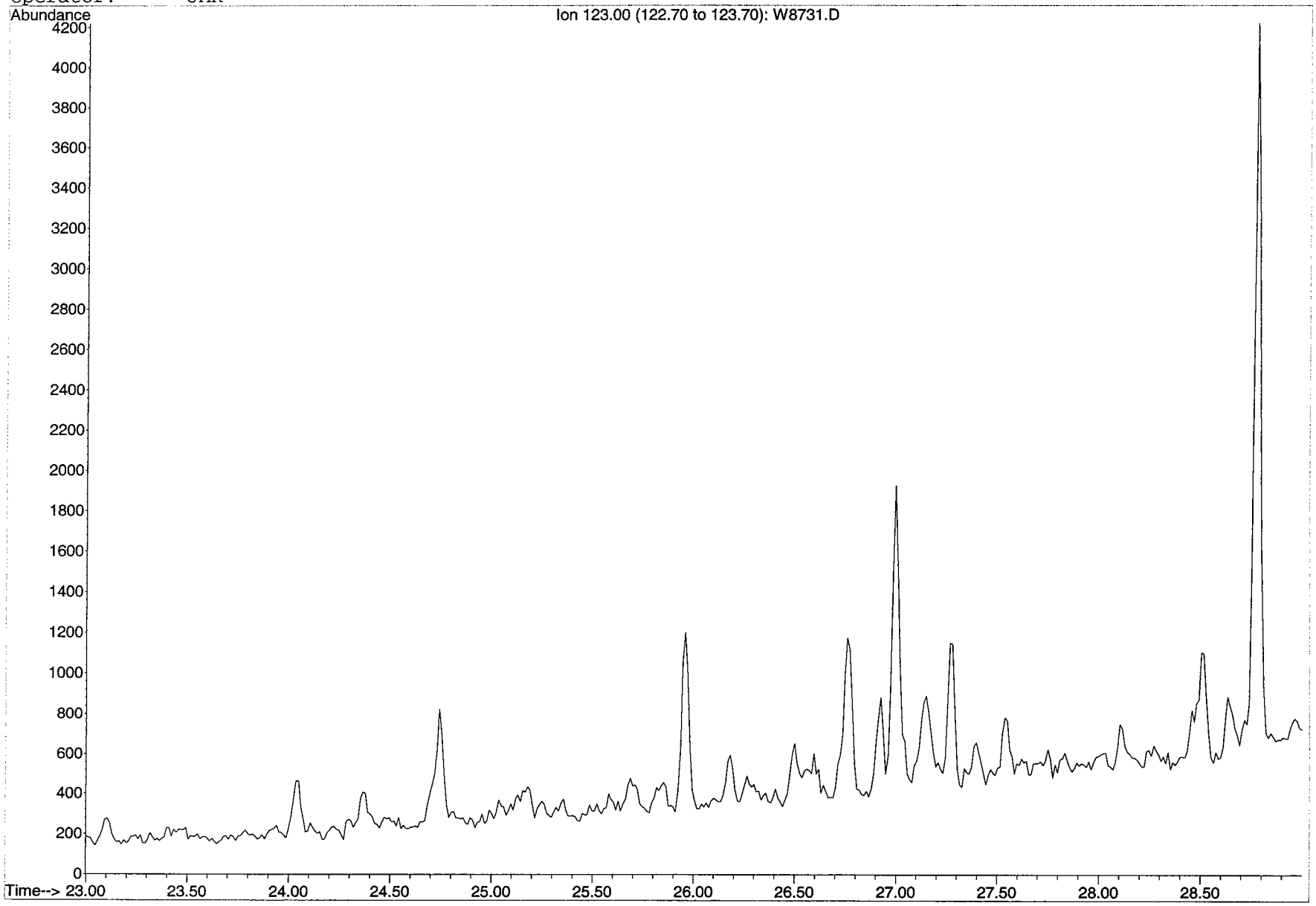
File: H:\E\DATA\SE0044\W8730.D
Date Acquired: 1 May 2004 1:14 pm
Method File: BIOSIM0
Sample Name: S1435-P-A-F1(10)
Misc Info: AH-17
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

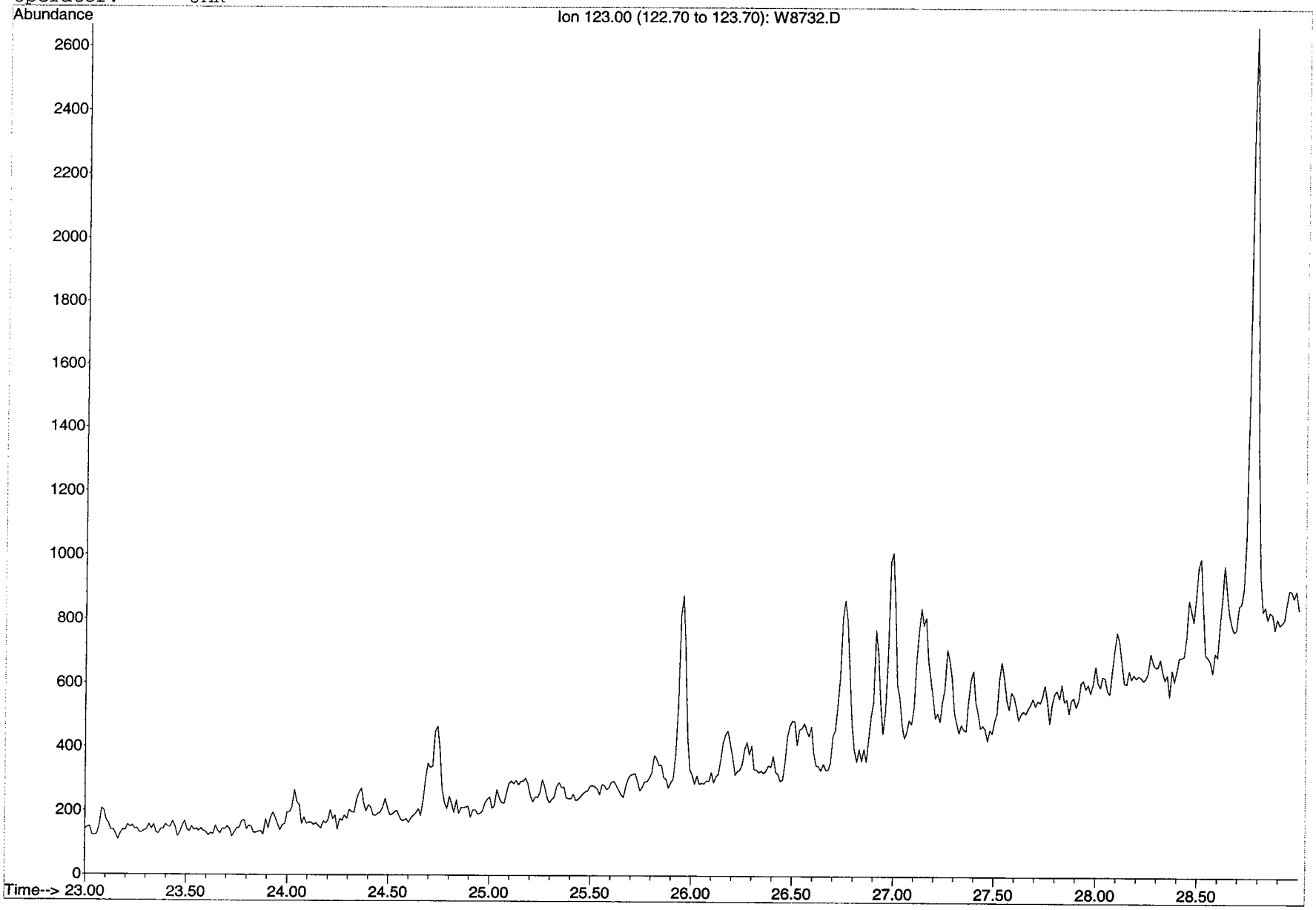
File: H:\E\DATA\SE0044\W8731.D
Date Acquired: 1 May 2004 2:43 pm
Method File: BIOSIM0
Sample Name: S1438-P-A-F1(8)
Misc Info: AH-03
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

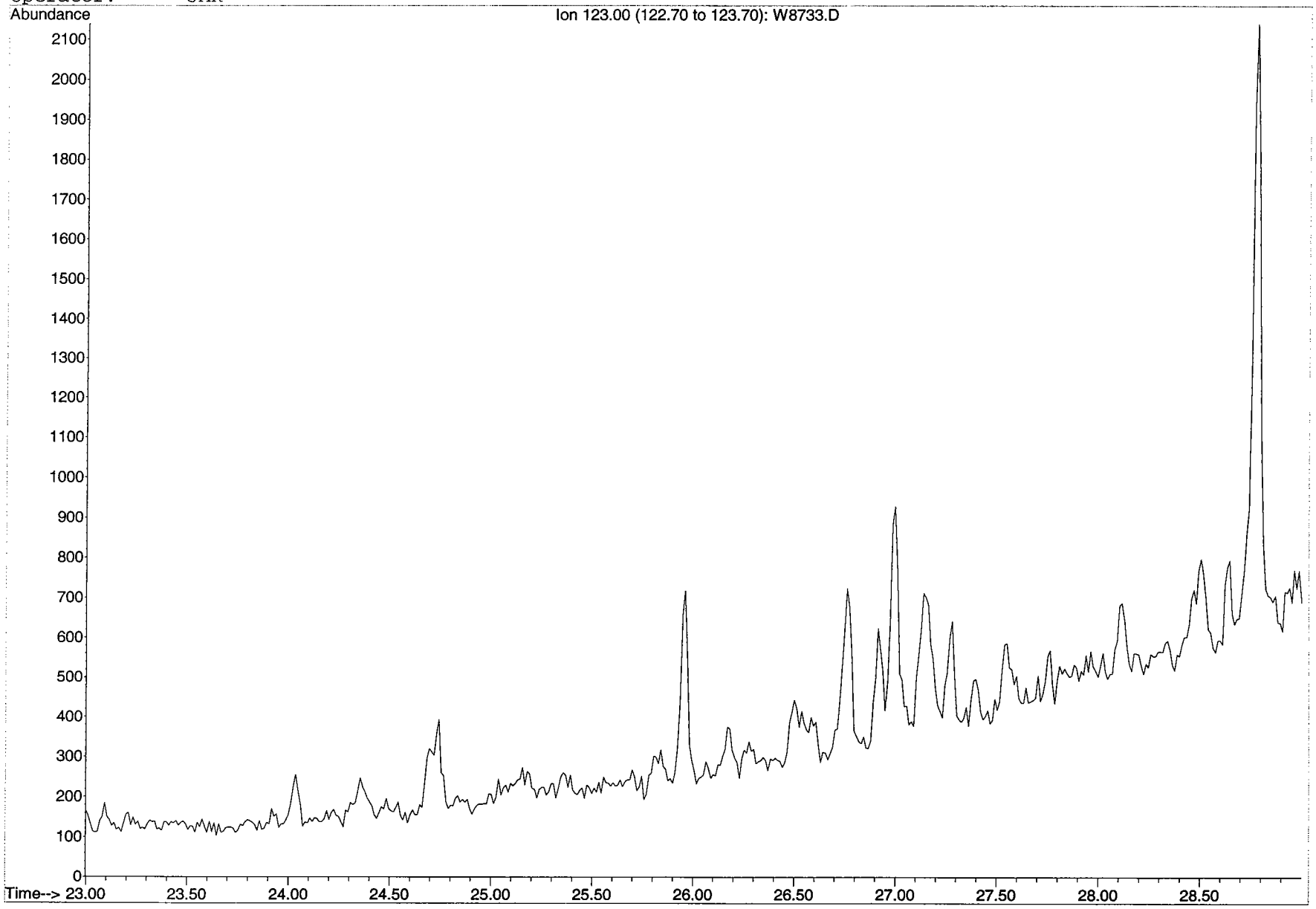
File: H:\E\DATA\SE0044\W8732.D
Date Acquired: 1 May 2004 4:13 pm
Method File: BIOSIM0
Sample Name: S1445-P-A-F1(8)
Misc Info: REF 1-4
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

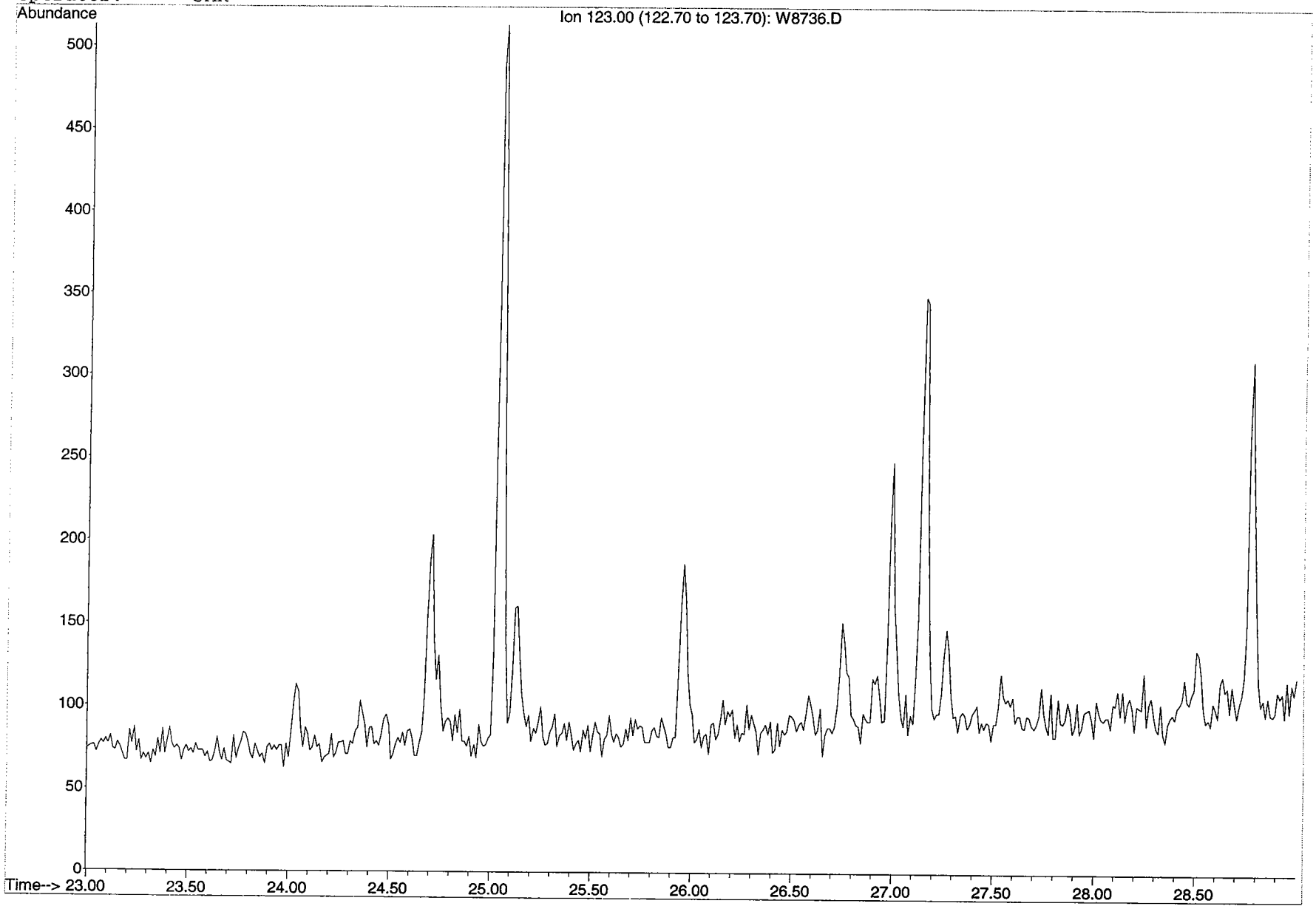
File: H:\E\DATA\SE0044\W8733.D
Date Acquired: 1 May 2004 5:42 pm
Method File: BIOSIM0
Sample Name: S1447-P-A-F1(8)
Misc Info: REF 2-1
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

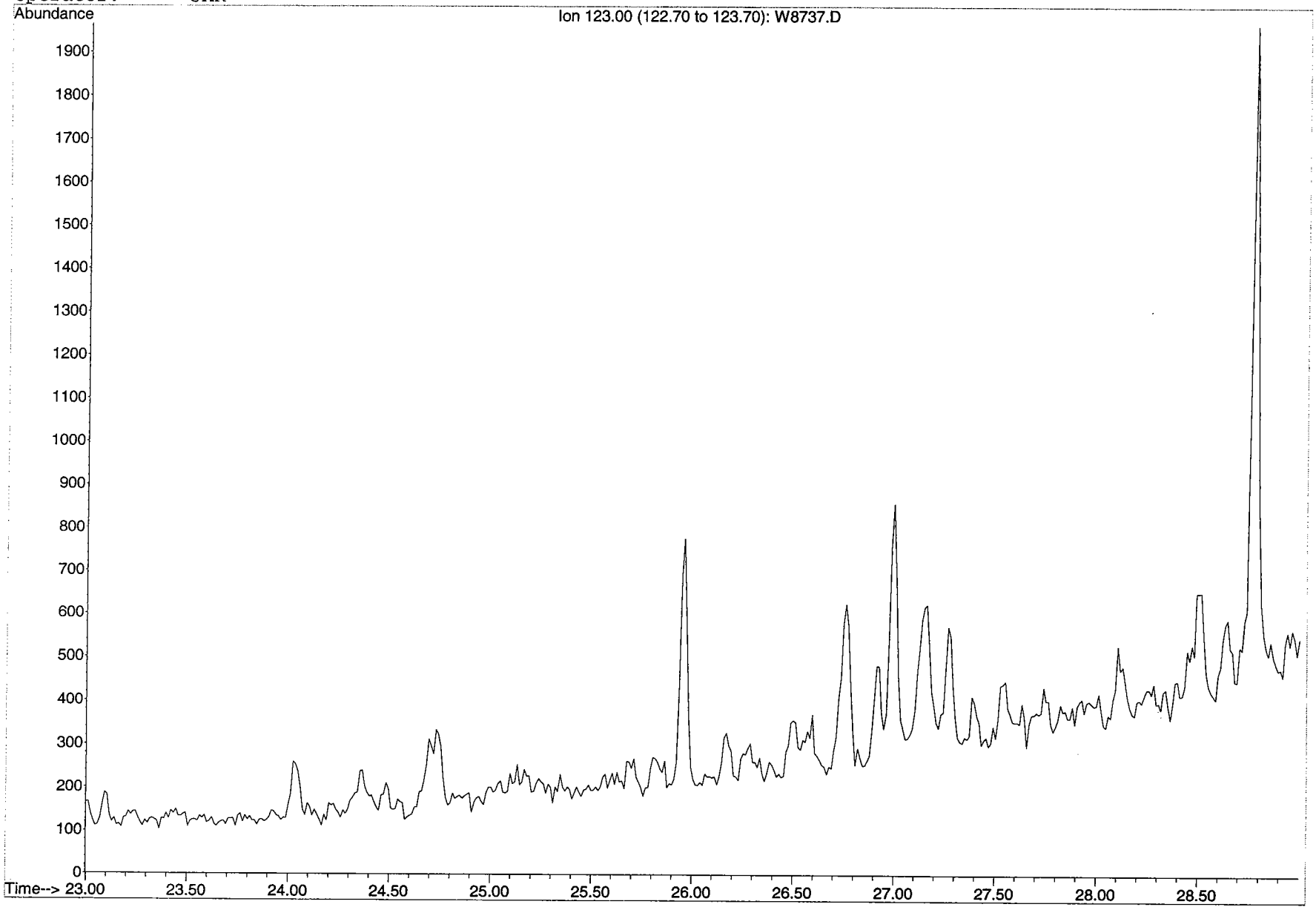
File: H:\E\DATA\SE0044\W8736.D
Date Acquired: 1 May 2004 10:10 pm
Method File: BIOSIM0
Sample Name: S1457-P-F1(14)
Misc Info: SID Source 4-1
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

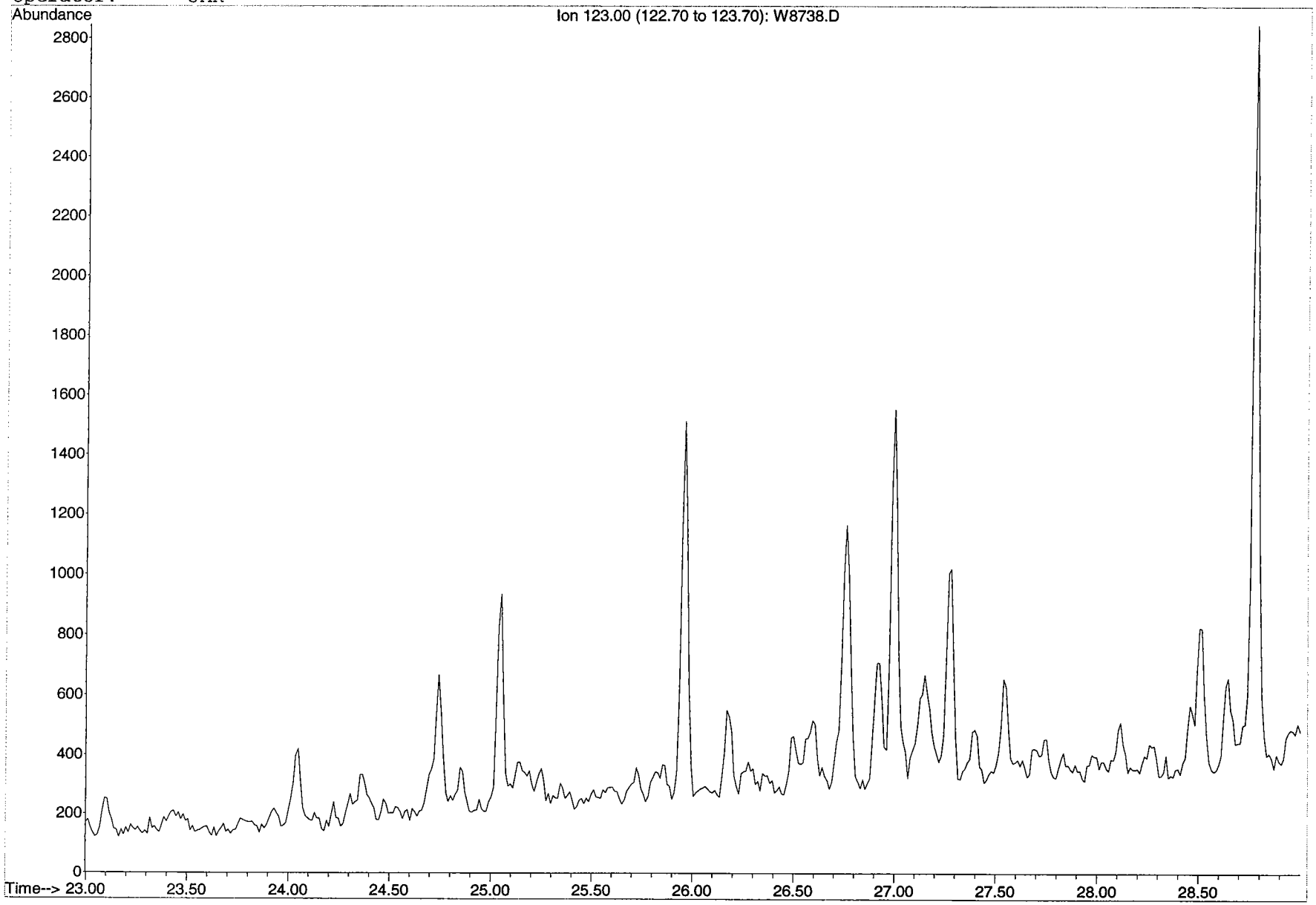
File: H:\E\DATA\SE0044\W8737.D
Date Acquired: 1 May 2004 11:39 pm
Method File: BIOSIM0
Sample Name: S1466-P-A-F1(8)
Misc Info: REF 3-2
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

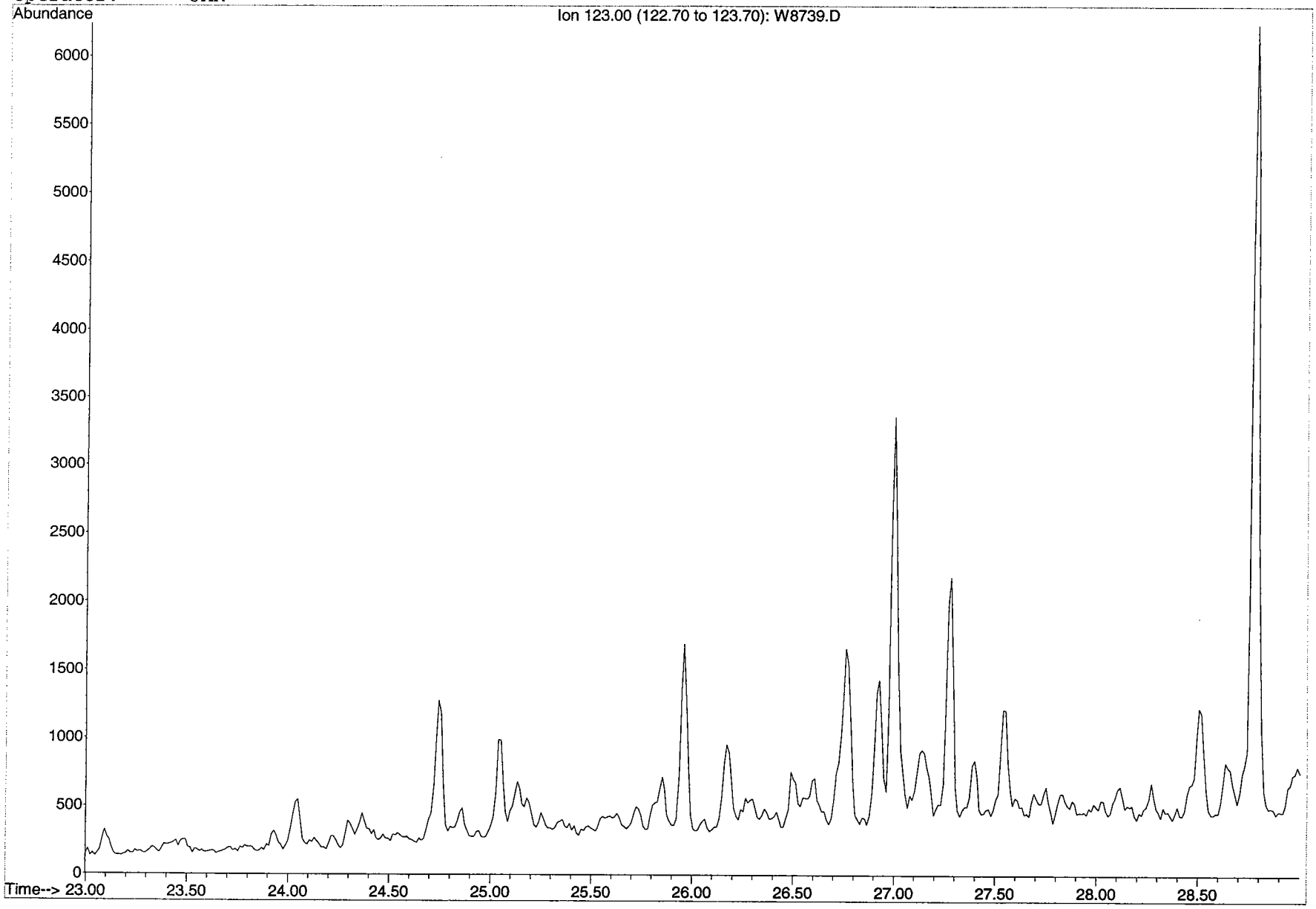
File: H:\E\DATA\SE0044\W8738.D
Date Acquired: 2 May 2004 1:09 am
Method File: BIOSIM0
Sample Name: S1468-P-A-F1(10)
Misc Info: AH-28
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

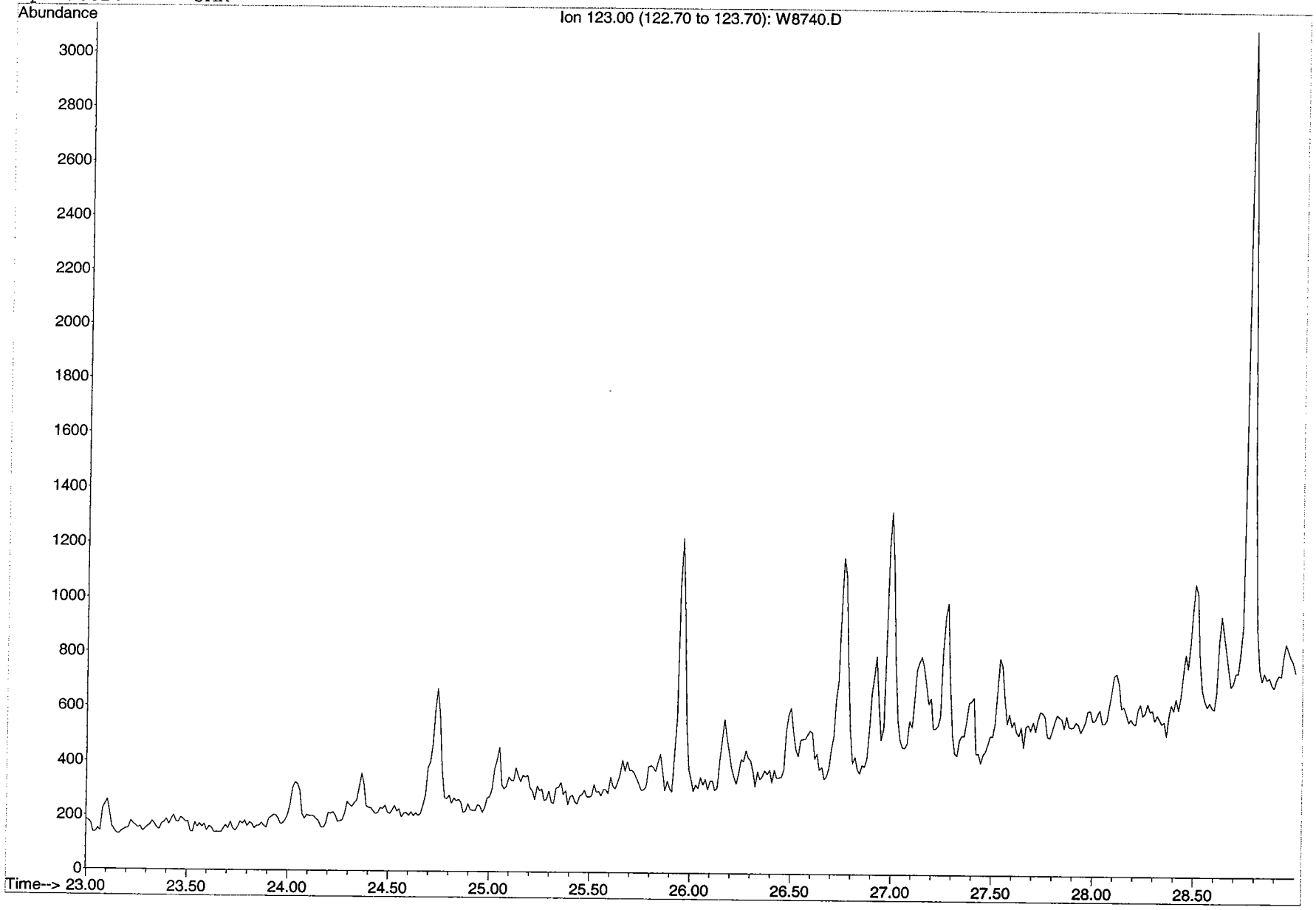
File: H:\E\DATA\SE0044\W8739.D
Date Acquired: 2 May 2004 2:39 am
Method File: BIOSIM0
Sample Name: S1471-P-A-F1(10)
Misc Info: AH-49
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

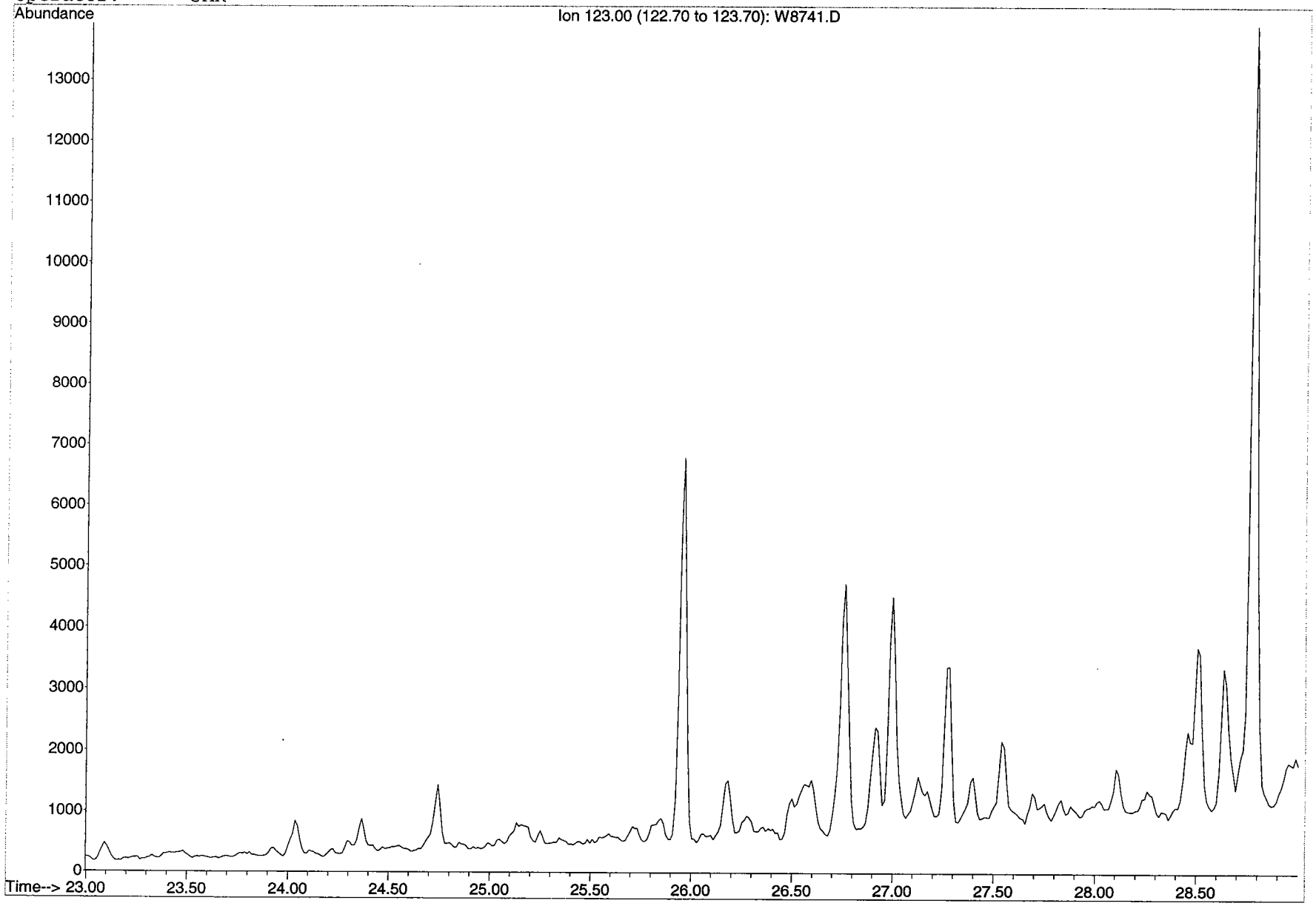
File: H:\E\DATA\SE0044\W8740.D
Date Acquired: 2 May 2004 4:08 am
Method File: BIOSIM0
Sample Name: S1474-P-A-F1(10)
Misc Info: AH-45
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

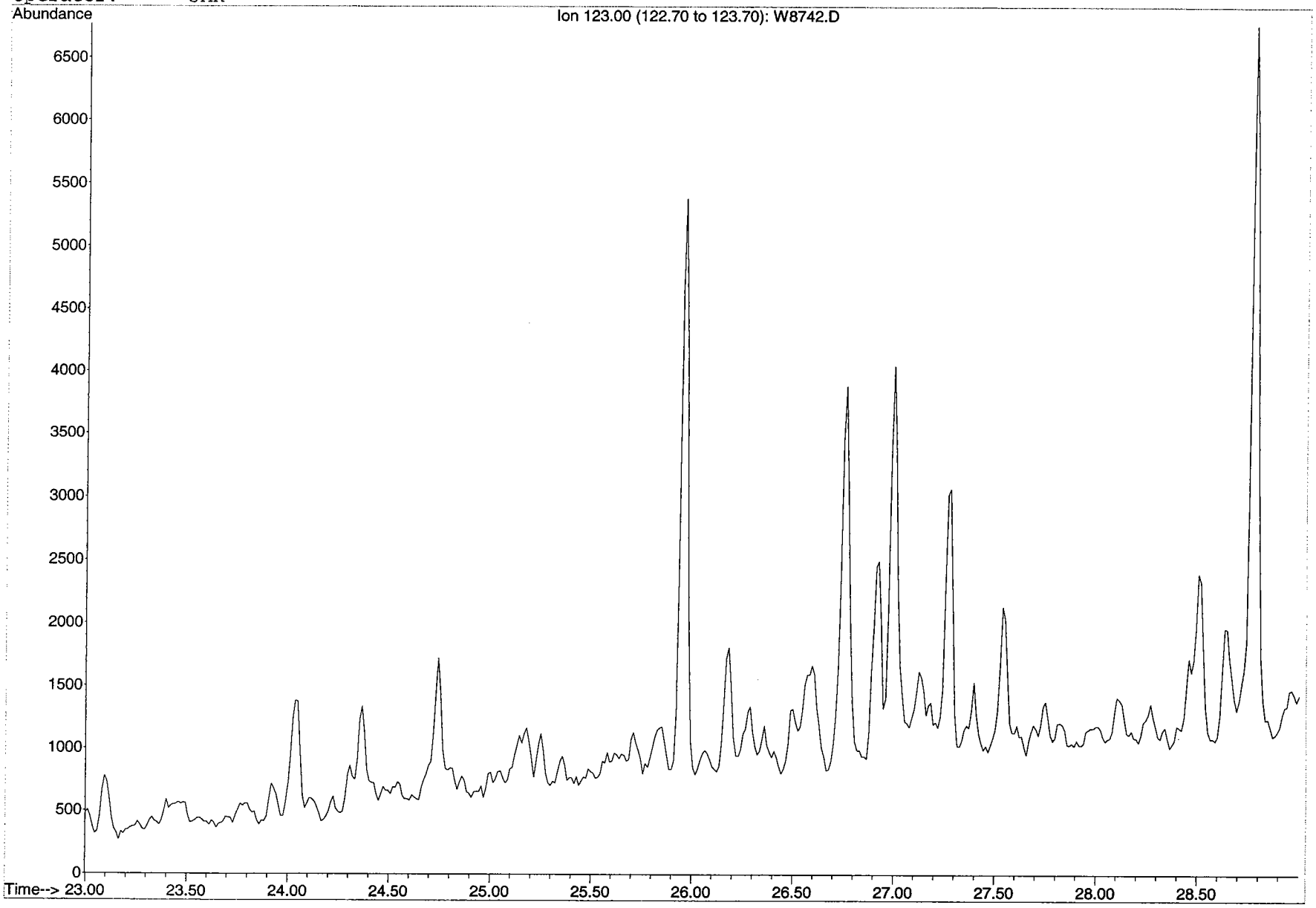
File: H:\E\DATA\SE0044\W8741.D
Date Acquired: 2 May 2004 5:38 am
Method File: BIOSIM0
Sample Name: S1481-P-A-F1(8)
Misc Info: Source 3-1
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

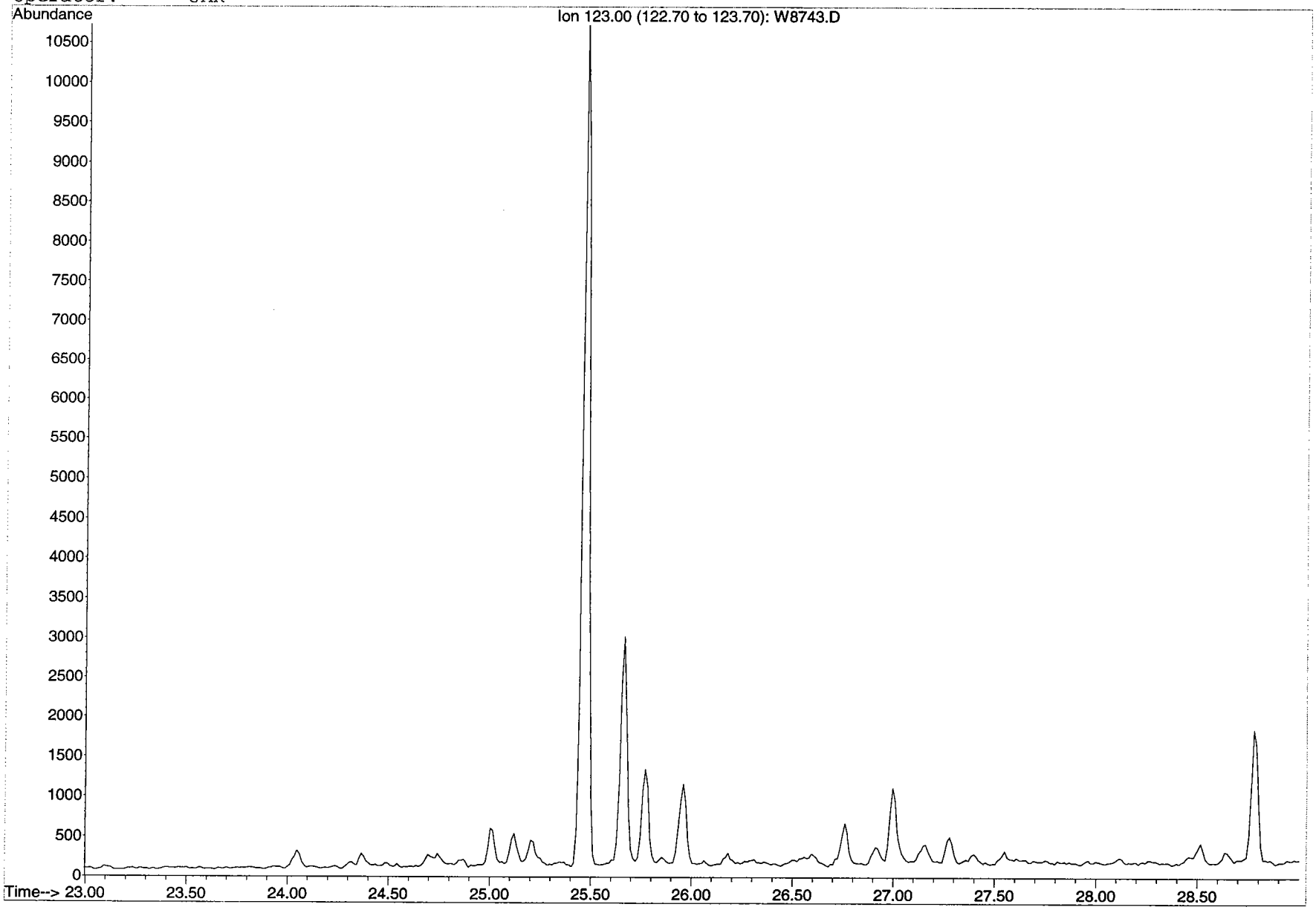
File: H:\E\DATA\SE0044\W8742.D
Date Acquired: 2 May 2004 7:08 am
Method File: BIOSIM0
Sample Name: S1482-P-A-F1(8)
Misc Info: Source 3-2
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

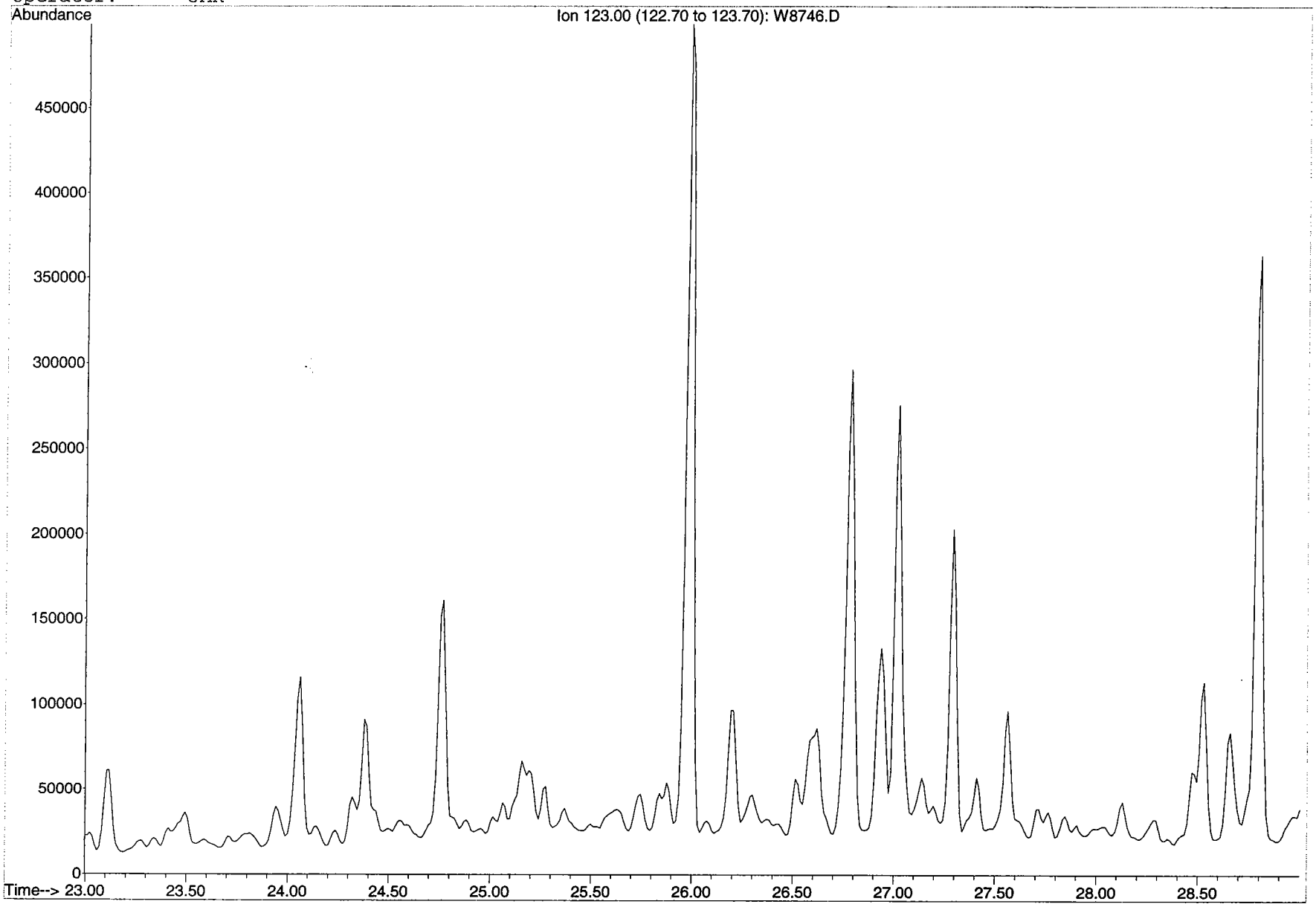
File: H:\E\DATA\SE0044\W8743.D
Date Acquired: 2 May 2004 8:37 am
Method File: BIOSIM0
Sample Name: S1483-P-A-F1(8)
Misc Info: Source 1-1
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

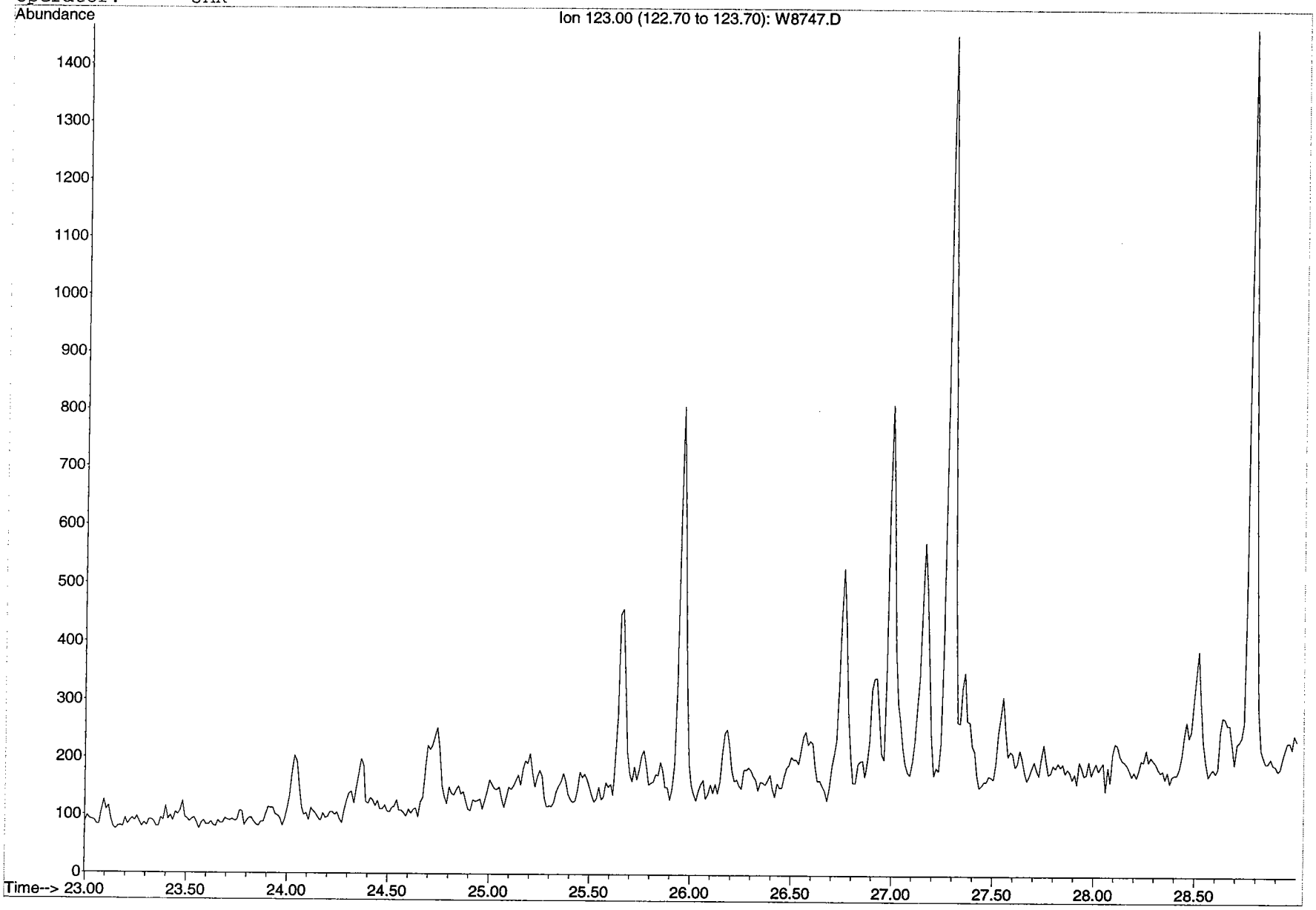
File: H:\E\DATA\SE0044\W8746.D
Date Acquired: 2 May 2004 1:05 pm
Method File: BIOSIM0
Sample Name: S1484-P-A-F1(10)
Misc Info: Source 2-1
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

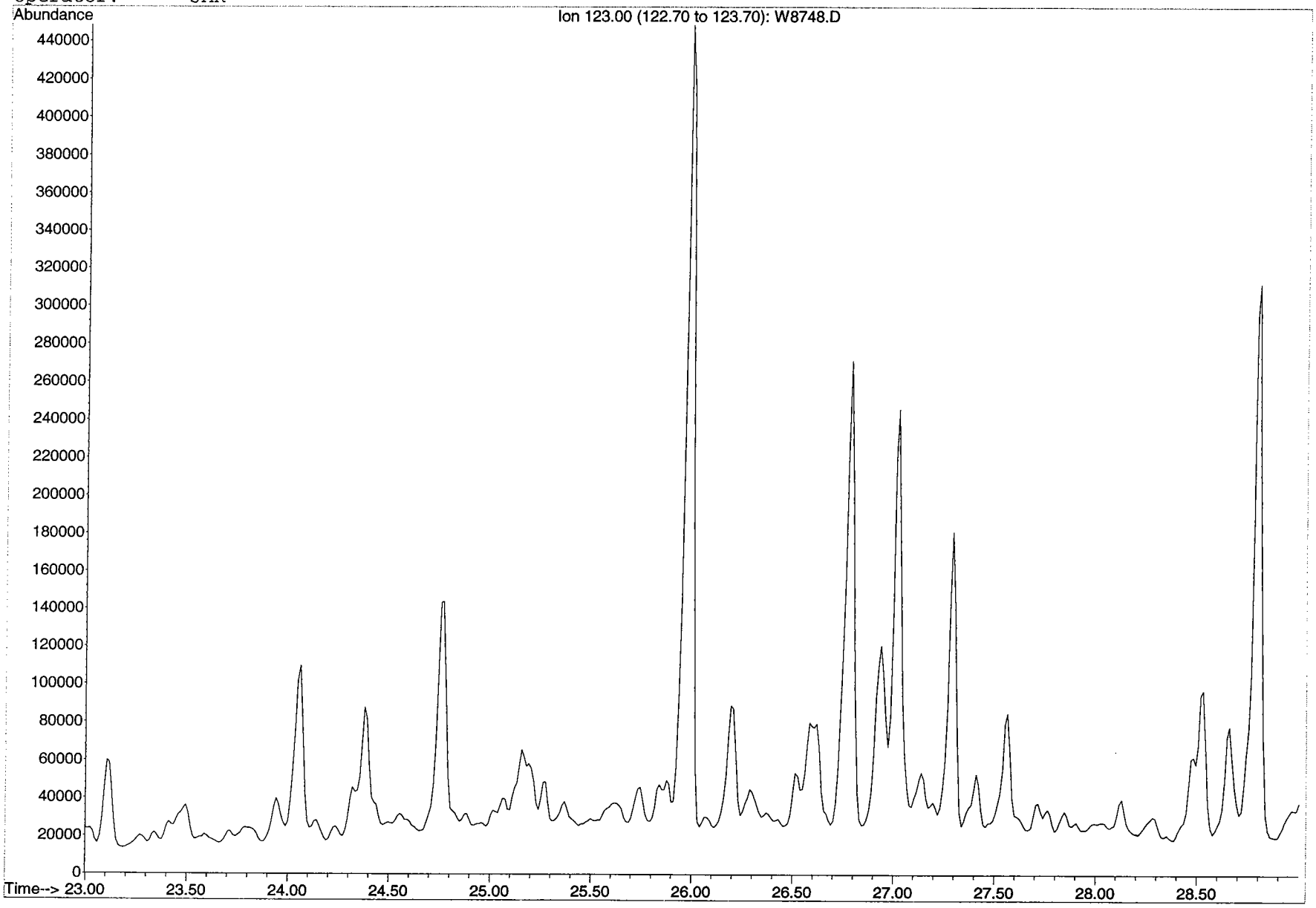
File: H:\E\DATA\SE0044\W8747.D
Date Acquired: 2 May 2004 2:35 pm
Method File: BIOSIM0
Sample Name: S1485-P-A-F1(10)
Misc Info: Source 1-2
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

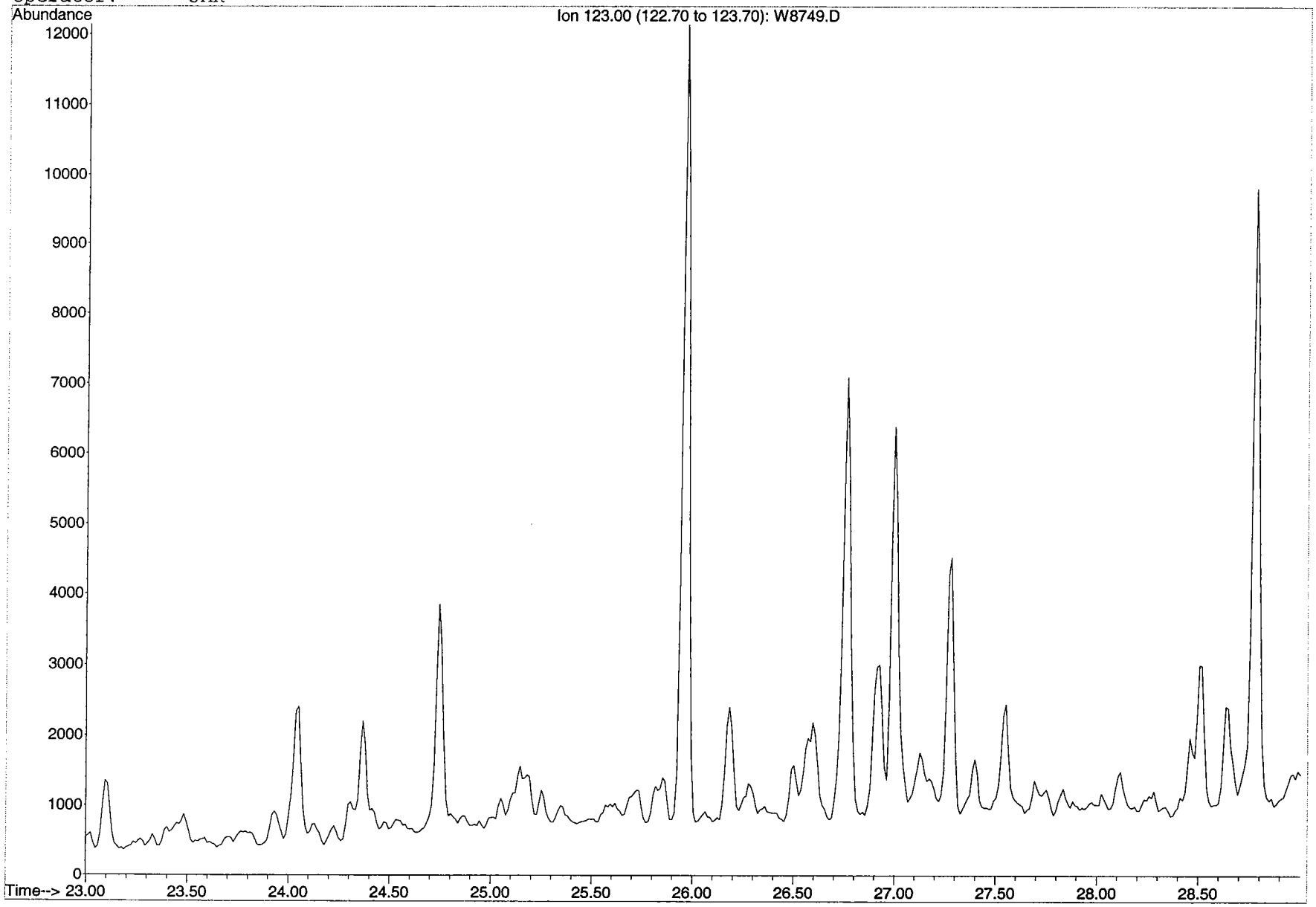
File: H:\E\DATA\SE0044\W8748.D
Date Acquired: 2 May 2004 4:04 pm
Method File: BIOSIM0
Sample Name: S1486-P-A-F1(10)
Misc Info: Source 2-2
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

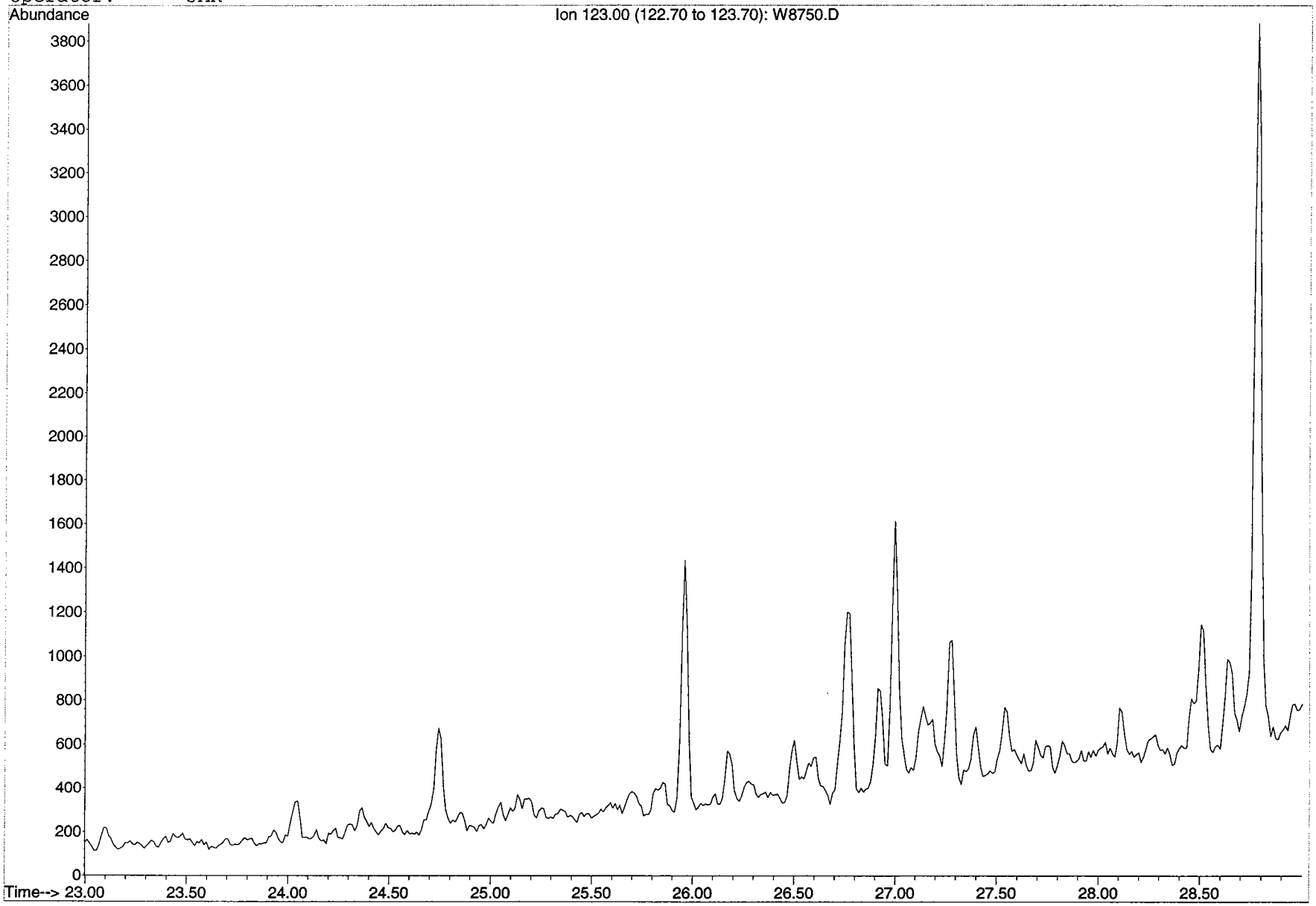
File: H:\E\DATA\SE0044\W8749.D
Date Acquired: 2 May 2004 5:33 pm
Method File: BIOSIM0
Sample Name: S1491-P-A-F1(10)
Misc Info: AH-29
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

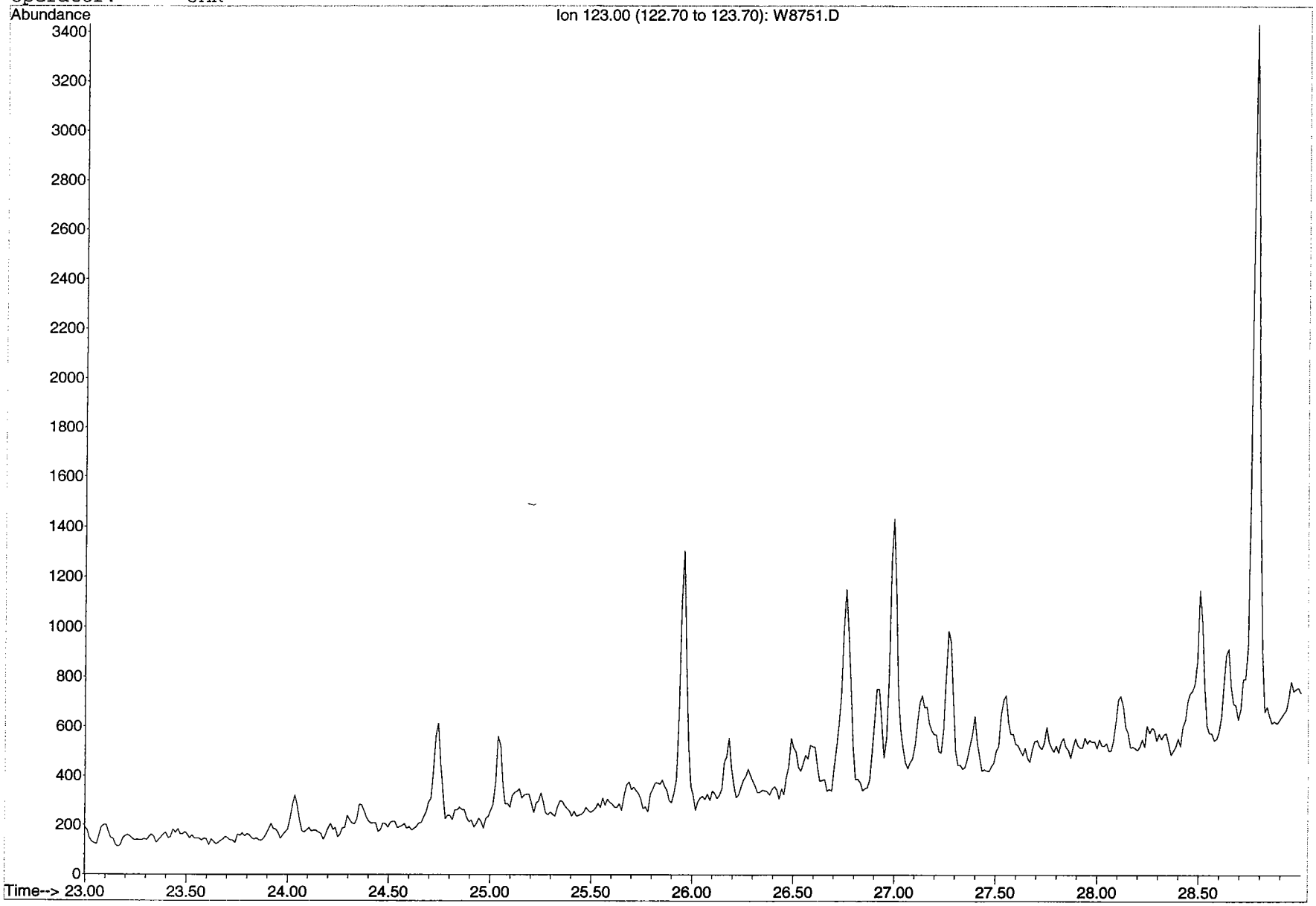
File: H:\E\DATA\SE0044\W8750.D
Date Acquired: 2 May 2004 7:03 pm
Method File: BIOSIM0
Sample Name: S1505-P-A-F1(8)
Misc Info: AH-26
Operator: JAR



BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

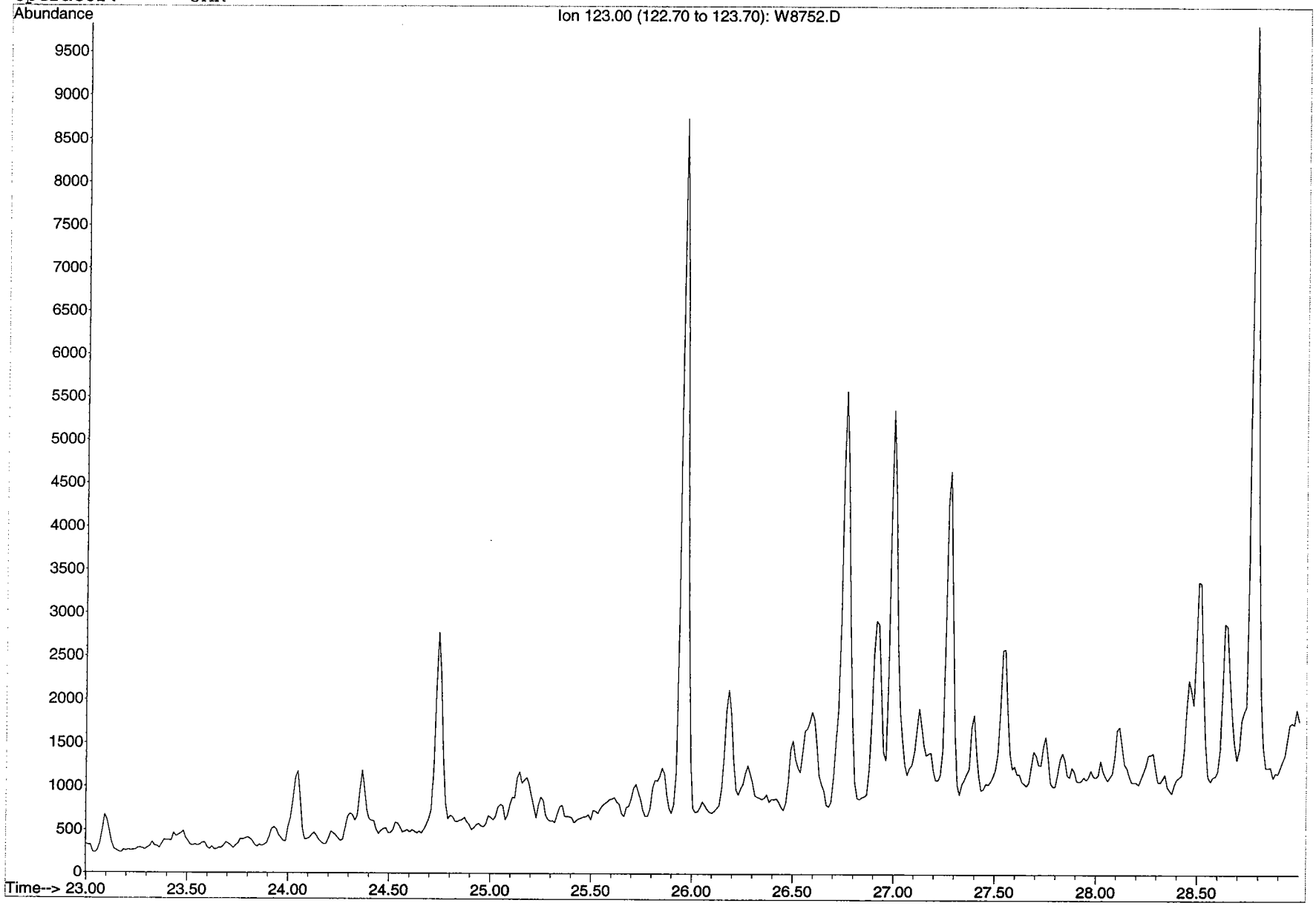
File: H:\E\DATA\SE0044\W8751.D
Date Acquired: 2 May 2004 8:32 pm
Method File: BIOSIM0
Sample Name: S1505DUP-P-A-F1(8)
Misc Info: AH-26
Operator: JAR



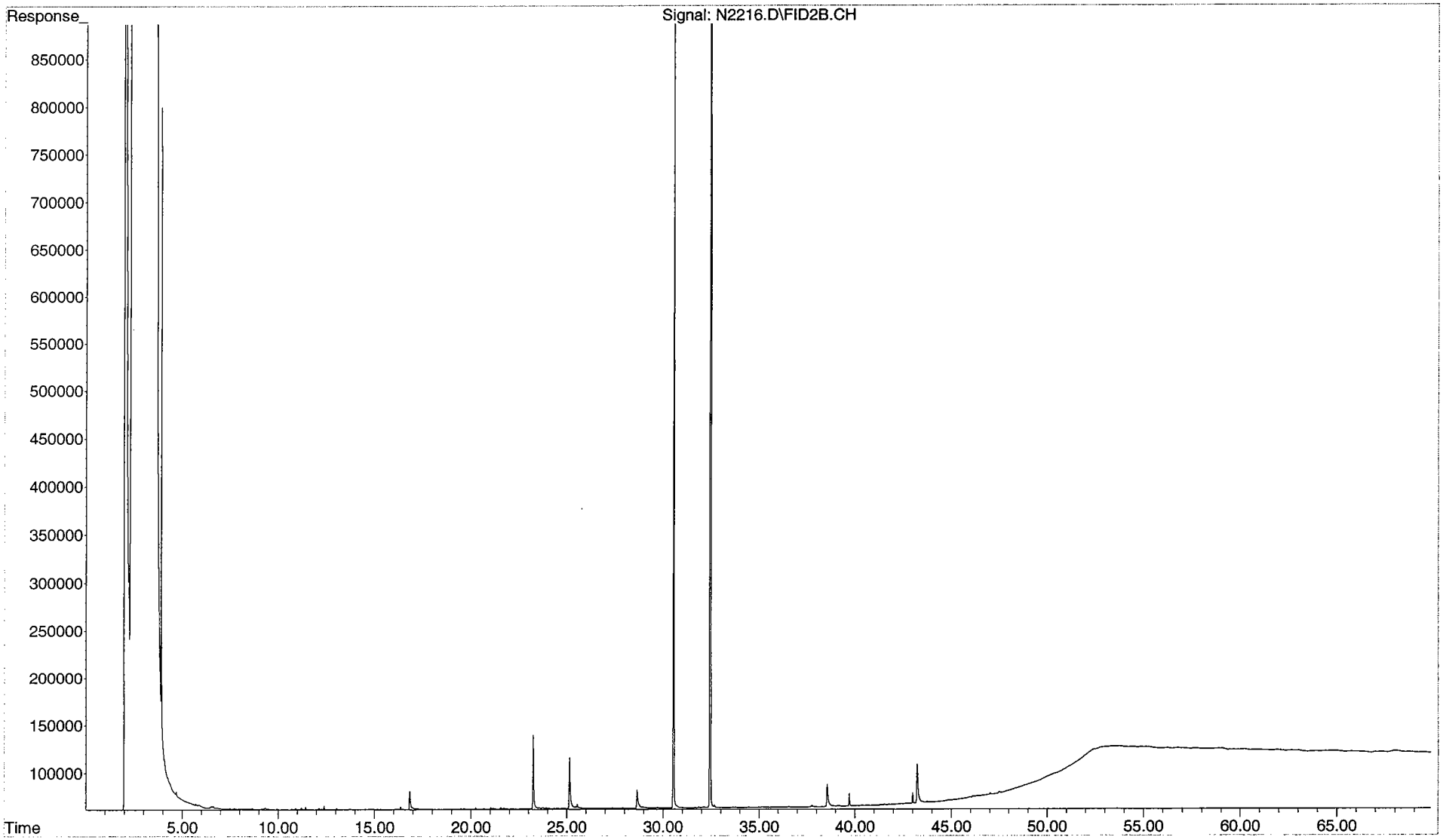
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

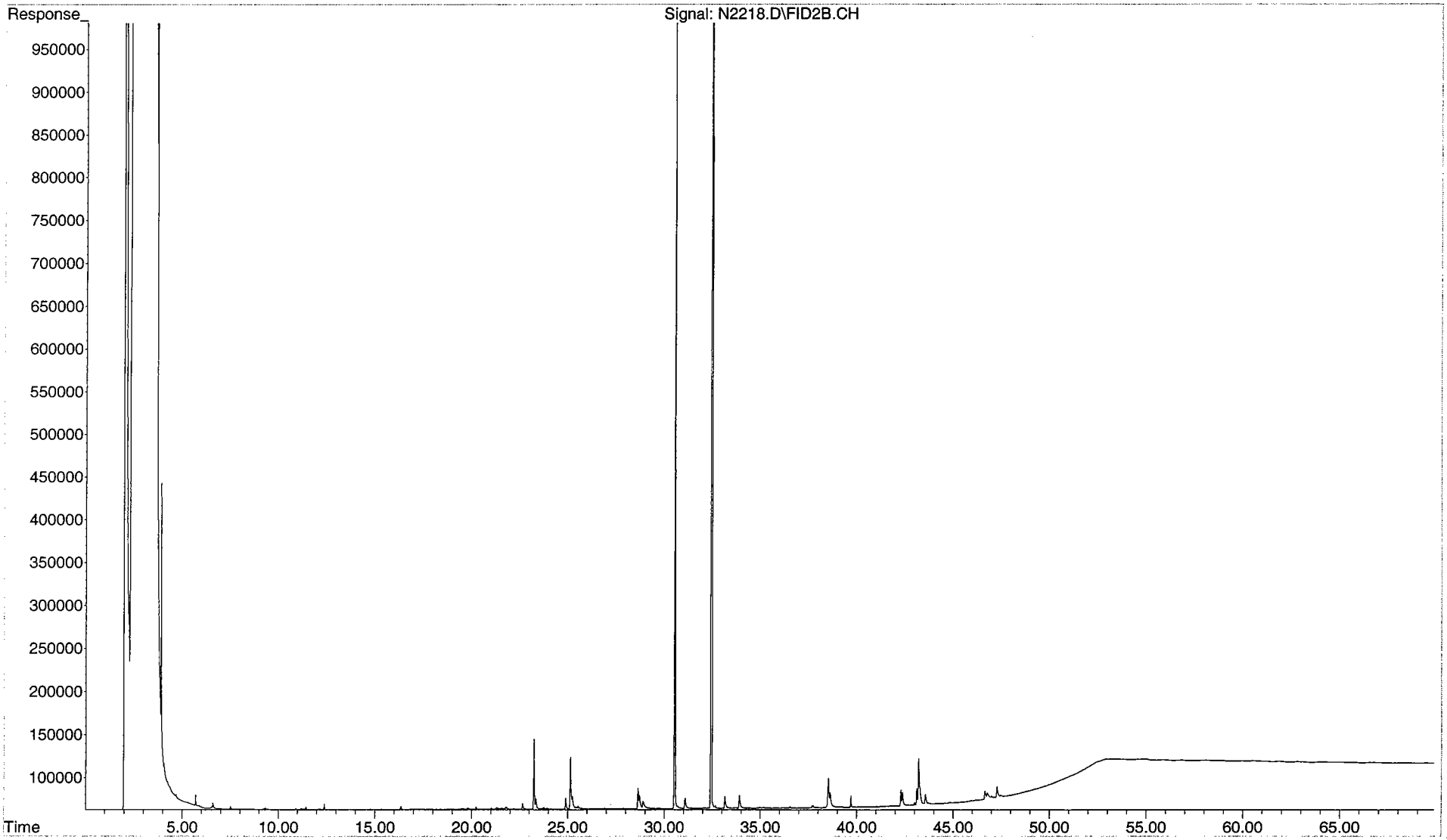
File: H:\E\DATA\SE0044\W8752.D
Date Acquired: 2 May 2004 10:02 pm
Method File: BIOSIM0
Sample Name: S1509-P-A-F1(10)
Misc Info: AH-40
Operator: JAR



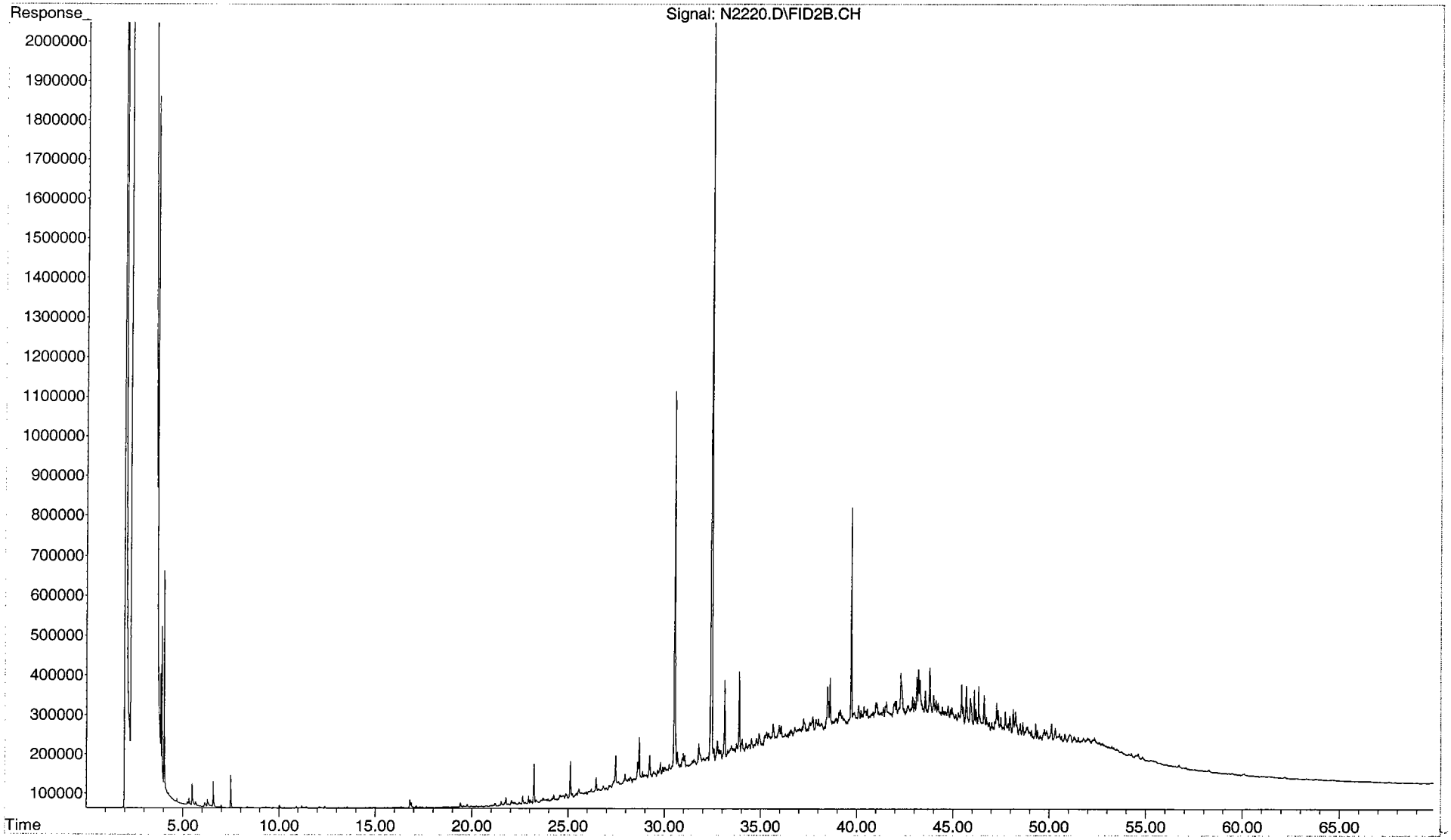
File : F:\N\DATA\SND0045.SEC\N2216.D
Operator : RR
Acquired : 20 Apr 2004 10:43 pm using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: BE161PB-P(3)
Misc Info : 04-0117 Procedural Blank
Vial Number: 57



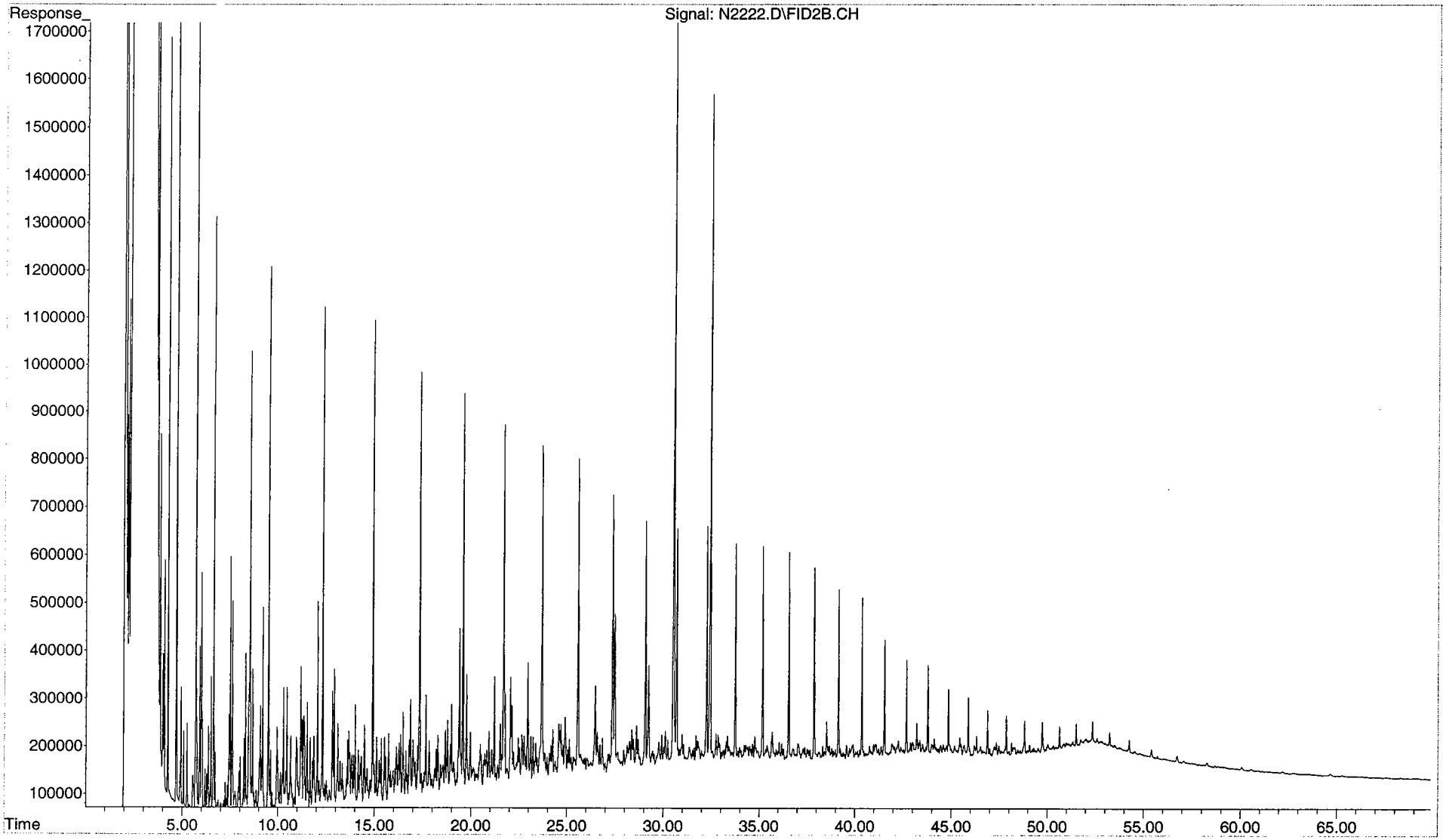
File : F:\N\DATA\SND0045.SEC\N2218.D
Operator : RR
Acquired : 21 Apr 2004 12:05 am using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: BE162LCS-P(3)
Misc Info : Laboratory Control Sample
Vial Number: 58



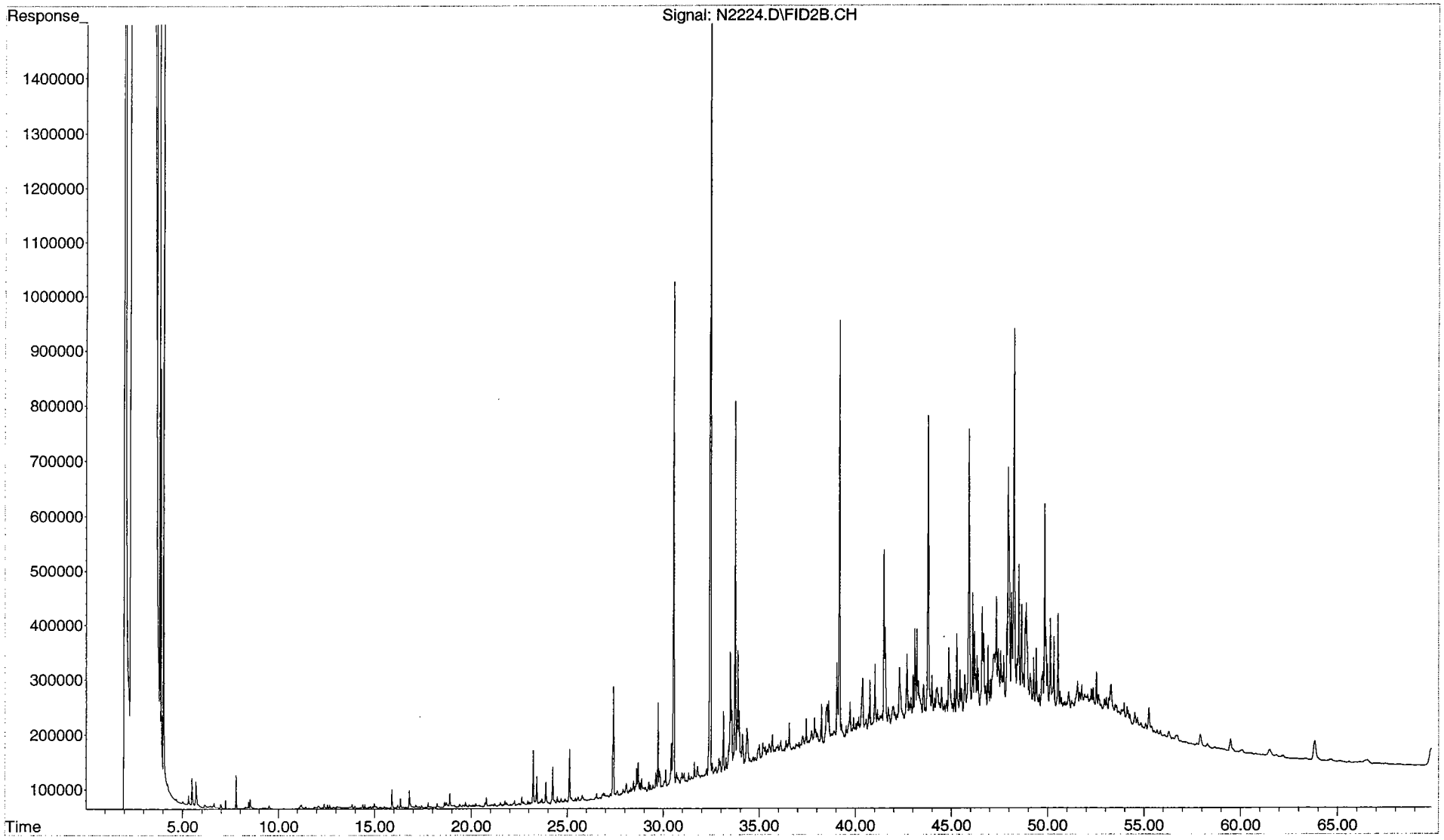
File : F:\N\DATA\SND0045.SEC\N2220.D
Operator : RR
Acquired : 4-21-2004 01:27:37 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: BE163SRM-P(3)
Misc Info : NIST 1944
Vial Number: 59



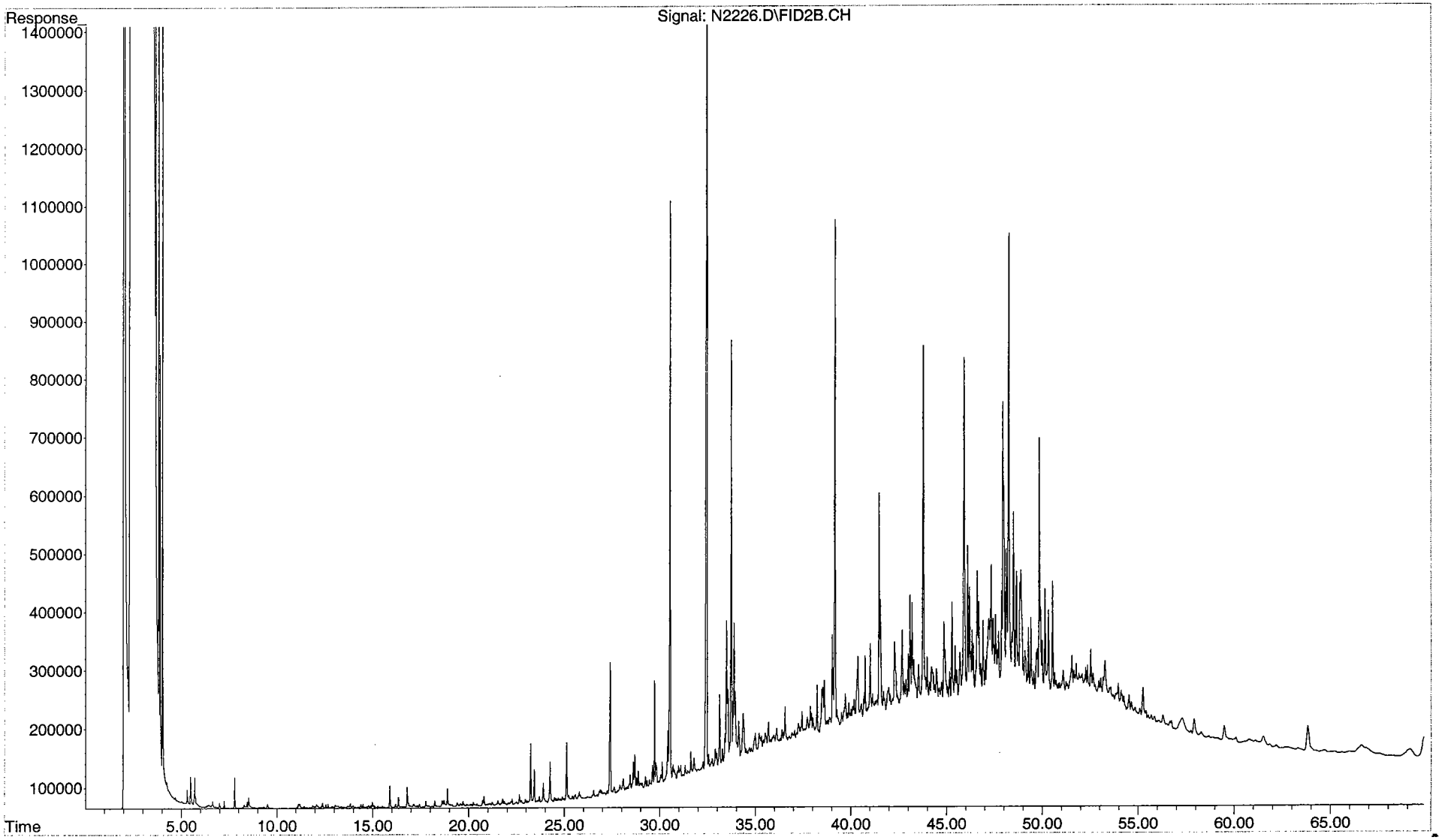
File : F:\N\DATA\SND0045.SEC\N2222.D
Operator : RR
Acquired : 4-21-2004 02:49:41 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: BE212NSC-P(0)
Misc Info : North Slope Crude
Vial Number: 60



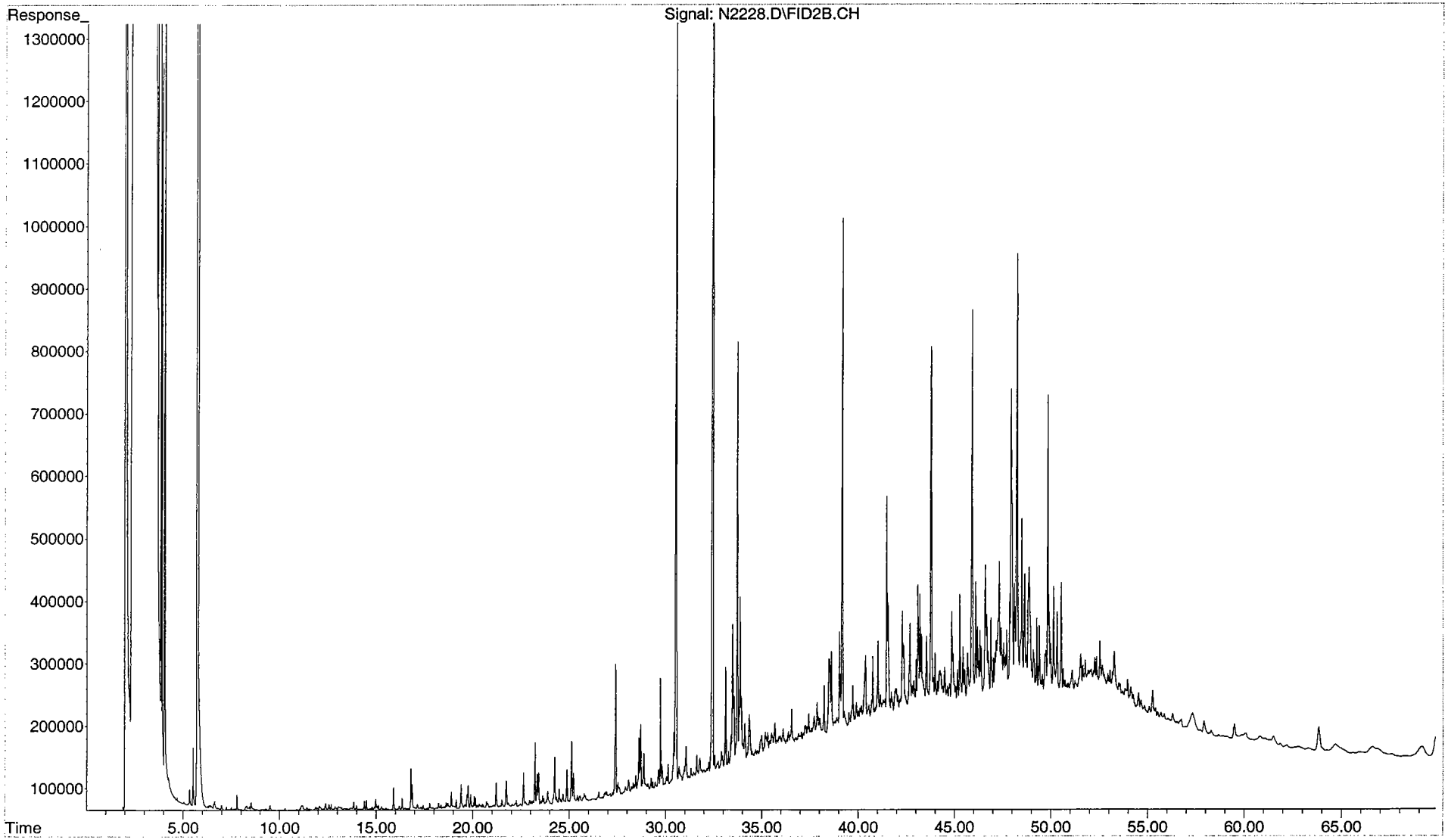
File : F:\N\DATA\SND0045.SEC\N2224.D
Operator : RR
Acquired : 4-21-2004 04:11:26 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1430-P(7)
Misc Info : Dup3
Vial Number: 61



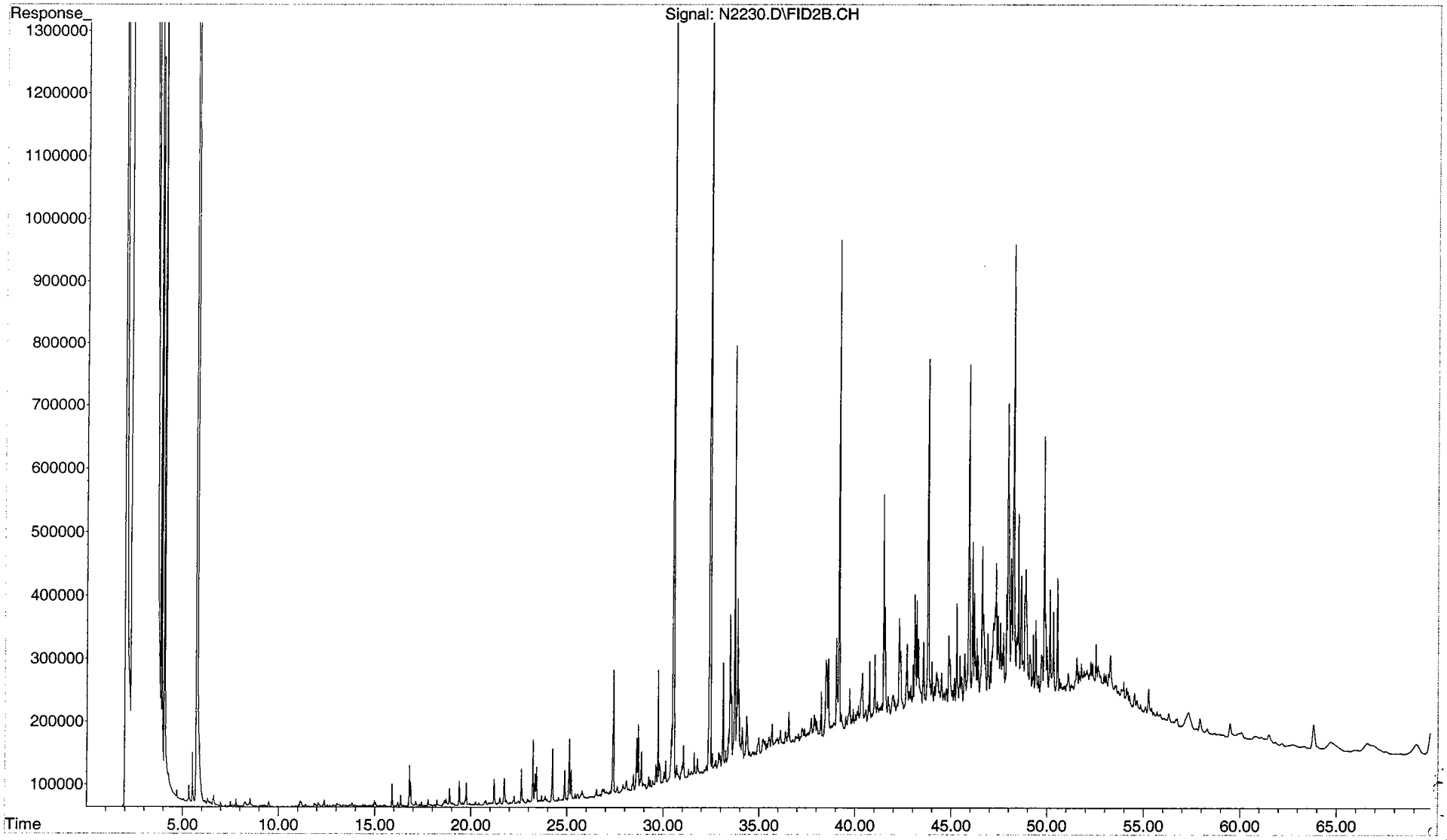
File : F:\N\DATA\SND0045.SEC\N2226.D
Operator : RR
Acquired : 4-21-2004 05:33:05 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1432-P(7)
Misc Info : AH-06
Vial Number: 62



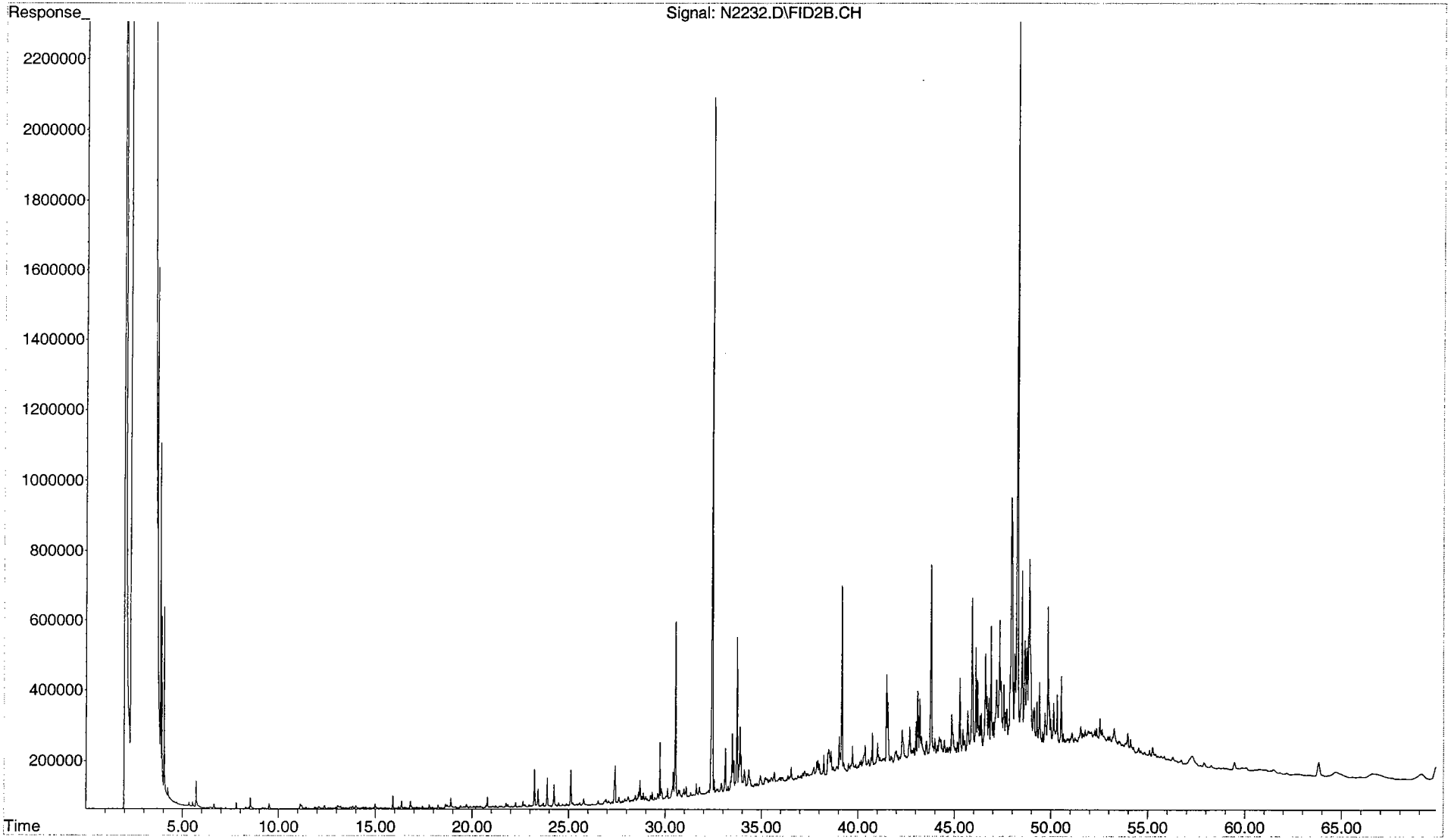
File : F:\N\DATA\SND0045.SEC\N2228.D
Operator : RR
Acquired : 4-21-2004 06:55:17 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1432MS-P(7)
Misc Info : AH-06
Vial Number: 63



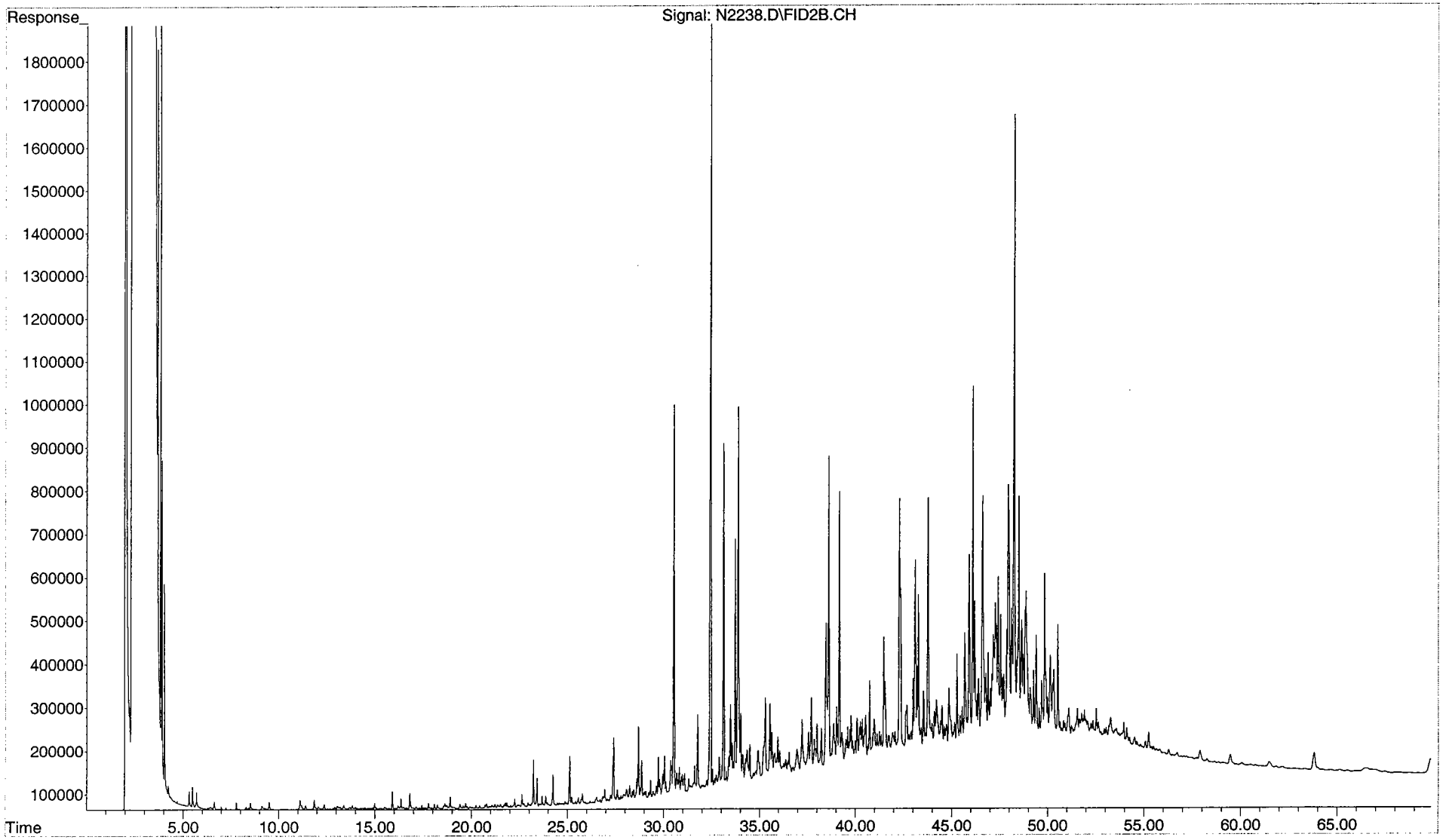
File : F:\N\DATA\SND0045.SEC\N2230.D
Operator : RR
Acquired : 4-21-2004 08:17:49 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1432MSD-P(7)
Misc Info : AH-06
Vial Number: 64



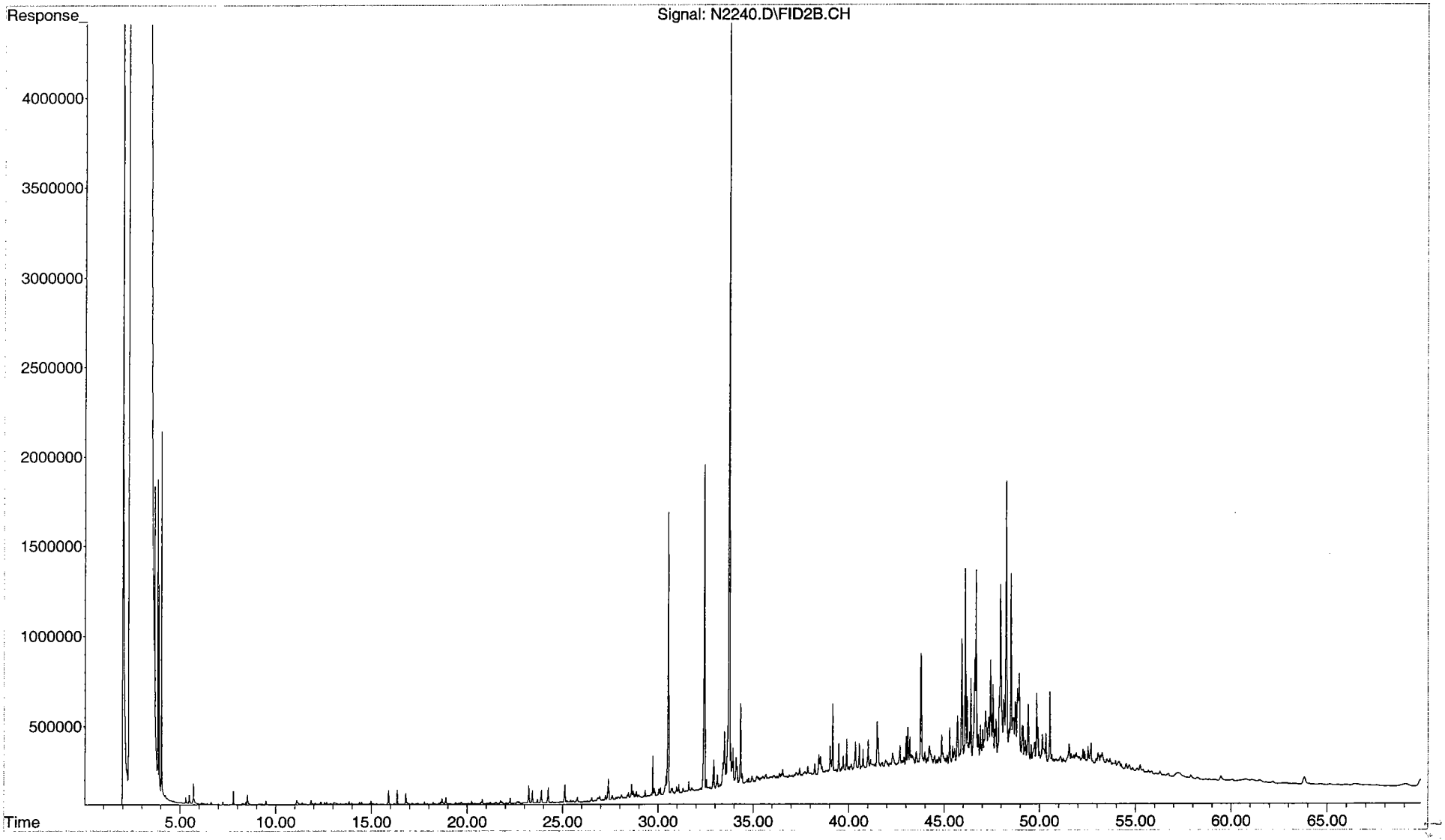
File : F:\N\DATA\SND0045.SEC\N2232.D
Operator : RR
Acquired : 4-21-2004 09:41:23 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1435-P(7)
Misc Info : AH-17
Vial Number: 65



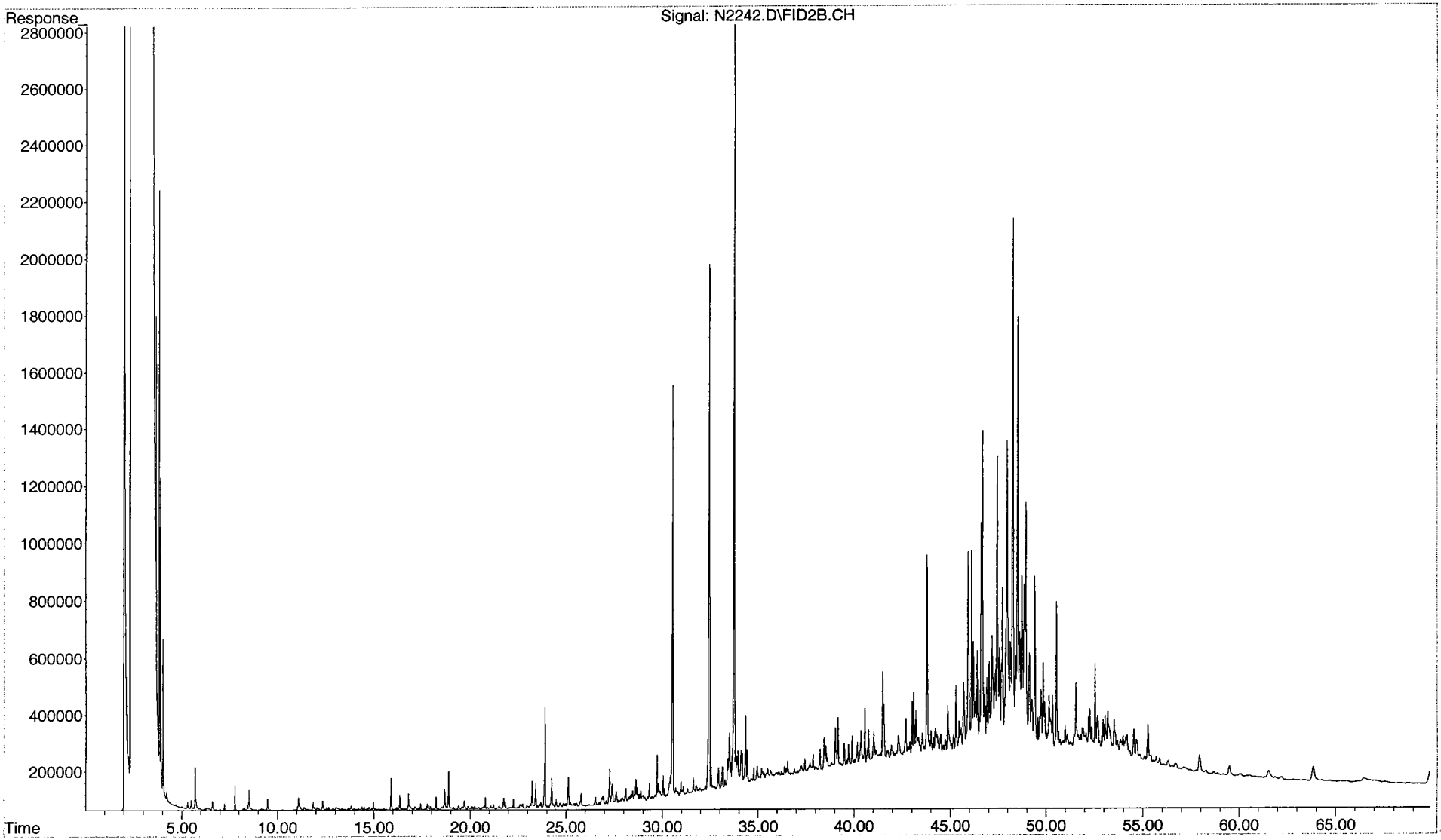
File : F:\N\DATA\SND0045.SEC\N2238.D
Operator : RR
Acquired : 4-21-2004 01:44:19 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1438-P(7)
Misc Info : AH-03
Vial Number: 68



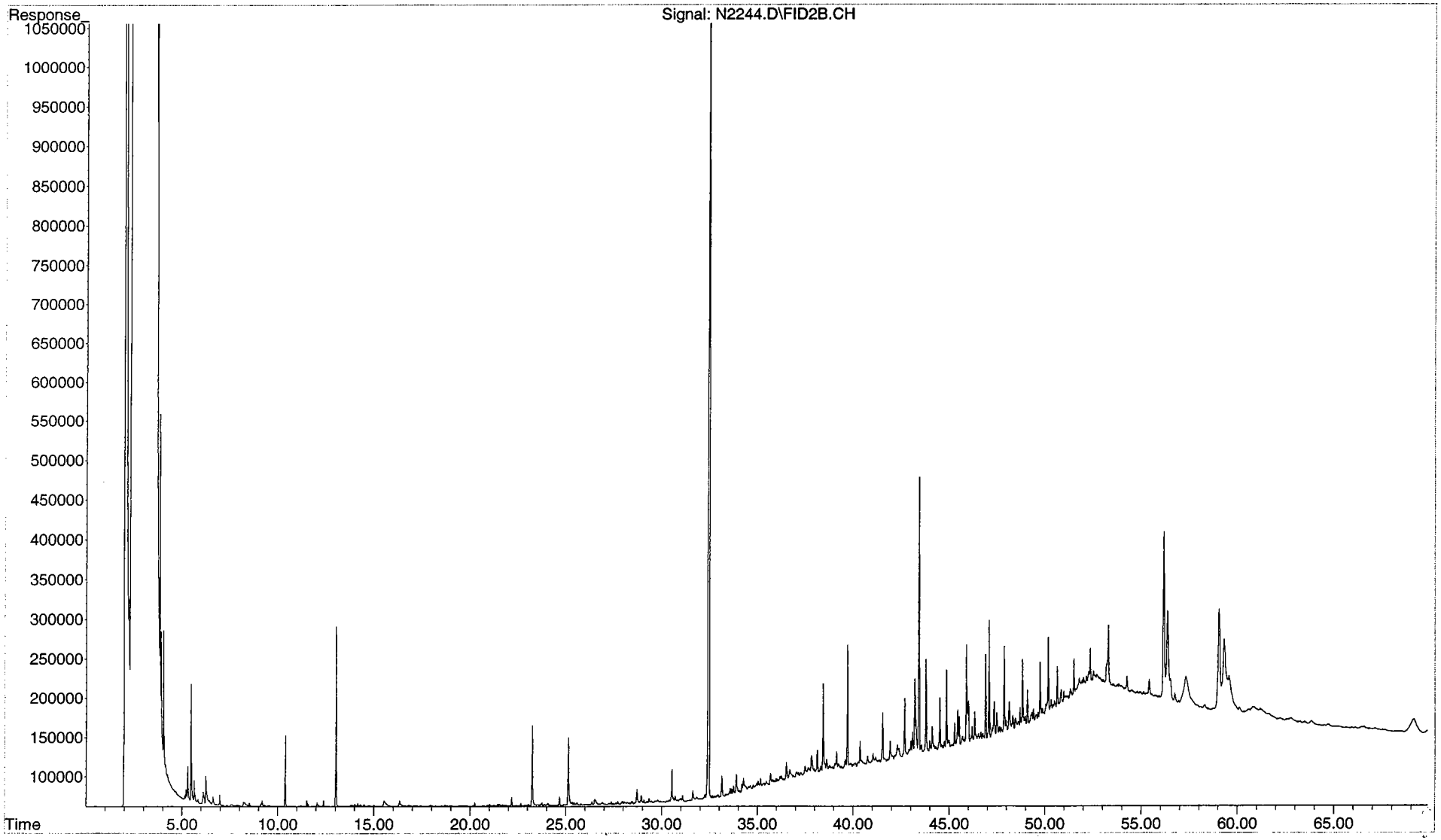
File : F:\N\DATA\SND0045.SEC\N2240.D
Operator : RR
Acquired : 4-21-2004 03:05:02 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1445-P(7)
Misc Info : REF 1-4
Vial Number: 69



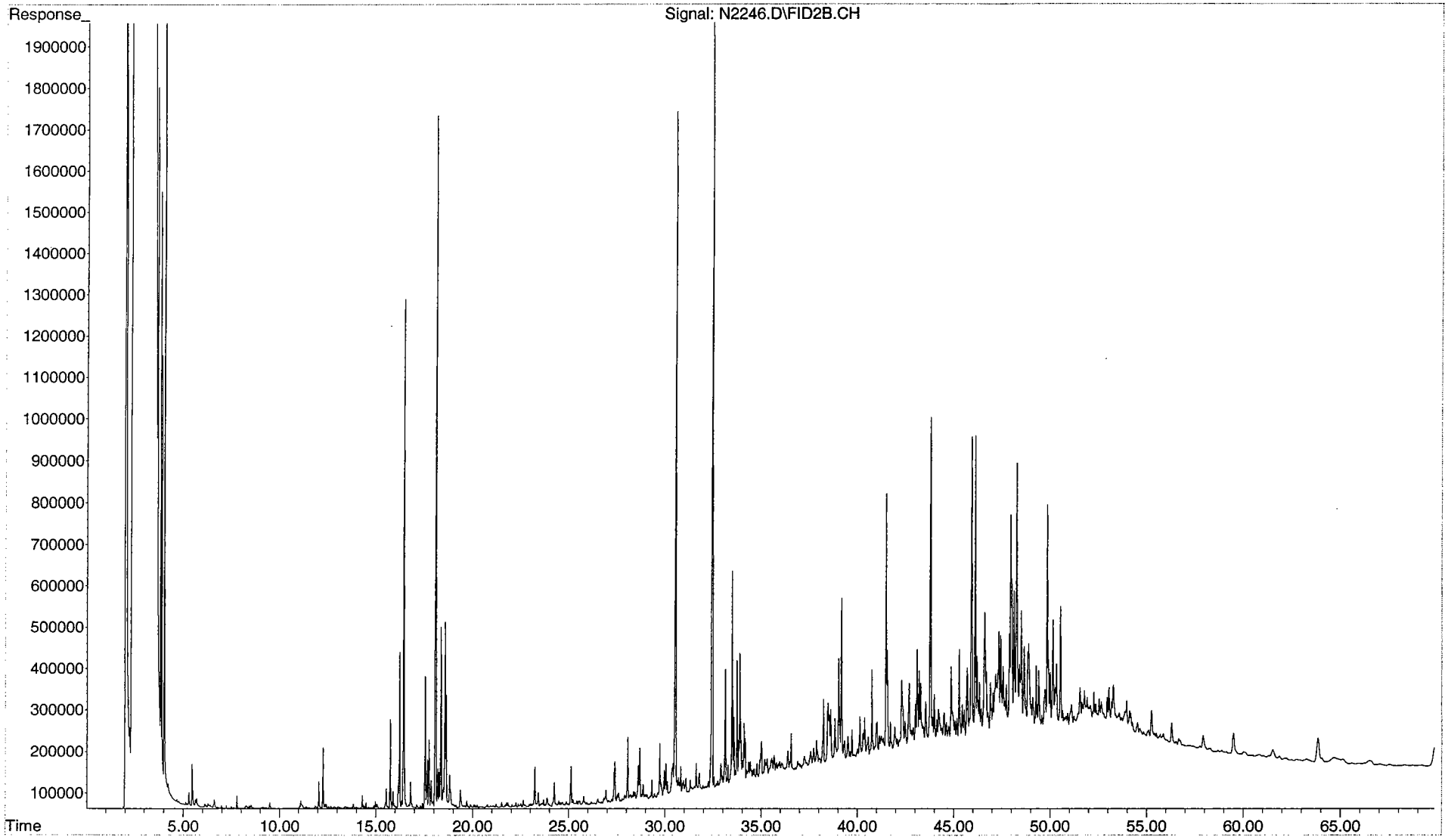
File : F:\N\DATA\SND0045.SEC\N2242.D
Operator : RR
Acquired : 4-22-2004 07:27:38 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1447-P(7)
Misc Info : REF 2-1
Vial Number: 70



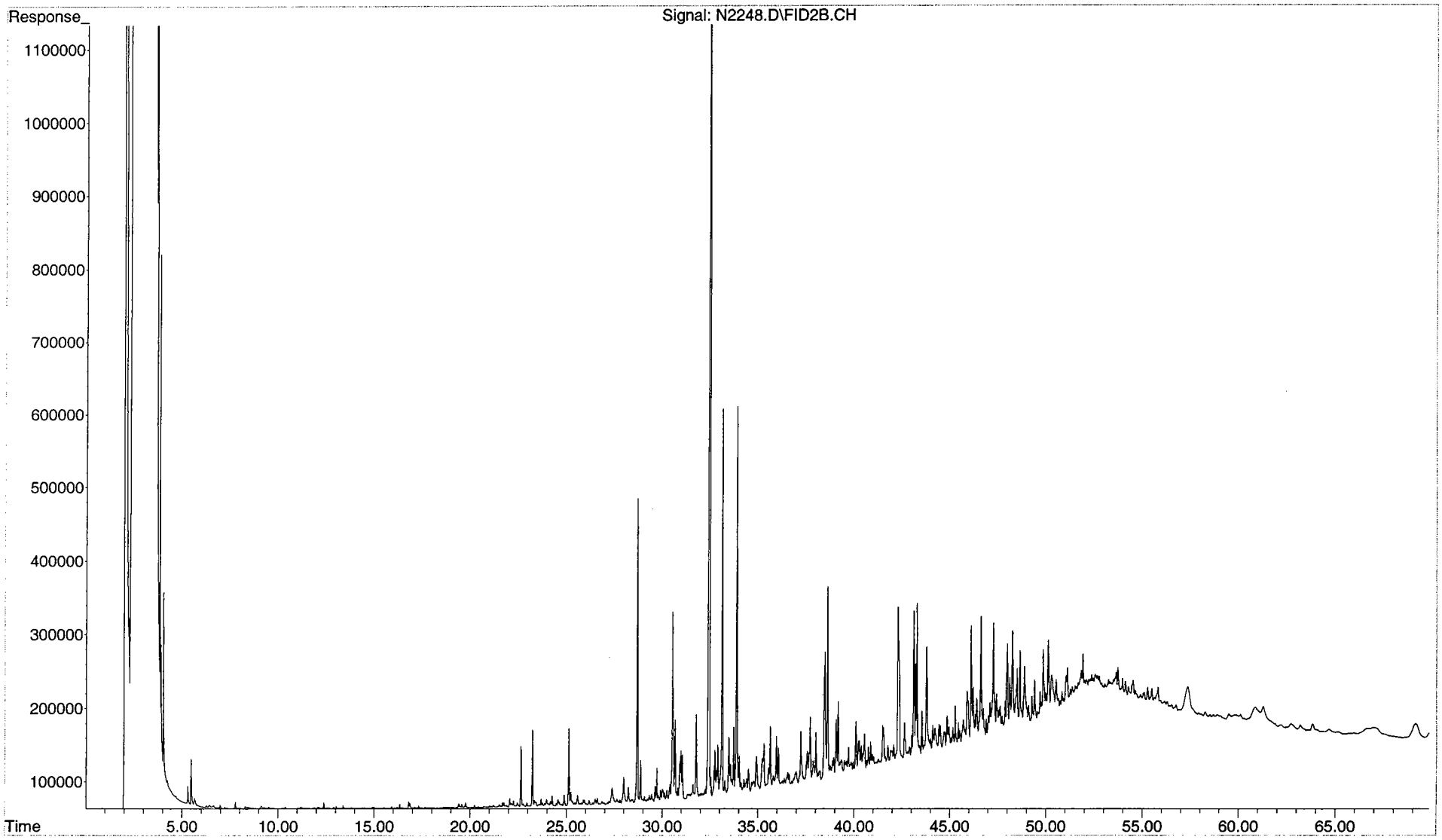
File : F:\N\DATA\SND0045.SEC\N2244.D
Operator : RR
Acquired : 4-22-2004 08:48:14 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1457-P(7)
Misc Info : SID Source 4-1
Vial Number: 71



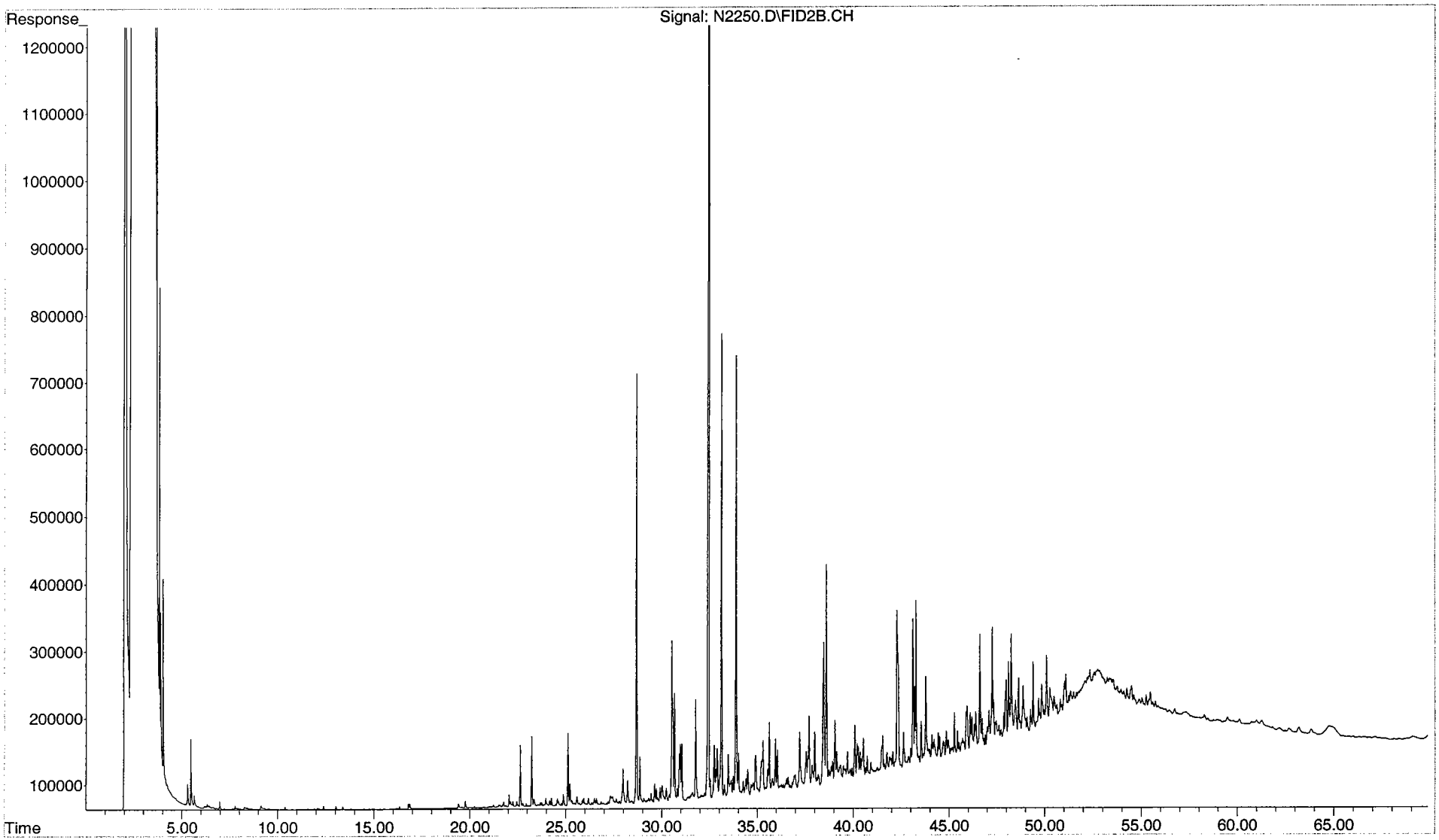
File : F:\N\DATA\SND0045.SEC\N2246.D
Operator : RR
Acquired : 22 Apr 2004 10:09 pm using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1466-P(7)
Misc Info : REF 3-2
Vial Number: 72



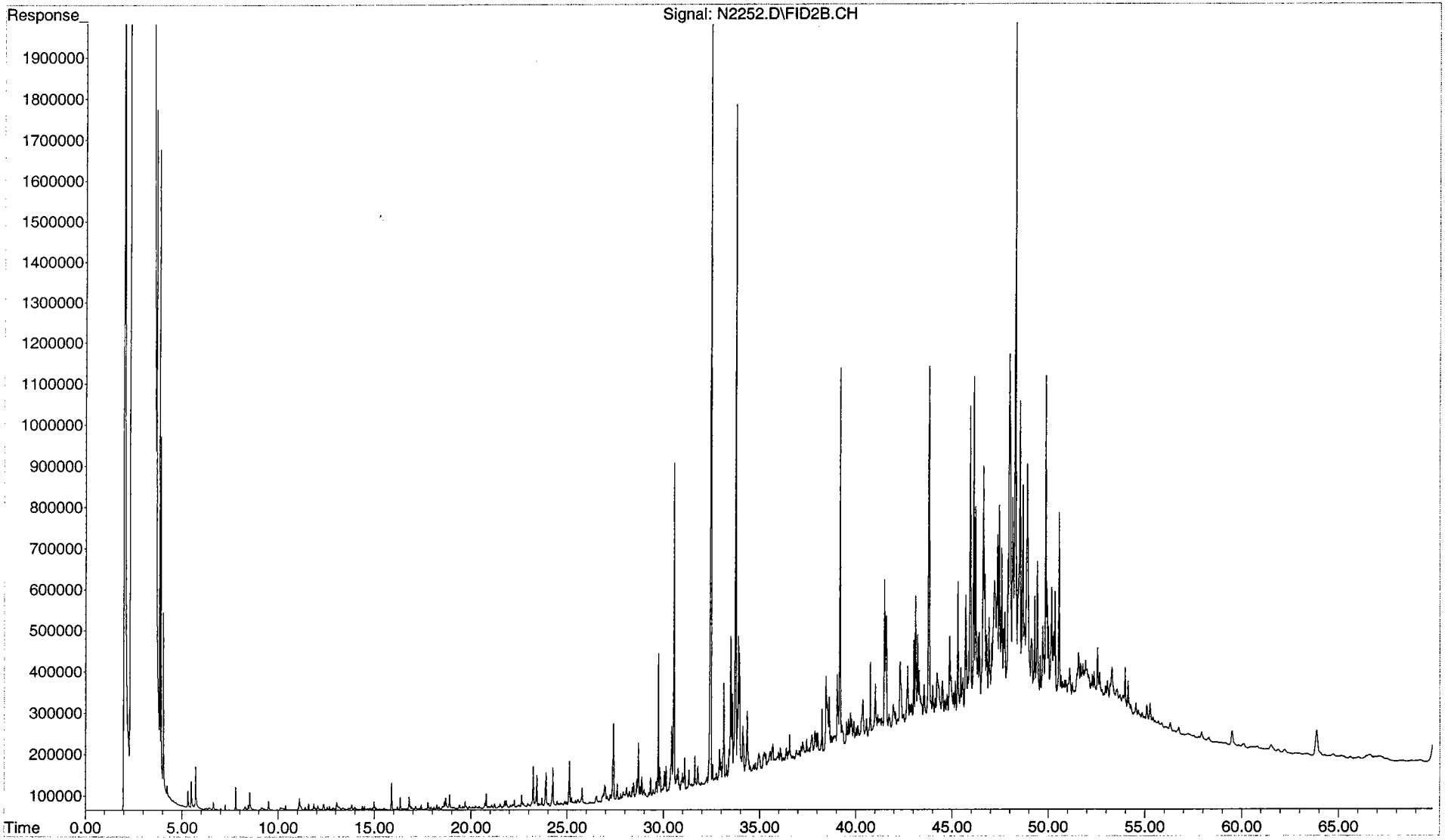
File : F:\N\DATA\SND0045.SEC\N2248.D
Operator : RR
Acquired : 22 Apr 2004 11:31 pm using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1468-P(7)
Misc Info : AH-28
Vial Number: 73



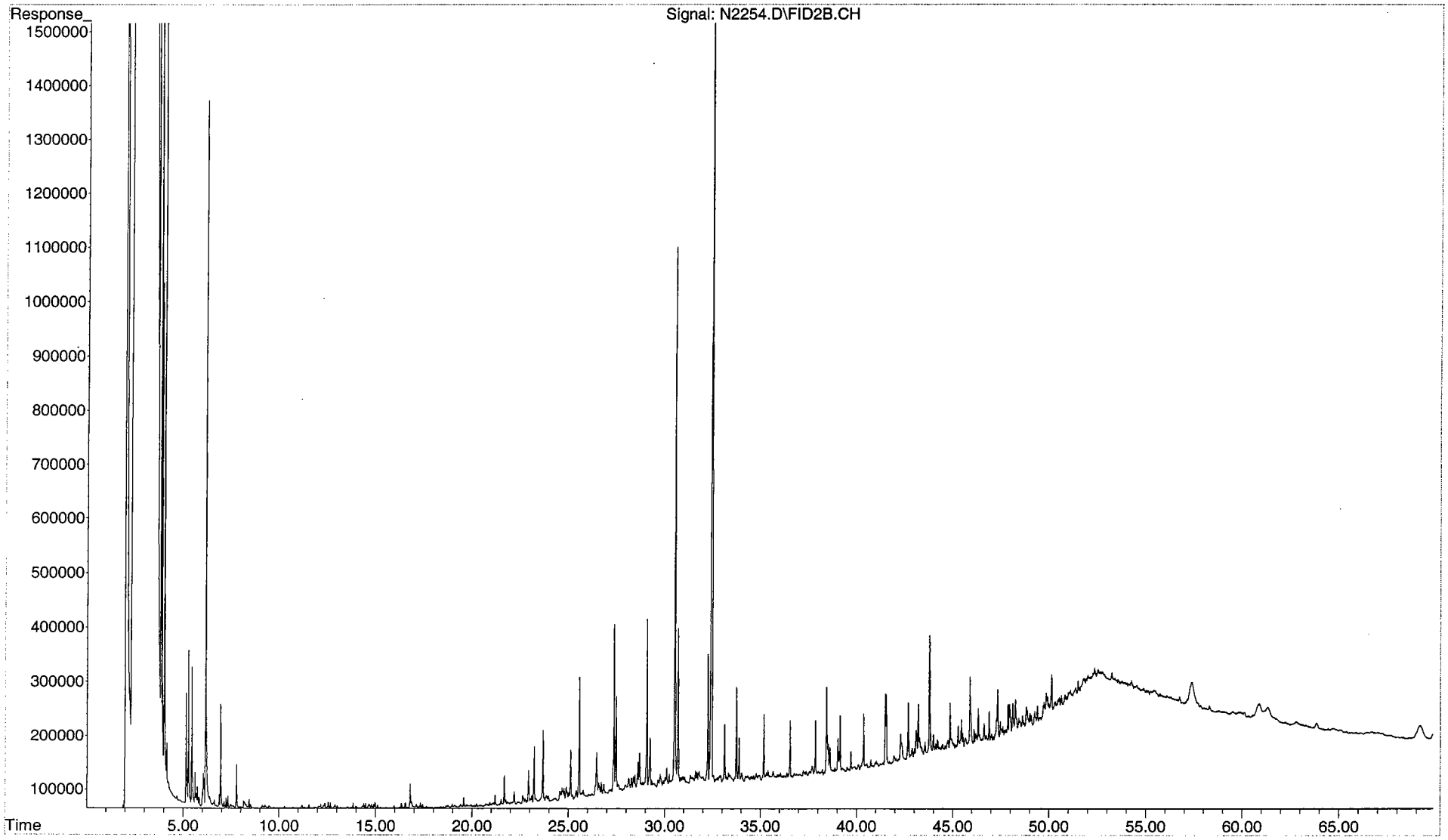
File : F:\N\DATA\SND0045.SEC\N2250.D
Operator : RR
Acquired : 23 Apr 2004 12:53 am using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1471-P(7)
Misc Info : AH-49
Vial Number: 74



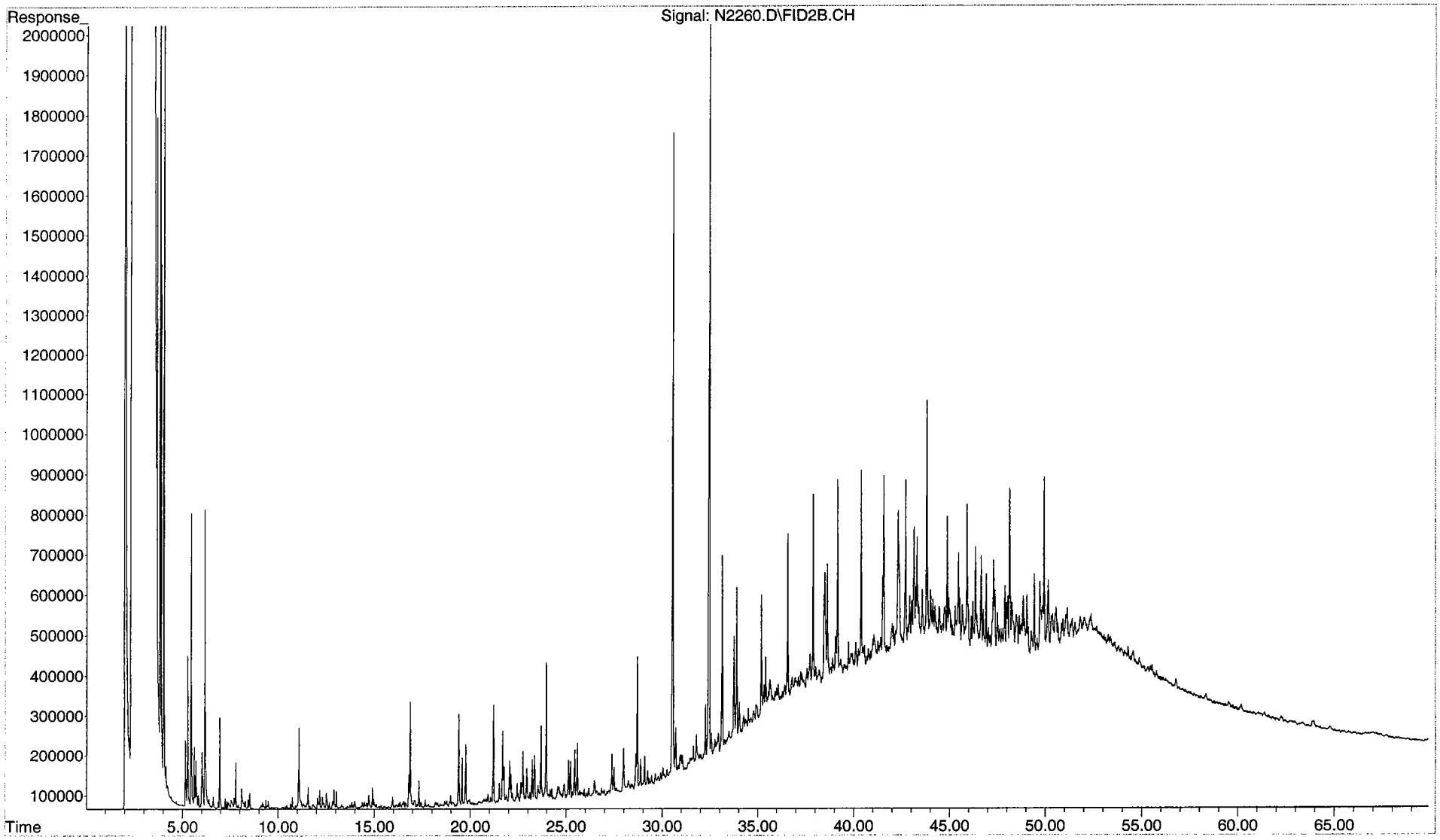
File : F:\N\DATA\SND0045.SEC\N2252.D
Operator : RR
Acquired : 4-23-2004 02:15:54 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1474-P(7)
Misc Info : AH-45
Vial Number: 75



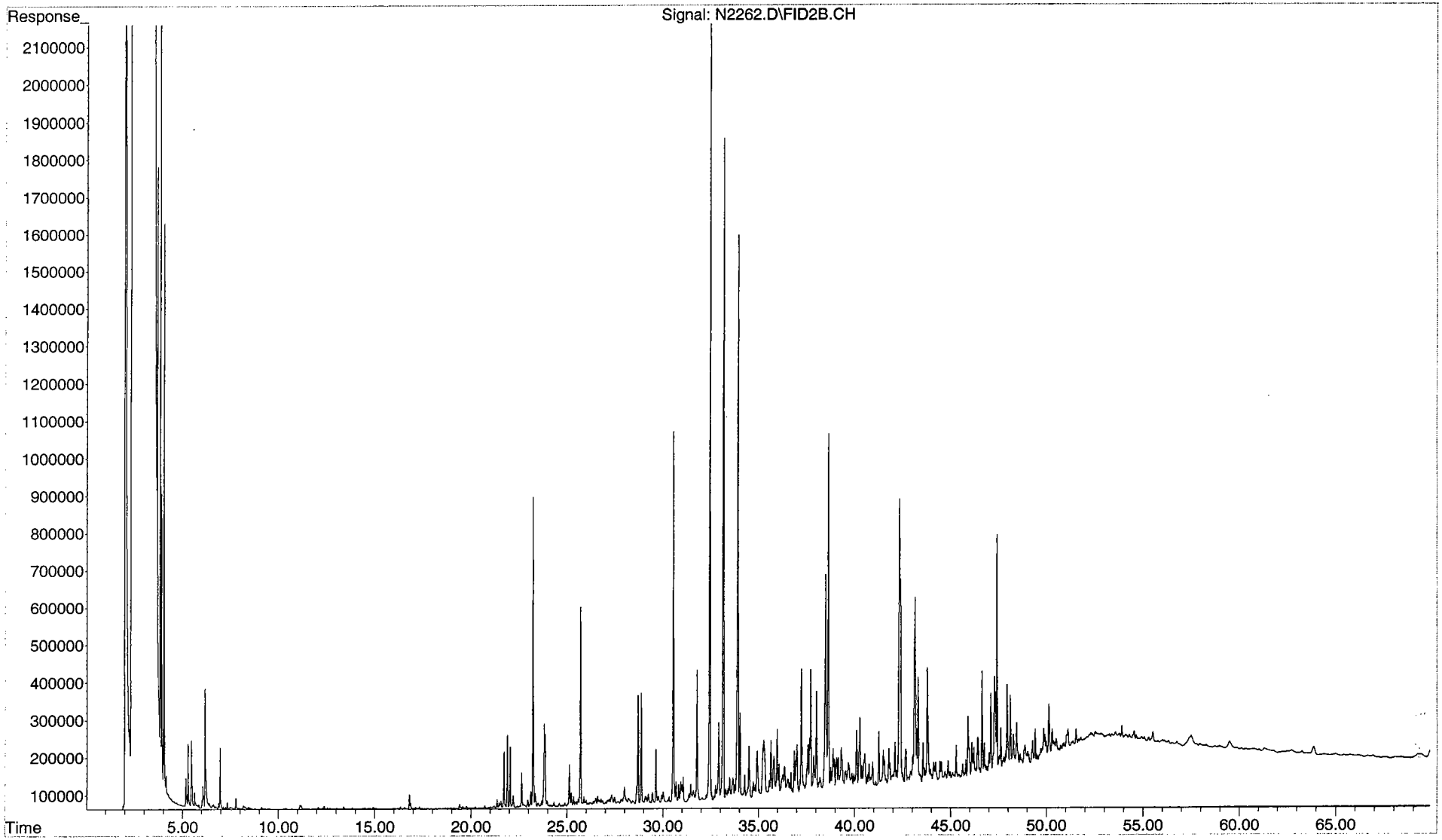
File : F:\N\DATA\SND0045.SEC\N2254.D
Operator : RR
Acquired : 4-23-2004 03:38:04 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1481-P(7)
Misc Info : Source 3-1
Vial Number: 76



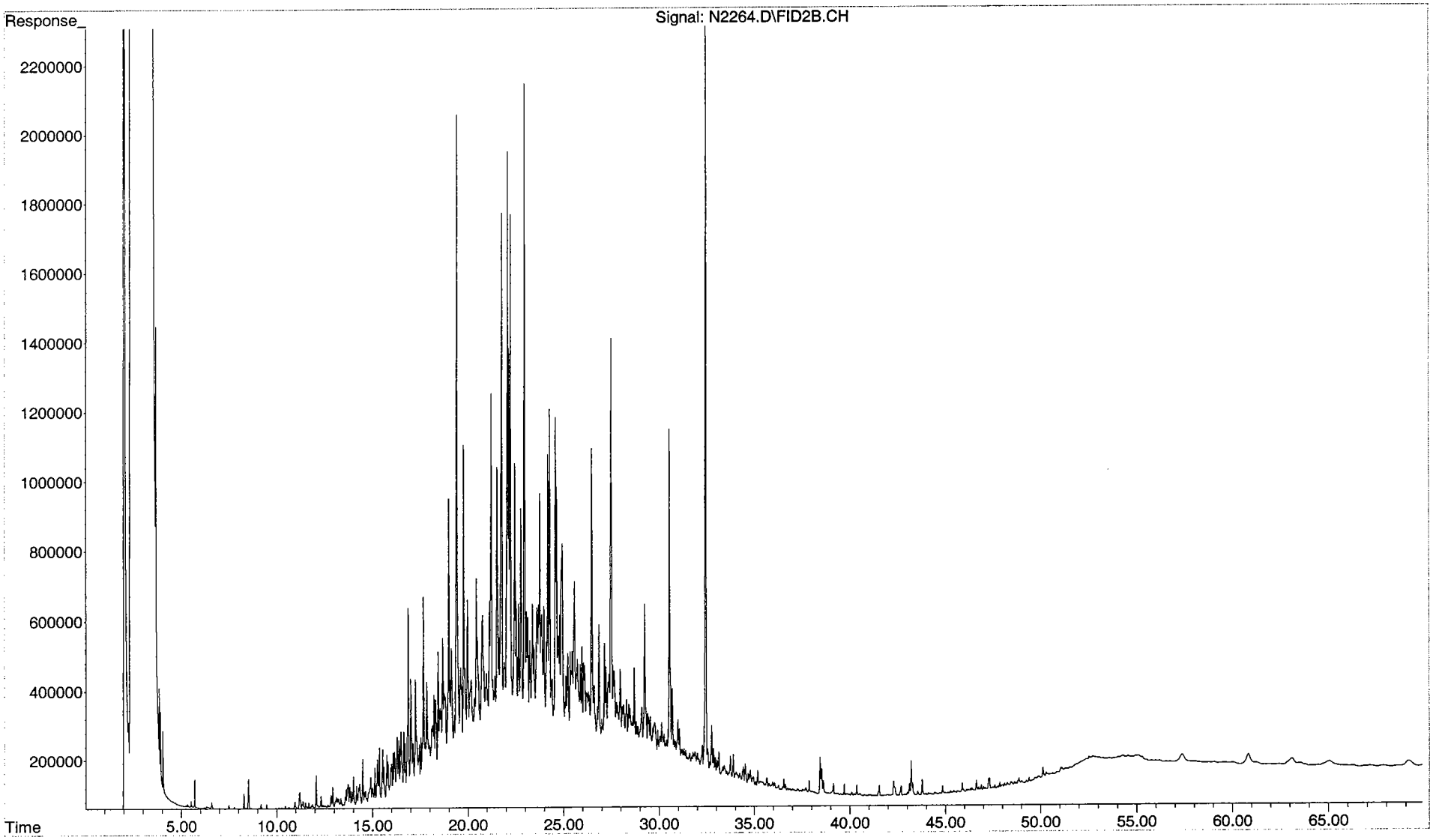
File : F:\N\DATA\SND0045.SEC\N2260.D
Operator : RR
Acquired : 4-23-2004 07:44:33 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1482-P(7)
Misc Info : Source 3-2
Vial Number: 79



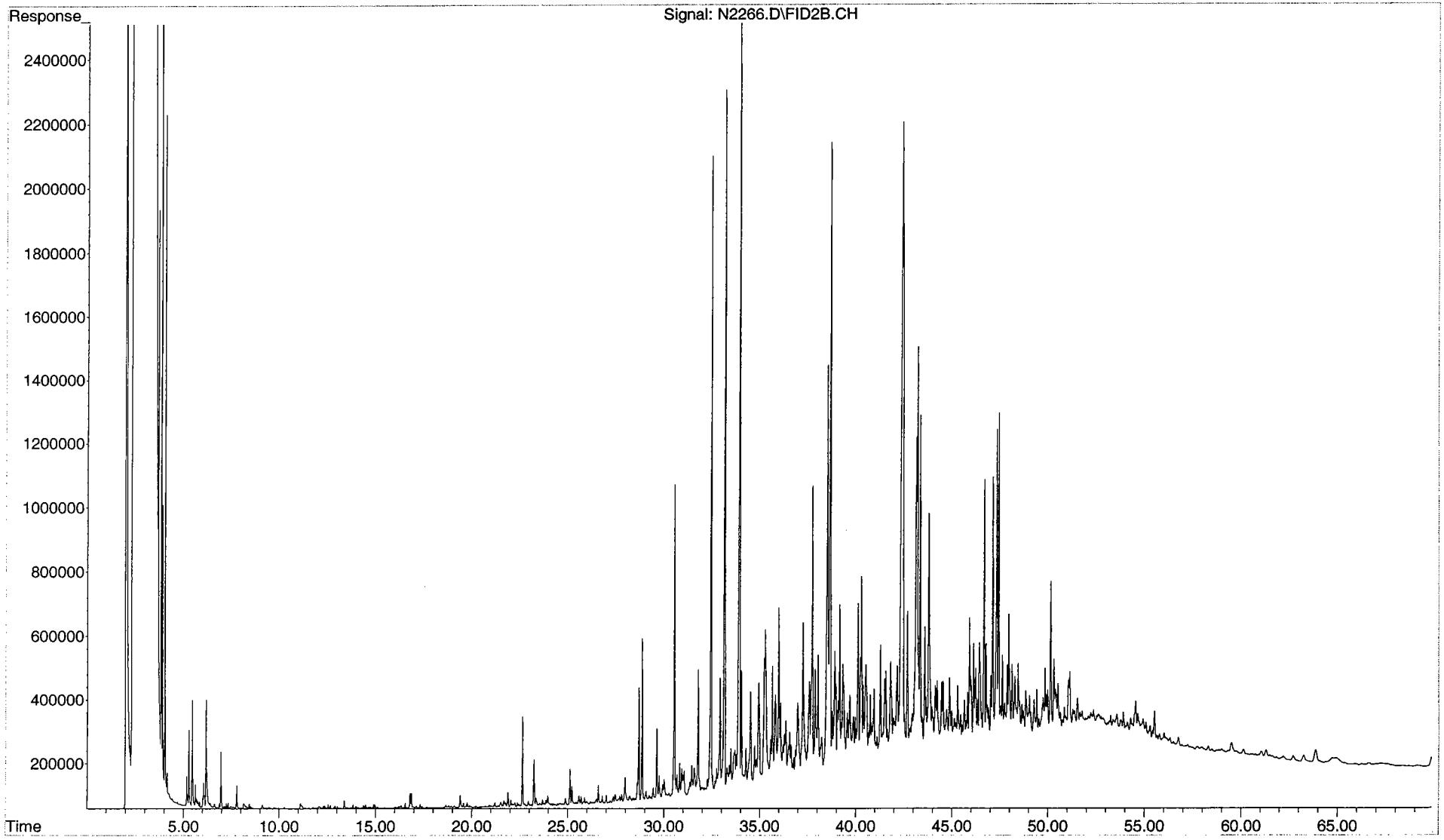
File : F:\N\DATA\SND0045.SEC\N2262.D
Operator : RR
Acquired : 4-23-2004 09:06:56 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1483-P(7)
Misc Info : Source 1-1
Vial Number: 80



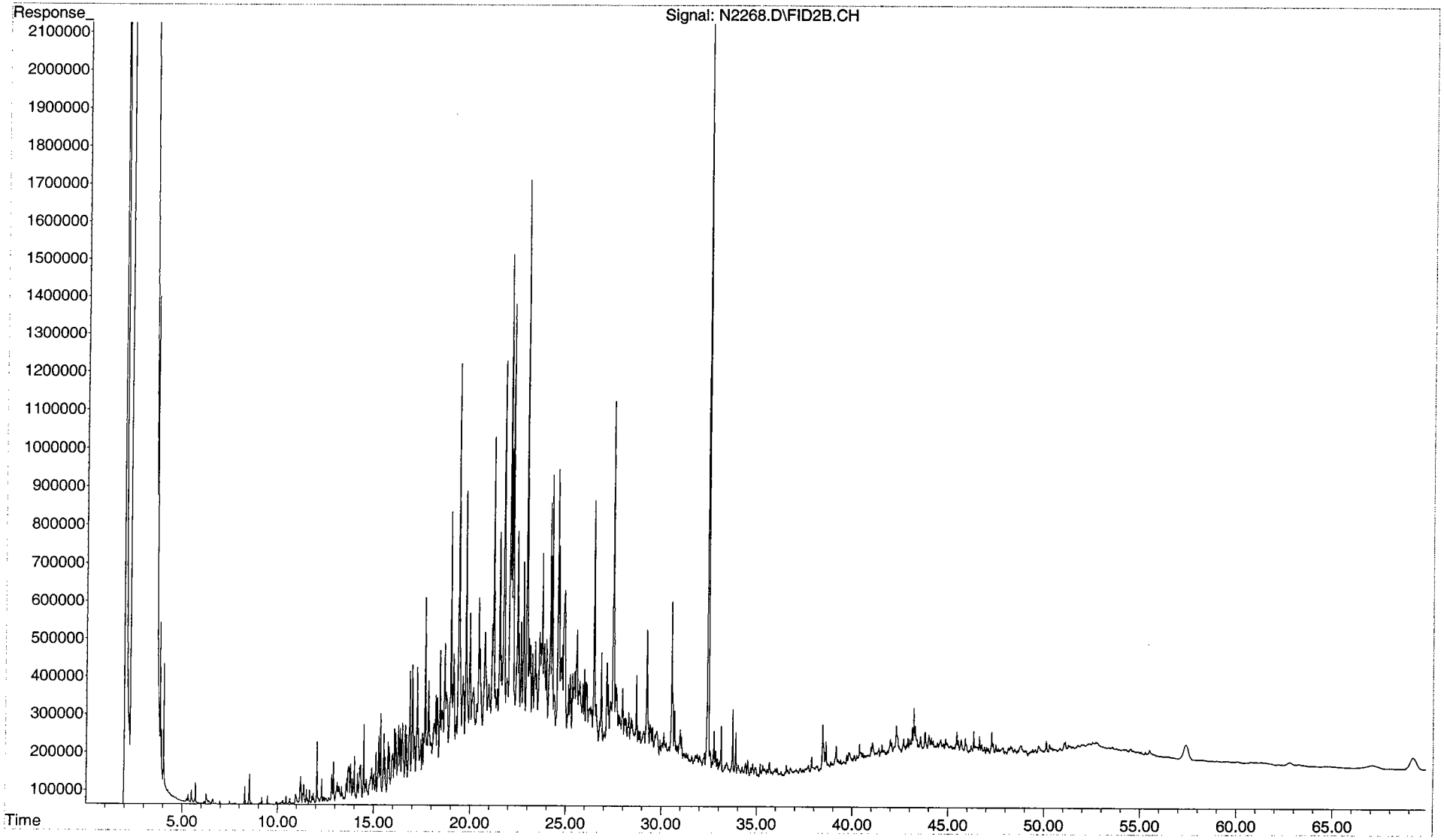
File : F:\N\DATA\SND0045.SEC\N2264.D
Operator : RR
Acquired : 23 Apr 2004 10:29 am using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1484-P(7)
Misc Info : Source 2-1
Vial Number: 81



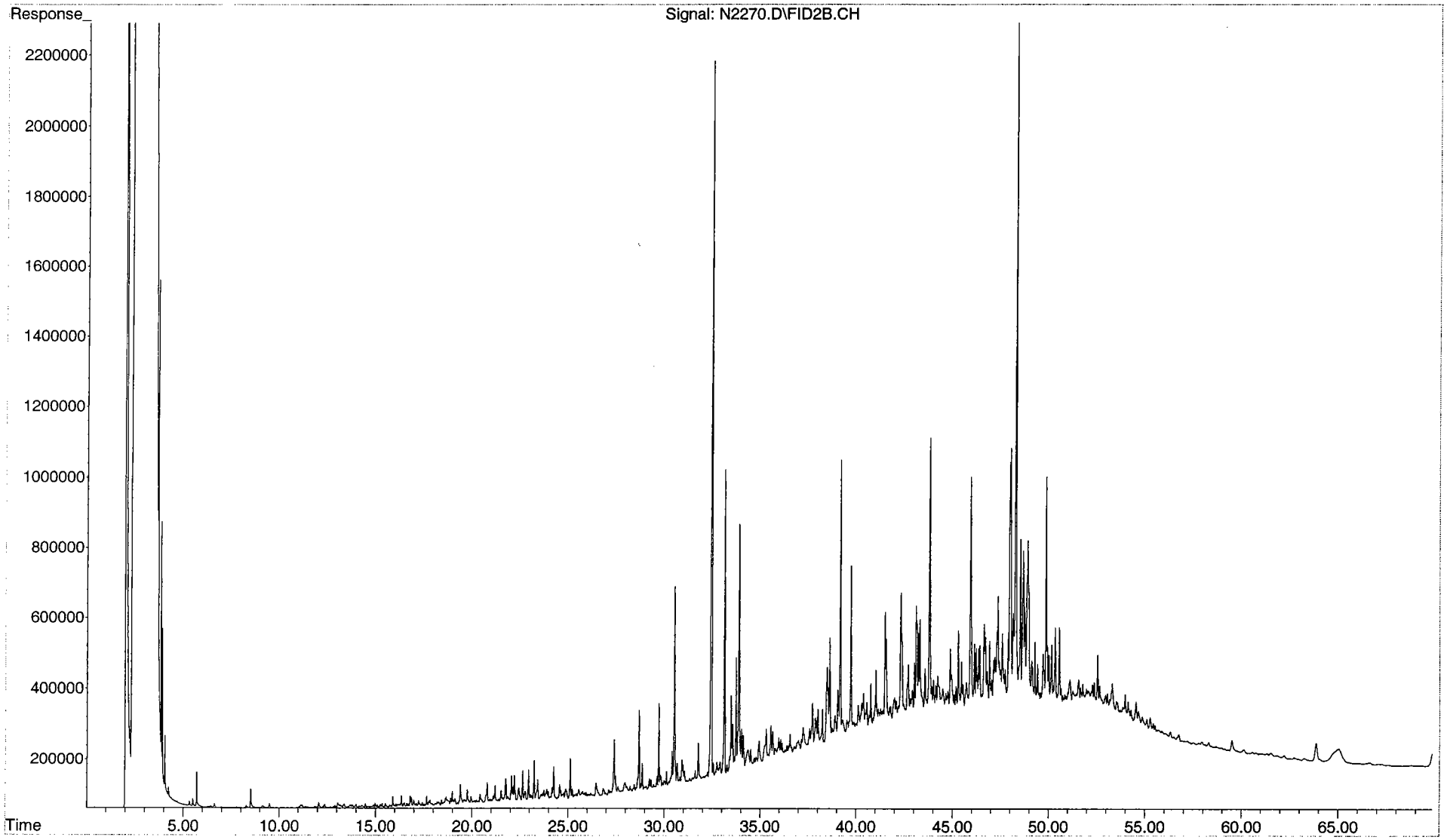
File : F:\N\DATA\SND0045.SEC\N2266.D
Operator : RR
Acquired : 23 Apr 2004 11:51 am using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1485-P(7)
Misc Info : Source 1-2
Vial Number: 82



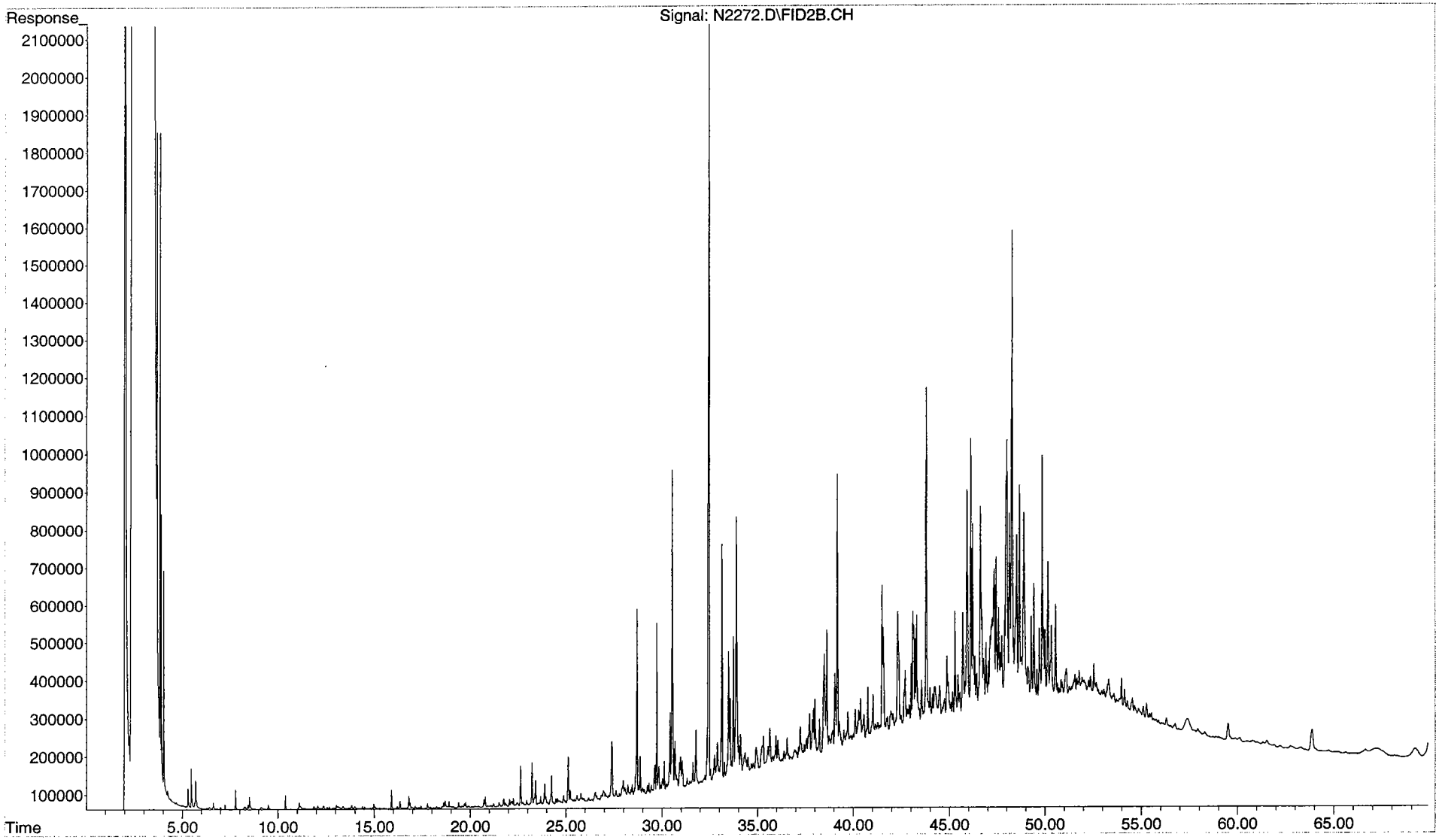
File : F:\N\DATA\SND0045.SEC\N2268.D
Operator : RR
Acquired : 4-23-2004 01:13:29 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1486-P(7)
Misc Info : Source 2-2
Vial Number: 83



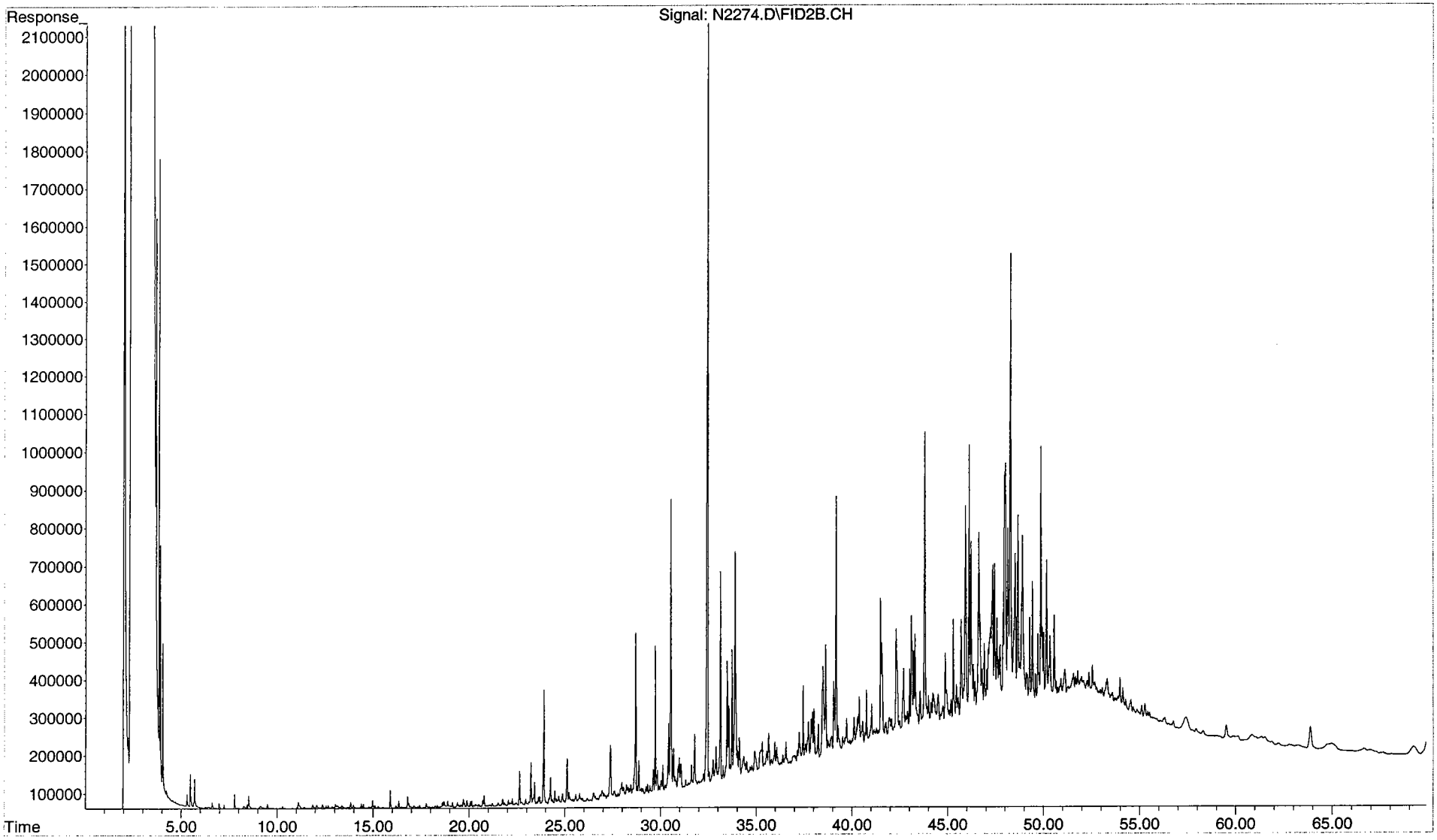
File : F:\N\DATA\SND0045.SEC\N2270.D
Operator : RR
Acquired : 4-23-2004 02:35:55 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1491-P(7)
Misc Info : AH-29
Vial Number: 84



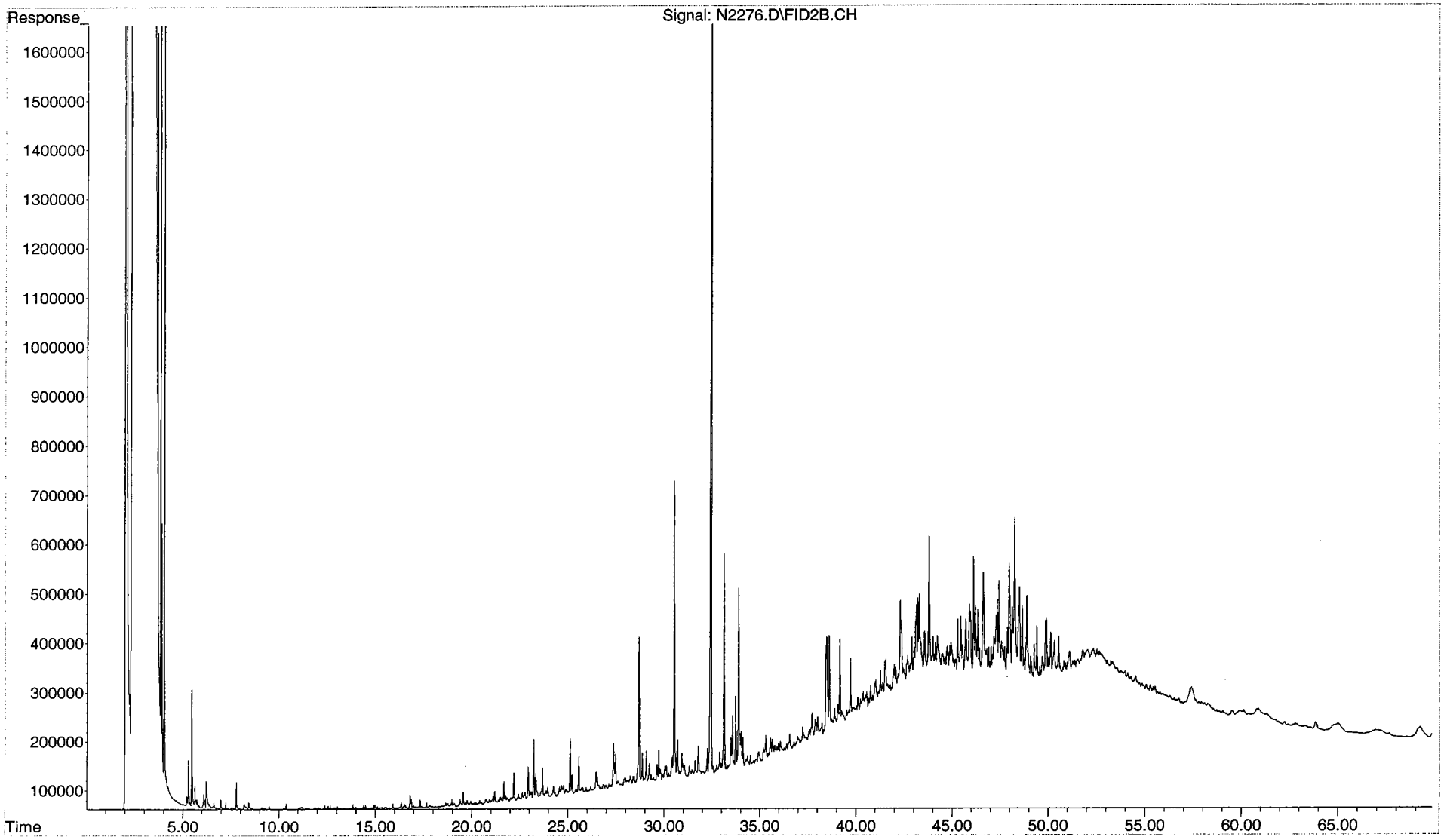
File : F:\N\DATA\SND0045.SEC\N2272.D
Operator : RR
Acquired : 4-23-2004 03:58:34 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1505-P(7)
Misc Info : AH-26
Vial Number: 85



File : F:\N\DATA\SND0045.SEC\N2274.D
Operator : RR
Acquired : 4-23-2004 05:21:17 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1505DUP-P(7)
Misc Info : AH-26
Vial Number: 86



File : F:\N\DATA\SND0045.SEC\N2276.D
Operator : RR
Acquired : 4-23-2004 06:44:00 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1509-P(7)
Misc Info : AH-40
Vial Number: 87

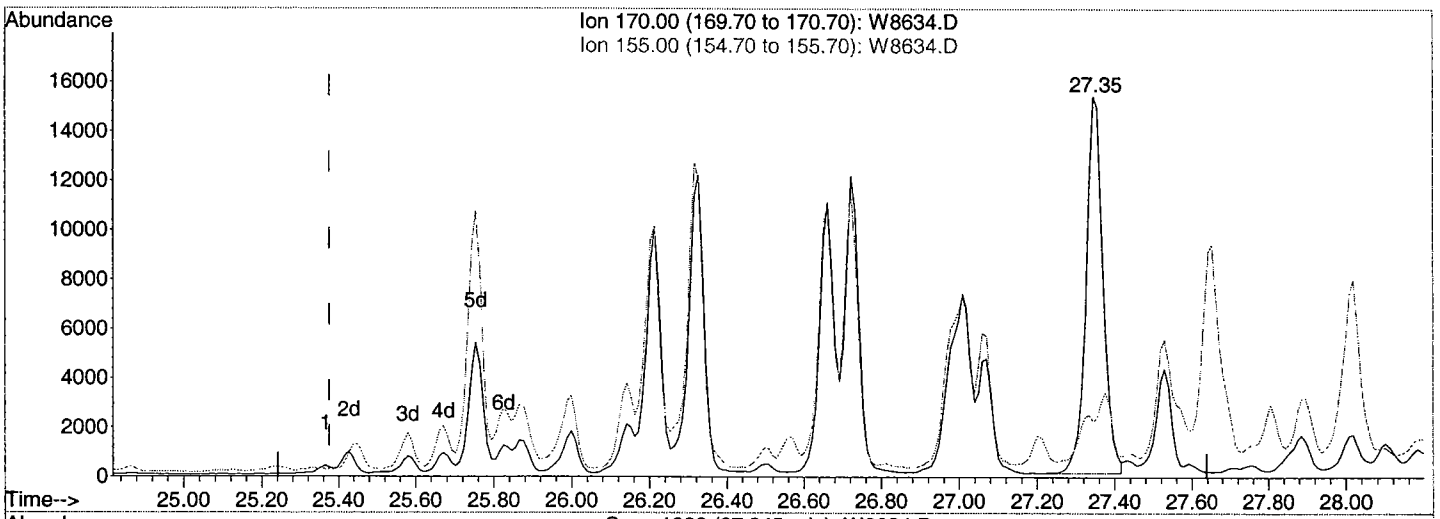


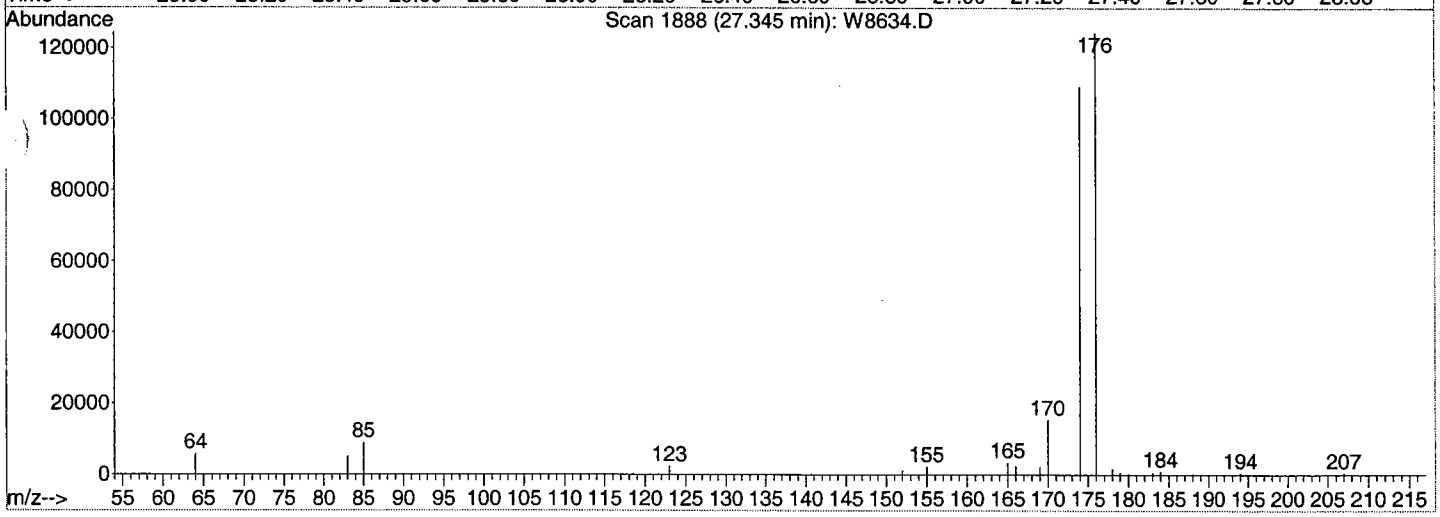
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8634.D
Acq On : 20 Apr 2004 5:03 pm
Sample : BE163SRM-P(3)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:08 2004

Vial: 5
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8634.D

(12) C3-Naphthalenes (J2)

27.35min (+1.970) 140.26ng/µl m

response 46463

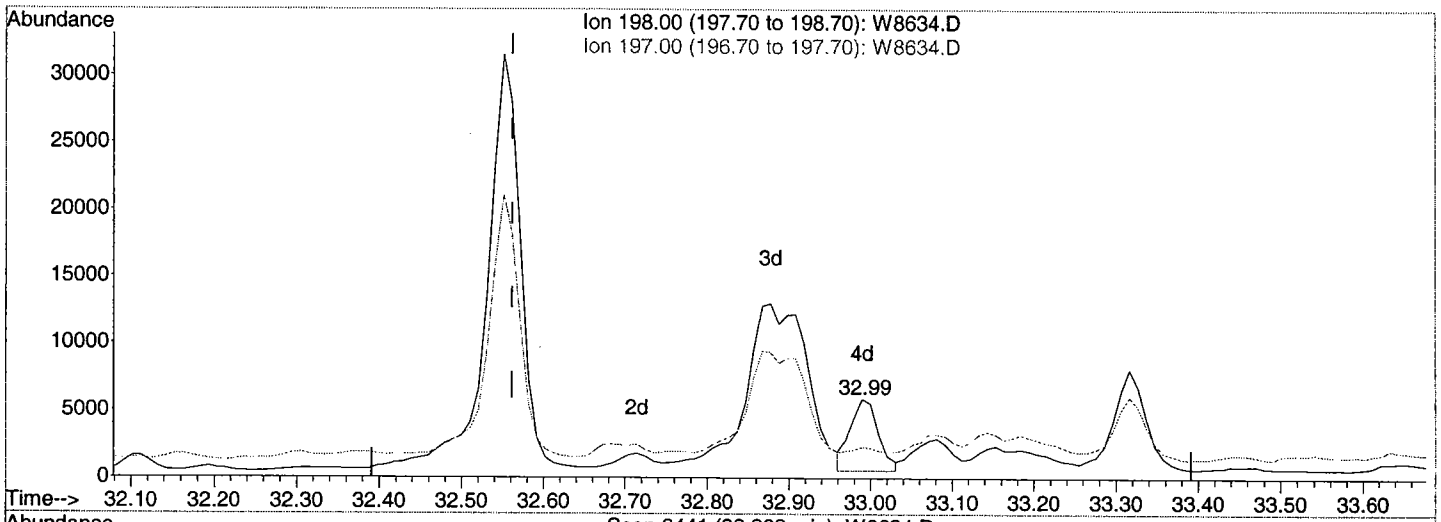
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	14.56
0.00	0.00	0.00
0.00	0.00	0.00

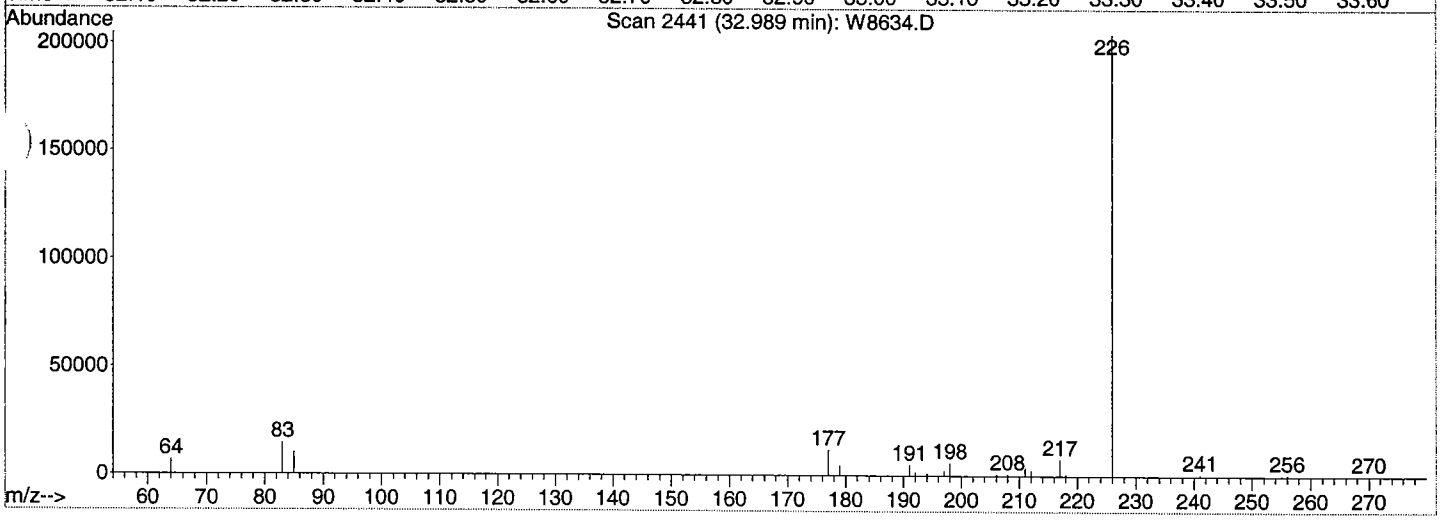
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8634.D
Acq On : 20 Apr 2004 5:03 pm
Sample : BE163SRM-P(3)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:08 2004

Vial: 5
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8634.D

(27) C1-Dibenzothiophenes (J2)

32.99min (+0.429) 43.38ng/µl m

response 12778

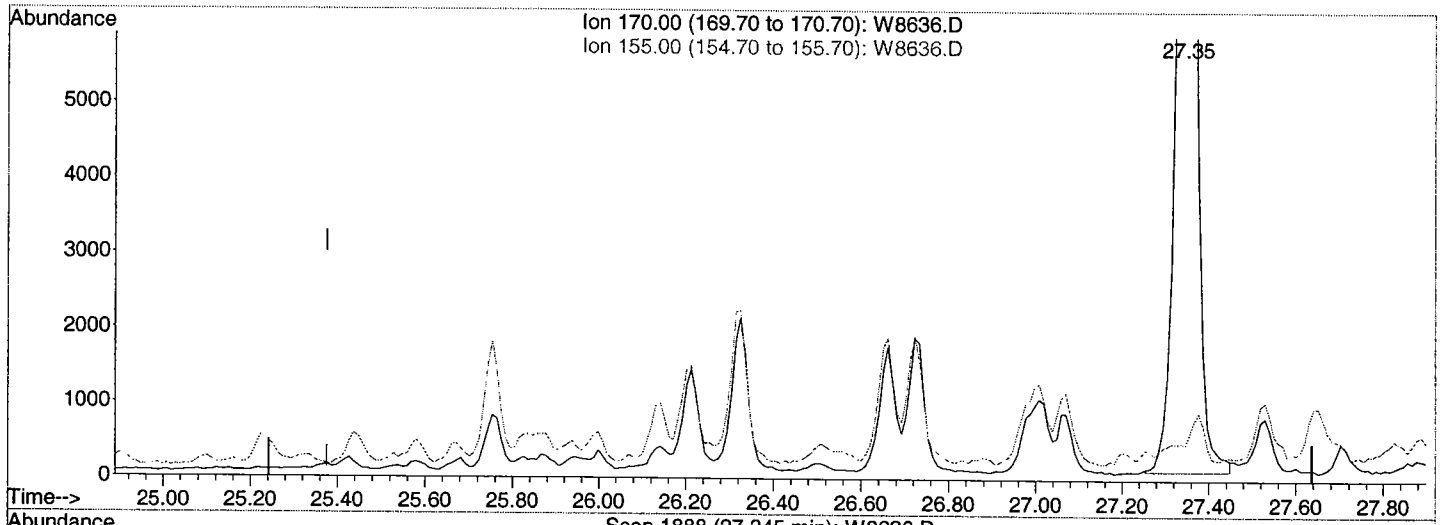
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	39.42#
0.00	0.00	0.00
0.00	0.00	0.00

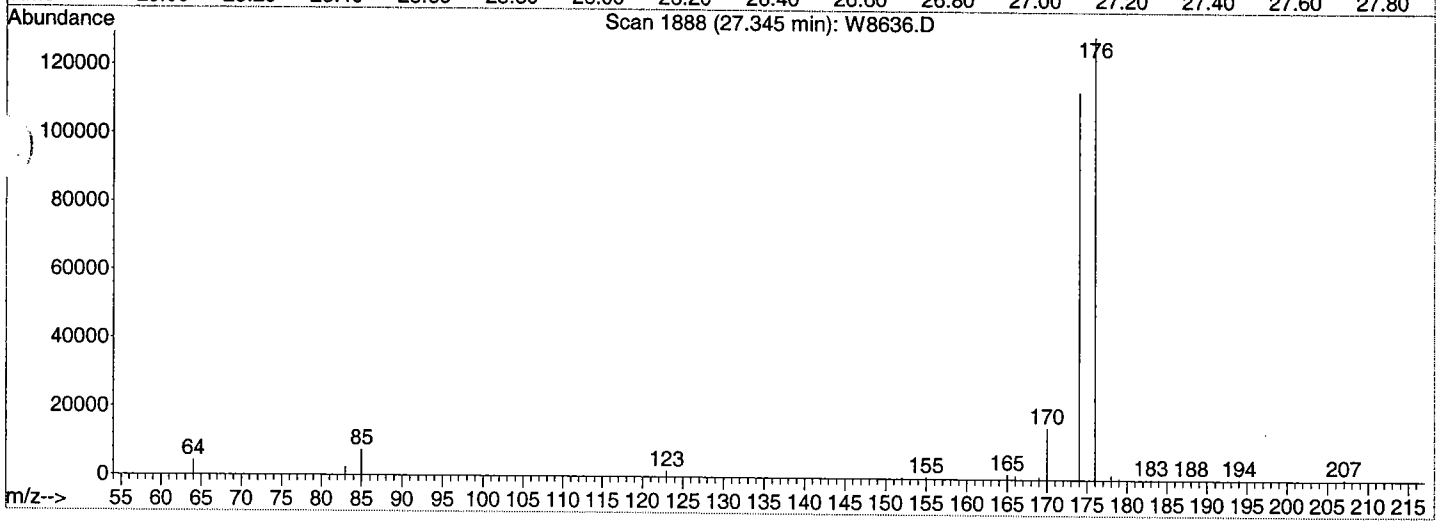
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8636.D
Acq On : 20 Apr 2004 7:52 pm
Sample : S1430-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:09 2004

Vial: 7
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8636.D

(12) C3-Naphthalenes (J2)

27.35min (+1.970) 126.07ng/µl m

response 41365

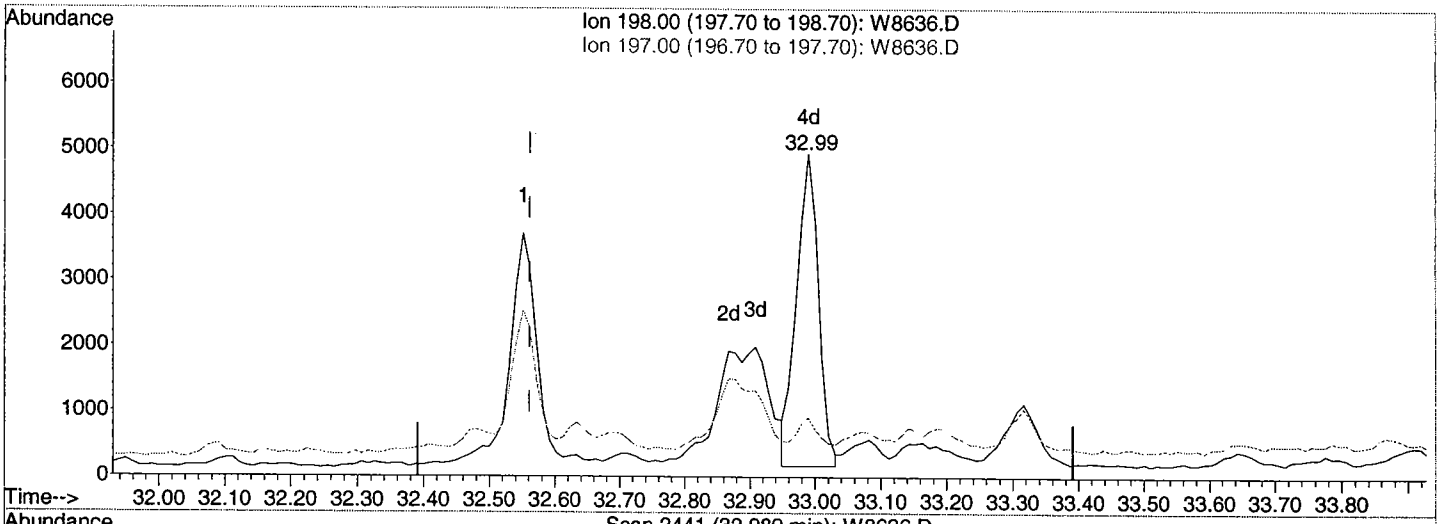
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	3.23
0.00	0.00	0.00
0.00	0.00	0.00

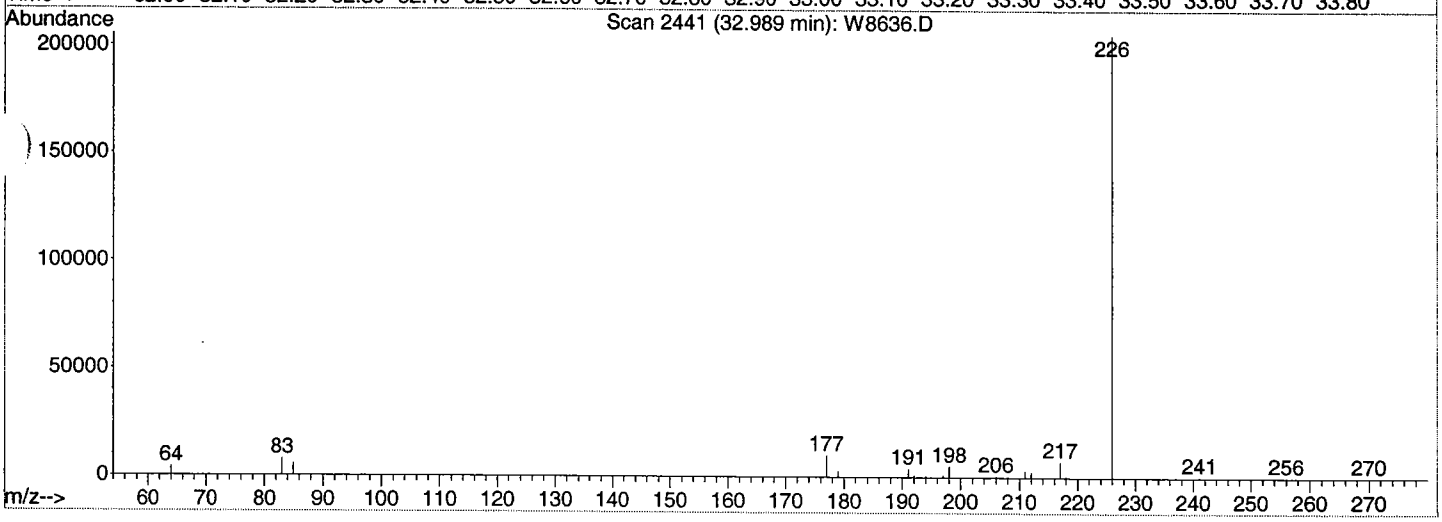
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8636.D
Acq On : 20 Apr 2004 7:52 pm
Sample : S1430-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:09 2004

Vial: 7
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8636.D

(27) C1-Dibenzothiophenes (J2)

32.99min (+0.429) 37.62ng/µl m

response 10975

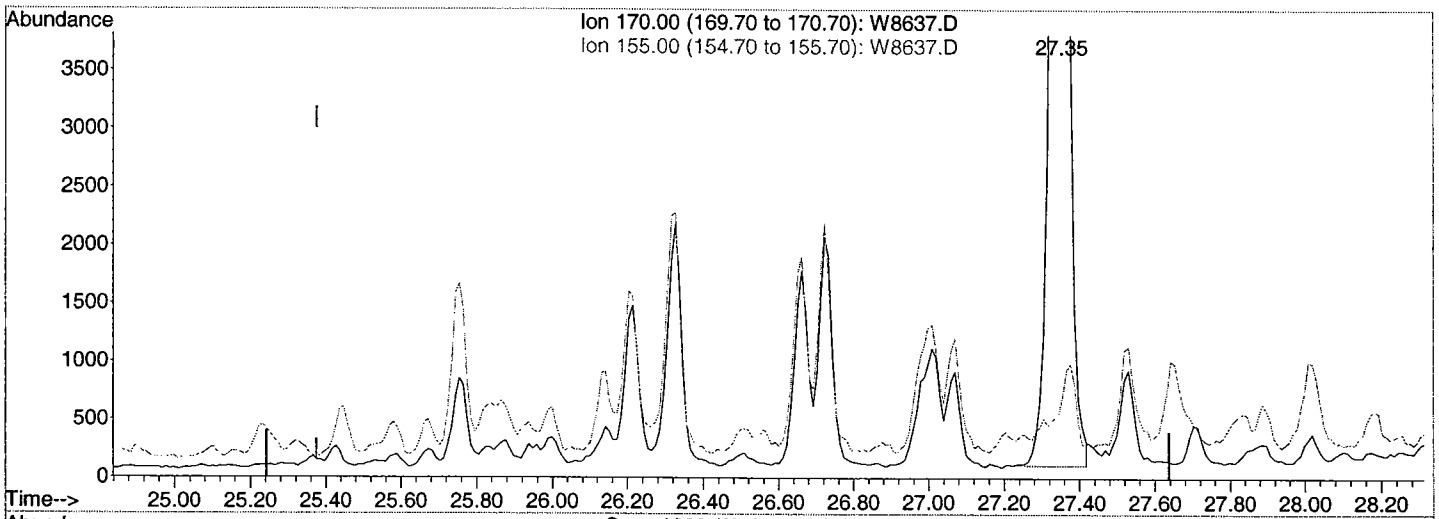
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	18.41#
0.00	0.00	0.00
0.00	0.00	0.00

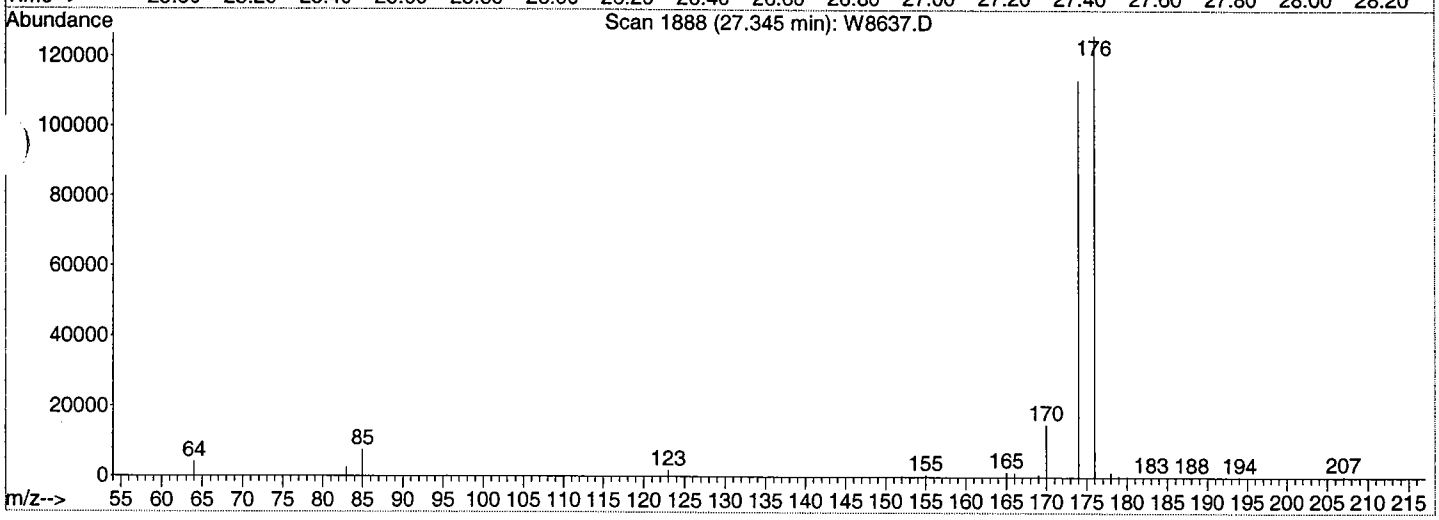
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8637.D
Acq On : 20 Apr 2004 9:18 pm
Sample : S1432-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:09 2004

Vial: 8
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8637.D

(12) C3-Naphthalenes (J2)

27.35min (+1.970) 125.24ng/µl m

response 40328

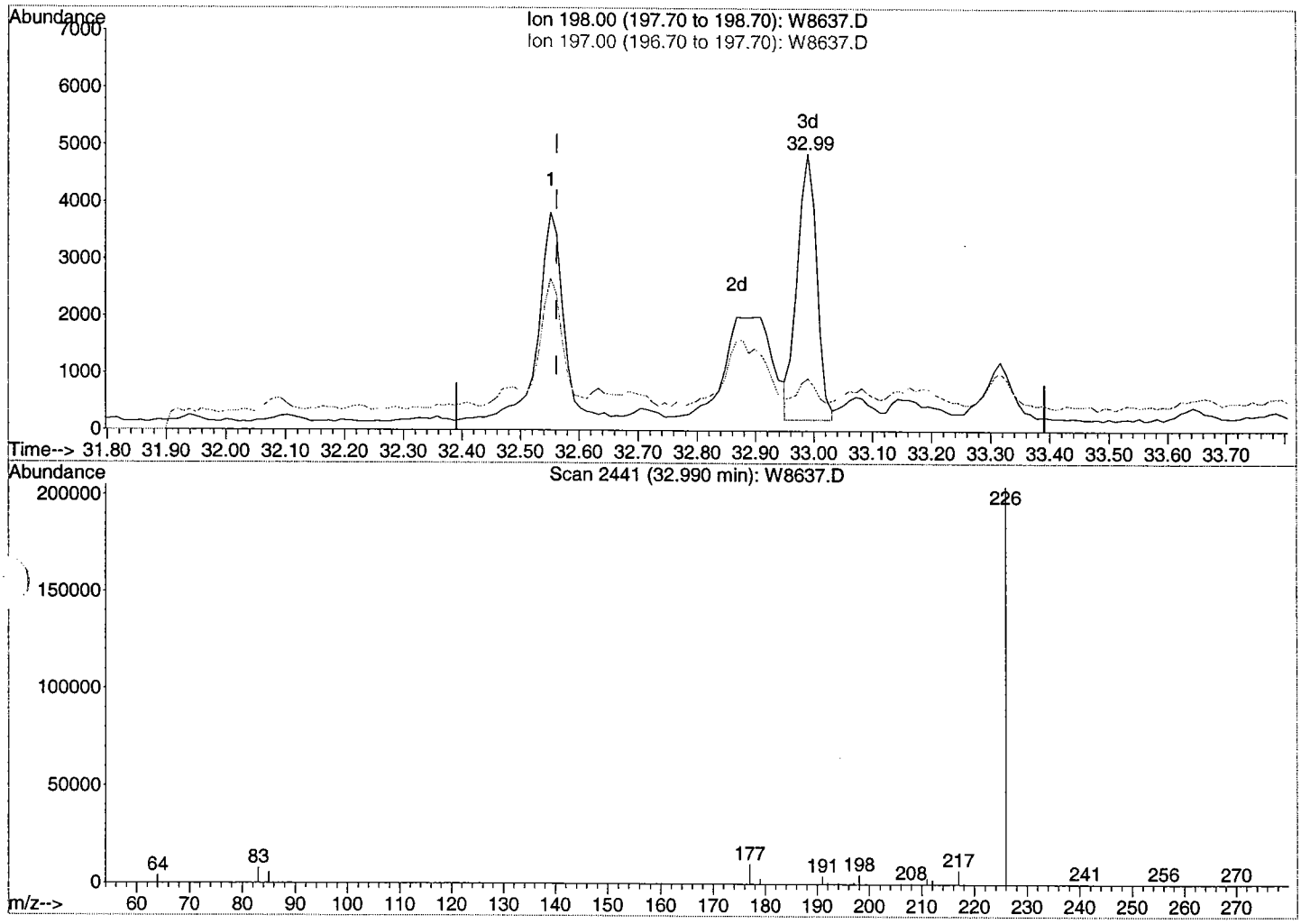
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	3.66
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8637.D
Acq On : 20 Apr 2004 9:18 pm
Sample : S1432-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:10 2004

Vial: 8
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8637.D

(27) C1-Dibenzothiophenes (J2)

32.99min (+0.429) 37.79ng/µl m

response 10820

Ion	Exp%	Act%
198.00	100	100
197.00	64.60	18.89#
0.00	0.00	0.00
0.00	0.00	0.00

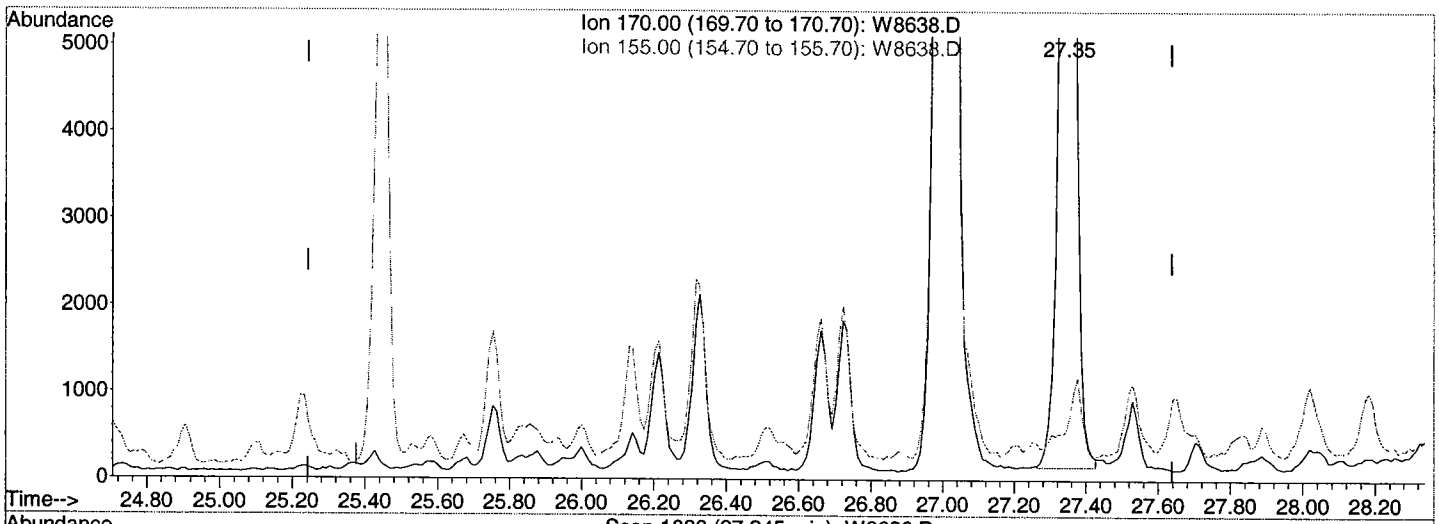
Quantitation Report (Qedit)

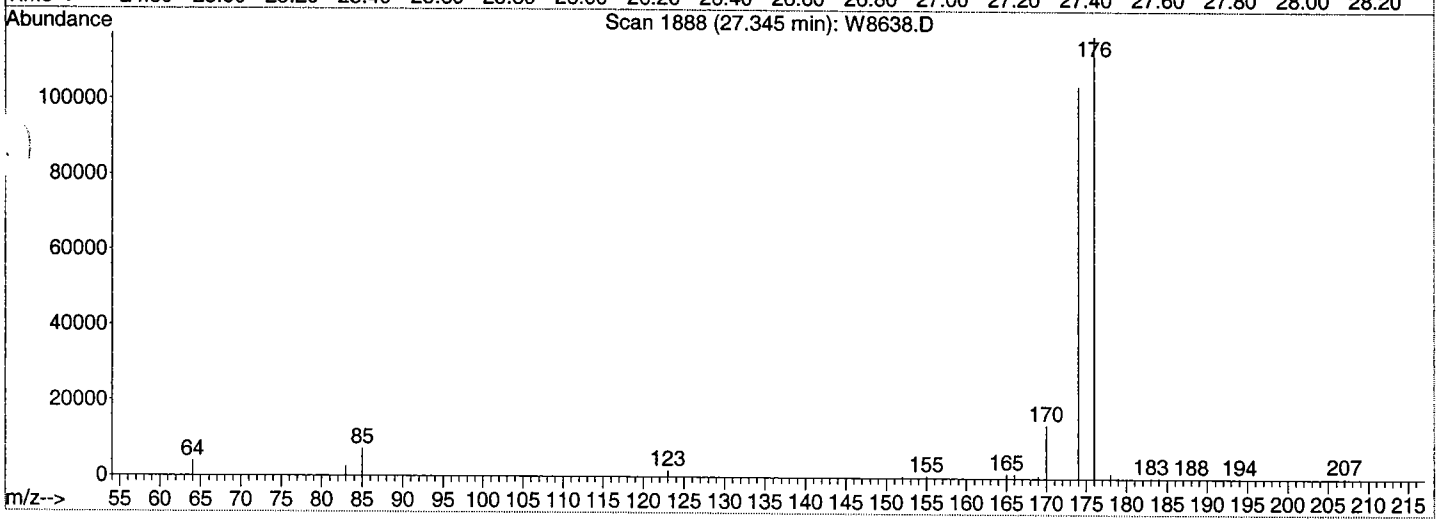
400

Data File : H:\E\DATA\SE0041\W8638.D
Acq On : 20 Apr 2004 10:43 pm
Sample : S1432MS-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:13 2004

Vial: 9
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8638.D

(12) C3-Naphthalenes (J2)

27.35min (+1.970) 62.82ng/µl m

response 38160

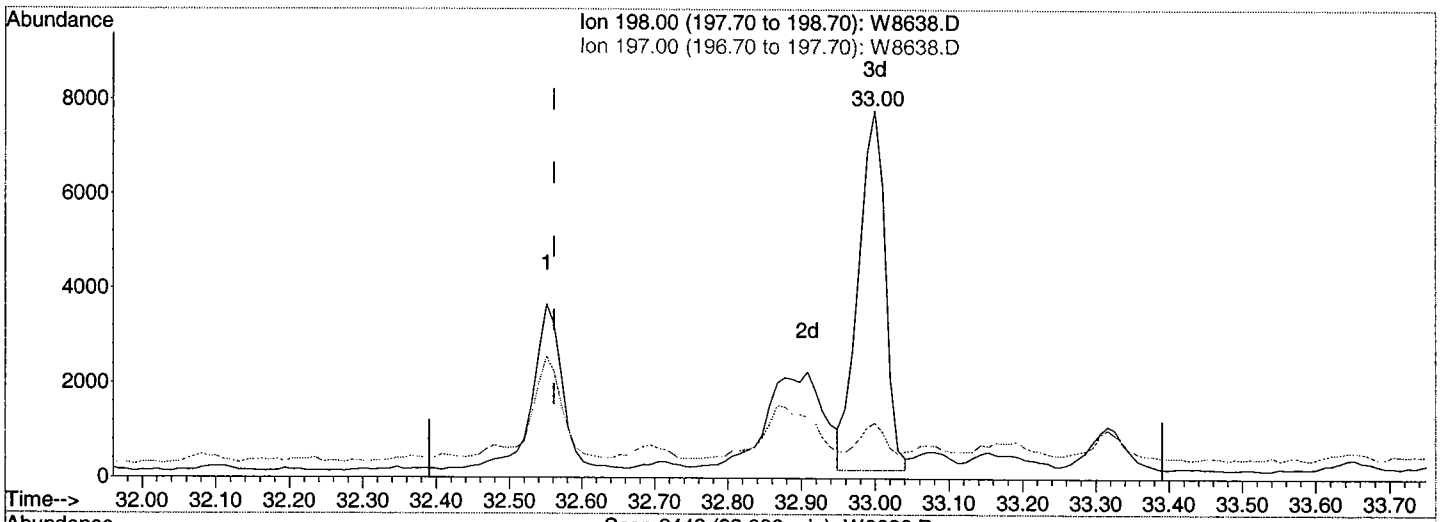
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	4.13
0.00	0.00	0.00
0.00	0.00	0.00

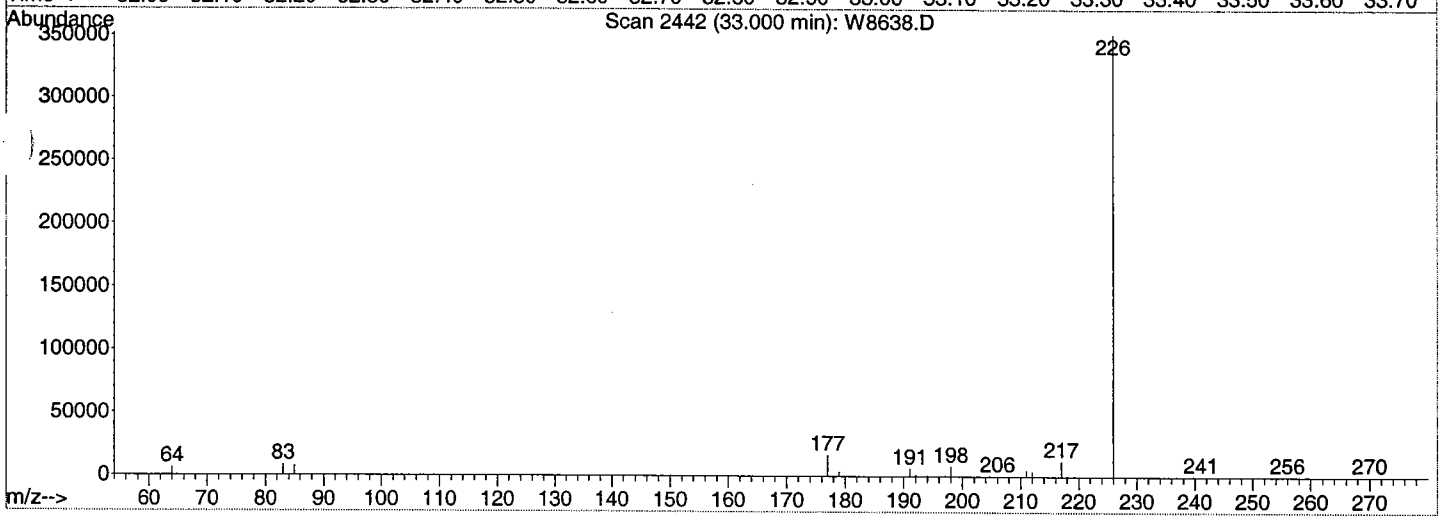
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8638.D
Acq On : 20 Apr 2004 10:43 pm
Sample : S1432MS-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:11 2004

Vial: 9
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8638.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 35.41ng/µl m

response 19127

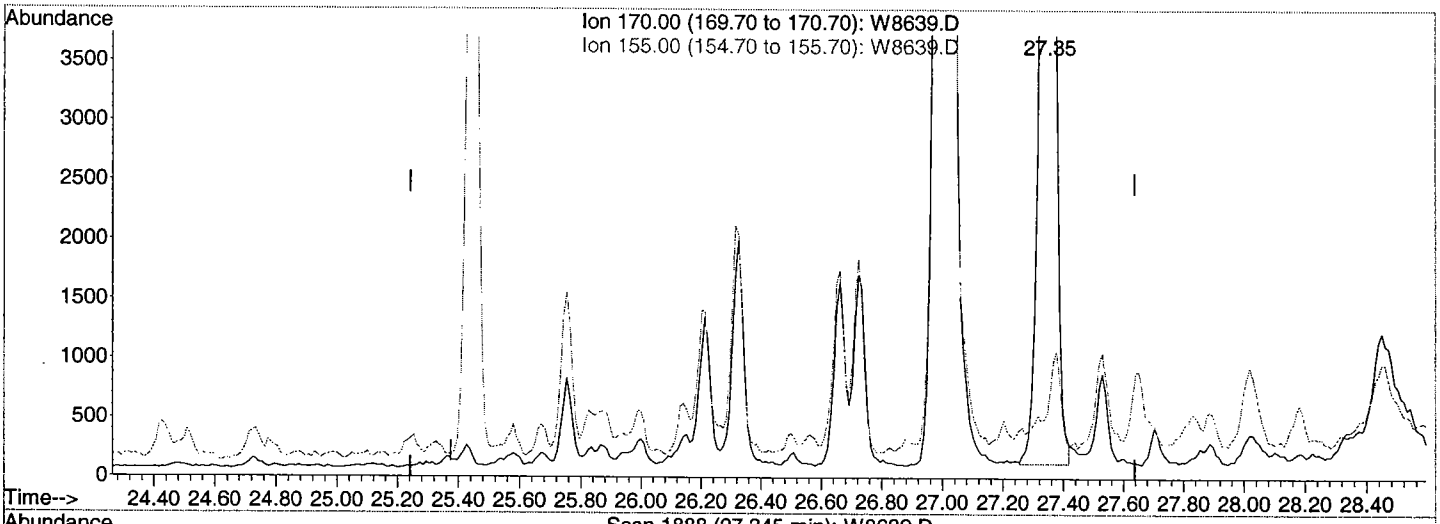
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	15.09#
0.00	0.00	0.00
0.00	0.00	0.00

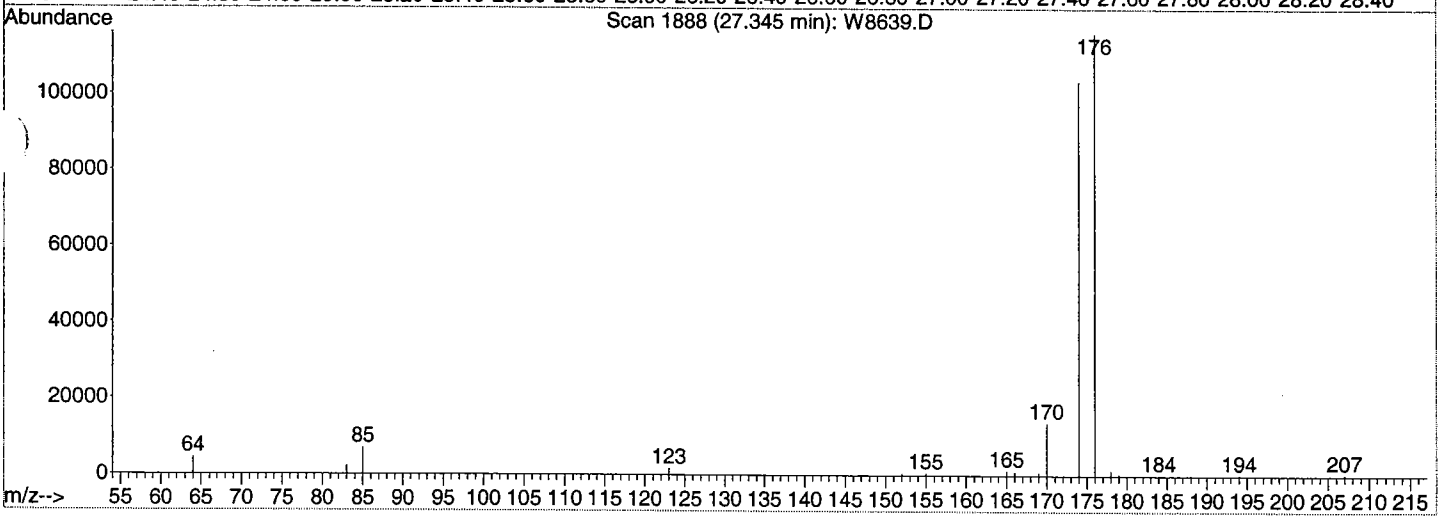
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8639.D
Acq On : 21 Apr 2004 12:08 am
Sample : S1432MSD-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:13 2004

Vial: 10
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8639.D

(12) C3-Naphthalenes (J2)

27.35min (+1.970) 63.00ng/µl m

response 37694

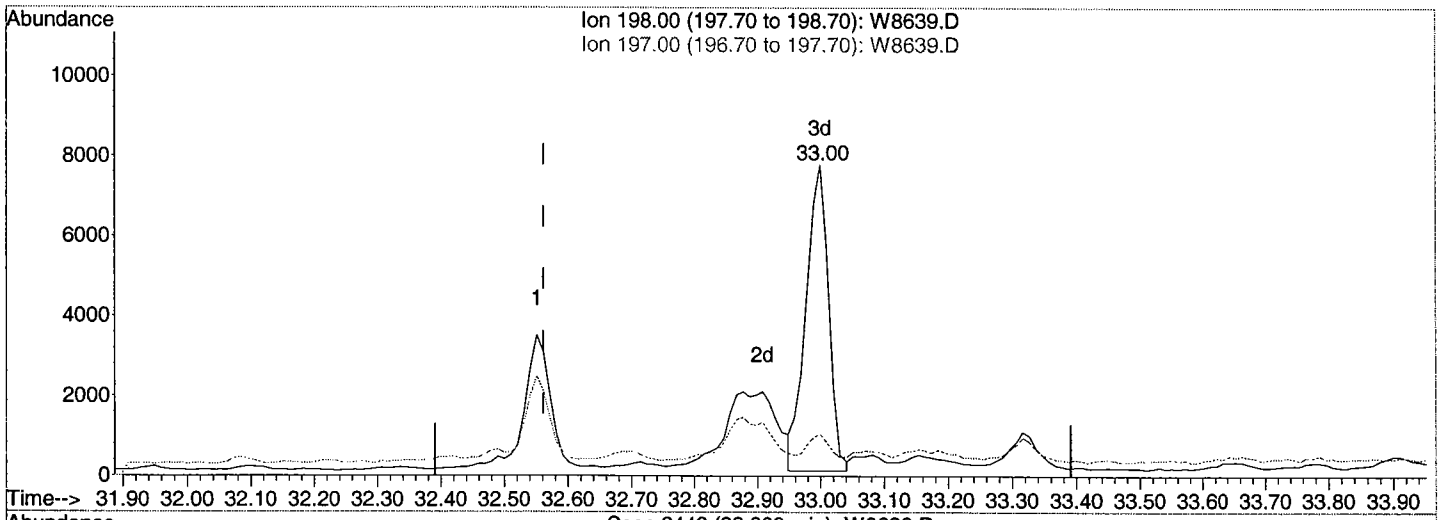
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	3.98
0.00	0.00	0.00
0.00	0.00	0.00

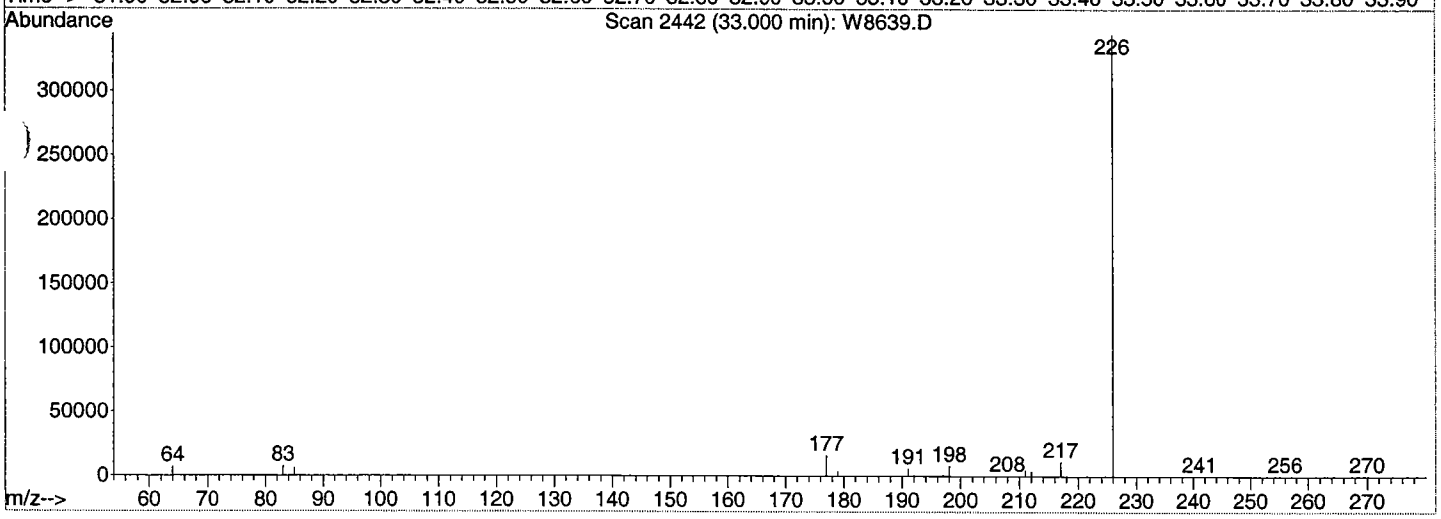
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8639.D
Acq On : 21 Apr 2004 12:08 am
Sample : S1432MSD-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:12 2004

Vial: 10
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8639.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 35.47ng/µl m

response 18874

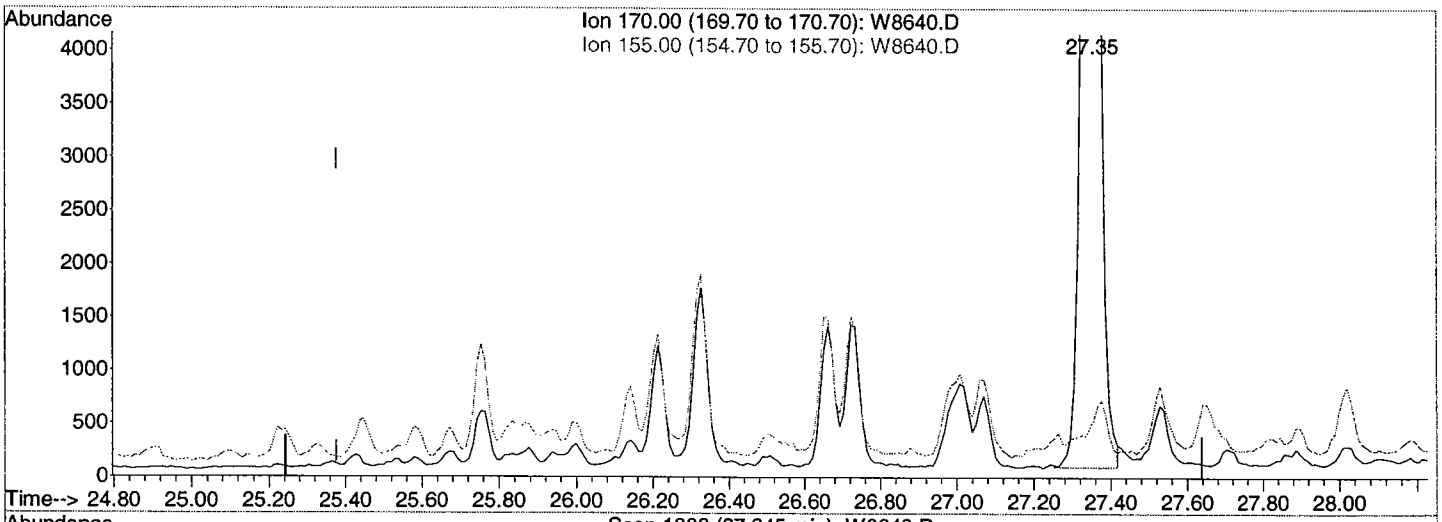
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	13.54#
0.00	0.00	0.00
0.00	0.00	0.00

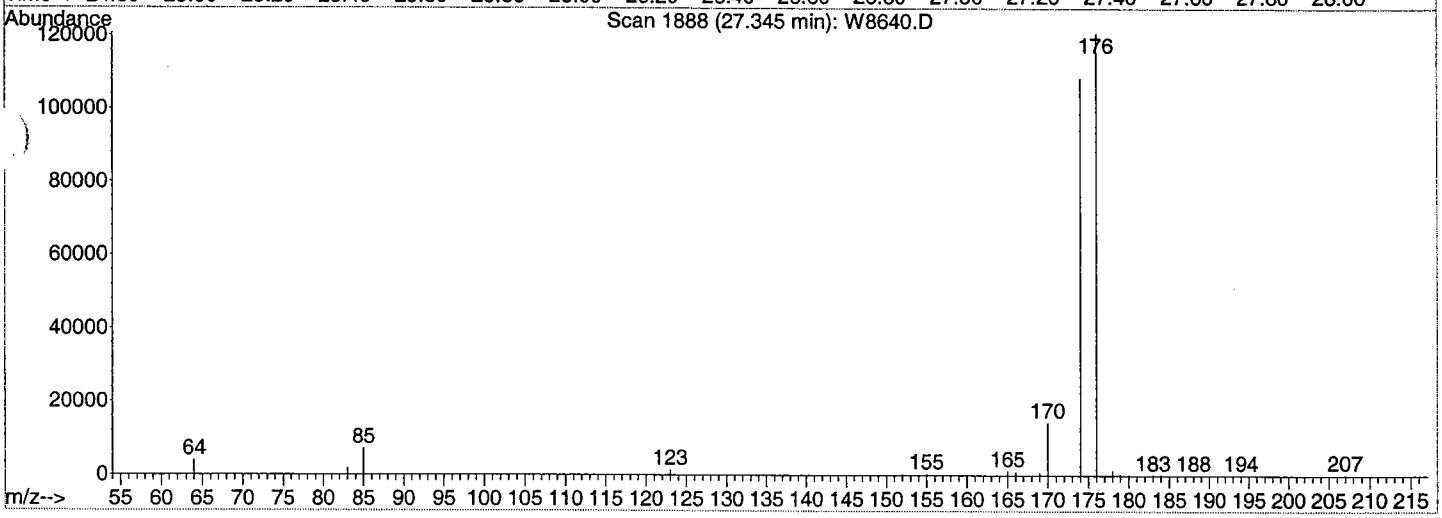
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8640.D
Acq On : 21 Apr 2004 1:34 am
Sample : S1435-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:12 2004

Vial: 11
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8640.D

(12) C3-Naphthalenes (J2)

27.35min (+1.970) 125.14ng/µl m

response 39106

Ion	Exp%	Act%
170.00	100	100
155.00	12.00	3.28
0.00	0.00	0.00
0.00	0.00	0.00

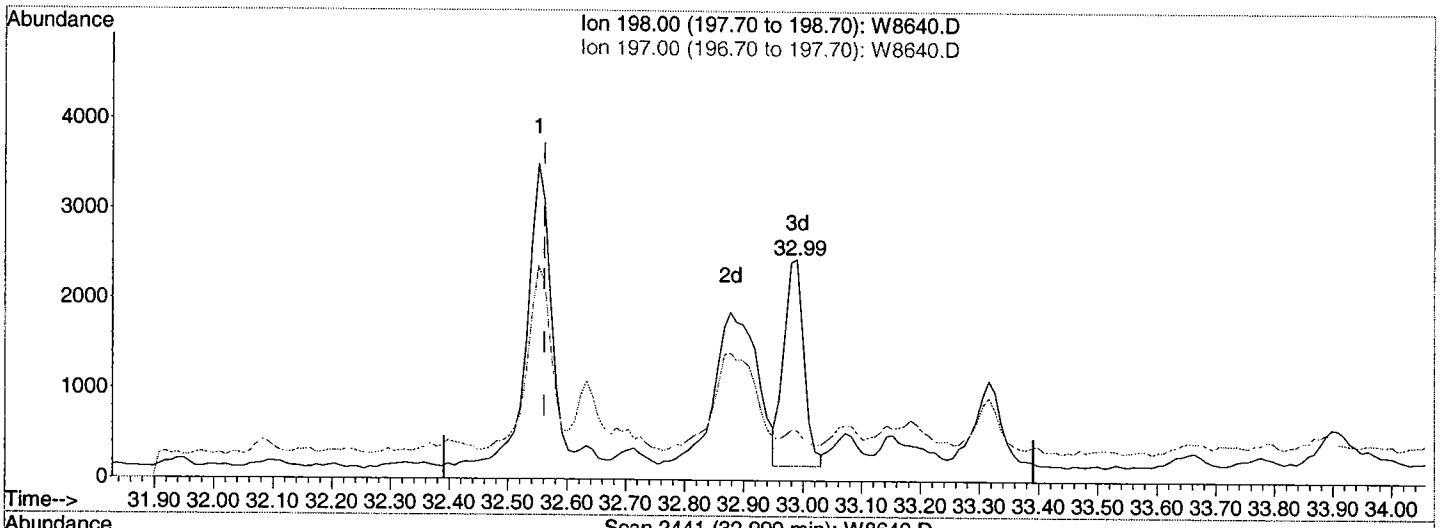
Quantitation Report (Qedit)

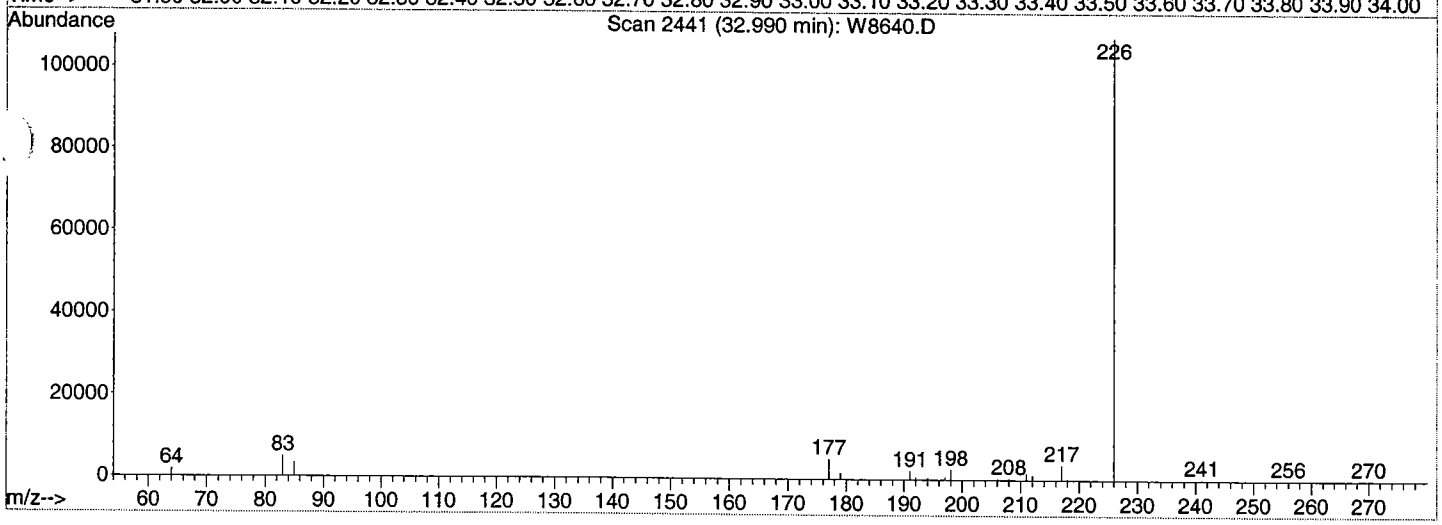
Data File : H:\E\DATA\SE0041\W8640.D
Acq On : 21 Apr 2004 1:34 am
Sample : S1435-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:12 2004

Vial: 11
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8640.D

(27) C1-Dibenzothiophenes (J2)

32.99min (+0.429) 19.69ng/µl m

response 5472

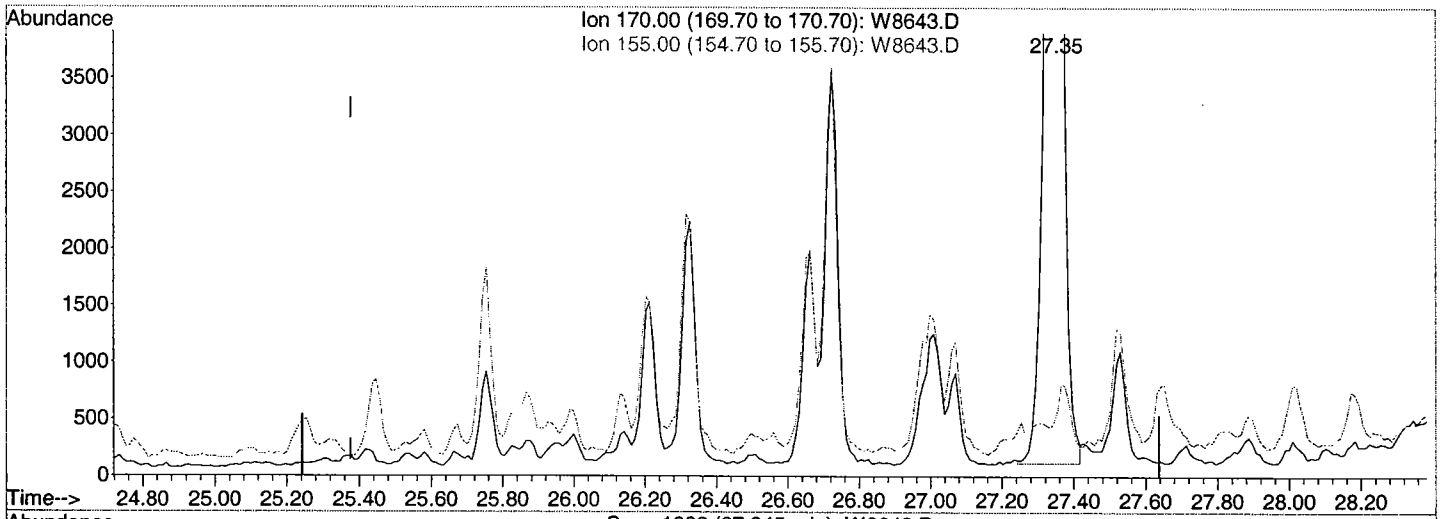
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	22.66#
0.00	0.00	0.00
0.00	0.00	0.00

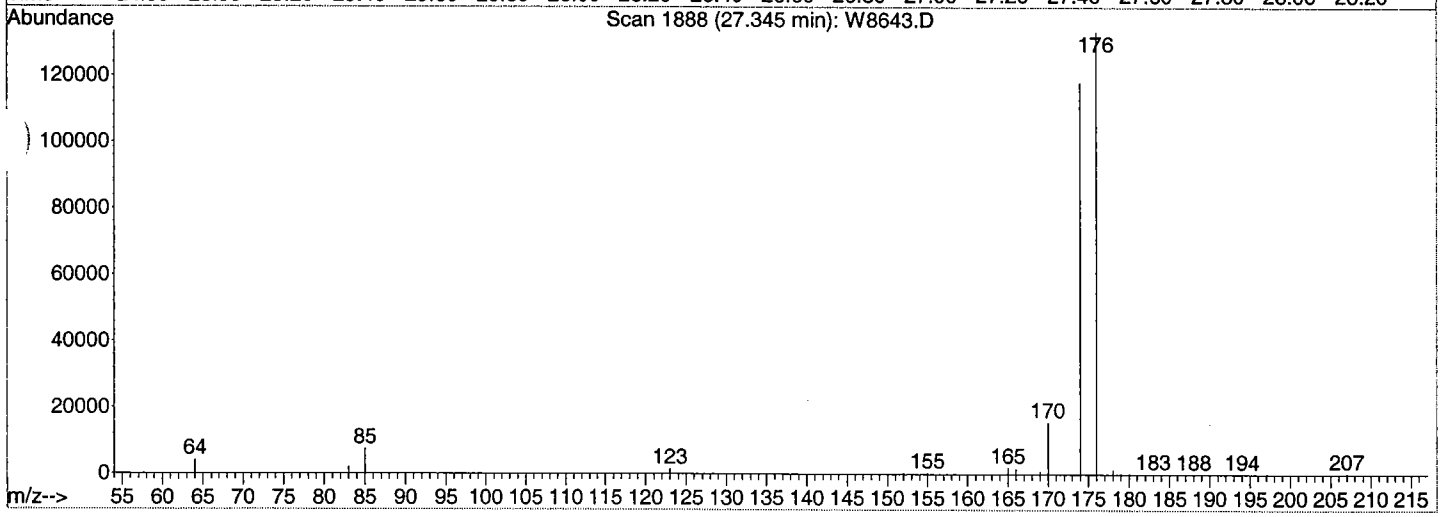
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8643.D
Acq On : 21 Apr 2004 5:50 am
Sample : S1438-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:15 2004

Vial: 14
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8643.D

(12) C3-Naphthalenes (J2)

27.35min (+1.970) 126.86ng/µl m

response 40126

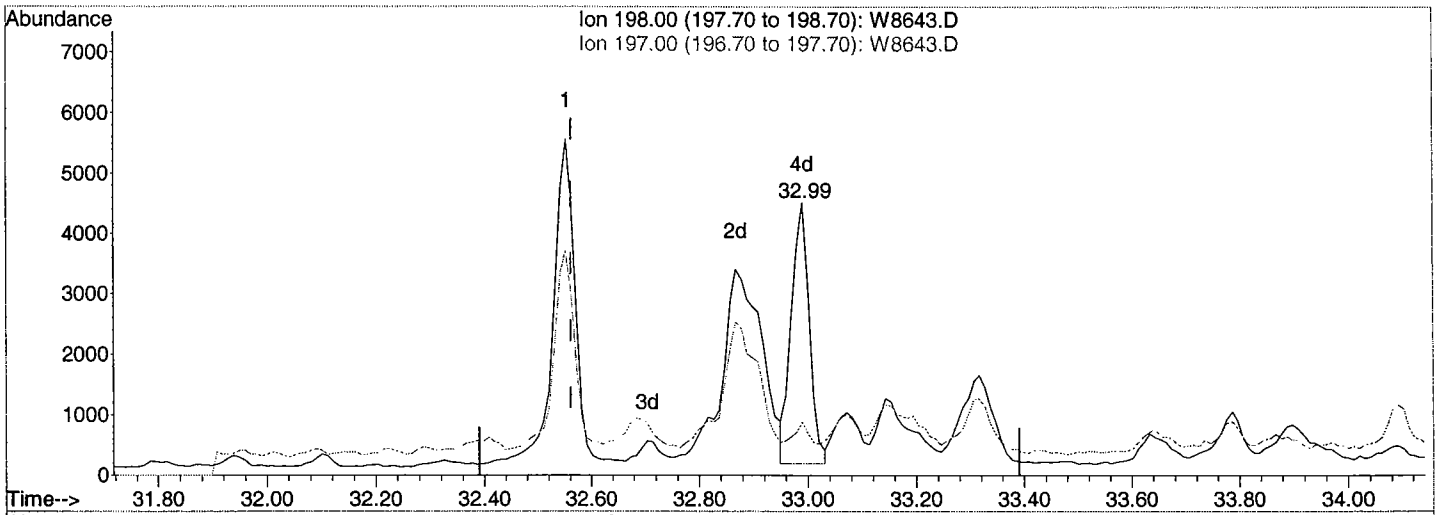
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	3.04
0.00	0.00	0.00
0.00	0.00	0.00

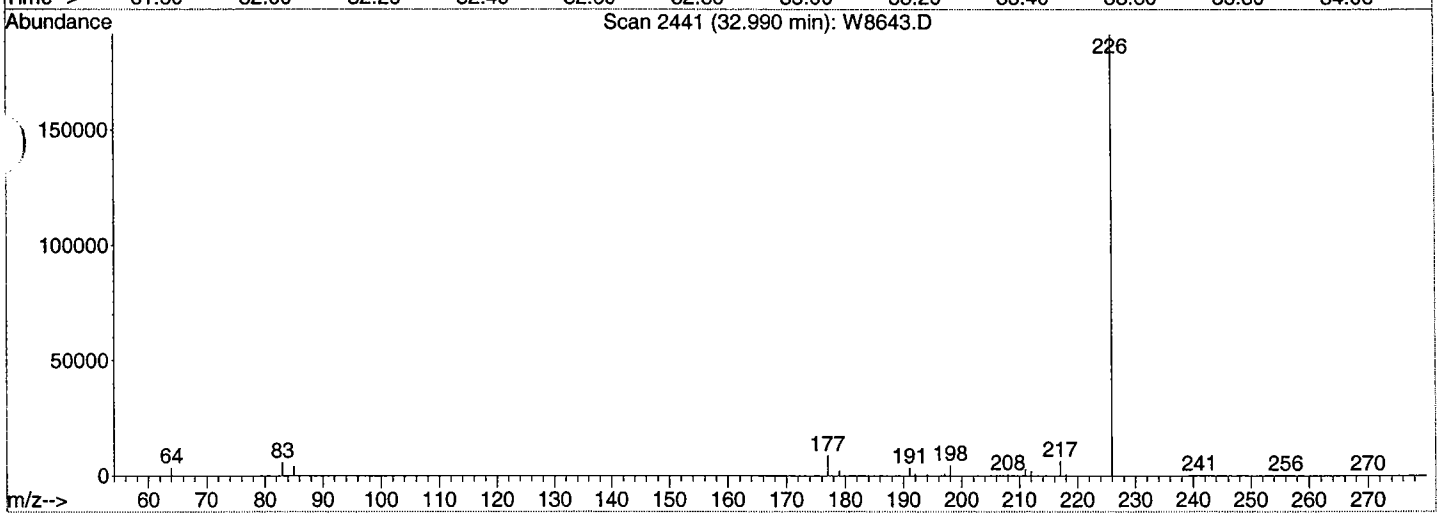
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8643.D
Acq On : 21 Apr 2004 5:50 am
Sample : S1438-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:15 2004

Vial: 14
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8643.D

(27) C1-Dibenzothiophenes (J2)

32.99min (+0.429) 35.17ng/µl m

response 9891

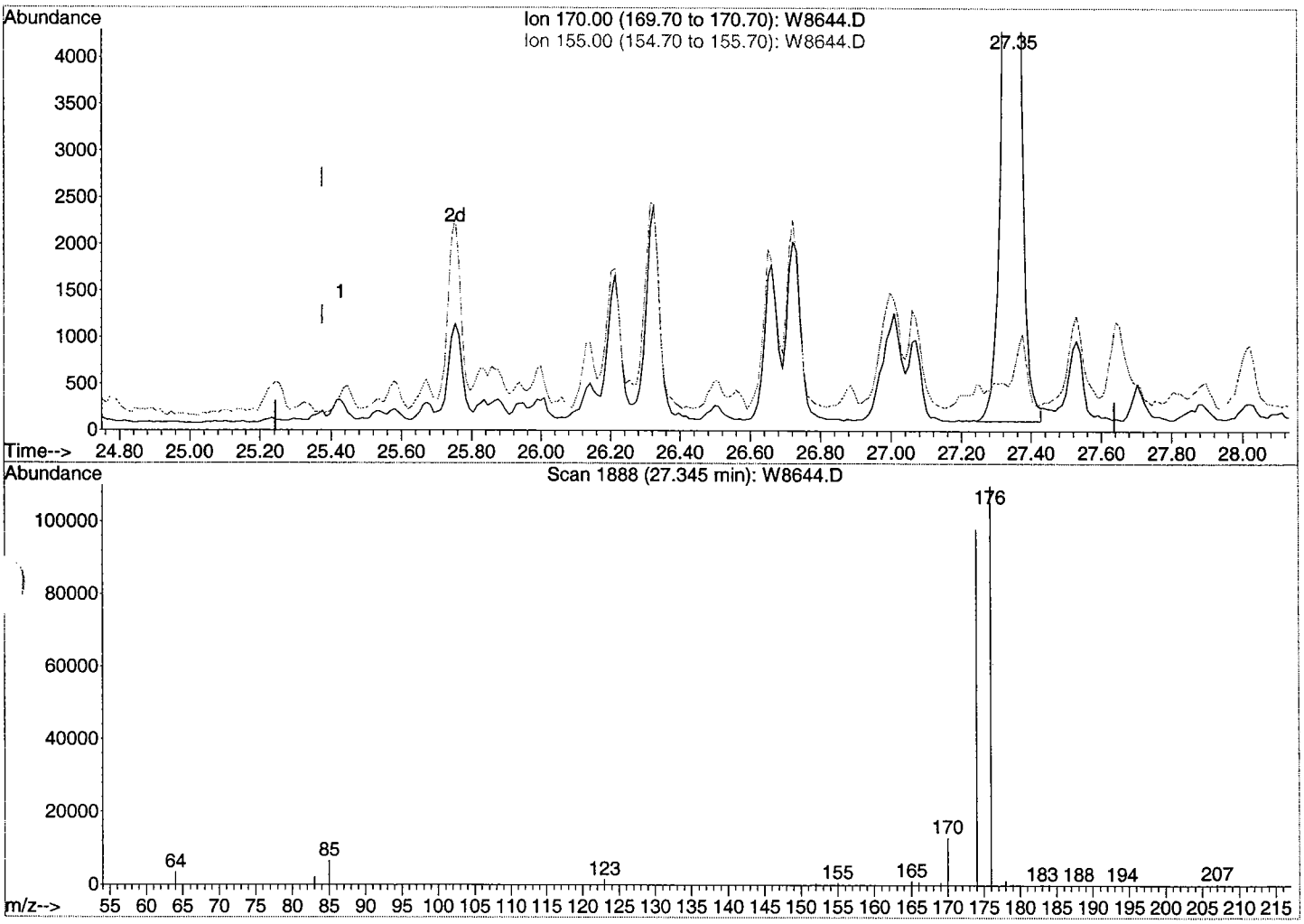
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	19.51#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8644.D
Acq On : 21 Apr 2004 7:16 am
Sample : S1445-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:16 2004

Vial: 15
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8644.D

(12) C3-Naphthalenes (J2)

27.35min (+1.970) 63.70ng/µl m

response 36792

Ion	Exp%	Act%
170.00	100	100
155.00	12.00	4.30
0.00	0.00	0.00
0.00	0.00	0.00

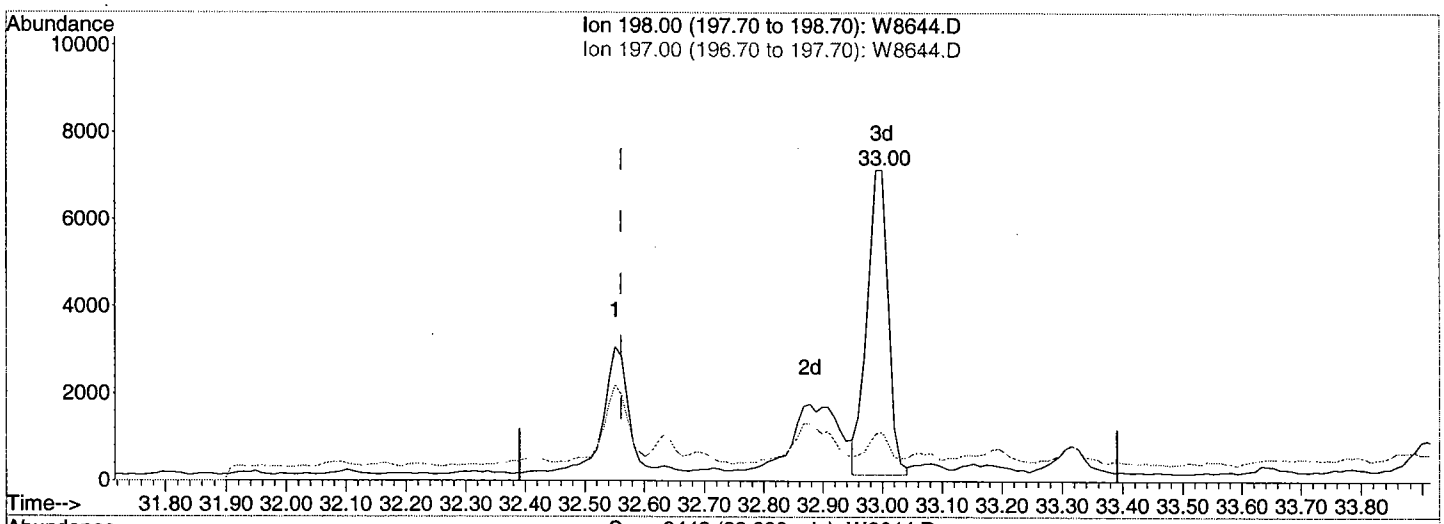
Quantitation Report (Qedit)

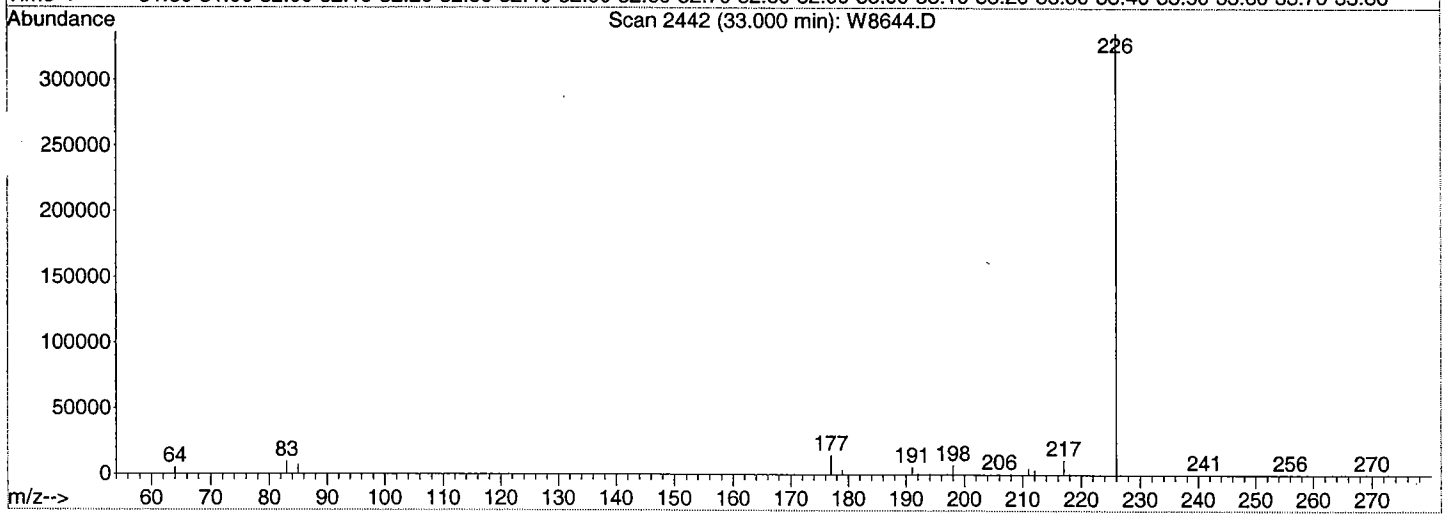
409
A OF B
JM
6/18/04

Data File : H:\E\DATA\SE0041\W8644.D
Acq On : 21 Apr 2004 7:16 am
Sample : S1445-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:16 2004

Vial: 15
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8644.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 33.83ng/µl m

response 17374

Ion	Exp%	Act%
198.00	100	100
197.00	64.60	15.90#
0.00	0.00	0.00
0.00	0.00	0.00

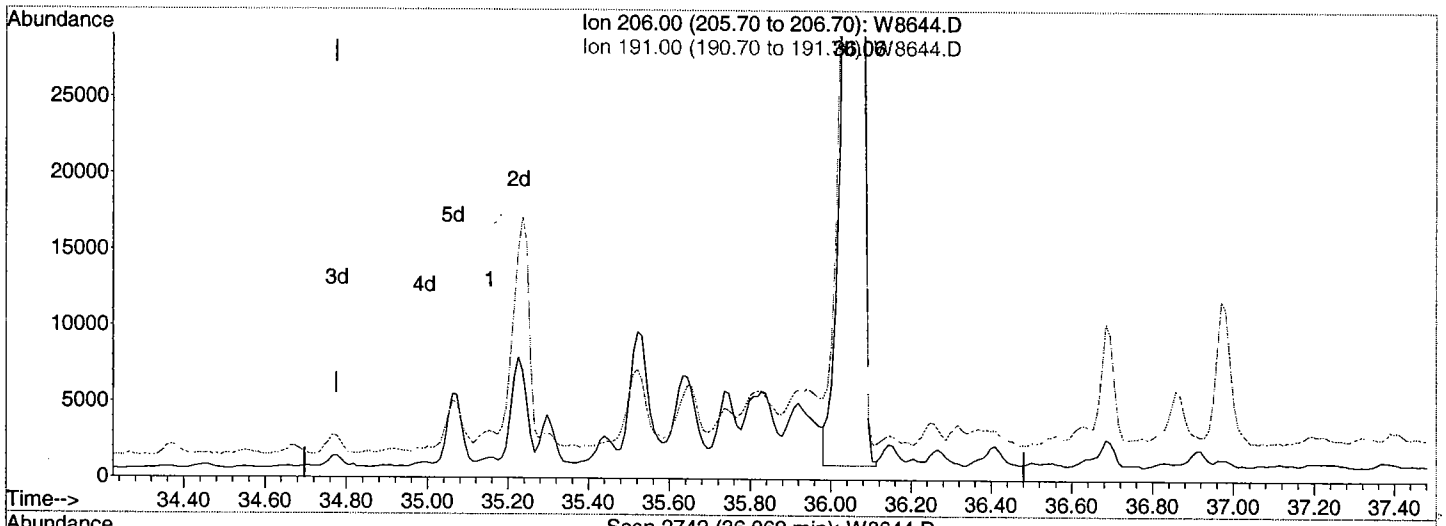
Quantitation Report (Qedit)

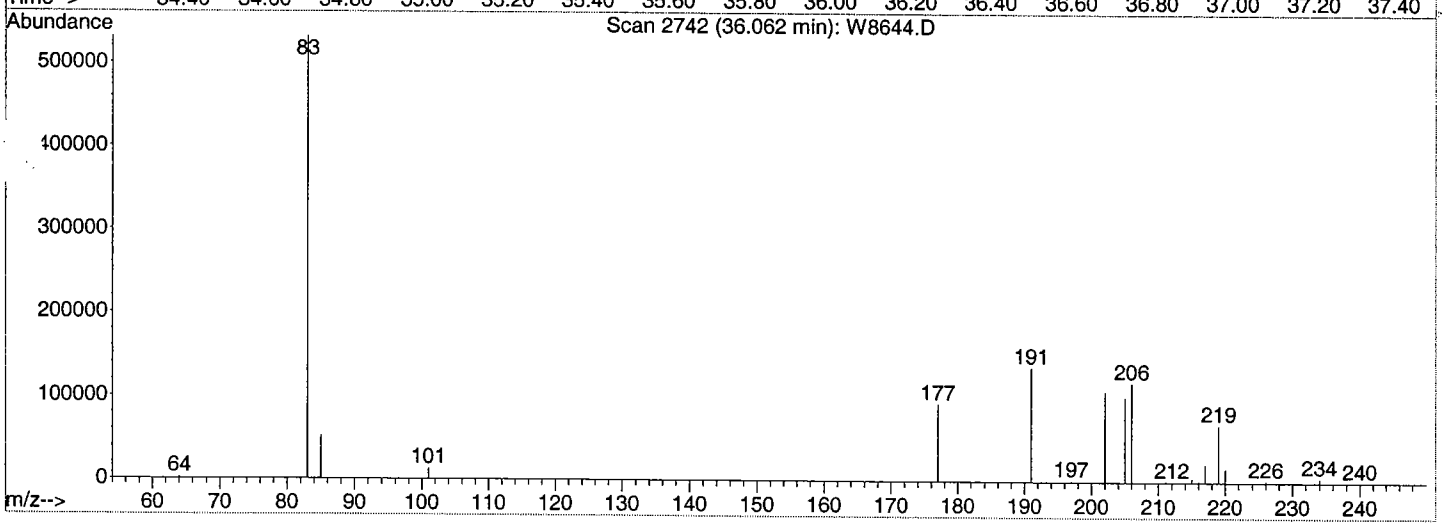
409
8 of 8
JR
6/18/04

Data File : H:\E\DATA\SE0041\W8644.D
Acq On : 21 Apr 2004 7:16 am
Sample : S1445-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Jun 11 10:02 2004

Vial: 15
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8644.D

(43) C2-Phenanthrenes/Anthracenes (J2)

36.06min (+1.286) 509.44ng/µl m

response 296407

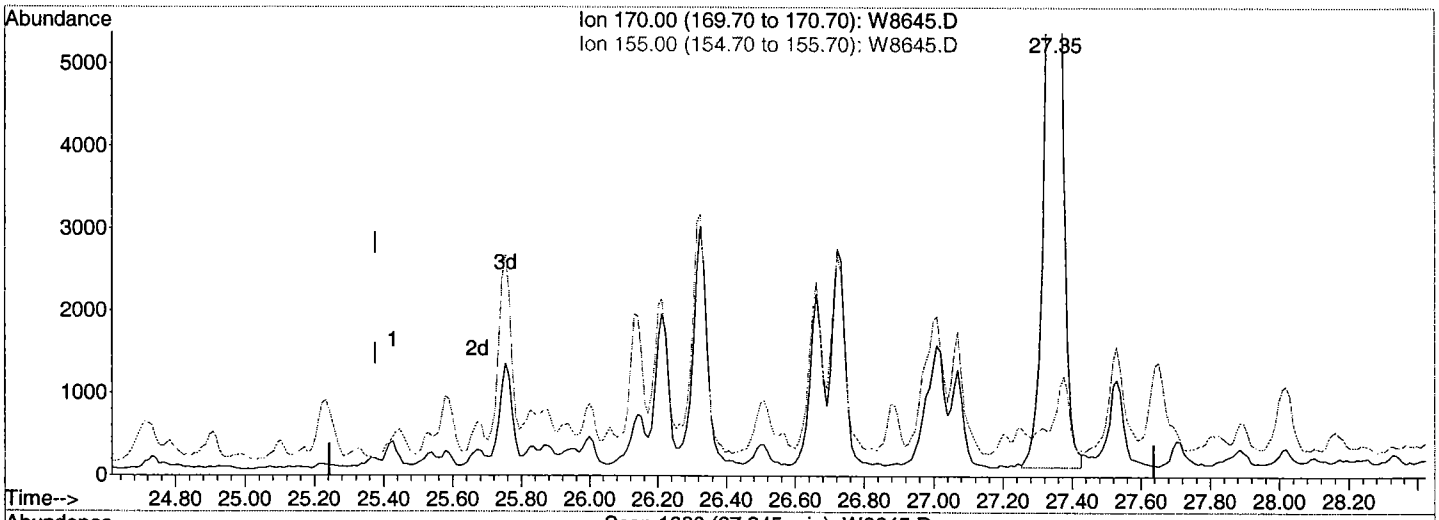
Ion	Exp%	Act%
206.00	100	100
191.00	181.10	115.13#
0.00	0.00	0.00
0.00	0.00	0.00

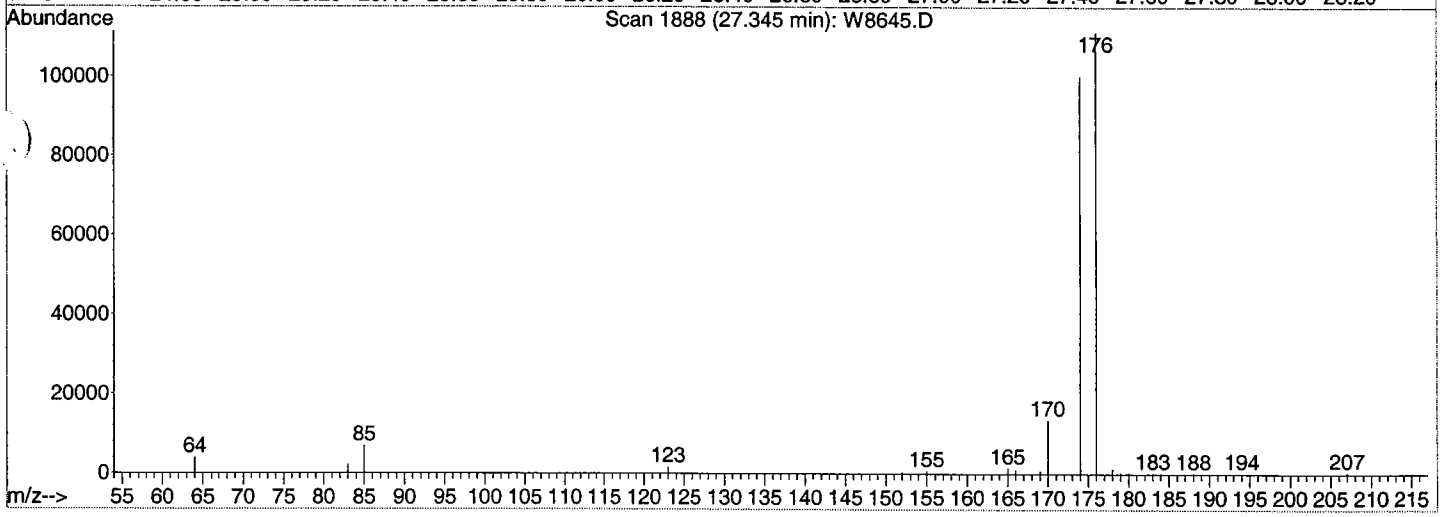
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8645.D
Acq On : 21 Apr 2004 8:42 am
Sample : S1447-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:17 2004

Vial: 16
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8645.D

(12) C3-Naphthalenes (J2)

27.35min (+1.970) 63.91ng/µl m

response 37453

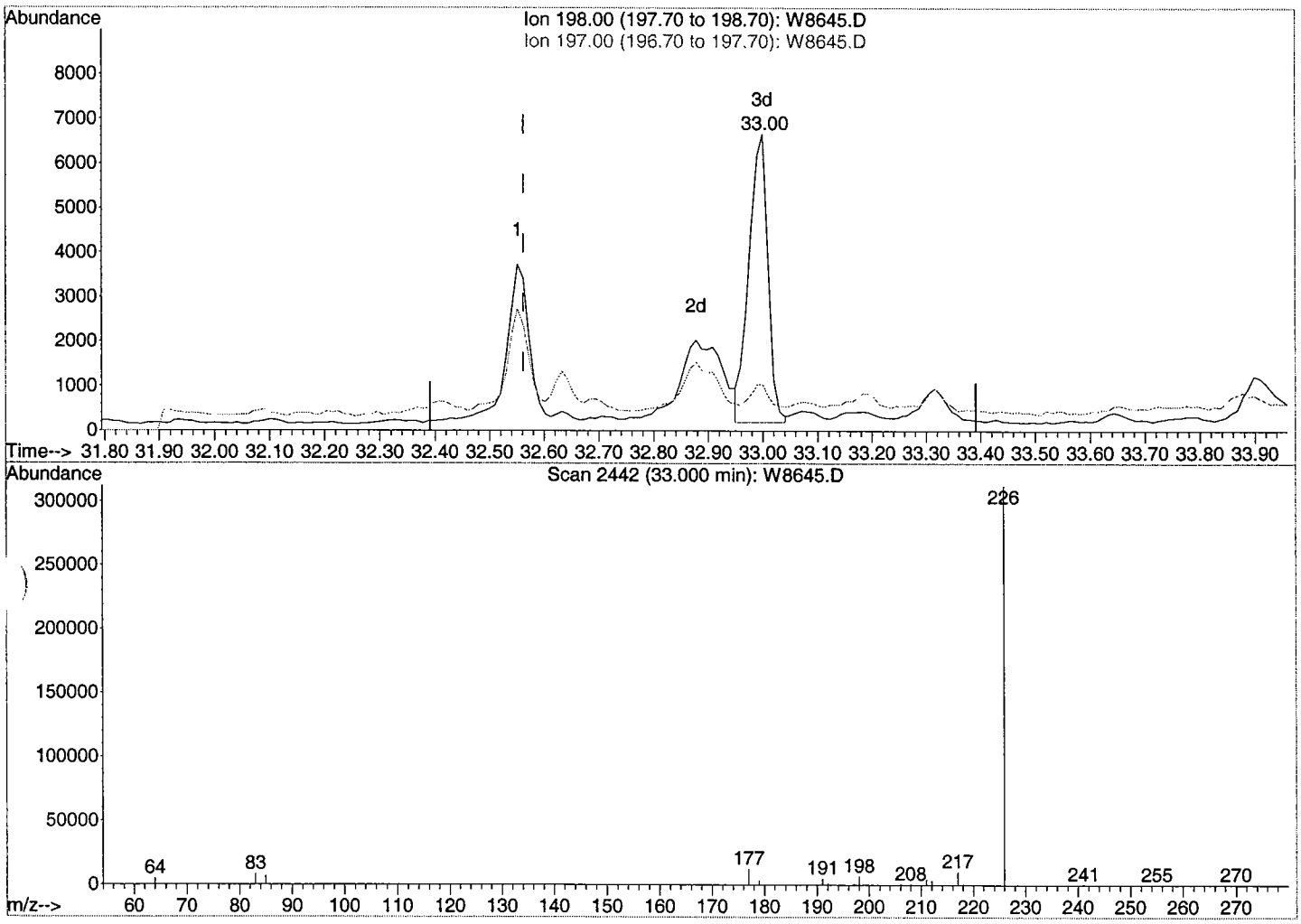
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	4.94
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8645.D
Acq On : 21 Apr 2004 8:42 am
Sample : S1447-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:17 2004

Vial: 16
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8645.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 29.91ng/µl m

response 15587

Ion	Exp%	Act%
198.00	100	100
197.00	64.60	15.71#
0.00	0.00	0.00
0.00	0.00	0.00

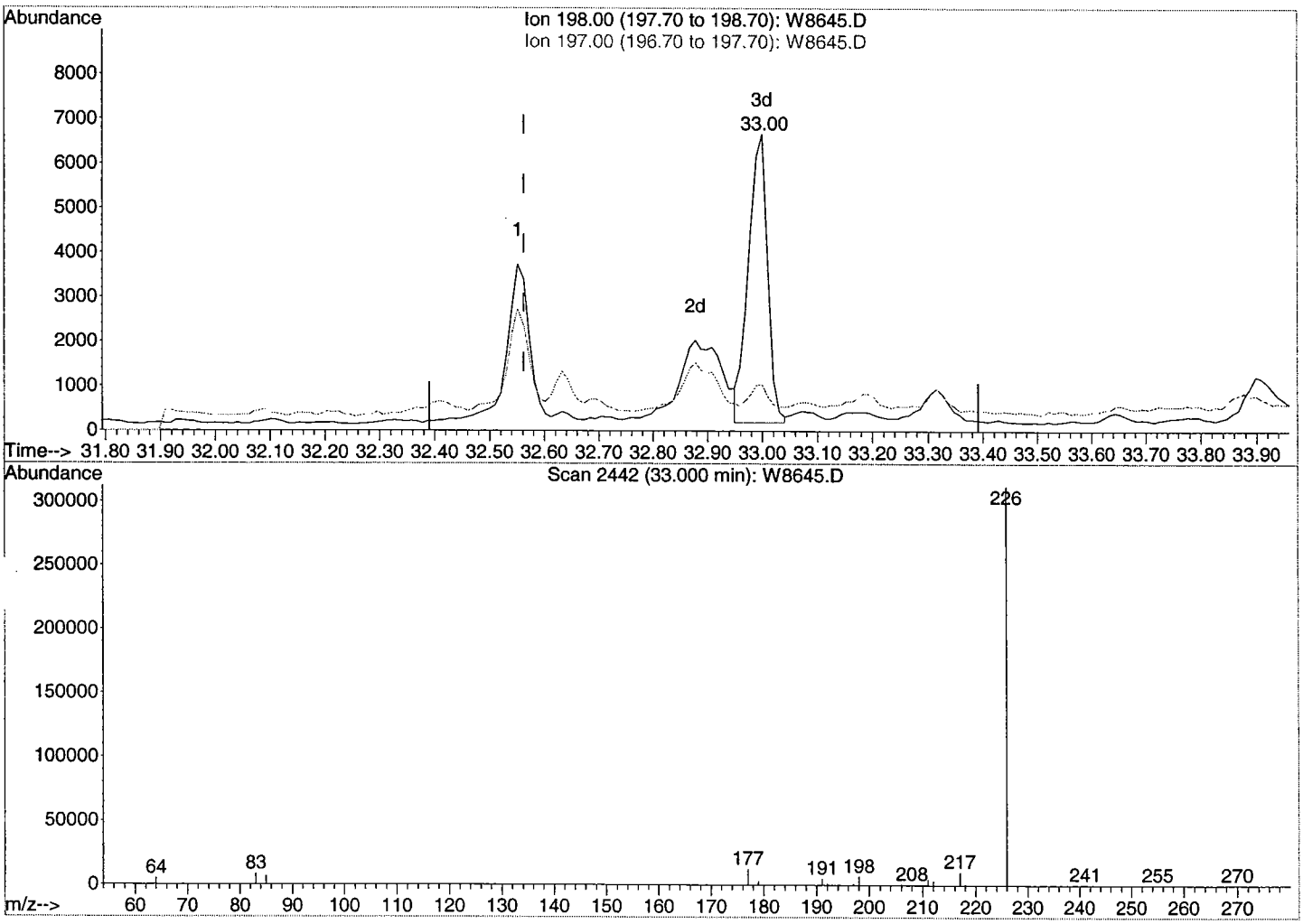
Quantitation Report (Qedit)

411
A of B
6/18/04

Data File : H:\E\DATA\SE0041\W8645.D
Acq On : 21 Apr 2004 8:42 am
Sample : S1447-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:17 2004

Vial: 16
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8645.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 29.91ng/µl m

response 15587

Ion	Exp%	Act%
198.00	100	100
197.00	64.60	15.71#
0.00	0.00	0.00
0.00	0.00	0.00

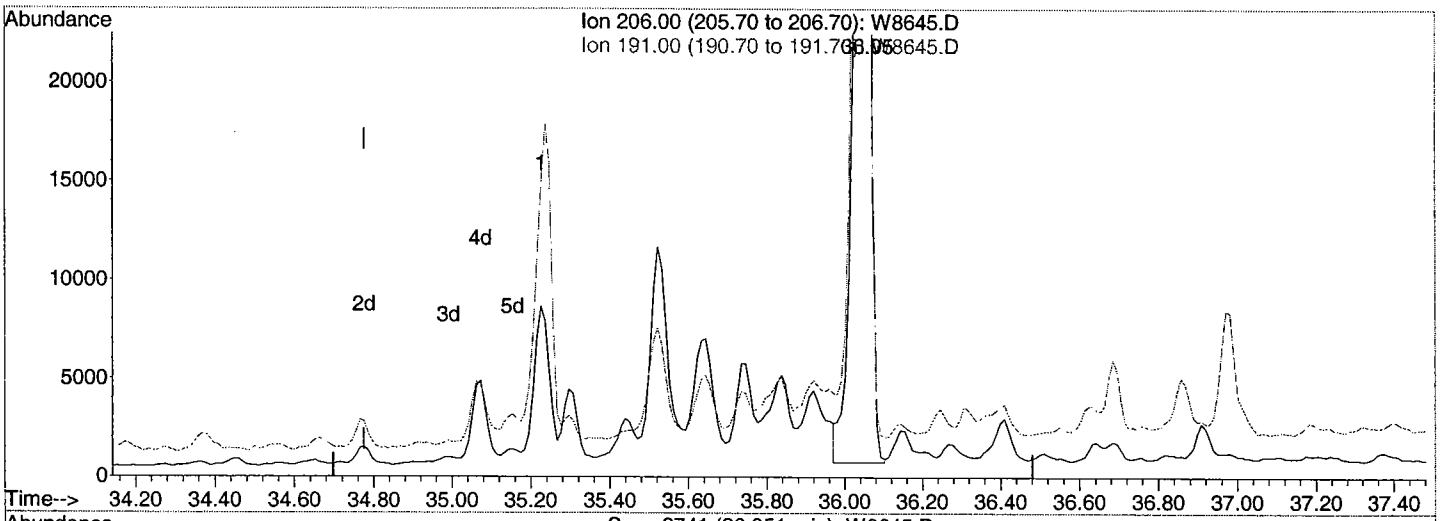
Quantitation Report (Qedit)

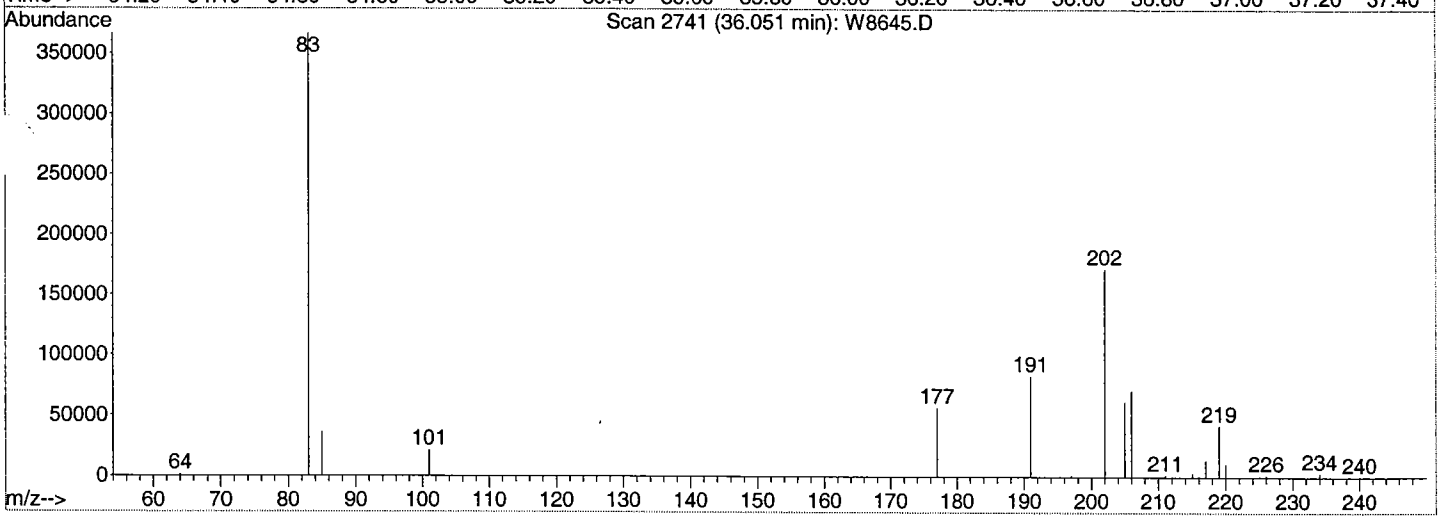
411
B of B
JAR
6/18/04

Data File : H:\E\DATA\SE0041\W8645.D
Acq On : 21 Apr 2004 8:42 am
Sample : S1447-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Jun 11 10:02 2004

Vial: 16
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8645.D

(43) C2-Phenanthrenes/Anthracenes (J2)

36.05min (+1.276) 281.58ng/µl m

response 166216

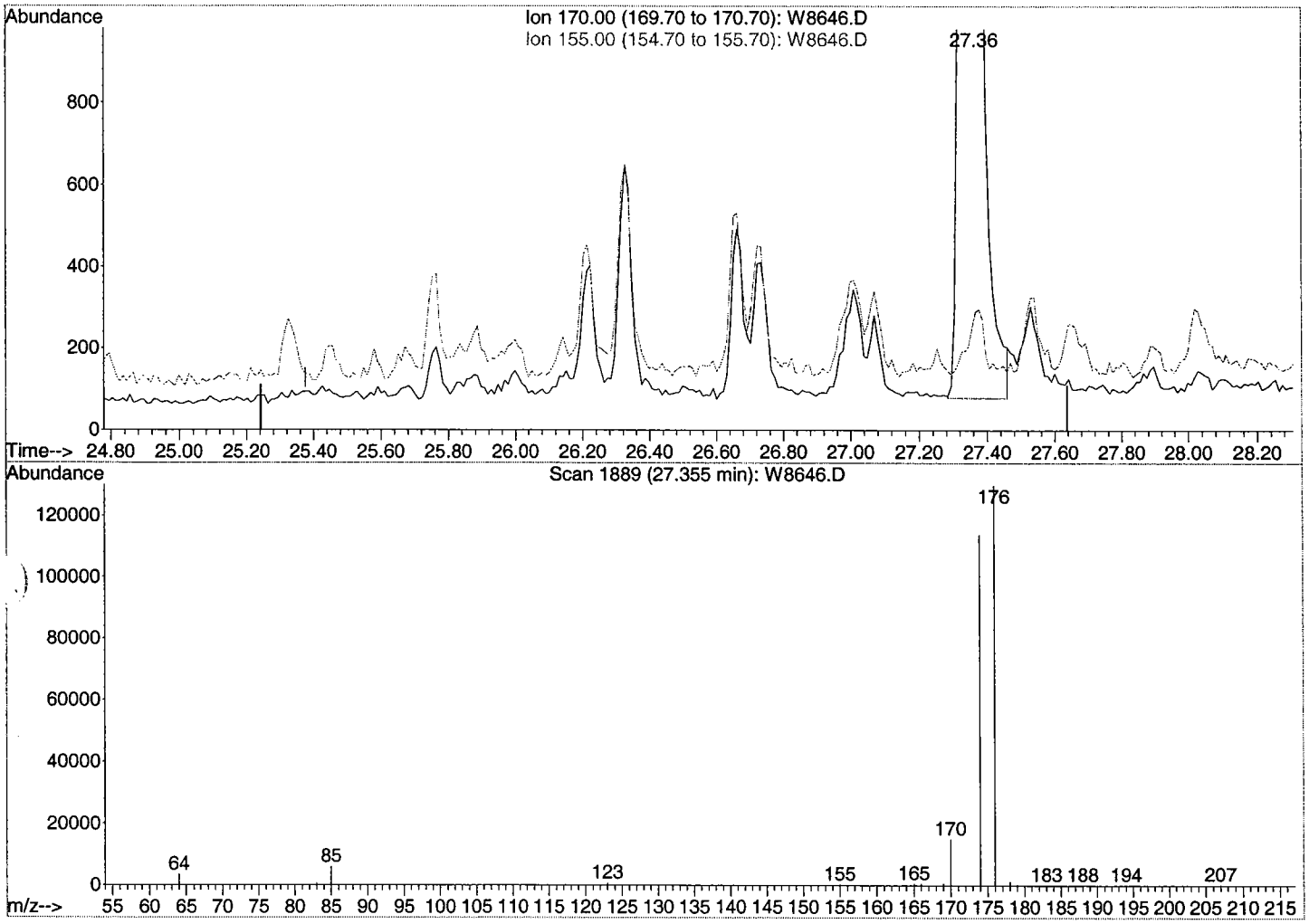
Ion	Exp%	Act%
206.00	100	100
191.00	181.10	116.32#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8646.D
Acq On : 21 Apr 2004 10:08 am
Sample : S1457-P(9)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:18 2004

Vial: 17
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8646.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 124.20ng/µl m

response 38737

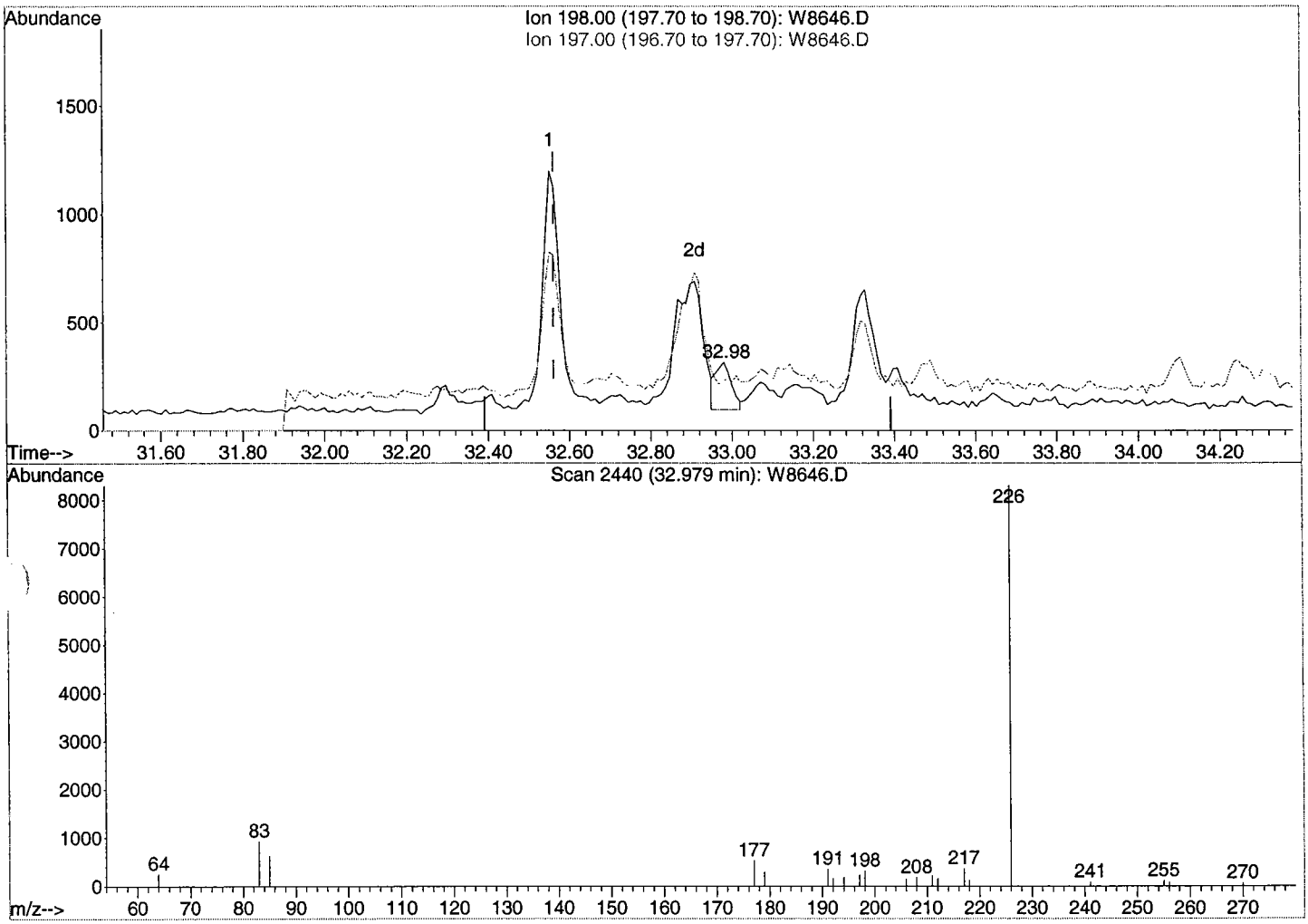
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	1.66
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8646.D
Acq On : 21 Apr 2004 10:08 am
Sample : S1457-P(9)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:18 2004

Vial: 17
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8646.D

(27) C1-Dibenzothiophenes (J2)

32.98min (+0.418) 2.14ng/µl m

response 594

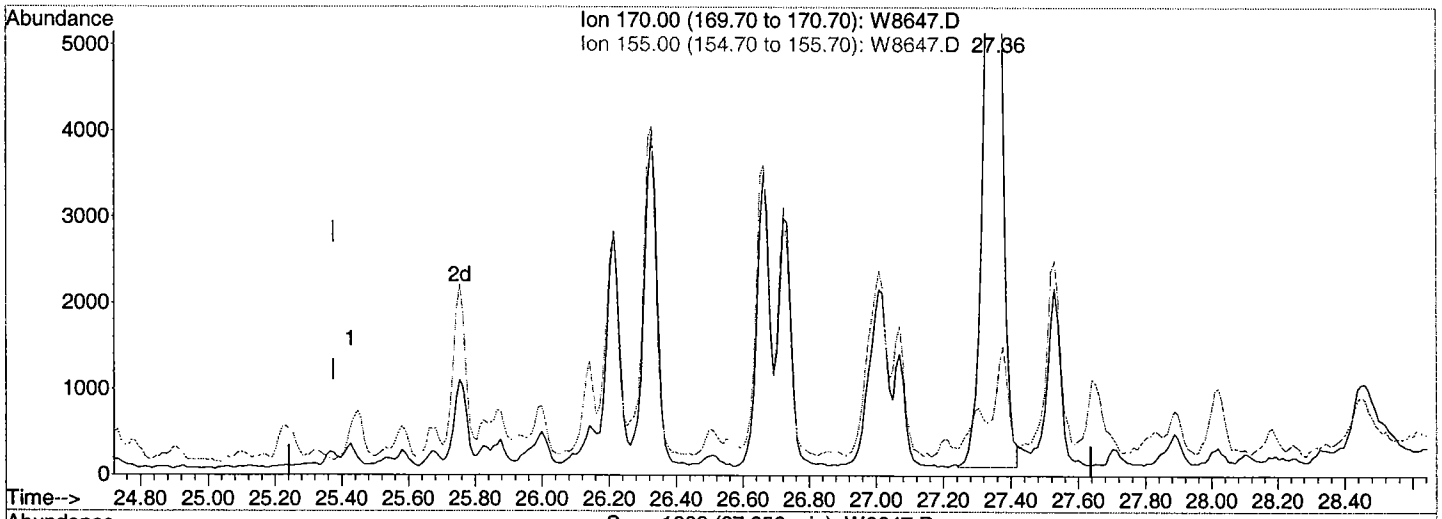
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	73.73
0.00	0.00	0.00
0.00	0.00	0.00

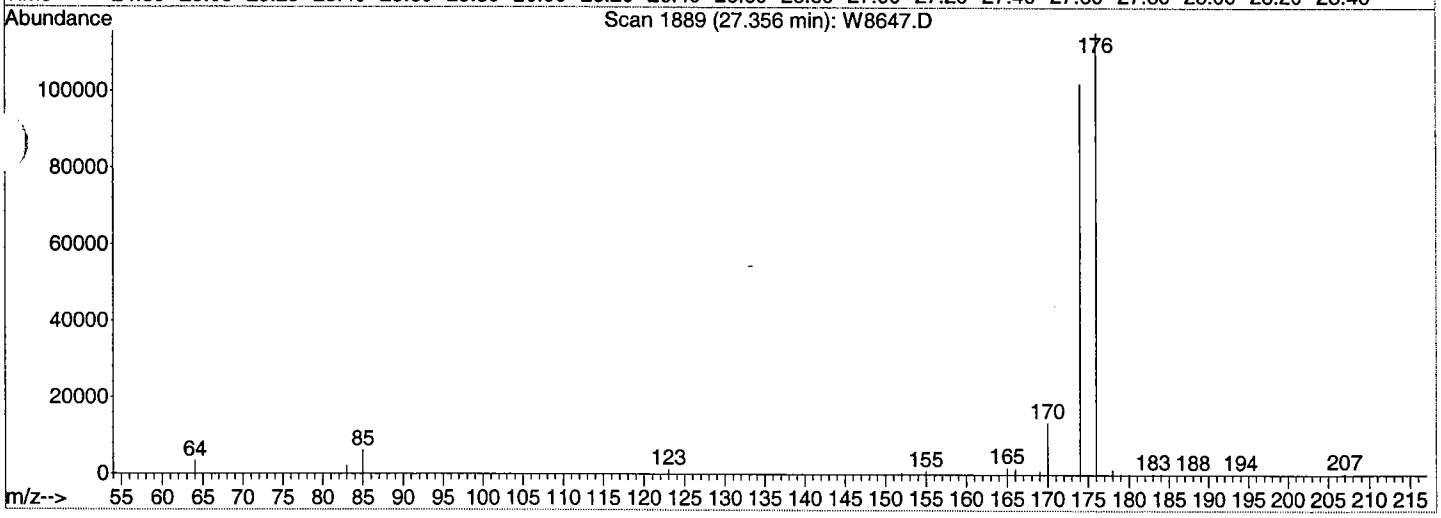
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8647.D
Acq On : 21 Apr 2004 11:33 am
Sample : S1466-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:19 2004

Vial: 18
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8647.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 66.19ng/µl m

response 38901

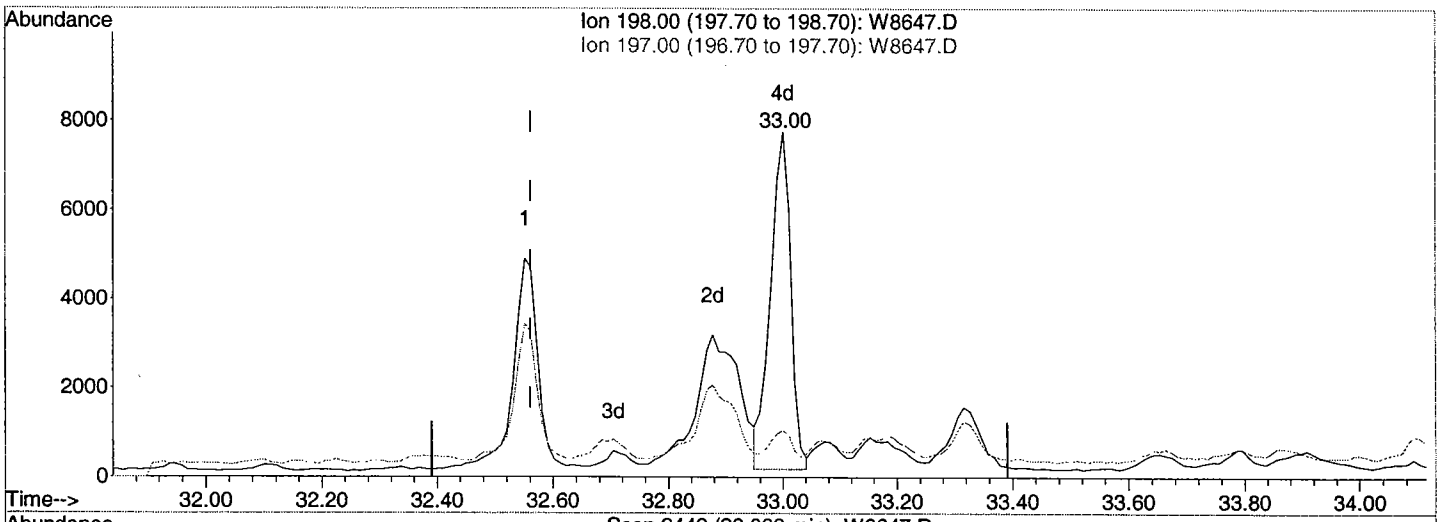
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	6.71
0.00	0.00	0.00
0.00	0.00	0.00

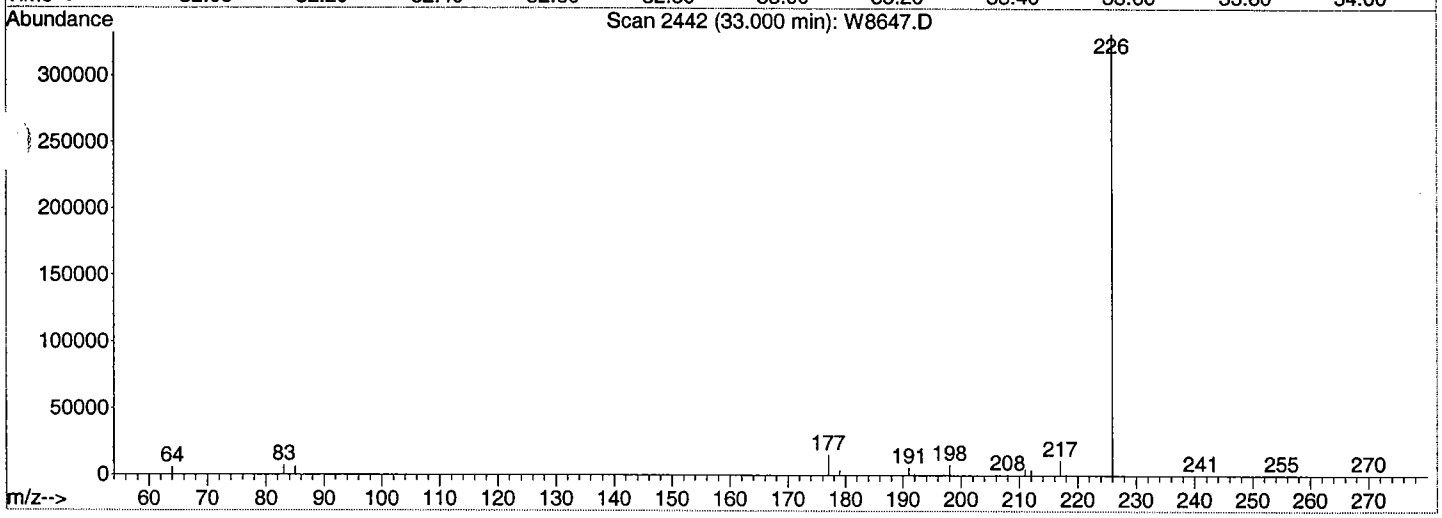
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8647.D
Acq On : 21 Apr 2004 11:33 am
Sample : S1466-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:19 2004

Vial: 18
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8647.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 35.60ng/µl m

response 18607

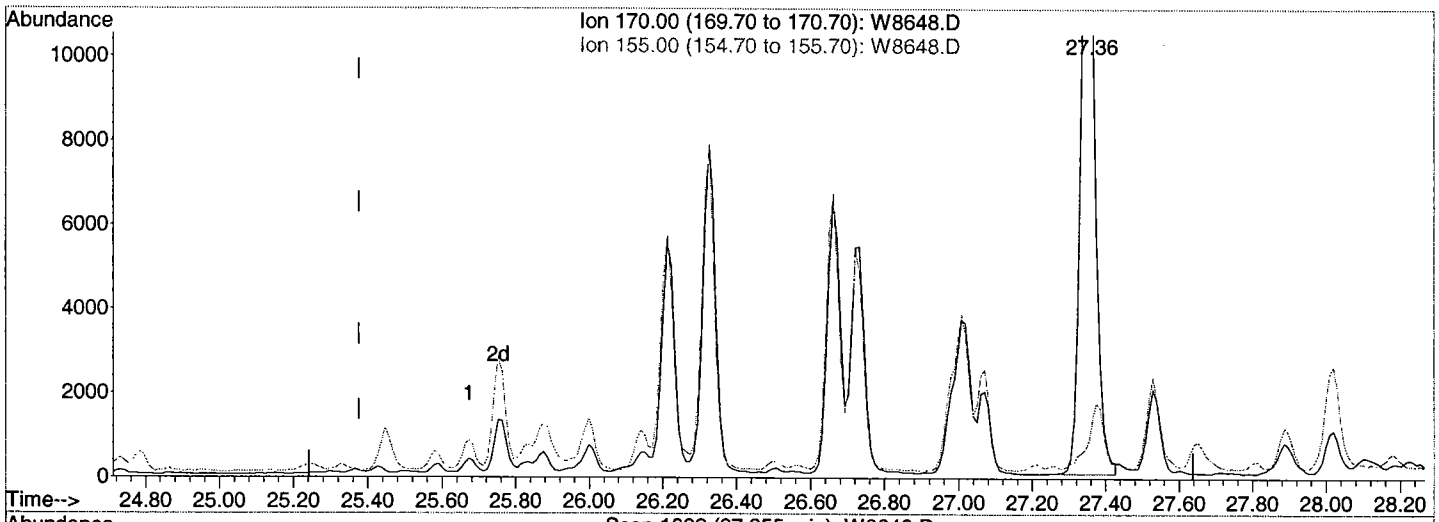
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	13.51#
0.00	0.00	0.00
0.00	0.00	0.00

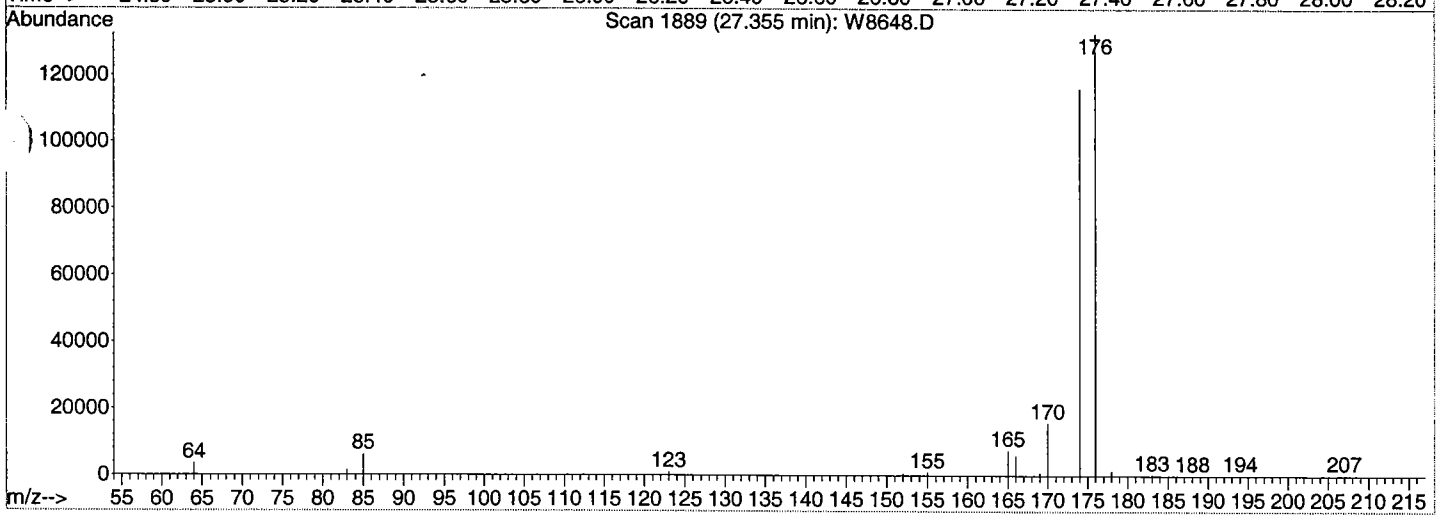
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8648.D
Acq On : 21 Apr 2004 12:59 pm
Sample : S1468-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:19 2004

Vial: 19
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8648.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 133.73ng/µl m

response 40869

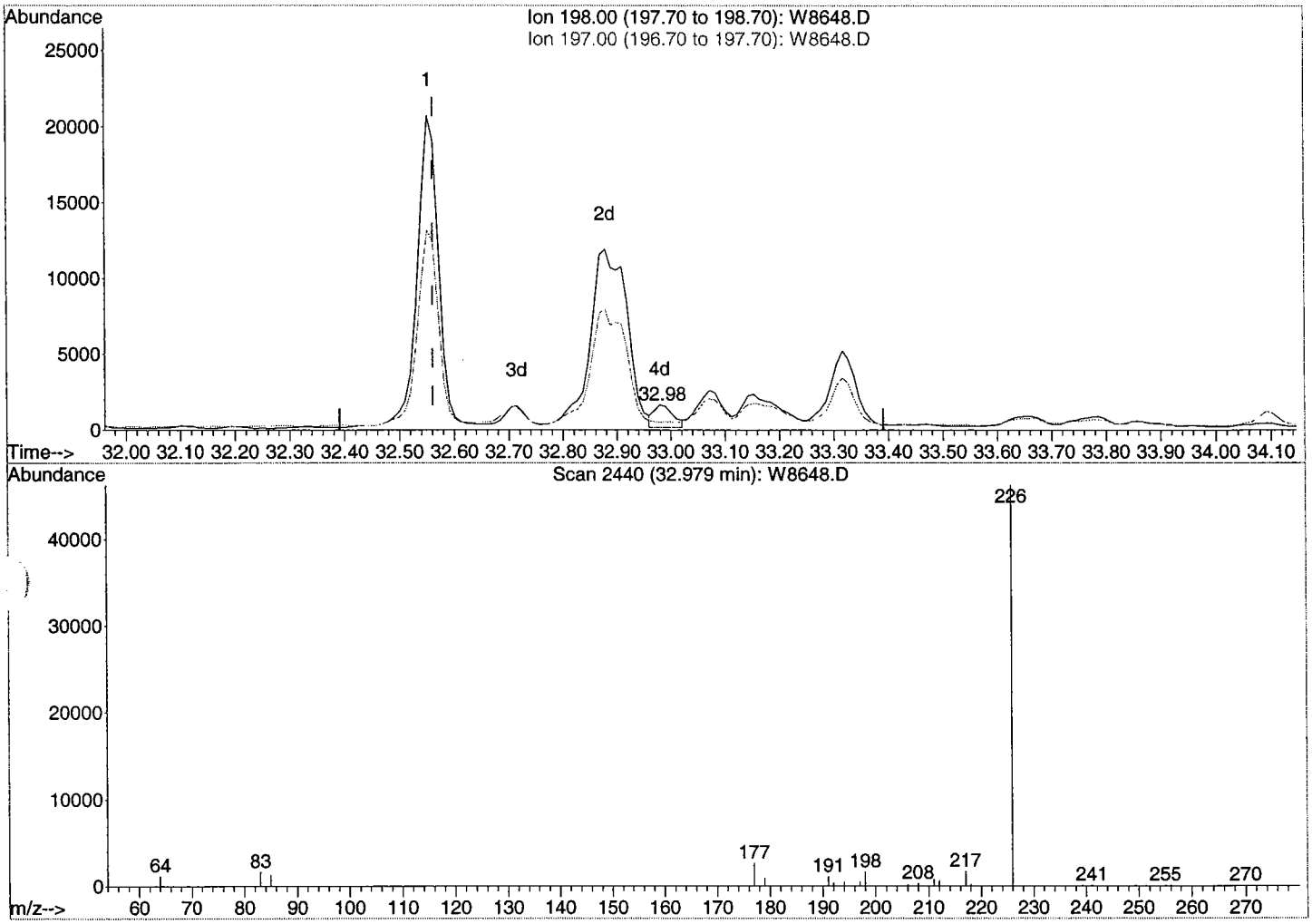
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	5.79
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8648.D
Acq On : 21 Apr 2004 12:59 pm
Sample : S1468-P(7)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 27 14:20 2004

Vial: 19
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8648.D

(27) C1-Dibenzothiophenes (J2)

32.98min (+0.418) 13.51ng/µl m

response 3670

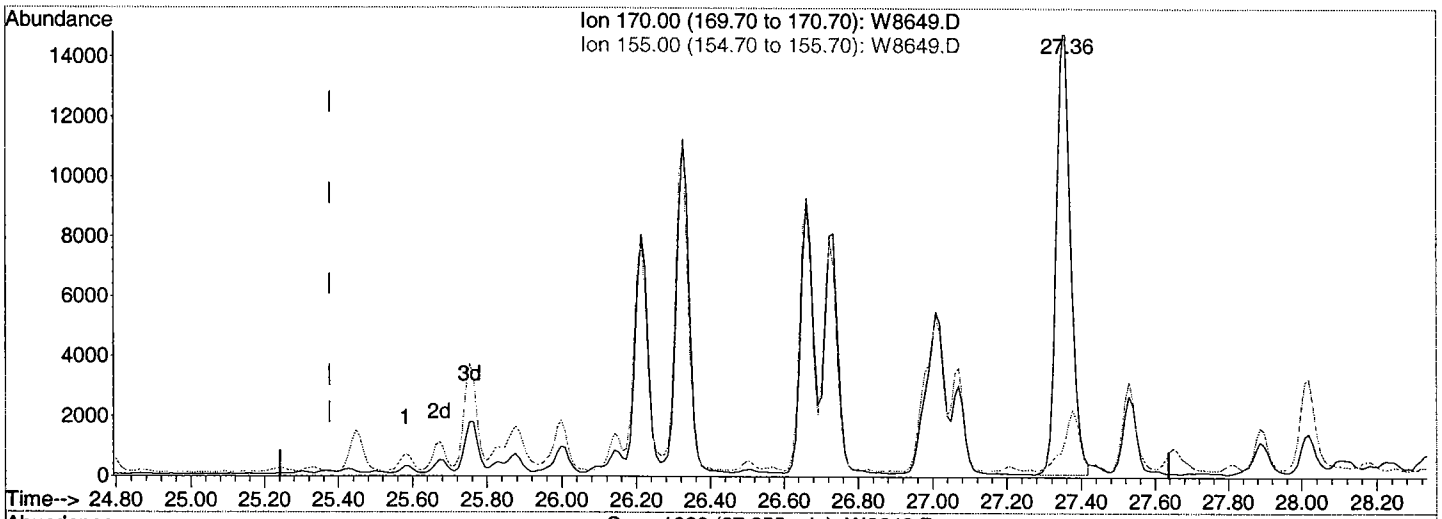
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	30.98#
0.00	0.00	0.00
0.00	0.00	0.00

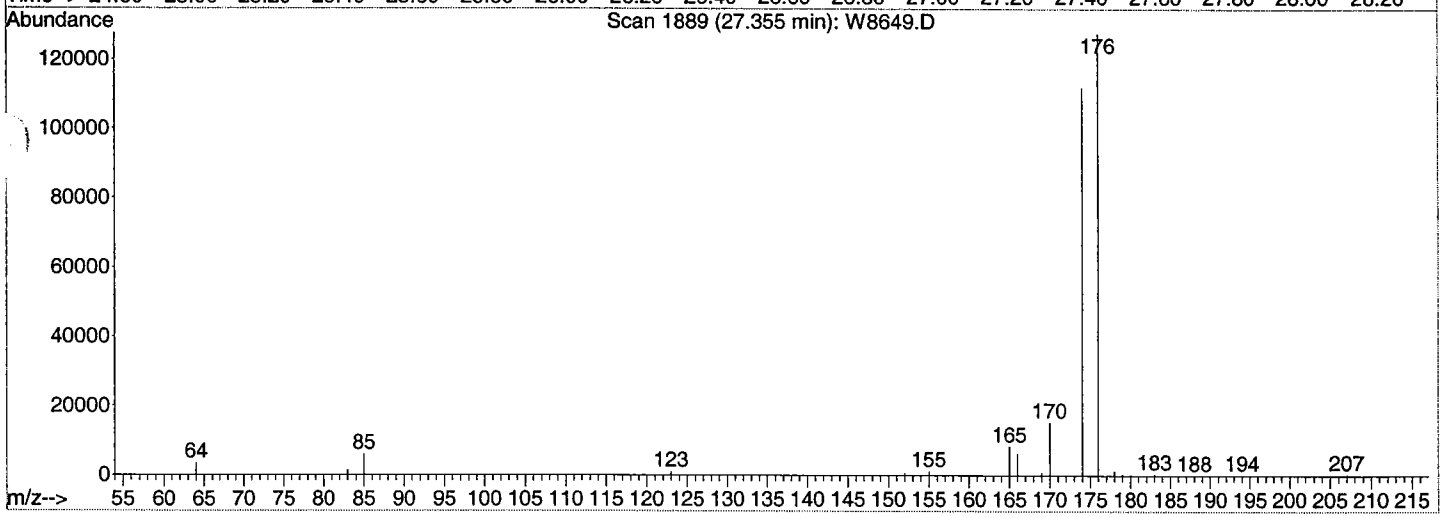
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8649.D
Acq On : 21 Apr 2004 2:24 pm
Sample : S1471-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:20 2004

Vial: 20
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8649.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 134.56ng/µl m

response 40154

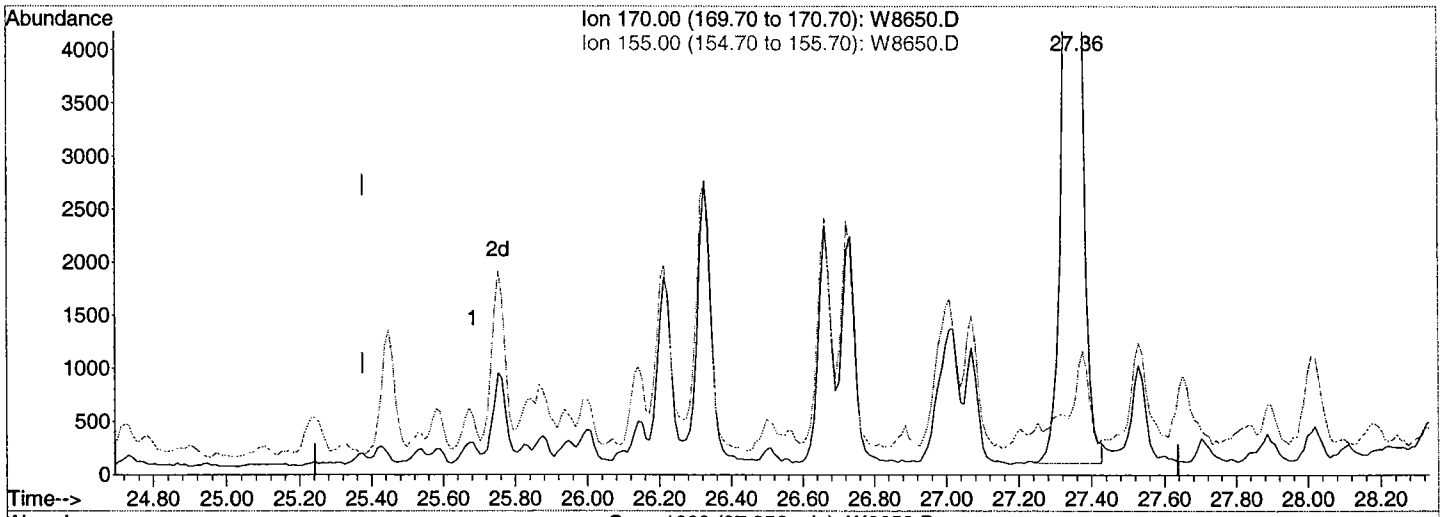
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	7.63
0.00	0.00	0.00
0.00	0.00	0.00

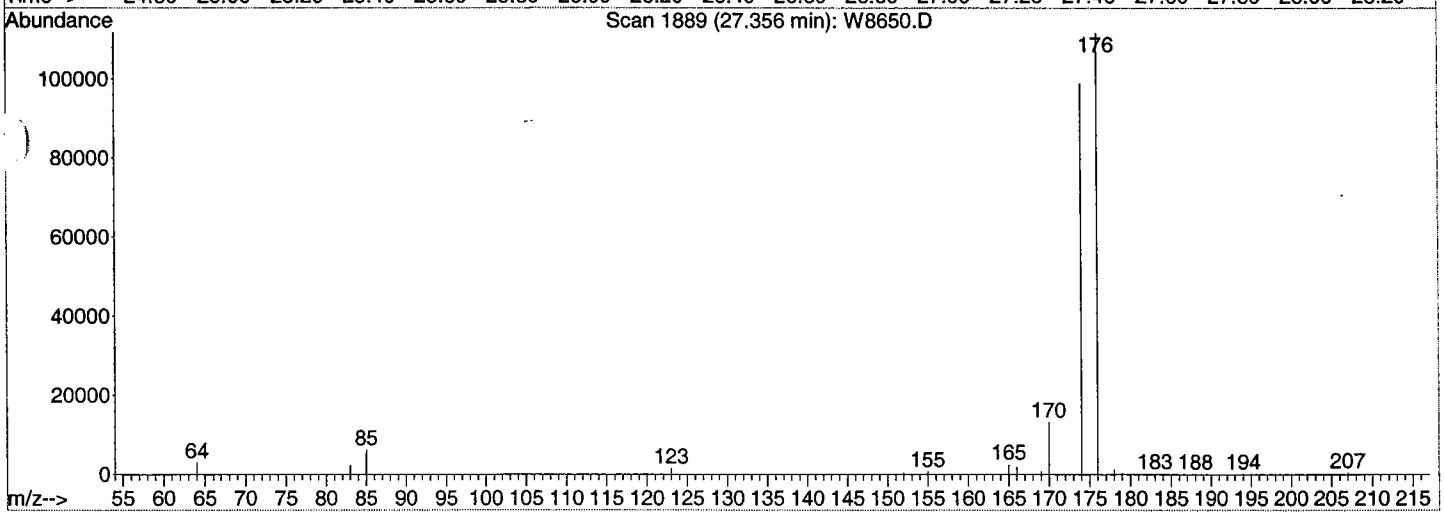
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8650.D
Acq On : 21 Apr 2004 3:49 pm
Sample : S1474-P(9)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:20 2004

Vial: 21
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8650.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 65.76ng/µl m

response 35904

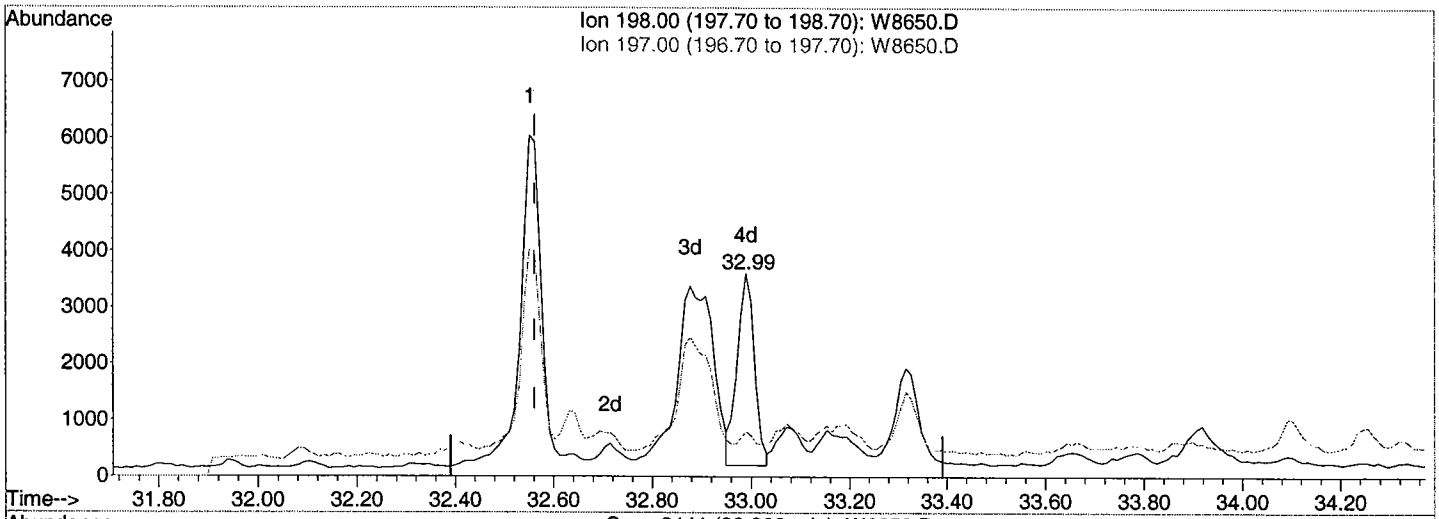
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	5.46
0.00	0.00	0.00
0.00	0.00	0.00

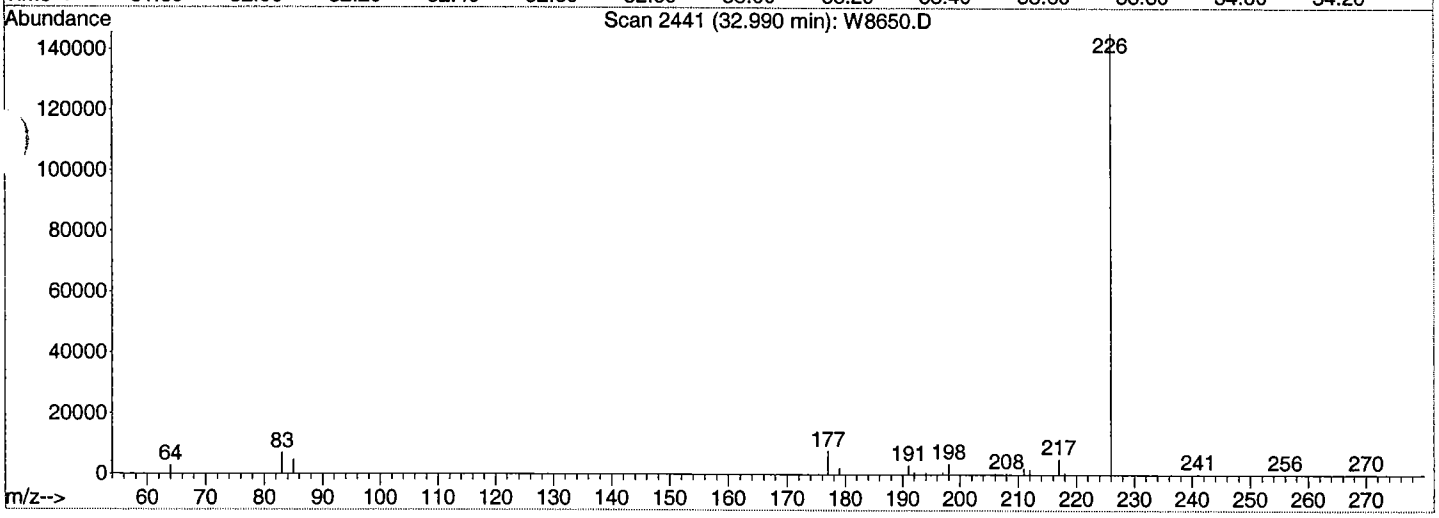
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8650.D
Acq On : 21 Apr 2004 3:49 pm
Sample : S1474-P(9)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:21 2004

Vial: 21
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8650.D

(27) C1-Dibenzothiophenes (J2)

32.99min (+0.429) 16.84ng/µl m

response 8176

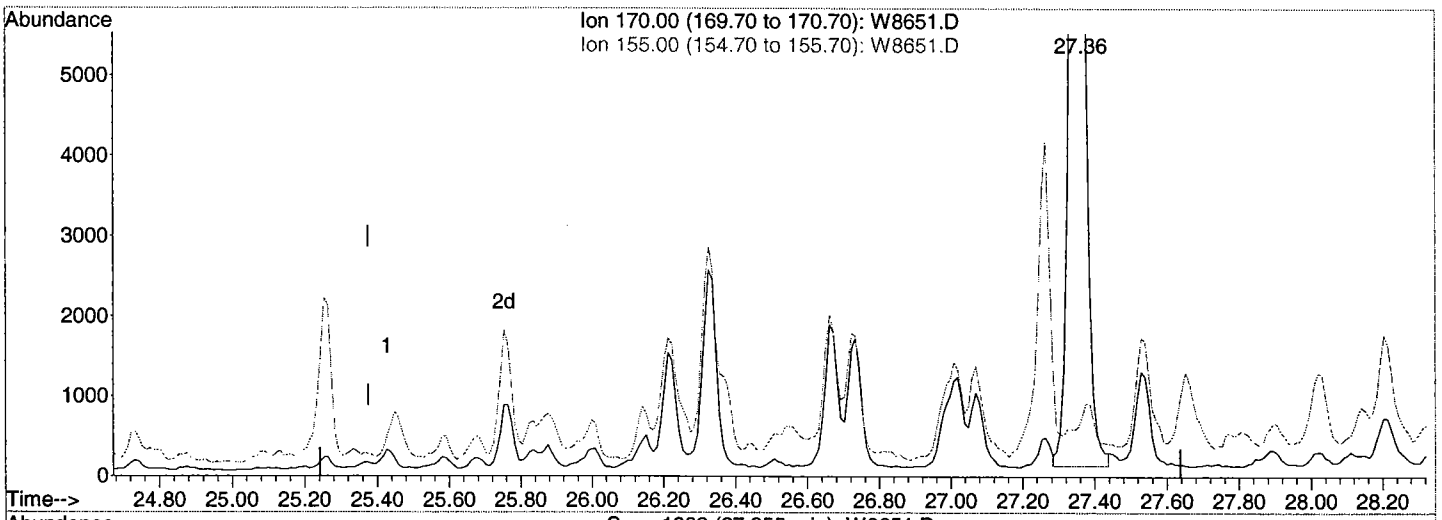
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	22.31#
0.00	0.00	0.00
0.00	0.00	0.00

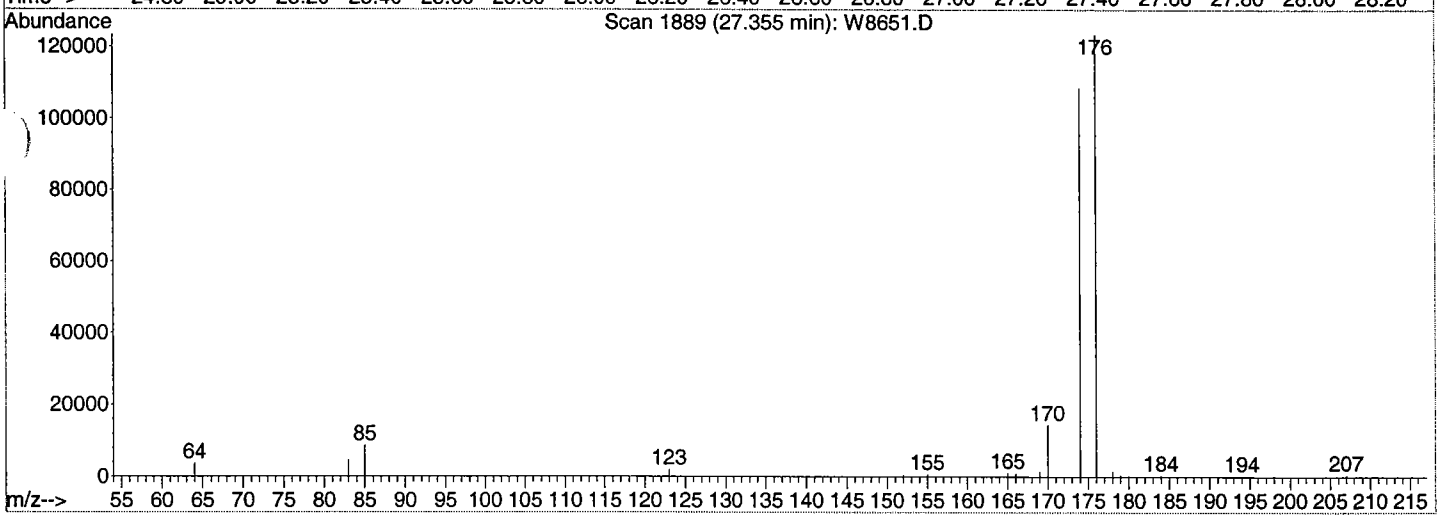
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8651.D
Acq On : 21 Apr 2004 5:13 pm
Sample : S1481-P(7)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 27 14:21 2004

Vial: 22
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8651.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 126.93ng/µl m

response 37499

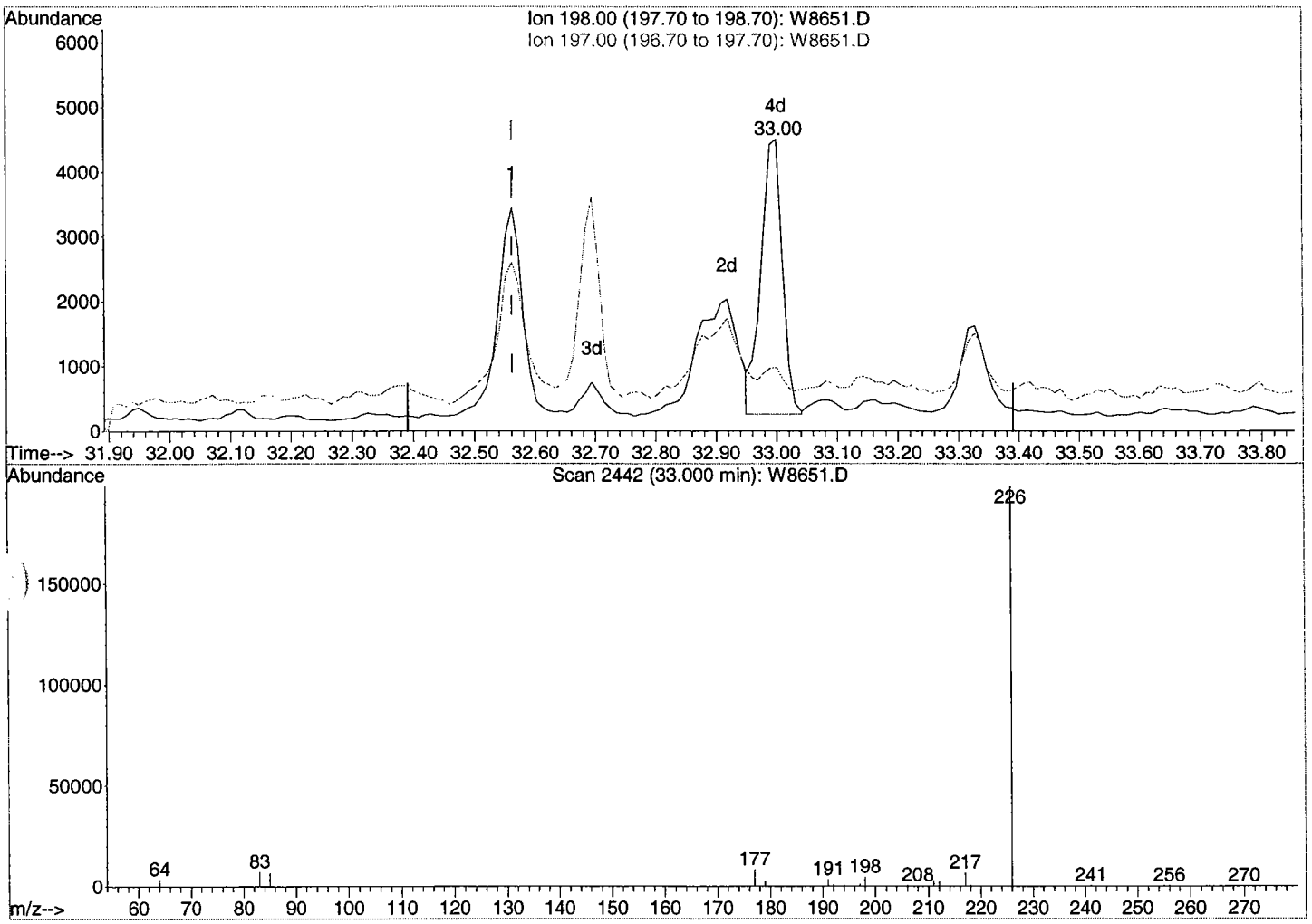
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	4.39
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8651.D
Acq On : 21 Apr 2004 5:13 pm
Sample : S1481-P(7)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 27 14:21 2004

Vial: 22
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8651.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 39.49ng/µl m

response 10375

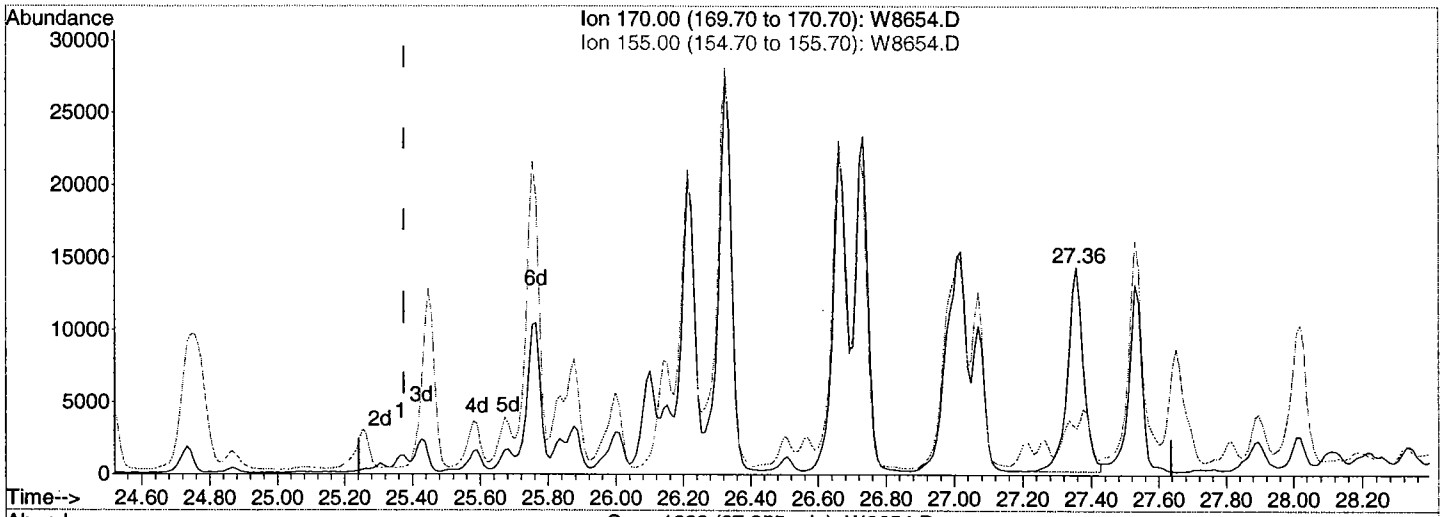
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	21.77#
0.00	0.00	0.00
0.00	0.00	0.00

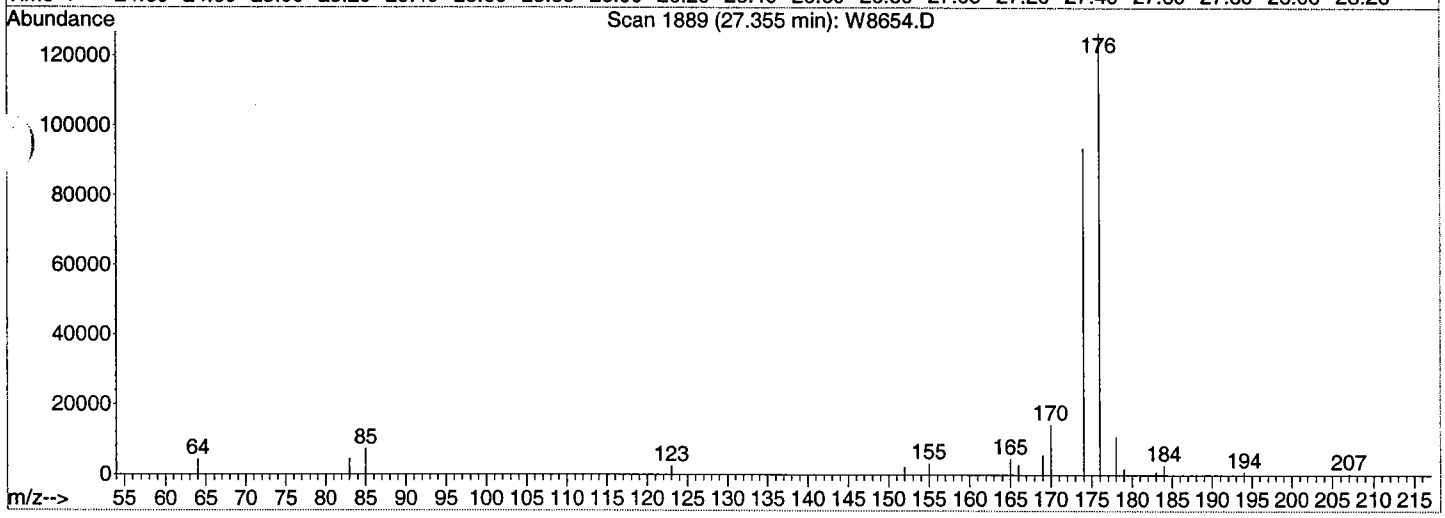
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8654.D
Acq On : 21 Apr 2004 9:27 pm
Sample : S1482-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:22 2004

Vial: 25
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8654.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 82.12ng/µl m

response 45673

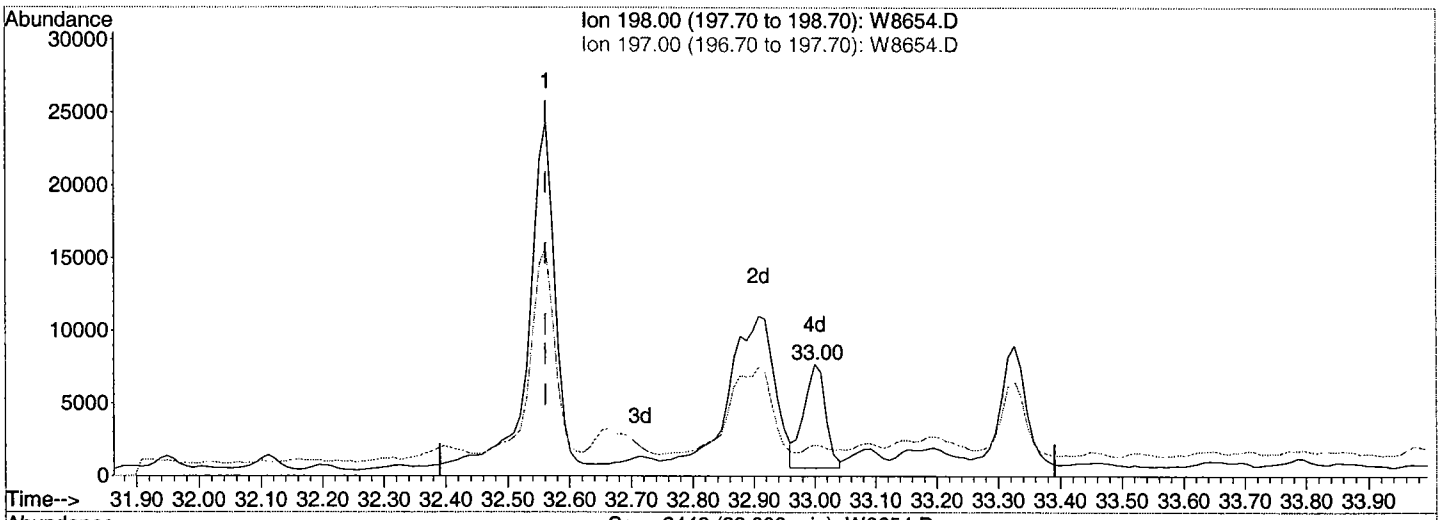
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	22.30
0.00	0.00	0.00
0.00	0.00	0.00

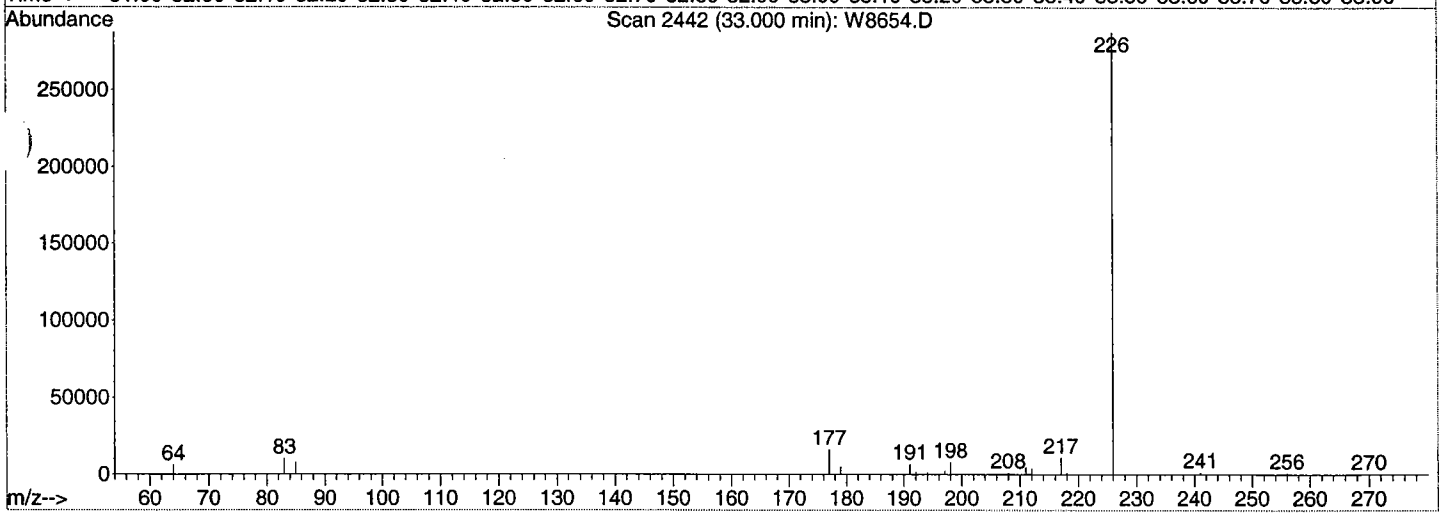
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8654.D
Acq On : 21 Apr 2004 9:27 pm
Sample : S1482-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:22 2004

Vial: 25
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8654.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 36.09ng/µl m

response 17851

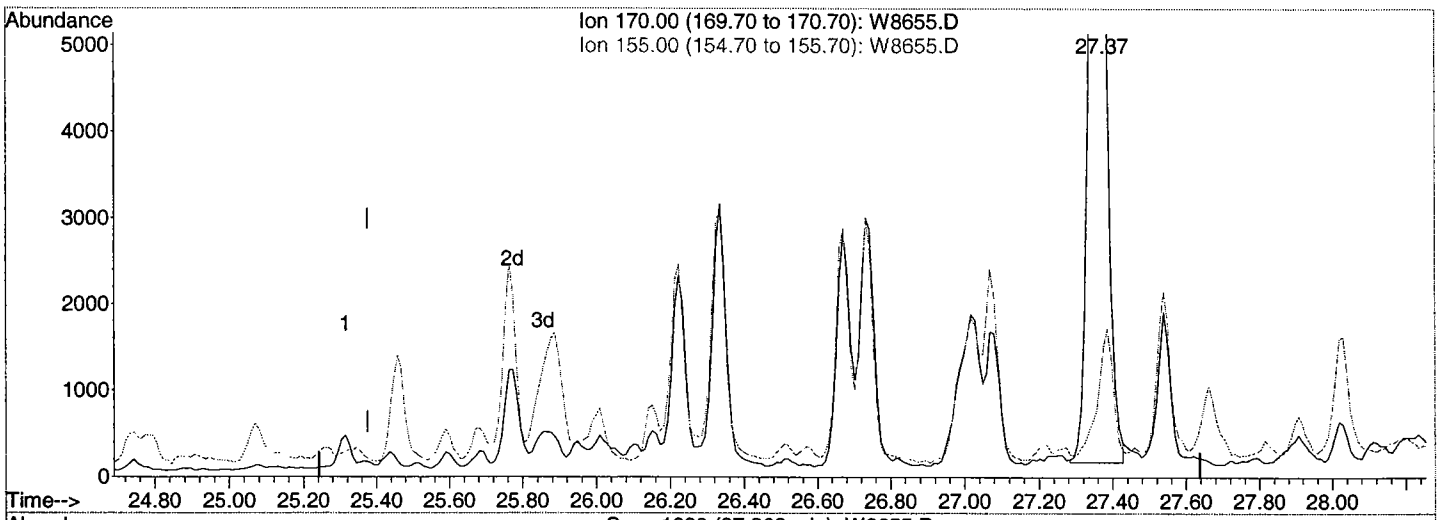
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	27.95#
0.00	0.00	0.00
0.00	0.00	0.00

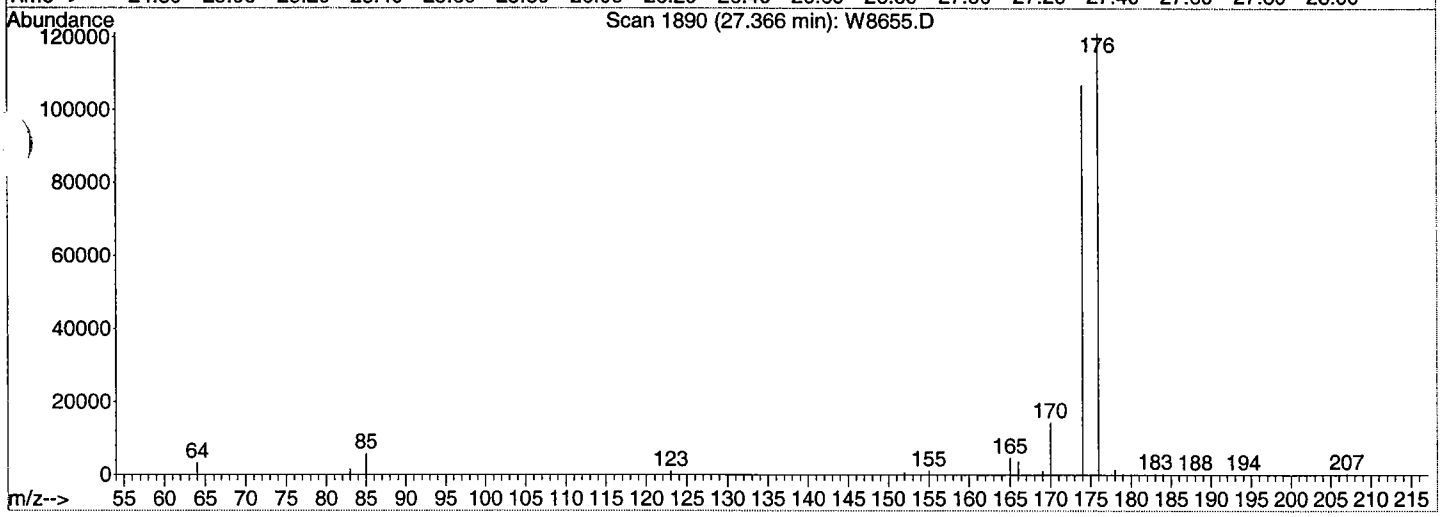
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8655.D
Acq On : 21 Apr 2004 10:53 pm
Sample : S1483-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:23 2004

Vial: 26
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8655.D

(12) C3-Naphthalenes (J2)

27.37min (+1.990) 132.88ng/µl m

response 37989

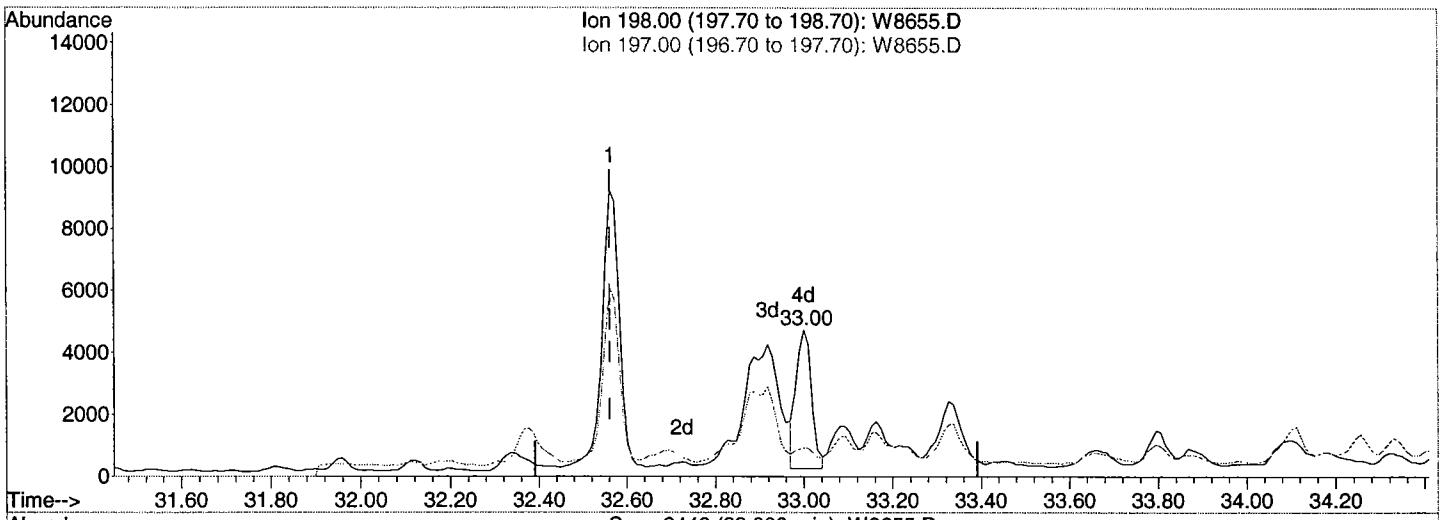
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	7.86
0.00	0.00	0.00
0.00	0.00	0.00

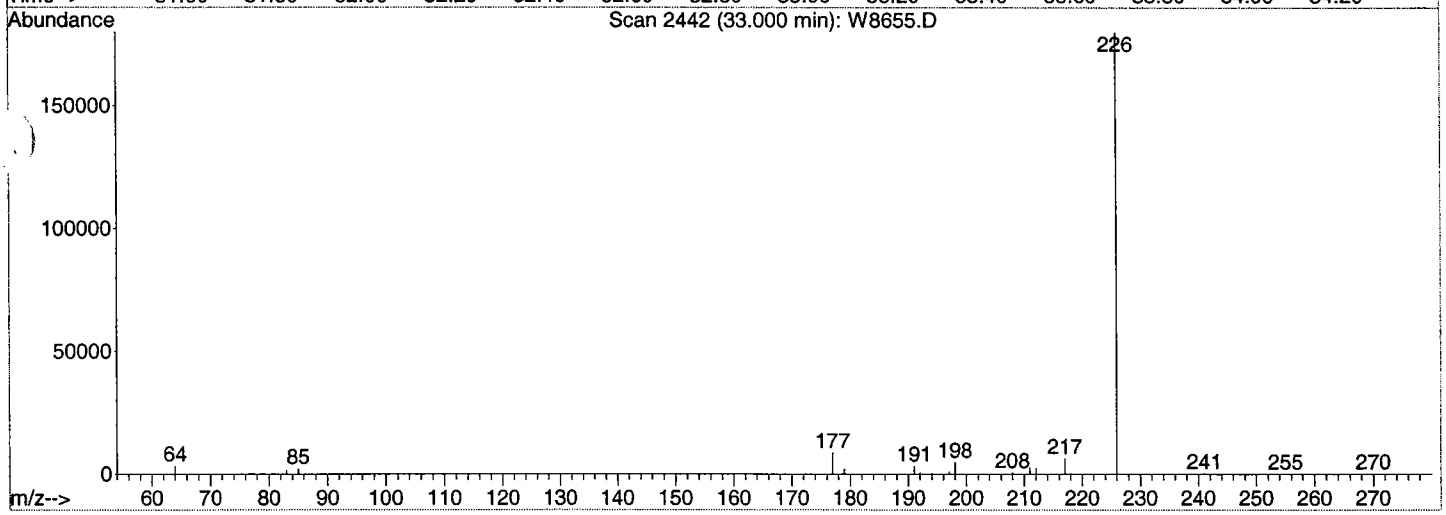
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8655.D
Acq On : 21 Apr 2004 10:53 pm
Sample : S1483-P(7)
Misc :
Integration Params: RTEINT.P
Print Time: Apr 27 14:23 2004

Vial: 26
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8655.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 42.00ng/µl m

response 10677

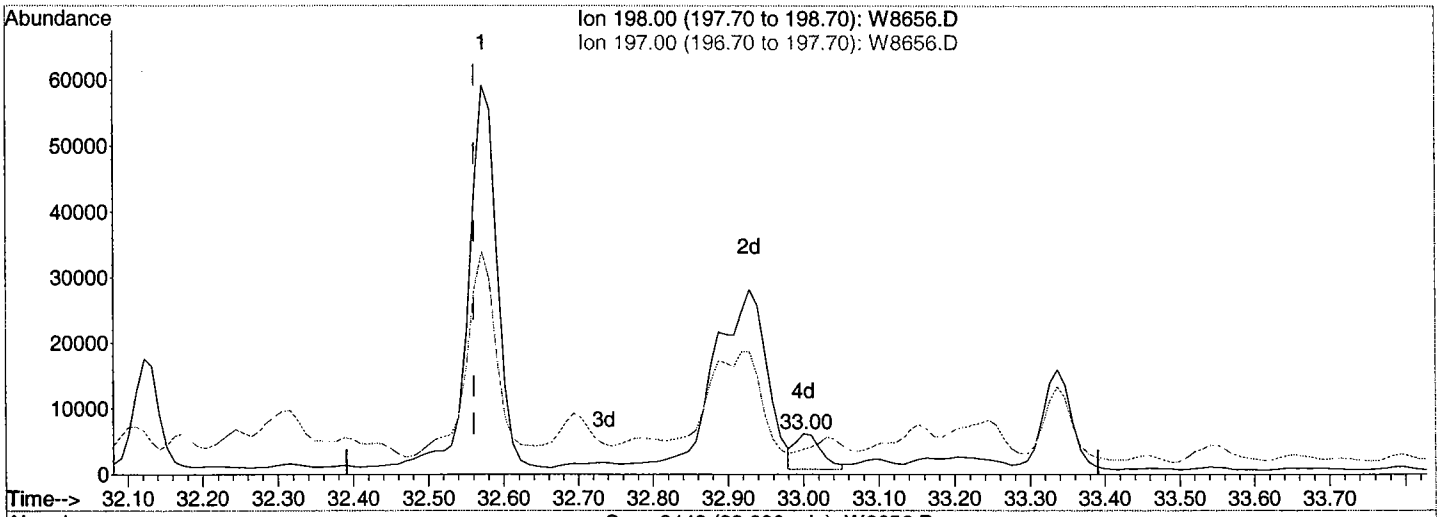
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	19.63#
0.00	0.00	0.00
0.00	0.00	0.00

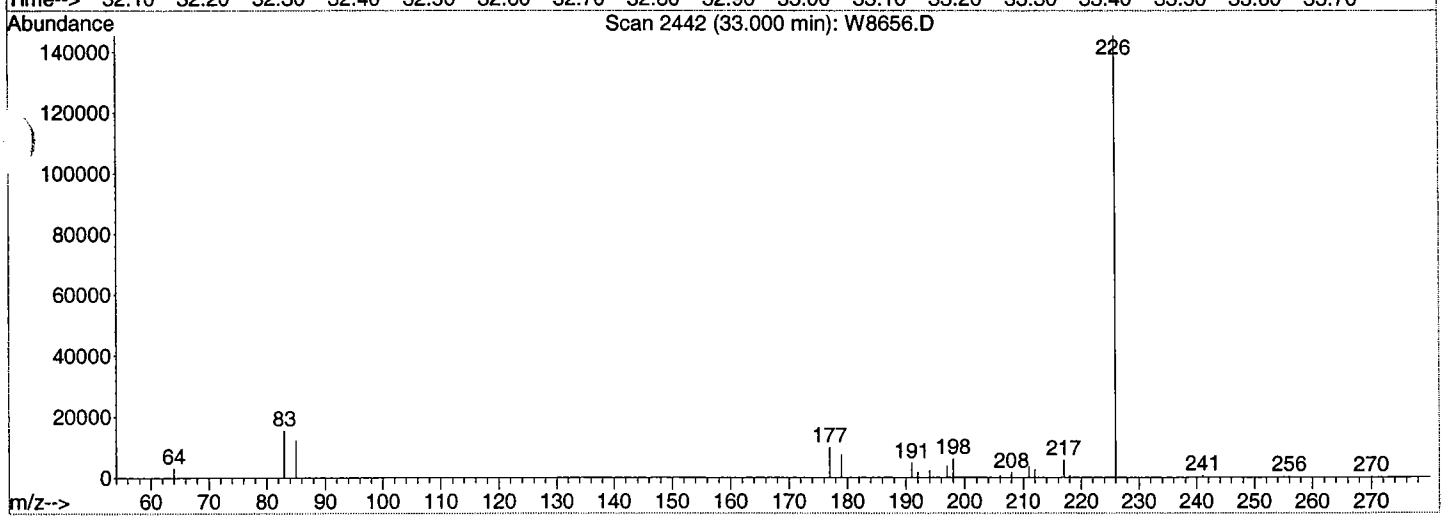
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8656.D
Acq On : 22 Apr 2004 12:19 am
Sample : S1484-P(7)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 27 14:24 2004

Vial: 27
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8656.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 51.34ng/µl m

response 13177

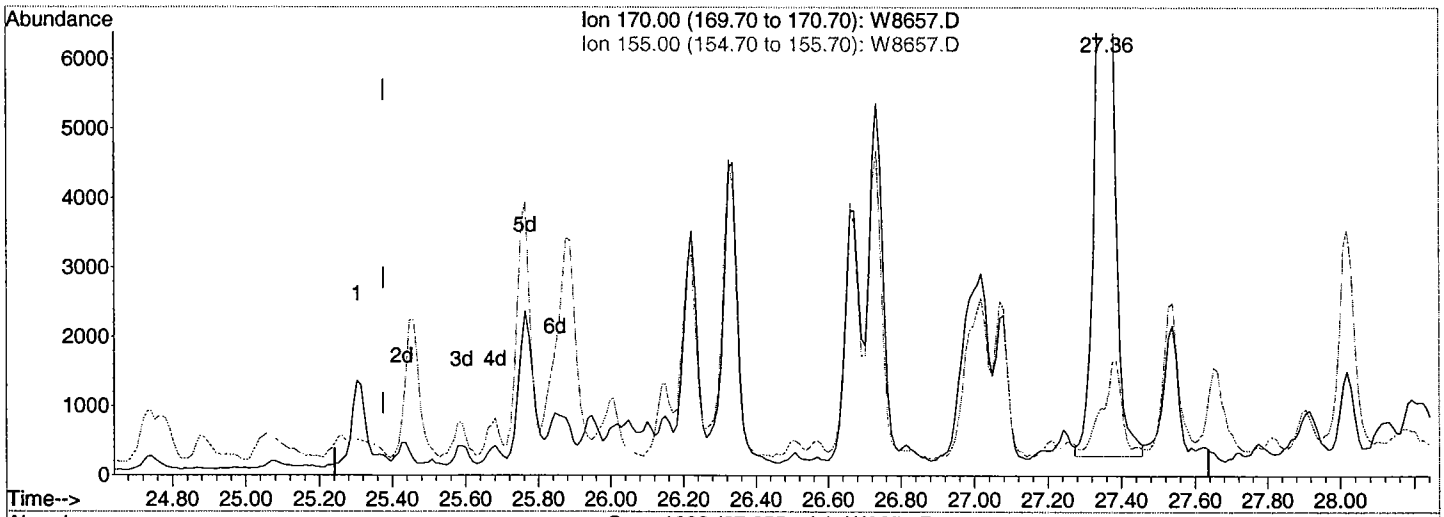
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	61.92
0.00	0.00	0.00
0.00	0.00	0.00

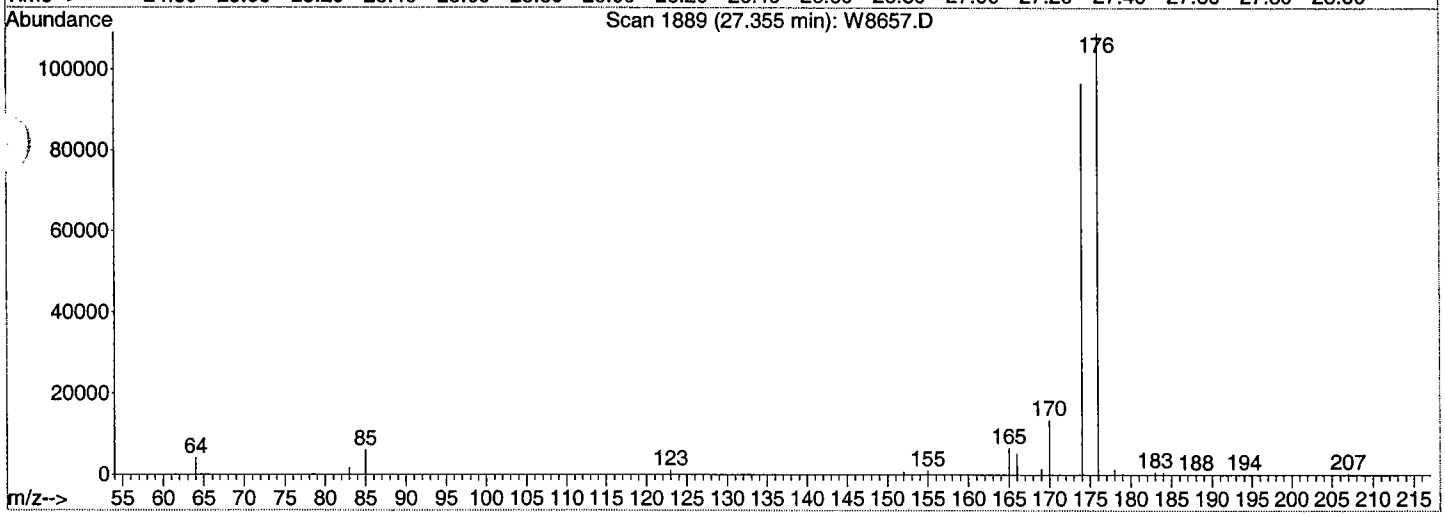
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8657.D
Acq On : 22 Apr 2004 1:45 am
Sample : S1485-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:24 2004

Vial: 28
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8657.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 139.65ng/µl m

response 37821

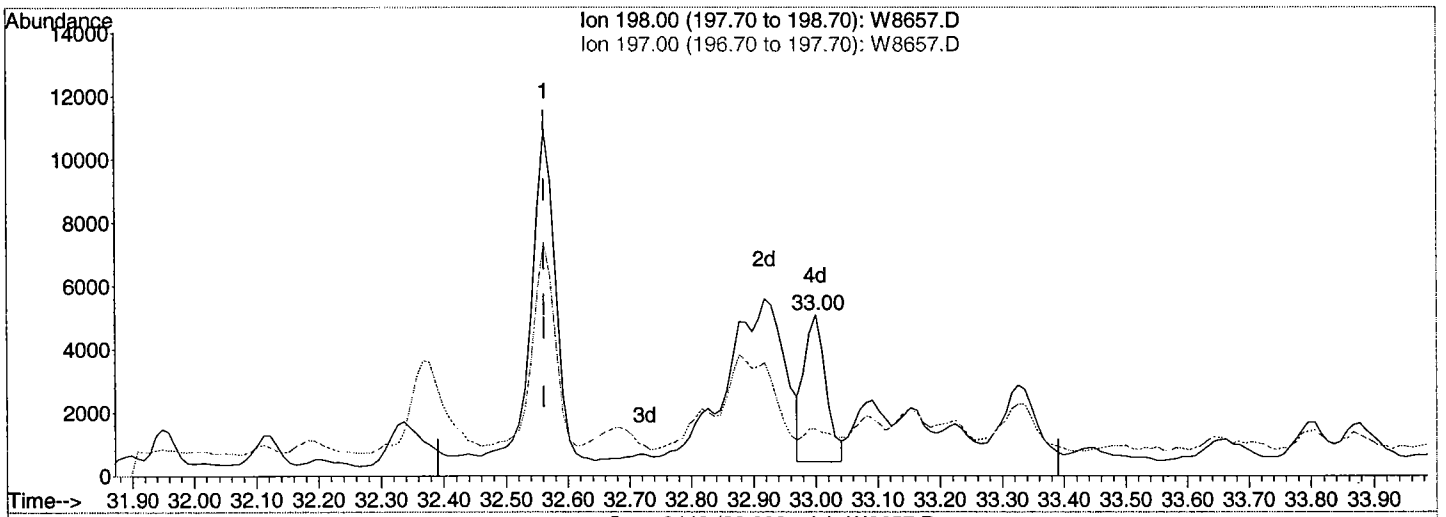
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	7.15
0.00	0.00	0.00
0.00	0.00	0.00

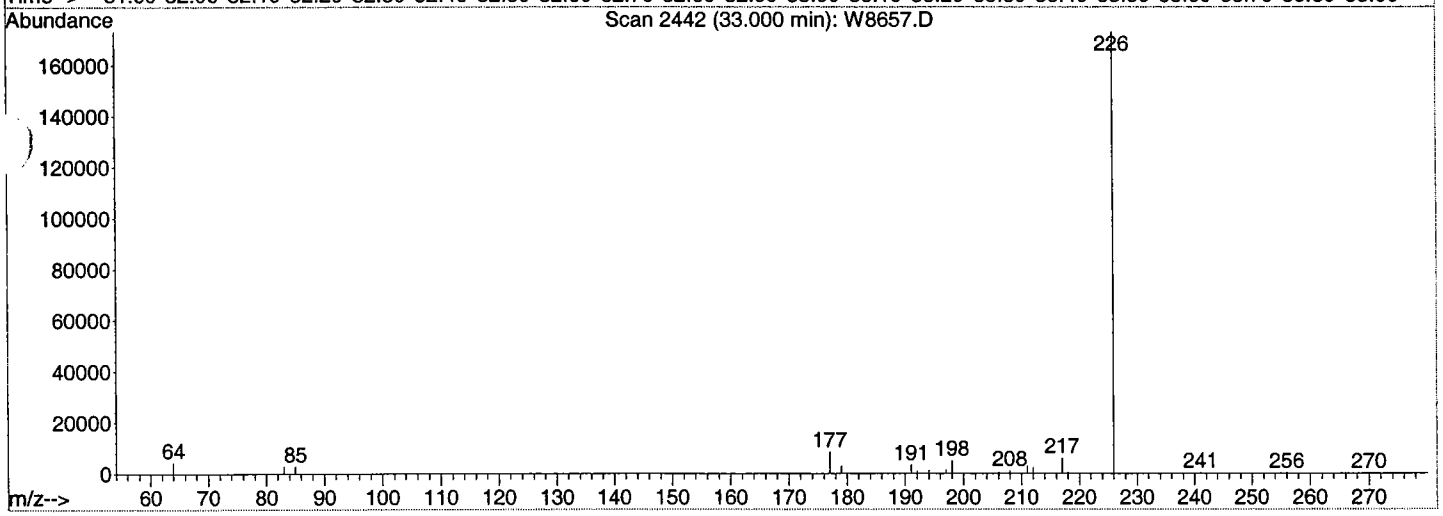
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8657.D
Acq On : 22 Apr 2004 1:45 am
Sample : S1485-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:25 2004

Vial: 28
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8657.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 46.38ng/µl m

response 11169

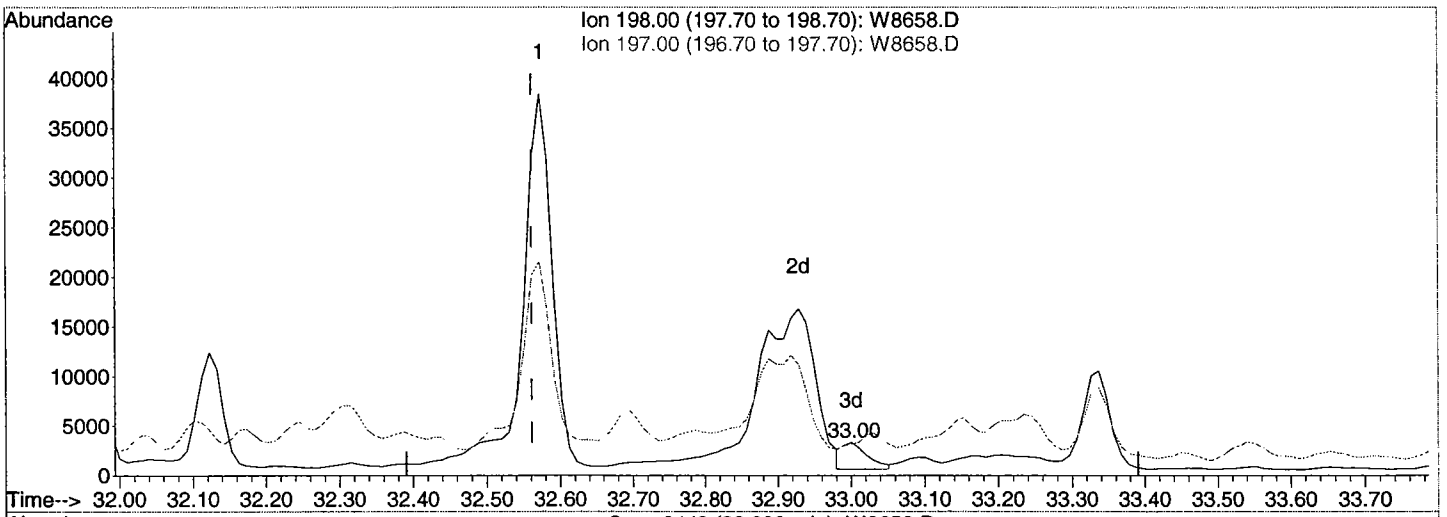
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	29.14#
0.00	0.00	0.00
0.00	0.00	0.00

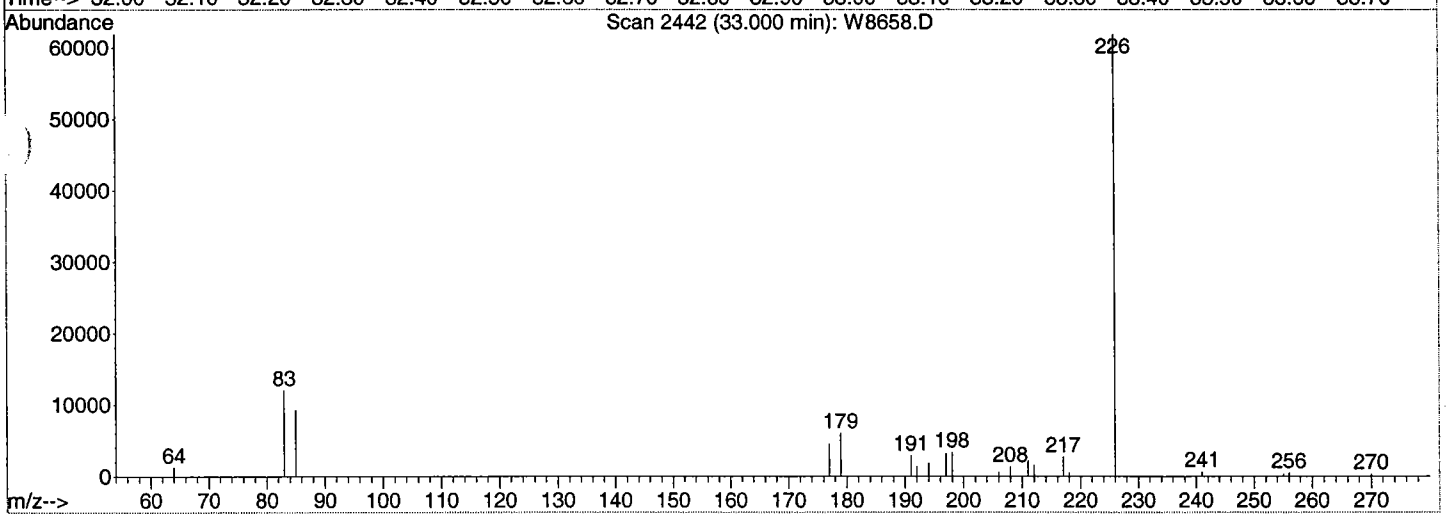
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8658.D
Acq On : 22 Apr 2004 3:11 am
Sample : S1486-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 27 14:25 2004

Vial: 29
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8658.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 27.01ng/µl m

response 6438

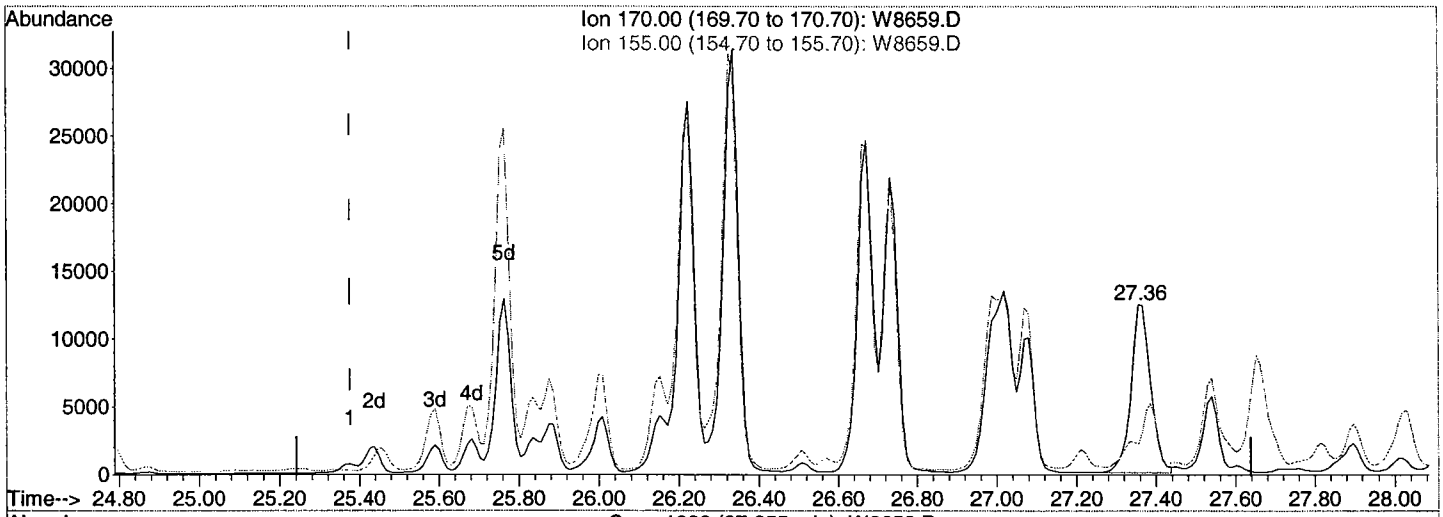
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	94.84#
0.00	0.00	0.00
0.00	0.00	0.00

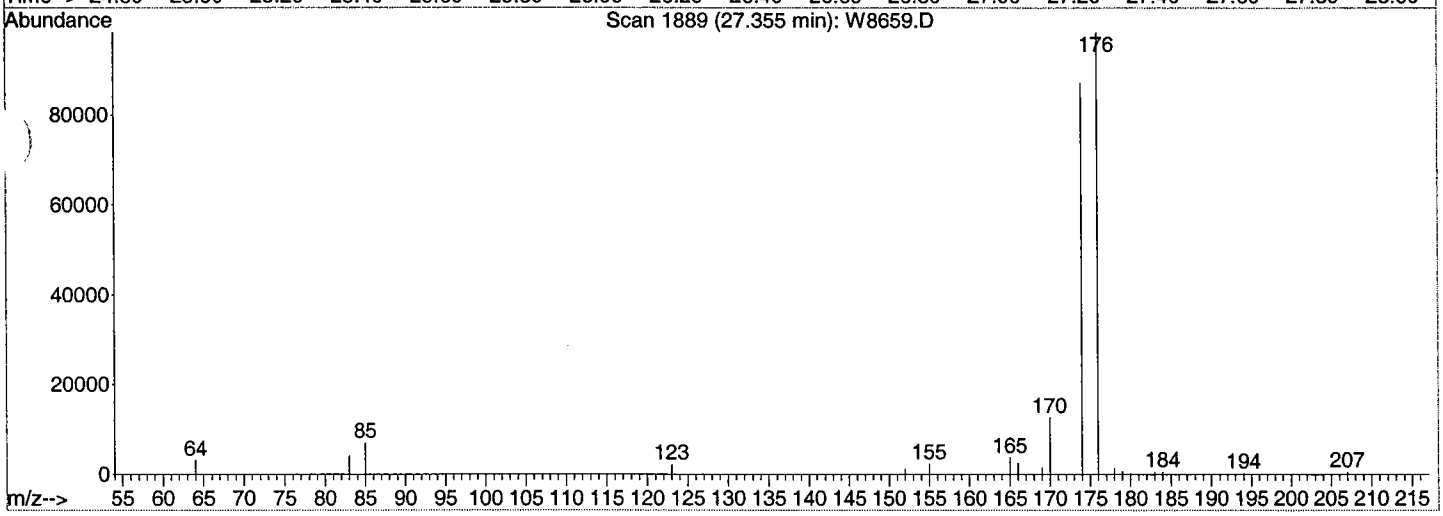
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8659.D
Acq On : 22 Apr 2004 4:36 am
Sample : S1491-P(7)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 27 14:25 2004

Vial: 30
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8659.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 163.92ng/µl m

response 42506

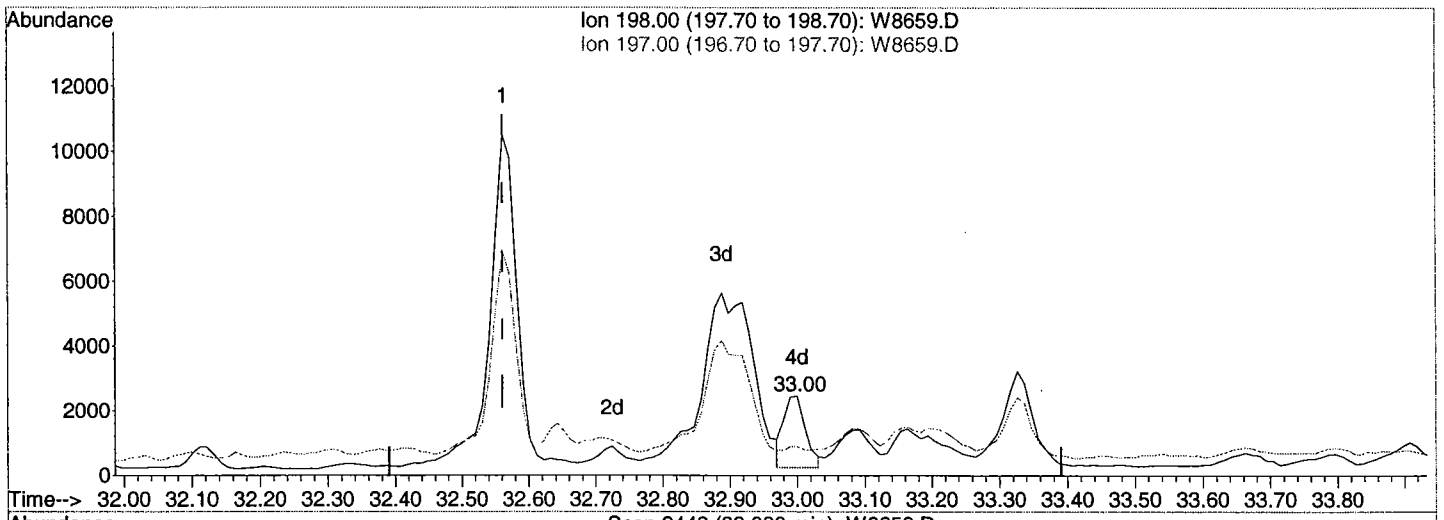
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	18.40
0.00	0.00	0.00
0.00	0.00	0.00

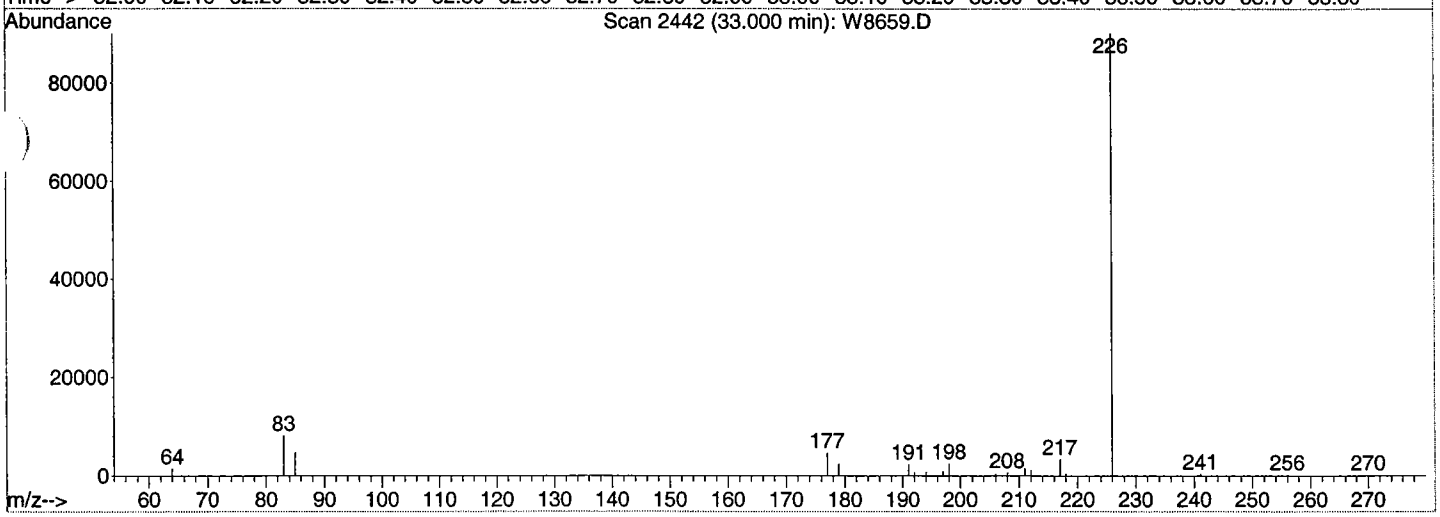
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8659.D
Acq On : 22 Apr 2004 4:36 am
Sample : S1491-P(7)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 27 14:26 2004

Vial: 30
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8659.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 21.51ng/µl m

response 4960

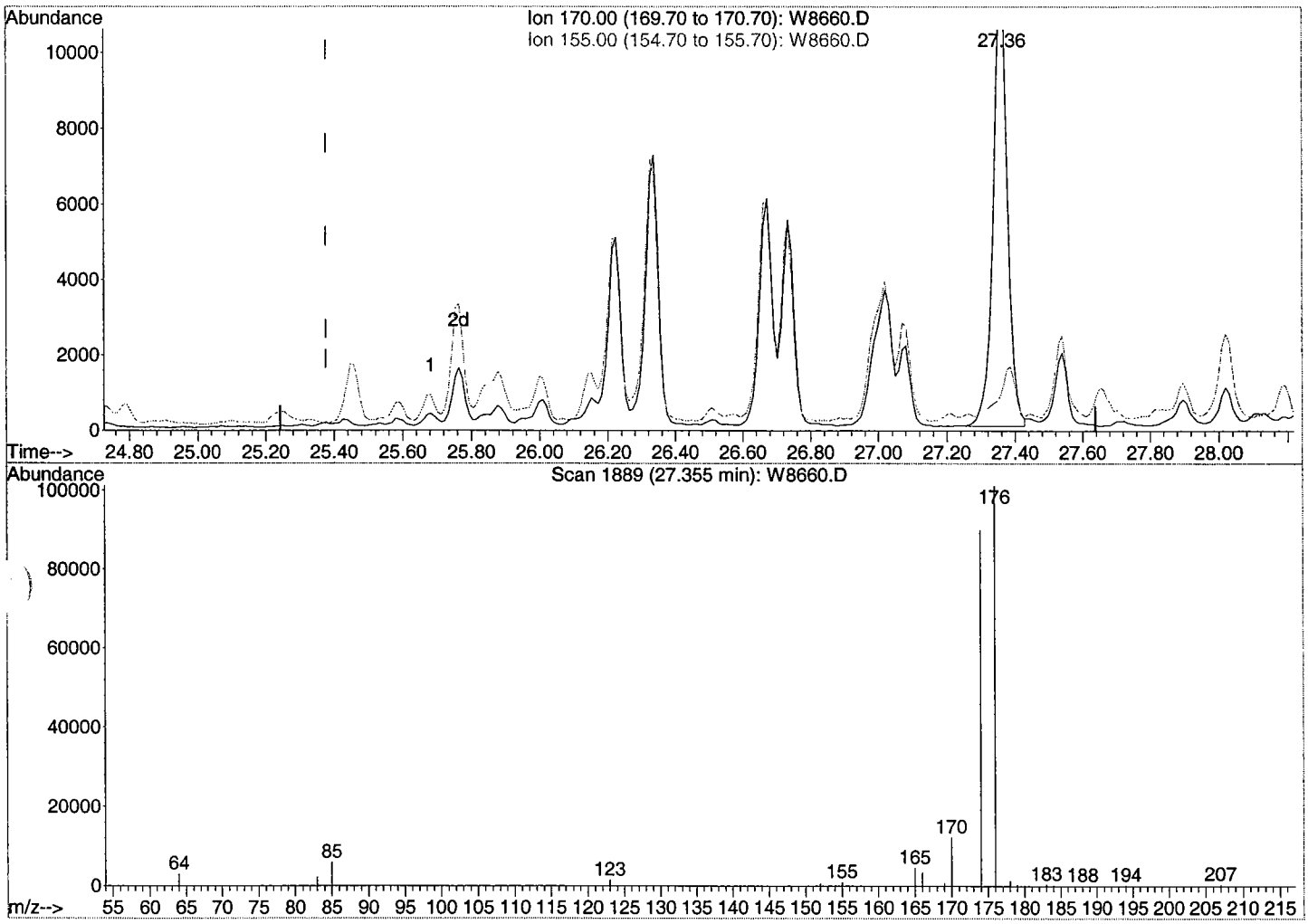
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	36.48#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8660.D
Acq On : 22 Apr 2004 6:01 am
Sample : S1505-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:26 2004

Vial: 31
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8660.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 136.14ng/µl m

response 34469

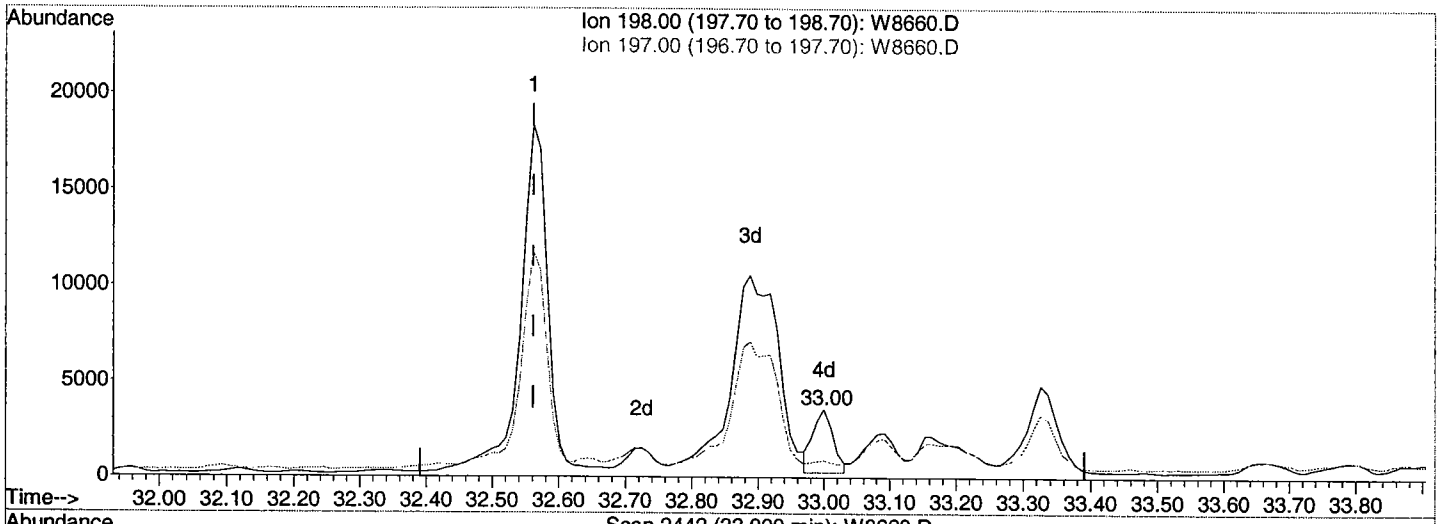
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	7.31
0.00	0.00	0.00
0.00	0.00	0.00

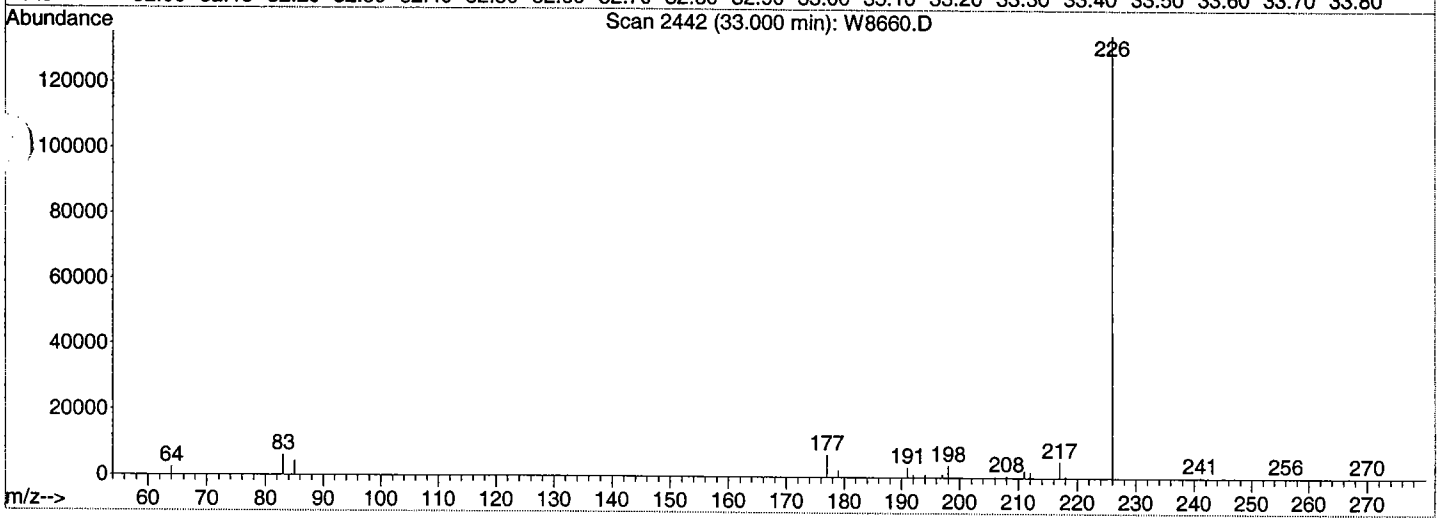
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8660.D
Acq On : 22 Apr 2004 6:01 am
Sample : S1505-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:26 2004

Vial: 31
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8660.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 31.71ng/µl m

response 7140

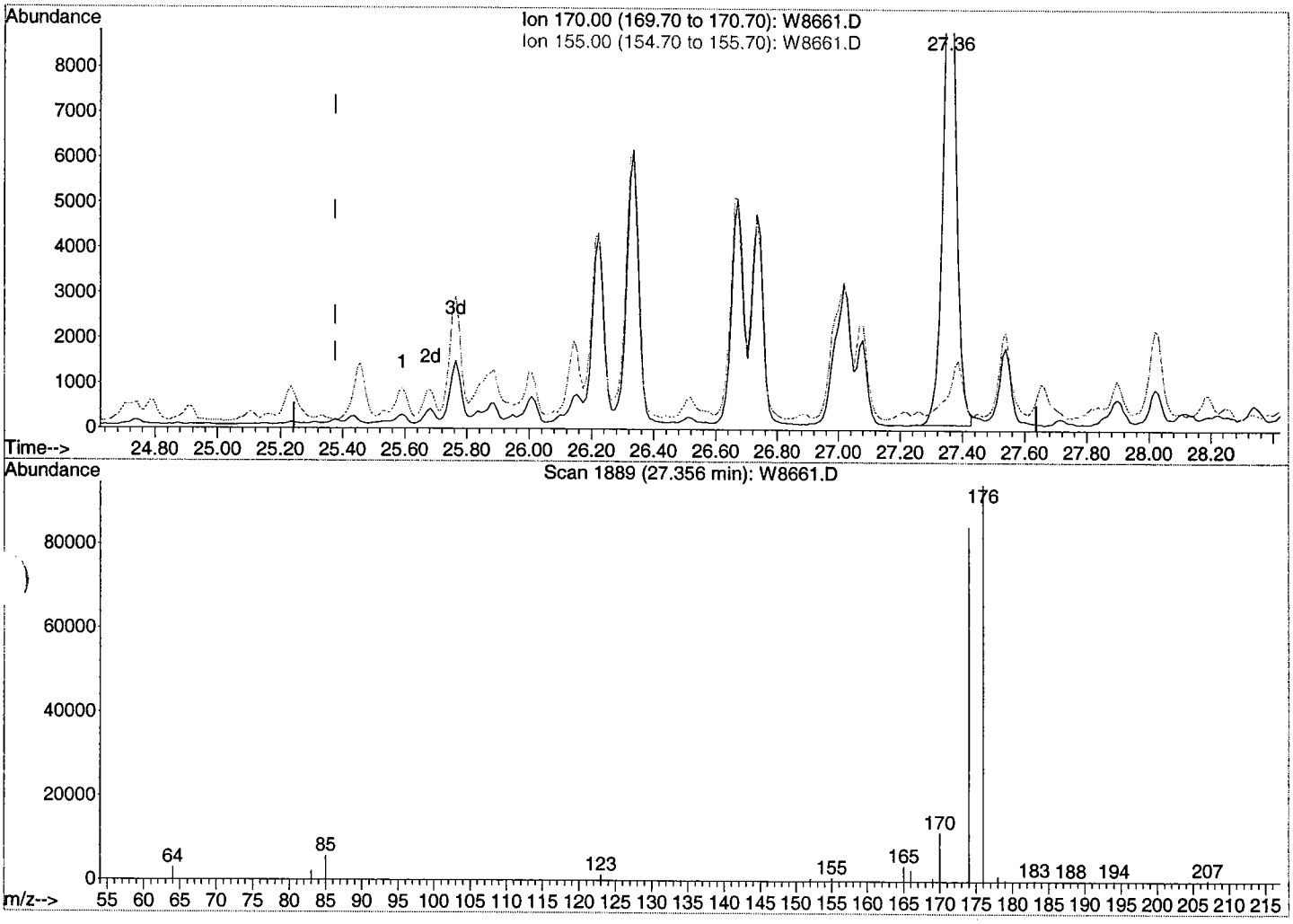
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	24.97#
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8661.D
Acq On : 22 Apr 2004 7:27 am
Sample : S1505DUP-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:27 2004

Vial: 32
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8661.D

(12) C3-Naphthalenes (J2)

27.36min (+1.980) 133.94ng/µl m

response 32837

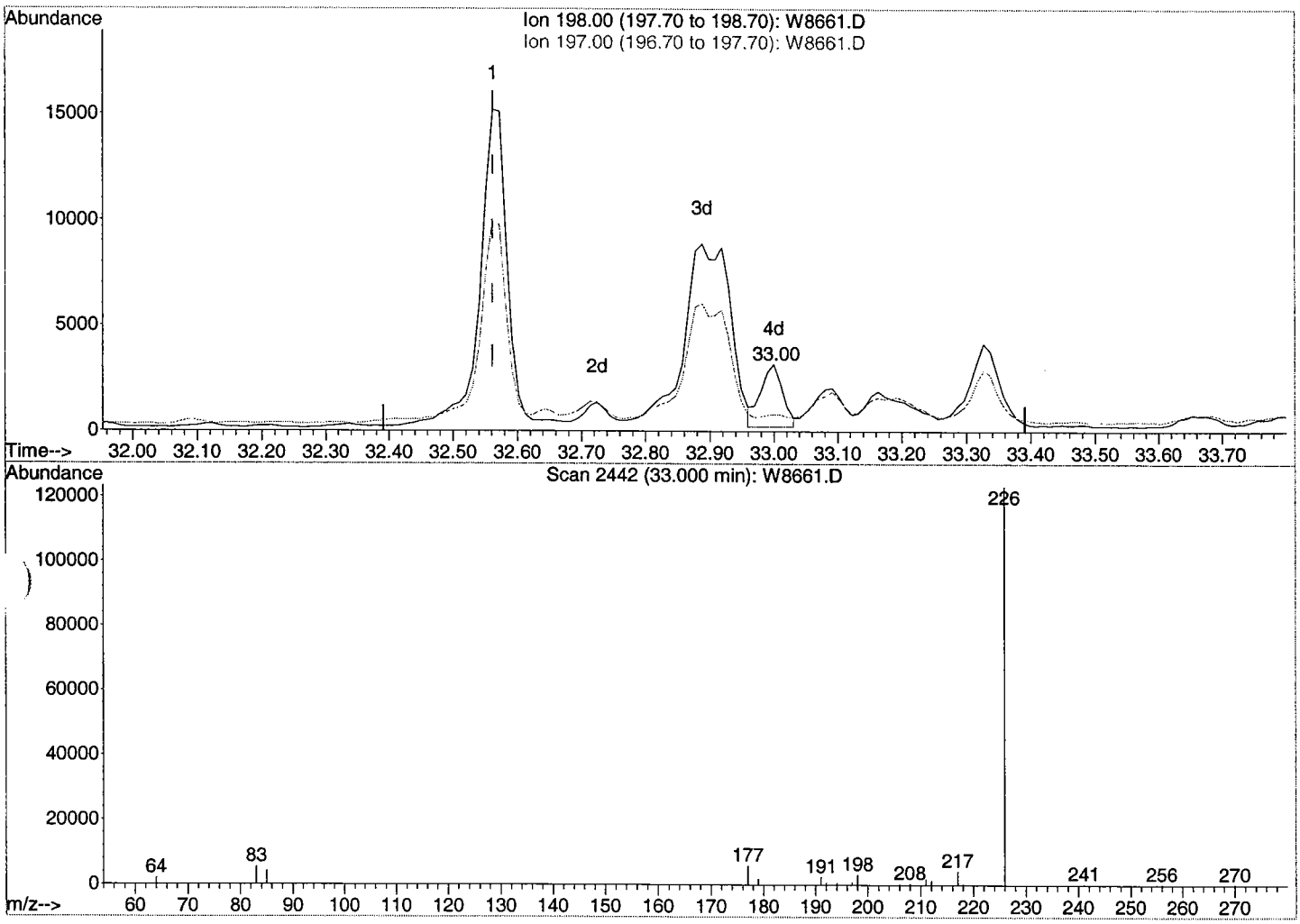
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	6.93
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8661.D
Acq On : 22 Apr 2004 7:27 am
Sample : S1505DUP-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 27 14:27 2004

Vial: 32
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration



TIC: W8661.D

(27) C1-Dibenzothiophenes (J2)

33.00min (+0.439) 32.87ng/µl m

response 7167

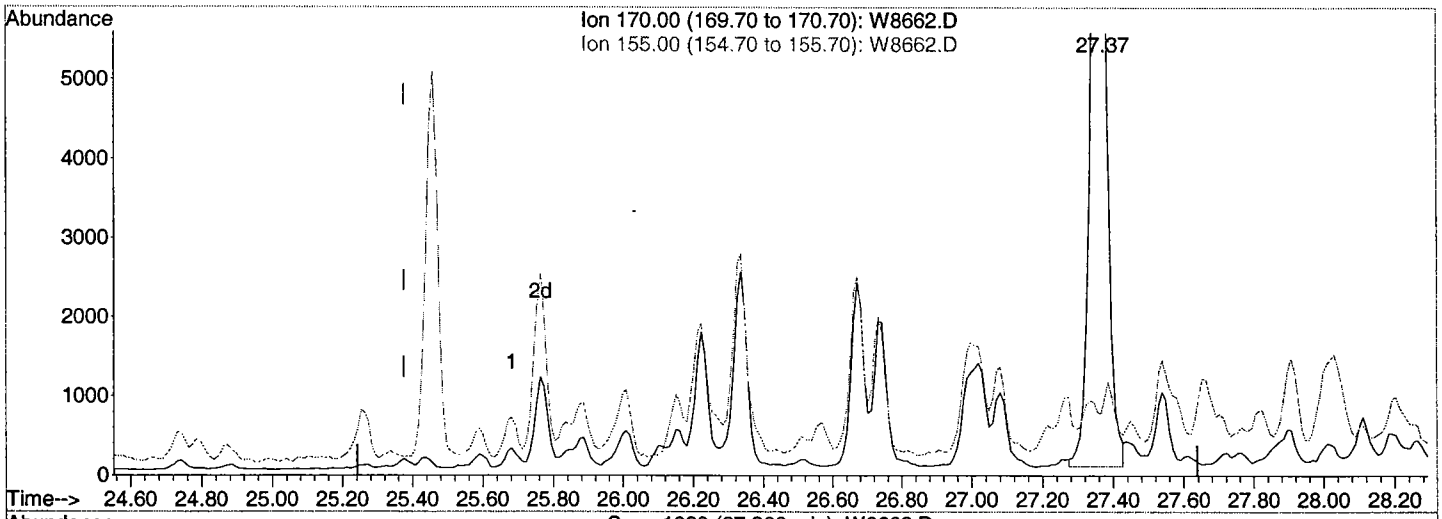
Ion	Exp%	Act%
198.00	100	100
197.00	64.60	25.40#
0.00	0.00	0.00
0.00	0.00	0.00

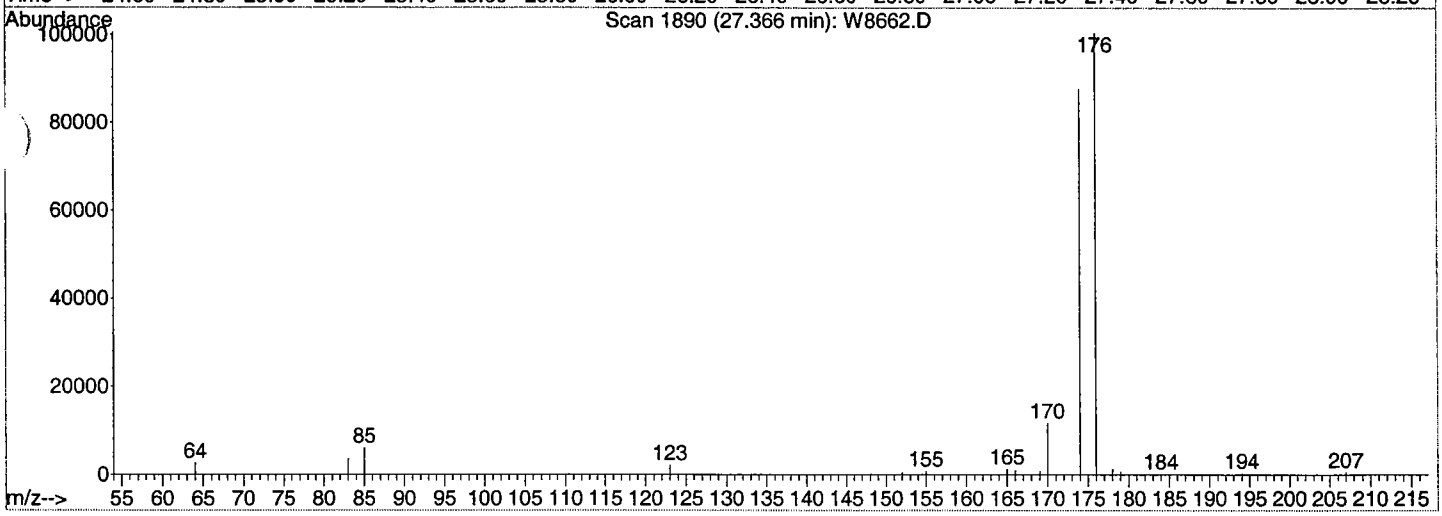
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8662.D
Acq On : 22 Apr 2004 8:52 am
Sample : S1509-P(7)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 27 14:27 2004

Vial: 33
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8662.D

(12) C3-Naphthalenes (J2)

27.37min (+1.990) 129.96ng/µl m

response 32183

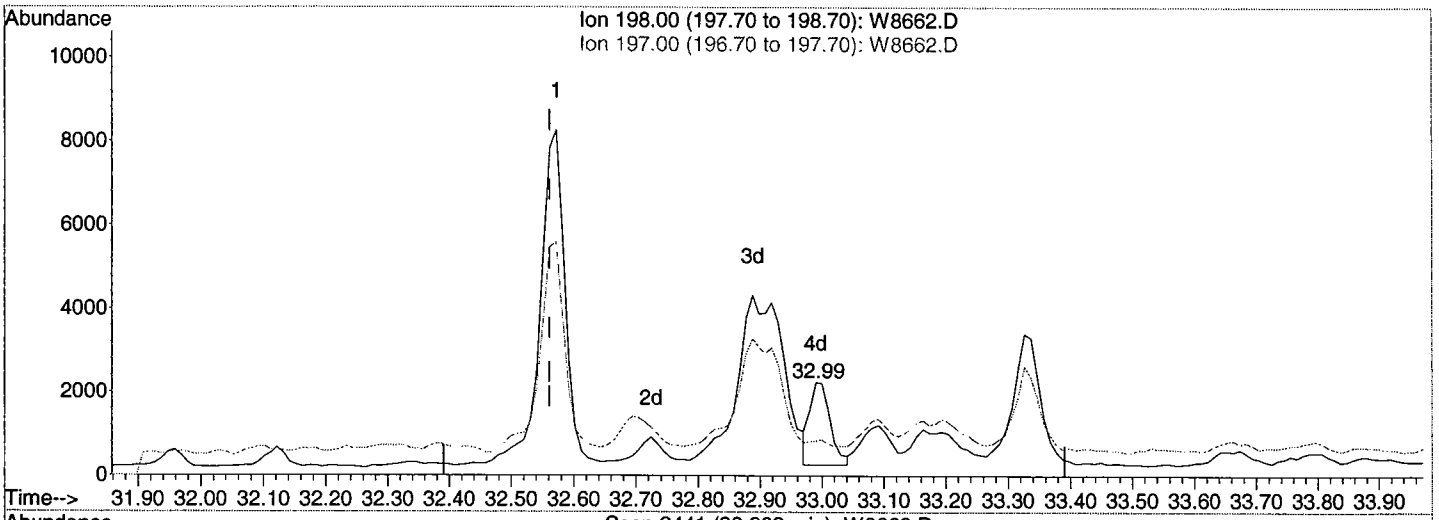
Ion	Exp%	Act%
170.00	100	100
155.00	12.00	6.67
0.00	0.00	0.00
0.00	0.00	0.00

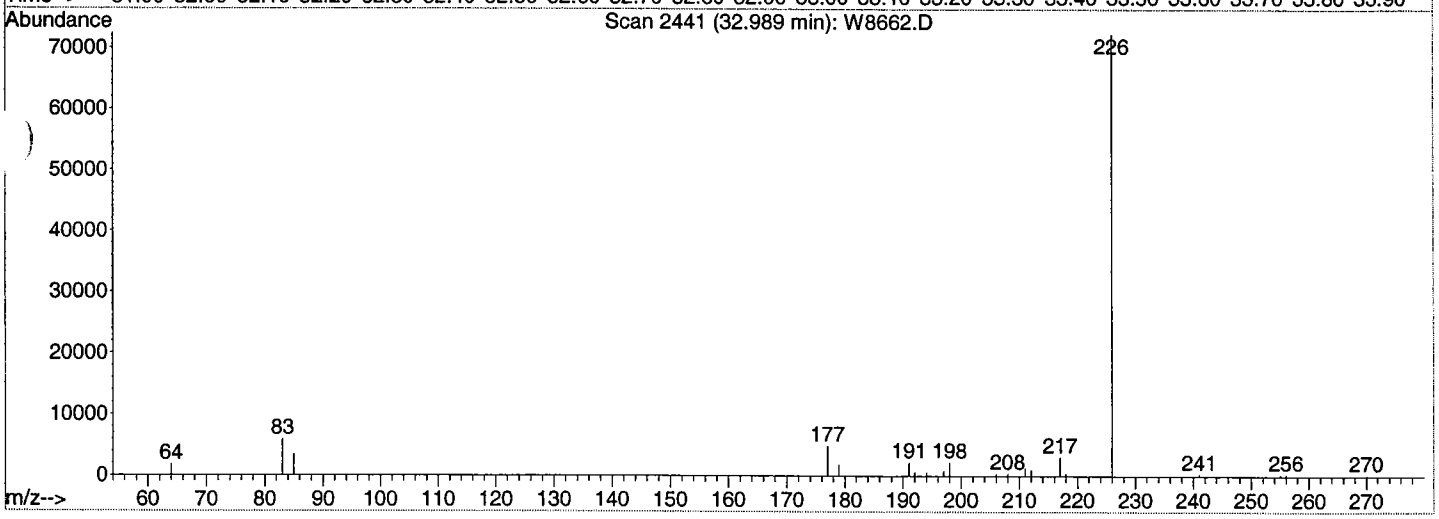
Quantitation Report (Qedit)

Data File : H:\E\DATA\SE0041\W8662.D
Acq On : 22 Apr 2004 8:52 am
Sample : S1509-P(7)
Misc :
Integration Params: RTEINT.P
Int Time: Apr 27 14:27 2004

Vial: 33
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: temp.res

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration





TIC: W8662.D

(27) C1-Dibenzothiophenes (J2)

32.99min (+0.429) 20.81ng/µl m

response 4582

Ion	Exp%	Act%
198.00	100	100
197.00	64.60	37.10#
0.00	0.00	0.00
0.00	0.00	0.00

Project Name:	Davisville Naval Sediment Study
Project Number:	EA Davisville G004976-0001
Analysis:	PAH & Biomarker by GCMS
Batch #:	04-0113 & 04-0118
Client:	EA Engineering, Science, and Technology
Matrix:	Water & Sediment

Battelle

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Battelle
The Business of Innovation
Battelle Memorial Institute
397 Washington Street
Duxbury, MA 02332

Date: May 4, 2004

Fax

To: Nancy Weaver	**From:** Bo Liu
Fax No: (603) 226-0128	**Fax No:** (781) 934-2124
Phone No: (603) 226-0118	**Phone No:** (781) 952-5272
Company: EDS	**Total Pages:** 7 (Including Lead Sheet)

Re: PAH data package (Batch 04-0113, 04-0118) narratives

Comments:
Dear Nancy,

Attached are the revised QA/QC narratives for submitted PAH data package (Batch 04-0113, 04-0118). Would you please discard the previous narratives (page 1 a of e through e of e), and replace with the attached pages.

Regards,
Bo Liu

Battelle
The Business of Innovation
Battelle Memorial Institute
397 Washington Street
Duxbury, MA 02332

Date: May 5, 2004

Fax

To: Nancy Weaver
Fax No: (603) 226-0128
Phone No: (603) 226-0118
Company: EDS

From: James Roush
Fax No: (781) 934-2124
Phone No: (781) 952-5264
Total Pages: 4 (Including Lead Sheet)

Re: PAH data package (04-0118) correction.

Comments:
Dear Nancy,

Attached are the revised Final Data Table and Prep records for submitted PAH data in Battelle Batch No. 04-0118. The revision only affects the Collection Date and Extraction Date for Battelle Sample ID *BE174NSC-P* Would you please discard the previous Final Data Table and Prep records (page 53 and 103), and replace with the attached pages. If you have any questions, please feel free to call.

Thanks,

James Roush

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

April 26, 2004

Bo Liu
Battelle-Duxbury Operations
397 Washington Street
Duxbury, MA 02332

Re: Davisville Naval Sediment Study, TOC Results. AMS Project No. 2004-03-17.

Dear Bo,

Applied Marine Sciences, Inc. (AMS) is pleased to submit the enclosed TOC results in support of the above referenced project. Samples were received on April 6 and April 8, 2004 under chain of custody in good condition.

AMS appreciates the opportunity to be of service to Battelle. Please feel free to call me if you have any questions, or if I can be of further assistance.

Sincerely,

Kenneth S. Davis, P.G.
Project Manager

Enclosure

s:\ams\battelle\2004\20040317\lt042604.doc

TOTAL ORGANIC CARBON-SEDIMENT QA/QC SUMMARY

PROJECT	Davisville Naval Sediment Study
PARAMETER	TOC Analysis
LABORATORY	Applied Marine Sciences, Inc. (AMS)
BATCH IDS	041504-01, and 041504-02
MATRIX	Sediment
SAMPLE CUSTODY	Sample collection dates for this batch were 3/22/04-3/27/04. Samples were received at AMS labs on 4/06/04 and 4/08/04. After sample receipt and check-in all samples were placed in refrigerated storage at 4°C.

QA/QC DATA QUALITY OBJECTIVES:

Reference Method	Blank	LCS/MS Recovery	SRM % Diff.	Surrogate Recovery	Relative Precision	Achieved Detection Limit (% DW)	Target Detection Limit (% DW)
EPA 9060	S:N<10:1	N/A	≤5% RPD of certified values	N/A	≤25%RPD	0.01	0.01

METHOD: Sediment Total Organic Carbon: A subsample was collected and dried at 70°C overnight. After drying, those samples that were visibly oiled were selected for extraction. Samples were ground to a fine powder using a mortar and pestle. The sample was split into TOC and insoluble residue analysis fractions. TOC fractions were acidified with 5% HCl acid, rinsed with RO/DI water, dried at 70°C, and analyzed.

HOLDING TIMES: TOC samples stored at 4°C have holding times of 28 days.

AMS Batch	Prep Date	Analysis Date
041504-01	4/06/2004	04/15/2004
041504-02	4/06/2004 and 4/08/2004	04/15/2004

DETECTION LIMITS: Achieved detection limits were less than the Target Detection Limits provided in the QAPP. Achieved detection limit for TOC is based on a 7 replicate MDL study.

Corrective Action – None

BLANKS: A blank (CB) was prepared with the analytical batch. The blank was analyzed to ensure the sample preparation and analysis method was free of contamination.

041504-01-Total Organic Carbon was undetected in the procedural blank at the detection limit of 0.01%.
041504-02-Total Organic Carbon was undetected in the procedural blank at the detection limit of 0.01%.

Corrective Action – None

TOTAL ORGANIC CARBON-SEDIMENT QA/QC SUMMARY

LABORATORY CONTROL SAMPLE

N/A

Corrective Action – None

MATRIX SPIKES:

N/A

Corrective Action – None

REPLICATES:

A sample duplicate was prepared with the analytical batch. The RPD between replicate analyses for TOC was calculated to measure data quality in terms of precision.

Total Organic Carbon

041504-01–RPD was 3.64%, which is within the control limit for TOC (≤25%).
041504-02–RPD was 8.96%, which is within the control limit for TOC (≤25%).

Corrective Action – None

SRM:

A standard reference material (SRM, NIST 1944) was prepared with the analytical batch. The relative percent difference (RPD) between the measured value and the certified range was calculated to measure data quality in terms of accuracy.

041504-01-SRM RPD was within the control limits (≤5% from certified range). The RPD was 1.89%.
041504-02-SRM RPD was within the control limits (≤5% from certified range). The RPD was 0.63%.

Corrective Action – None

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1421
Client Sample ID: AH-08
AMS Sample ID: 19464

AMS Project Number: 2004-03-17
Date Sampled: 3/22/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.68	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSL

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1424
Client Sample ID: AH-11
AMS Sample ID: 19465

AMS Project Number: 2004-03-17
Date Sampled: 3/22/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.99	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSN

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1426
Client Sample ID: AH-DUP 01
AMS Sample ID: 19466

AMS Project Number: 2004-03-17
Date Sampled: 3/22/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.80	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1430
Client Sample ID: Dup3
AMS Sample ID: 19467

AMS Project Number: 2004-03-17
Date Sampled: N/A
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.22	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1432
Client Sample ID: AH-06
AMS Sample ID: 19468

AMS Project Number: 2004-03-17
Date Sampled: 3/23/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.17	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSR

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1435
Client Sample ID: AH-17
AMS Sample ID: 19469

AMS Project Number: 2004-03-17
Date Sampled: 3/23/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	5.25	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1438
Client Sample ID: AH-03
AMS Sample ID: 19470

AMS Project Number: 2004-03-17
Date Sampled: 3/23/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.77	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1442
Client Sample ID: REF 1-1
AMS Sample ID: 19471

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.18	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSN

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1443
Client Sample ID: REF 1-2
AMS Sample ID: 19472

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.31	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1445
Client Sample ID: REF 1-4
AMS Sample ID: 19473

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.97	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1447
Client Sample ID: REF 2-1
AMS Sample ID: 19474

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.85	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1449
Client Sample ID: REF 2-3
AMS Sample ID: 19475

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.51	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1451
Client Sample ID: REF 2-5
AMS Sample ID: 19476

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.03	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1452
Client Sample ID: AH-23
AMS Sample ID: 19477

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.73	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1464
Client Sample ID: REF 3-4
AMS Sample ID: 19478

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.89	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1467
Client Sample ID: REF 3-1
AMS Sample ID: 19479

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.86	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1471
Client Sample ID: AH-49
AMS Sample ID: 19480

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.36	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1473
Client Sample ID: DUP 07
AMS Sample ID: 19481

AMS Project Number: 2004-03-17
Date Sampled: N/A
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.73	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1474
Client Sample ID: AH-45
AMS Sample ID: 19482

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.97	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1476
Client Sample ID: AH-33
AMS Sample ID: 19483

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.05	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1479
Client Sample ID: AH-35
AMS Sample ID: 19484

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.55	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1481
Client Sample ID: Source 3-1
AMS Sample ID: 19485

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.80	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1490
Client Sample ID: AH-32
AMS Sample ID: 19486

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.29	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1491
Client Sample ID: AH-29
AMS Sample ID: 19487

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	5.01	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1494
Client Sample ID: AH-47
AMS Sample ID: 19488

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.60	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1502
Client Sample ID: AH-51
AMS Sample ID: 19489

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	5.05	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1505
Client Sample ID: AH-26
AMS Sample ID: 19490

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.10	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1507
Client Sample ID: AH-42
AMS Sample ID: 19491

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.13	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSB

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1509
Client Sample ID: AH-40
AMS Sample ID: 19492

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.78	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1510
Client Sample ID: Core 1-Top
AMS Sample ID: 19493

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.27	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1511
Client Sample ID: Core 1-Bot
AMS Sample ID: 19494

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.18	%		0.01	EPA 9060	Sediment	4/15/2004
Total Organic Carbon	2	1.25	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSM

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1468
Client Sample ID: AH-28
AMS Sample ID: 19500

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/8/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.10	%		0.01	EPA 9060	Sediment	4/15/2004
Total Organic Carbon	2	1.92	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSD

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Quality Control Report

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project No.: EA Davisville
Client ID: S1464

AMS Project No.: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004
Date Analyzed: 4/15/2004
Matrix: Sediment
Method: EPA 9060

Continuing Calibration Data

AMS Sample ID	Parameter	SRM Result %	SRM Theoretical %	RPD %	QC Limits % RPD
CC01	TOC	4.71	4.80	1.89	<5

TOC Method Blank

AMS Sample ID	Weight (g)	Result (µg C)	TOC (%)	MDL (%)
CB01	0.4791	0.83	ND	0.01

Replicate Analysis

AMS Sample ID	Parameter	Sample Result %	Replicate Result %	RPD %	QC Limits % RPD
19478	TOC	1.89	1.96	3.64	<25

Samples in Batch (AMS ID): 19464 19467 19470 19473 19476
19465 19468 19471 19474 19477
19466 19469 19472 19475 19478

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSN

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Quality Control Report

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project No.: EA Davisville
Client ID: S1468

AMS Project No.: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/8/2004
Date Analyzed: 4/15/2004
Matrix: Sediment
Method: EPA 9060

Continuing Calibration Data

AMS Sample ID	Parameter	SRM Result %	SRM Theoretical %	RPD %	QC Limits % RPD
CC02	TOC	4.77	4.80	0.63	<5

TOC Method Blank

AMS Sample ID	Weight (g)	Result (µg C)	TOC (%)	MDL (%)
CB02	0.4978	2.88	ND	0.01

Replicate Analysis

AMS Sample ID	Parameter	Sample Result %	Replicate Result %	RPD %	QC Limits % RPD
19500	TOC	2.10	1.92	8.96	<25

Samples in Batch (AMS ID): 19479 19482 19485 19488 19491 19494
19480 19483 19486 19489 19492 19500
19481 19484 19487 19490 19493

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSR

AMS, Inc. Project Manager

Battelle
The Business of Innovation

Chain of Custody

Shipment No: SHP-040405-01

Proj. No:	Proj. Name:
EA Davisville	Davisville Naval Sediment Study

SAMPLERS: Singature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE/TIME	BATTELLE ID	CLIENT ID	FIELD LOC	MATRIX	OIL CODE	TOC Analysis										Total No of Containers
03/22/04 15:40	S1421	AH-08		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/22/04 12:15	S1424	AH-11		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/22/04 0:00	S1426	AH-DUP 01		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
	S1430	Dup3		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/23/04 10:05	S1432	AH-06		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/23/04 16:25	S1435	AH-17		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/23/04 13:50	S1438	AH-03		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 8:40	S1442	REF 1-1		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 9:00	S1443	REF 1-2		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 10:05	S1445	REF 1-4		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 11:50	S1447	REF 2-1		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 12:35	S1449	REF 2-3		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 13:25	S1451	REF 2-5		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 15:30	S1452	AH-23		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/25/04 9:40	S1464	REF 3-4		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/25/04 8:25	S1467	REF 3-1		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/25/04 16:45	S1471	AH-49		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
	S1473	DUP 07		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/26/04 11:40	S1474	AH-45		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/26/04 11:05	S1476	AH-33		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1

Relinquished by:	Date/Time:		Received by:	Date/Time:	
Jessica Fahey	4/5/2004	1:27 PM	KSD	4/6/04	0930
Relinquished by:	Date/Time:		Received by:	Date/Time:	

Comments:
Please contact Jeff Hardenstine at 781.952.5269 if you have any questions or comments. Thank you!

Battelle
The Business of Innovation

Chain of Custody

Shipment No: SHP-040405-01

Proj. No:	Proj. Name:
EA Davisville	Davisville Naval Sediment Study

SAMPLERS: Singature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE/TIME	BATTELLE ID	CLIENT ID	FIELD LOC	MATRIX	OIL CODE	TOC analysis										Total No of Containers
03/26/04 9:40	S1479	AH-35		SEDIMENT		✓										1
03/26/04 12:20	S1481	Source 3-1		SEDIMENT		✓										1
03/26/04 15:15	S1490	AH-32		SEDIMENT		✓										1
03/26/04 14:45	S1491	AH-29		SEDIMENT		✓										1
03/26/04 13:50	S1494	AH-47		SEDIMENT		✓										1
03/27/04 13:45	S1502	AH-51		SEDIMENT		✓										1
03/27/04 8:20	S1505	AH-26		SEDIMENT		✓										1
03/27/04 9:20	S1507	AH-42		SEDIMENT		✓										1
03/27/04 10:30	S1509	AH-40		SEDIMENT		✓										1
03/27/04 12:00	S1510	Core 1-Top		SEDIMENT		✓										1
03/27/04 12:00	S1511	Core 1-Bot		SEDIMENT		✓										1

Relinquished by:	Date/Time:		Received by:	Date/Time:	
Jessica Fahey	4/5/2004	1:27 PM	KSA	4/6/04	0930
Relinquished by:	Date/Time:		Received by:	Date/Time:	

Comments:
Please contact Jeff Hardenstine at 781.952.5269 if you have any questions or comments. Thank you!

Battelle
The Business of Innovation

Chain of Custody

Shipment No: SHP-040407-01

Proj. No:	Proj. Name:
EA Davisville	Davisville Naval Sediment Study

SAMPLERS: Singature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE/TIME	BATTELLE ID	CLIENT ID	FIELD LOC	MATRIX	OIL CODE											Total No of Containers
03/25/04 15:00	S1468	AH-28		SEDIMENT		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	1

Relinquished by:	Date/Time:		Received by:	Date/Time:	
Jessica Fahey JMF	4/7/2004	2:57 PM		4/8/04	1000
Relinquished by:	Date/Time:		Received by:	Date/Time:	

Comments:
Please contact Jeff Hardenstine at 781.952.5269 if you have any comments or questions. Thank you!

Applied Marine Sciences, Inc.
Sample Receipt Checklist

Date: 4/6/04 Client No. Battelle
Time: 0930 Contract No. EA Dawisville

Client Sample Nos. _____

AMS Sample Nos. 19464-19494

		YES	NO
1.	Is a Chain-of-Custody form present?	✓	
2.	Is the COC properly completed?	✓	
	If no, please provide details:		
3.	Is airbill/packing list/bill of laden present?	✓	
	If yes, ID#: 6592 0692 3762		
4.	Are custody seals present on package?		✓
	If yes, were they intact upon receipt?		
5.	Are all samples tagged or labeled?	✓	
6.	Do the sample tags/labels match the COC?	✓	
	If no, has the client been contacted?		
	(Attach subsequent documentation from client regarding this matter.)		
7.	Do all shipping documents agree?	✓	
	If no, describe the nonconformity:		
8.	Condition/temperature of shipping container:	Good -0.2°C	
9.	Condition/temperature of sample containers:	Good + 2.3°C	
10.	Sample Disposal?: AMS ✓	Return to client	

Notes: _____

Attest: KSD Date: 4/6/04
Corrective Action: _____ Date: _____
Resolved: _____ Date: _____

AMS 1301:02: Revised 1/01

ORIGIN ID: XPUA (781) 934-0571
SAMPLE CUSTODY
BATTELLE
397 WASHINGTON STREET

DUXBURY, MA 02332

SHIP DATE: 05APR04
SYSTEM #348589 / CAFE2208
ACTUAL WGT: 48 LBS MAN-WGT
ACCOUNT #: 100000458

FedEx

FedEx Revenue Barcode

TO:

KENNETH DAVIS (281) 554-7272
APPLIED MARINE SCIENCES, INC.
502 N. HIGHWAY 3
SUITE B
LEAGUE CITY, TX 77573

REF: 3181

Delivery Address Barcode (FedEx-EDR)

PRIORITY OVERNIGHT

TRK# 6592 0692 3762 FORM 0201

TUE
Deliver by:
06APR04
A2

IAH

77573 —TX—US NC BBCA

Part # 156148-434 NRIT 8-03

Applied Marine Sciences, Inc.
Sample Receipt Checklist

Date: 4/8/04
Time: 1000

Client No. Davisville
Contract No.

Client Sample Nos.

AMS Sample Nos. 19500

		YES	NO
1.	Is a Chain-of-Custody form present?	✓	
2.	Is the COC properly completed?	✓	
	If no, please provide details:		
3.	Is airbill/packing list/bill of laden present?	✓	
	If yes, ID#: 6592 0692 4004		
4.	Are custody seals present on package?		✓
	If yes, were they intact upon receipt?		
5.	Are all samples tagged or labeled?	✓	
6.	Do the sample tags/labels match the COC?	✓	
	If no, has the client been contacted?		
	(Attach subsequent documentation from client regarding this matter.)		
7.	Do all shipping documents agree?	✓	
	If no, describe the nonconformity:		
8.	Condition/temperature of shipping container:	Good 3.1°C	
9.	Condition/temperature of sample containers:	Good 4.5°C	
10.	Sample Disposal?: AMS ✓	Return to client	

Notes:

Attest: KSL
Corrective Action:
Resolved:

Date: 4/8/04
Date:
Date:

AMS 1301:02: Revised 1/01

ORIGIN ID: XPUA (781) 934-0571
SAMPLE CUSTODY
BATTELLE
397 WASHINGTON STREET

DUXBURY, MA 02332

SHIP DATE: 07APR04
SYSTEM #348589 / CAFE2208
ACTUAL WGT: 4 LBS MAN-WGT
ACCOUNT #: 100000458

FedEx

FedEx Revenue Barcode

TO:

KENNETH DAVIS (281) 554-7272
APPLIED MARINE SCIENCES, INC.
502 N. HIGHWAY 3
SUITE B
LEAGUE CITY, TX 77573

REF: 3181

Delivery Address Barcode (FedEx-EDR)

PRIORITY OVERNIGHT

TRK# 6592 0692 4004 FORM 0201

THU
Deliver by:
08APR04
A2

IAH

77573 —TX—US NC BBCA

Part # 156148-434 NAIT 8-03

TX HUU

Date	AMS ID	Sample Wt. (g)	Result (ug C)	Blank (ug C)	TOC (%)	Comments
4/10/04	CB01	0.4975	3.53	3.22	ND	
	19430	0.0046	2301.99	3.53	49.97	
	19430	0.0036	1858.69	3.53	51.53	
	19431	0.0059	3062.79	3.53	51.85	
	19431	0.0046	2496.08	3.53	54.19	
	19432	0.0026	1499.77	3.53	57.55	
	19432	0.0018	905.14	3.53	50.09	
	19433	0.0029	1323.62	3.53	45.52	
	19433	0.0029	1413.02	3.53	48.60	
	19434	0.0030	1523.81	3.53	50.68	
	19434	0.0036	1744.60	3.53	48.36	
	19435	0.0085	4158.39	3.53	48.88	
	19435	0.0081	4019.56	3.53	49.58	
	19436	0.0029	1526.40	3.53	52.57	
	19436	0.0032	1533.98	3.53	47.83	
	19437	0.0021	982.74	3.53	46.63	
	19437	0.0029	1362.44	3.53	46.86	
	19437	0.0026	1239.14	3.53	47.52	= 1.40
	19419	0.1118	438.18	3.53	0.39	
	19497	0.0392	535.94	3.53	1.36	
	19498	0.0325	423.00	3.53	1.29	
	19499	0.0360	483.52	3.53	1.33	
	19419	0.1021	409.94	3.53	0.40	= 2.53
	19499	0.0492	654.54	3.53	1.32	= 0.75
	CC02	0.0175	827.77	3.53	4.71	= 1.89
	CB02	0.5801	4.62	3.53	ND	
4/15/04	Blank	–	–	2.35	–	
	IB01	0.5702	3.27	2.35	ND	
	IC01	0.0184	876.06	2.35	4.75	= 1.05
	IC02	0.0086	1000.00	2.35	11.60	= 3.39
	IC03	0.0029	1209.61	2.35	41.63	= 1.12

Date	AMS ID	Sample Wt. (g)	Result (ug C)	Blank (ug C)	TOC (%)	Comments
4/15/04	19464	0.0259	1213.96	2.35	4.68	
	19465	0.0283	1130.15	2.35	3.99	
	19466	0.0219	835.18	2.35	3.80	
	19467	0.0204	665.41	2.35	3.22	
	19468	0.0285	906.50	2.35	3.17	
	19469	0.0277	1456.68	2.35	5.25	
	19470	0.0276	766.61	2.35	2.77	
	19471	0.1034	190.16	2.35	0.18	
	19472	0.1043	326.87	2.35	0.31	
	19473	0.0468	926.11	2.35	1.97	
	19474	0.0290	828.89	2.35	2.85	
	19475	0.0320	804.28	2.35	2.51	
	19476	0.1038	1070.90	2.35	1.03	
	19477	0.0210	784.76	2.35	3.73	
	19478	0.0467	885.21	2.35	1.89	
	19478-2	0.0401	789.76	2.35	1.96	= 3.64
	CC01	0.0181	855.74	2.35	4.71	= 1.39
	CB01	0.4791	0.83	2.35	ND	
	19479	0.0396	1134.27	0.83	2.68	
	19480	0.0940	1277.17	0.83	1.36	
	19481	0.0310	1157.63	0.83	3.73	
	19482	0.0255	1268.70	0.83	4.97	
	19483	0.0244	988.87	0.83	4.05	
	19484	0.0283	1289.59	0.83	4.55	
	19485	0.0911	731.12	0.83	0.80	
	19486	0.0341	1462.47	0.83	4.29	
	19487	0.0239	1199.23	0.83	5.01	
	19488	0.0905	1448.62	0.83	1.60	
	19489	0.0381	1924.32	0.83	5.05	
	19490	0.0319	988.39	0.83	3.10	
	19491	0.1183	1333.48	0.83	1.13	

Date	AMS ID	Sample Wt. (g)	Result (ug C)	Blank (ug C)	TOC (%)	Comments
4/15/04	19492	0.1213	950.07	0.83	0.78	
	19493	0.0753	960.56	0.83	1.27	
	19494	0.0736	868.54	0.83	1.18	
	19494-2	0.0681	853.08	0.83	1.25	= 5.76
	19500	0.0564	1184.53	0.83	2.10	
	19500-2	0.0448	859.20	0.83	1.92	= 8.96
	CC02	0.0189	902.61	0.83	4.77	= 0.63
	CB02	0.4978	2.88	0.83	ND	
	19438	0.0635	1465.39	KSD ~~0.83~~ 2.88	2.30	
	19439	0.0403	770.30	KSD ~~0.83~~ 2.88	1.90	
	19440	0.0854	450.02	KSD ~~0.83~~ 2.88	0.52	
	19441	0.1360	348.50	2.88	0.26	
	19442	0.0976	1068.95	2.88	1.09	
	19443	0.0854	2020.24	2.88	2.36	
	19444	0.0869	1227.40	2.88	1.41	
	19445	0.0369	803.05	2.88	2.17	
	19446	0.0426	966.24	2.88	2.26	
	19447	0.0590	2368.77	2.88	4.01	
	19448	0.0696	983.16	2.88	1.41	
	19449	0.0469	772.05	2.88	1.64	
	19450	0.0760	403.31	2.88	0.53	
	19451	0.1155	492.72	2.88	0.42	
	19452	0.0632	686.10	2.88	1.08	
	19453	0.0709	1042.96	2.88	1.47	
	19453-2	0.0853	1245.19	2.88	1.46	= 0.68
	CC03	0.0186	866.11	2.88	4.64	= 3.39
	CB03	0.4842	3.10	2.88	ND	
	19454	0.1079	559.49	3.10	0.52	
	19455	0.1063	592.79	3.10	0.55	
	19456	0.0701	724.86	3.10	1.03	
	19457	0.0645	1069.48	3.10	1.65	

COULOMETER ANALYSIS REPORT

Sample #: 19464 Analysis Type: C Date: 04-15-2004
Sample Weight: .0259 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.51
3	1.0	309.91
4	1.5	911.54
5	2.0	1193.61
6	2.5	1207.66
7	3.0	1210.90
8	3.5	1212.41
9	4.0	1213.29
10	4.5	1213.96

Final Results: 4.68%C Analyst: KSD Time: 10:39:28

COULOMETER ANALYSIS REPORT

Sample #: 19465 Analysis Type: C Date: 04-15-2004
Sample Weight: .0283 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.93
3	1.0	356.85
4	1.5	959.53
5	2.0	1114.36
6	2.5	1124.78
7	3.0	1127.25
8	3.5	1128.57
9	4.0	1129.45
10	4.5	1130.15

Final Results: 3.99%C Analyst: KSD Time: 10:44:45

COULOMETER ANALYSIS REPORT

Sample #: 19466 Analysis Type: C Date: 04-15-2004
Sample Weight: .0219 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.92
3	1.0	298.54
4	1.5	751.48
5	2.0	822.87
6	2.5	830.92
7	3.0	832.89
8	3.5	833.93
9	4.0	834.67
10	4.5	835.18

Final Results: 3.80%C Analyst: KSD Time: 10:49:57

COULOMETER ANALYSIS REPORT

Sample #: 19467 Analysis Type: C Date: 04-15-2004
Sample Weight: .0206 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.59
3	1.0	249.22
4	1.5	590.36
5	2.0	653.03
6	2.5	661.77
7	3.0	663.51
8	3.5	664.38
9	4.0	664.95
10	4.5	665.41

Final Results: 3.22%C Analyst: KSD Time: 10:55:11

COULOMETER ANALYSIS REPORT

Sample #: 19468 Analysis Type: C Date: 04-15-2004
Sample Weight: .0285 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.59
3	1.0	319.90
4	1.5	789.68
5	2.0	890.02
6	2.5	901.67
7	3.0	904.18
8	3.5	905.23
9	4.0	905.96
10	4.5	906.50

Final Results: 3.17%C Analyst: KSD Time: 11:00:23

COULOMETER ANALYSIS REPORT

Sample #: 19469 Analysis Type: C Date: 04-15-2004
Sample Weight: .0277 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.39
3	1.0	330.70
4	1.5	993.67
5	2.0	1420.25
6	2.5	1449.22
7	3.0	1453.20
8	3.5	1454.83
9	4.0	1455.97
10	4.5	1456.68

Final Results: 5.25%C Analyst: KSD Time: 11:06:22

COULOMETER ANALYSIS REPORT

Sample #: 19470 Analysis Type: C Date: 04-15-2004
Sample Weight: .0276 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.66
3	1.0	208.73
4	1.5	614.32
5	2.0	733.32
6	2.5	758.90
7	3.0	763.80
8	3.5	765.42
9	4.0	766.04
10	4.5	766.61

Final Results: 2.77%C Analyst: KSD Time: 11:11:40

COULOMETER ANALYSIS REPORT

Sample #: 19471 Analysis Type: C Date: 04-15-2004
Sample Weight: .1034 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.37
3	1.0	50.13
4	1.5	136.15
5	2.0	180.79
6	2.5	188.16
7	3.0	189.06
8	3.5	189.59
9	4.0	189.89
10	4.5	190.16

Final Results: 0.18%C Analyst: KSD Time: 11:16:55

COULOMETER ANALYSIS REPORT

Sample #: 19472 Analysis Type: C Date: 04-15-2004
Sample Weight: .1043 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.18
3	1.0	74.56
4	1.5	227.26
5	2.0	305.29
6	2.5	322.99
7	3.0	325.28
8	3.5	326.09
9	4.0	326.53
10	4.5	326.87

Final Results: 0.31%C Analyst: KSD Time: 11:22:10

COULOMETER ANALYSIS REPORT

Sample #: 19473 Analysis Type: C Date: 04-15-2004
Sample Weight: .0468 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.27
3	1.0	220.71
4	1.5	752.29
5	2.0	901.47
6	2.5	920.56
7	3.0	923.65
8	3.5	924.83
9	4.0	925.55
10	4.5	926.11

Final Results: 1.97%C Analyst: KSD Time: 11:27:25

COULOMETER ANALYSIS REPORT

Sample #: 19474 Analysis Type: C Date: 04-15-2004
Sample Weight: .029 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.50
3	1.0	244.51
4	1.5	678.14
5	2.0	800.21
6	2.5	822.02
7	3.0	825.73
8	3.5	827.24
9	4.0	828.11
10	4.5	828.89

Final Results: 2.85%C Analyst: KSD Time: 11:32:37

COULOMETER ANALYSIS REPORT

Sample #: 19475 Analysis Type: C Date: 04-15-2004
Sample Weight: .032 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.42
3	1.0	198.28
4	1.5	583.28
5	2.0	748.20
6	2.5	792.89
7	3.0	800.68
8	3.5	802.55
9	4.0	803.54
10	4.5	804.28

Final Results: 2.51%C Analyst: KSD Time: 11:37:50

COULOMETER ANALYSIS REPORT

Sample #: 19476 Analysis Type: C Date: 04-15-2004
Sample Weight: .1038 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.42
3	1.0	121.10
4	1.5	401.38
5	2.0	833.22
6	2.5	1023.31
7	3.0	1061.09
8	3.5	1067.76
9	4.0	1069.71
10	4.5	1070.90

Final Results: 1.03%C Analyst: KSD Time: 11:43:03

COULOMETER ANALYSIS REPORT

Sample #: 19477 Analysis Type: C Date: 04-15-2004
Sample Weight: .021 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.22
3	1.0	235.86
4	1.5	664.31
5	2.0	765.56
6	2.5	780.72
7	3.0	782.81
8	3.5	783.75
9	4.0	784.32
10	4.5	784.76

Final Results: 3.73%C Analyst: KSD Time: 11:51:50

COULOMETER ANALYSIS REPORT

Sample #: 19478 Analysis Type: C Date: 04-15-2004
Sample Weight: .0467 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	1.30
3	1.0	272.29
4	1.5	719.28
5	2.0	854.42
6	2.5	878.74
7	3.0	882.42
8	3.5	883.83
9	4.0	884.59
10	4.5	885.21

Final Results: 1.89%C Analyst: KSD Time: 11:57:19

COULOMETER ANALYSIS REPORT

Sample #: 19478 Analysis Type: C Date: 04-15-2004
Sample Weight: .0401 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.18
3	1.0	149.82
4	1.5	577.71
5	2.0	749.90
6	2.5	781.67
7	3.0	786.89
8	3.5	788.28
9	4.0	789.17
10	4.5	789.76

Final Results: 1.96%C Analyst: KSD Time: 12:02:52

COULOMETER ANALYSIS REPORT

Sample #: CC01 Analysis Type: C Date: 04-15-2004
Sample Weight: .0181 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.39
3	1.0	209.32
4	1.5	592.00
5	2.0	753.32
6	2.5	826.98
7	3.0	849.99
8	3.5	853.51
9	4.0	854.93
10	4.5	855.74

Final Results: 4.71%C Analyst: KSD Time: 12:08:11

COULOMETER ANALYSIS REPORT

Sample #: CB01 Analysis Type: C Date: 04-15-2004
Sample Weight: .4791 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.16
3	1.0	0.29
4	1.5	0.38
5	2.0	0.45
6	2.5	0.55
7	3.0	0.64
8	3.5	0.72
9	4.0	0.75
10	4.5	0.83

Final Results: -3.2ugC/g Analyst: KSD Time: 12:16:21

COULOMETER ANALYSIS REPORT

Sample #: 19479 Analysis Type: C Date: 04-15-2004
Sample Weight: .0396 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.02
3	1.0	198.47
4	1.5	732.32
5	2.0	1072.39
6	2.5	1121.70
7	3.0	1130.54
8	3.5	1132.54
9	4.0	1133.62
10	4.5	1134.27

Final Results: 2.86%C Analyst: KSD Time: 13:00:02

COULOMETER ANALYSIS REPORT

Sample #: 19480 Analysis Type: C Date: 04-15-2004
Sample Weight: 9.399999E-02 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.20
3	1.0	159.92
4	1.5	642.37
5	2.0	1050.50
6	2.5	1177.97
7	3.0	1228.13
8	3.5	1256.12
9	4.0	1269.92
10	4.5	1277.17

Final Results: 1.36%C Analyst: KSD Time: 13:05:16

COULOMETER ANALYSIS REPORT

Sample #: 19481 Analysis Type: C Date: 04-15-2004
Sample Weight: .031 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	2.32
3	1.0	200.17
4	1.5	699.86
5	2.0	1079.70
6	2.5	1143.41
7	3.0	1153.68
8	3.5	1155.95
9	4.0	1156.95
10	4.5	1157.63

Final Results: 3.73%C Analyst: KSD Time: 13:10:32

COULOMETER ANALYSIS REPORT

Sample #: 19482 Analysis Type: C Date: 04-15-2004
Sample Weight: .0255 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.33
3	1.0	241.78
4	1.5	849.85
5	2.0	1198.50
6	2.5	1255.33
7	3.0	1265.23
8	3.5	1267.03
9	4.0	1268.03
10	4.5	1268.70

Final Results: 4.97%C Analyst: KSD Time: 13:15:42

COULOMETER ANALYSIS REPORT

Sample #: 19483 Analysis Type: C Date: 04-15-2004
Sample Weight: .0244 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.37
3	1.0	182.92
4	1.5	662.77
5	2.0	930.93
6	2.5	976.17
7	3.0	984.71
8	3.5	986.69
9	4.0	988.05
10	4.5	988.87

Final Results: 4.05%C Analyst: KSD Time: 13:20:53

COULOMETER ANALYSIS REPORT

Sample #: 19484 Analysis Type: C Date: 04-15-2004
Sample Weight: .0283 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.24
3	1.0	230.15
4	1.5	802.13
5	2.0	1198.22
6	2.5	1272.64
7	3.0	1285.85
8	3.5	1287.80
9	4.0	1288.83
10	4.5	1289.59

Final Results: 4.55%C Analyst: KSD Time: 13:26:03

COULOMETER ANALYSIS REPORT

Sample #: 19485 Analysis Type: C Date: 04-15-2004
Sample Weight: .0911 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.30
3	1.0	81.47
4	1.5	352.28
5	2.0	585.15
6	2.5	688.79
7	3.0	723.22
8	3.5	729.10
9	4.0	730.41
10	4.5	731.12

Final Results: 0.80%C Analyst: KSD Time: 13:31:18

COULOMETER ANALYSIS REPORT

Sample #: 19486 Analysis Type: C Date: 04-15-2004
Sample Weight: .0341 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.19
3	1.0	234.33
4	1.5	814.62
5	2.0	1320.89
6	2.5	1433.26
7	3.0	1456.86
8	3.5	1460.32
9	4.0	1461.63
10	4.5	1462.47

Final Results: 4.29%C Analyst: KSD Time: 13:36:34

COULOMETER ANALYSIS REPORT

Sample #: 19487 Analysis Type: C Date: 04-15-2004
Sample Weight: .0239 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.41
3	1.0	190.92
4	1.5	691.73
5	2.0	1096.91
6	2.5	1176.32
7	3.0	1195.14
8	3.5	1197.47
9	4.0	1198.54
10	4.5	1199.23

Final Results: 5.01%C Analyst: KSD Time: 13:41:45

COULOMETER ANALYSIS REPORT

Sample #: 19488 Analysis Type: C Date: 04-15-2004
Sample Weight: .0905 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.02
3	1.0	136.68
4	1.5	628.52
5	2.0	1140.55
6	2.5	1356.03
7	3.0	1417.99
8	3.5	1439.68
9	4.0	1445.75
10	4.5	1448.62

Final Results: 1.60%C Analyst: KSD Time: 13:46:59

COULOMETER ANALYSIS REPORT

Sample #: 19489 Analysis Type: C Date: 04-15-2004
Sample Weight: .0381 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	1.34
3	1.0	288.58
4	1.5	911.93
5	2.0	1556.12
6	2.5	1841.73
7	3.0	1902.58
8	3.5	1919.23
9	4.0	1922.60
10	4.5	1924.32

Final Results: 5.05%C Analyst: KSD Time: 13:52:12

COULOMETER ANALYSIS REPORT

Sample #: 19490 Analysis Type: C Date: 04-15-2004
Sample Weight: .0319 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.84
3	1.0	171.13
4	1.5	648.44
5	2.0	907.80
6	2.5	967.87
7	3.0	982.95
8	3.5	985.53
9	4.0	987.21
10	4.5	988.39

Final Results: 3.10%C Analyst: KSD Time: 13:57:24

COULOMETER ANALYSIS REPORT

Sample #: 19491 Analysis Type: C Date: 04-15-2004
Sample Weight: .1183 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.22
3	1.0	117.04
4	1.5	548.56
5	2.0	995.00
6	2.5	1230.77
7	3.0	1298.50
8	3.5	1323.19
9	4.0	1329.56
10	4.5	1333.48

Final Results: 1.13%C Analyst: KSD Time: 14:02:40

COULOMETER ANALYSIS REPORT

Sample #: 19492 Analysis Type: C Date: 04-15-2004
Sample Weight: .1213 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	2.11
3	1.0	116.23
4	1.5	477.09
5	2.0	791.80
6	2.5	904.24
7	3.0	941.01
8	3.5	948.10
9	4.0	949.34
10	4.5	950.07

Final Results: 0.78%C Analyst: KSD Time: 14:07:54

COULOMETER ANALYSIS REPORT

Sample #: 19493 Analysis Type: C Date: 04-15-2004
Sample Weight: .0753 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.00
3	1.0	180.41
4	1.5	638.18
5	2.0	872.11
6	2.5	937.04
7	3.0	956.66
8	3.5	959.13
9	4.0	959.97
10	4.5	960.56

Final Results: 1.27%C Analyst: KSD Time: 14:13:35

COULOMETER ANALYSIS REPORT

Sample #: 19494 Analysis Type: C Date: 04-15-2004
Sample Weight: .0736 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.00
3	1.0	96.56
4	1.5	412.77
5	2.0	661.96
6	2.5	749.65
7	3.0	796.33
8	3.5	825.63
9	4.0	848.07
10	4.5	868.54

Final Results: 1.18%C Analyst: KSD Time: 14:18:47

COULOMETER ANALYSIS REPORT

Sample #: 19494 Analysis Type: C Date: 04-15-2004
Sample Weight: .0681 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	11.73
3	1.0	105.43
4	1.5	403.96
5	2.0	651.69
6	2.5	751.85
7	3.0	800.40
8	3.5	825.16
9	4.0	840.97
10	4.5	853.08

Final Results: 1.25%C Analyst: KSD Time: 14:24:30

COULOMETER ANALYSIS REPORT

Sample #: 19500 Analysis Type: C Date: 04-15-2004
Sample Weight: .0564 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	7.42
3	1.0	144.10
4	1.5	593.44
5	2.0	949.30
6	2.5	1073.73
7	3.0	1134.01
8	3.5	1167.44
9	4.0	1179.51
10	4.5	1184.53

Final Results: 2.10%C Analyst: KSD Time: 14:29:44

COULOMETER ANALYSIS REPORT

Sample #: 19500 Analysis Type: C Date: 04-15-2004
Sample Weight: .0448 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	1.66
3	1.0	101.46
4	1.5	430.90
5	2.0	667.47
6	2.5	756.64
7	3.0	807.42
8	3.5	836.52
9	4.0	850.31
10	4.5	859.20

Final Results: 1.92%C Analyst: KSD Time: 14:34:54

COULOMETER ANALYSIS REPORT

Sample #: CC02 Analysis Type: C Date: 04-15-2004
Sample Weight: .0189 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	2.88
3	1.0	161.84
4	1.5	548.00
5	2.0	754.59
6	2.5	843.15
7	3.0	886.78
8	3.5	899.53
9	4.0	901.68
10	4.5	902.61

Final Results: 4.77%C Analyst: KSD Time: 14:40:41

COULOMETER ANALYSIS REPORT

Sample #: CB02 Analysis Type: C Date: 04-15-2004
Sample Weight: .4978 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.11
3	1.0	1.91
4	1.5	2.52
5	2.0	2.71
6	2.5	2.84
7	3.0	2.87
8	3.5	2.88
9	4.0	2.88
10	4.5	2.88

Final Results: 4.1ugC/g Analyst: KSD Time: 14:45:52

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04-0113 & 04-0118

Water & Sediment

Analyst:		Date:	04/26/2004
Laboratory Supervisor:		Date:	4.26.04
Project Manager:		Date:	4-27-04

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PAH WATER QA/QC SUMMARY
QC Batch 04-0113

PROJECT: Davisville Naval Sediment Study

PARAMETER: PAH

LABORATORY: Battelle, Duxbury, MA

MATRIX: Water (Rinsate Blank)

SAMPLE CUSTODY: Water samples for PAH analysis, were collected in the field on March 26, 2004. The samples arrived at Battelle Duxbury on March 27, 2004. Cooler temperature was at 3.6°C upon receipt. Samples were stored refrigerated after receipt.

This batch contains 2 water samples.

QA/QC MEASUREMENT PERFORMANCE CRITERIA:

	Reference Method	Blank	Surrogate Recovery	LCS/MS Recovery	SRM % Diff.	MS/MSD Replicate Relative Precision	ICC Precision
PAH	Battelle SOP 5-157	<ssMDL[a]	40-120% Recovery	40-120% Recovery[b]	<30% PD[c]	≤30% RPD[b]	<15% PD

[a] Or analyte concentrations in associated samples >5 x blank values.
[b] For 80% of analytes in MS/MSD; Analyte concentration in MS/MSD must be >5x background to be used for data quality assessment
[c] From a range of certified values; using surrogate corrected data; certified values in SRM must be >5x the detection limit to be used for data quality assessment.

METHOD: Water samples were prepared and analyzed for PAHs following methods described in EA's Quality Assurance Project Plan Addendum (EA, 2004). Briefly,

Sample Preparation – Water samples were extracted for PAHs following Battelle Duxbury SOP 5-200. Briefly, approximately 1-L of water sample (measured using a graduated cylinder) was transferred to a separatory funnel, extraction solvent added (60 mL methylene chloride), and the sample fortified with surrogate internal standard (SIS) compounds. Samples were serially extracted three times using separatory funnel techniques. The combined extract was dried over sodium sulfate and concentrated to 1 mL using Kuderna-Danish and nitrogen evaporation techniques. The final extract was quantatively split, one half was archived, the other half was fortified with recovery internal standards (RIS) and submit to GC/MS analysis.

GC/MS Analysis – PAHs were analyzed by GC/MS (Hewlett Packard 5890 Series 2 GC) using a 60-m DB5 column and helium as the carrier gas. A minimum of a five-point calibration curve was used for PAH analysis, ranging from approximately 0.010 to 10.0 µg/mL. A separate minimum five-point calibration curve was used for Benzaldehyde analysis ranging, from approximately 0.010 to 10.0 µg/mL. All water results were reported in a nanogram per liter concentration basis (ng/L).

HOLDING TIMES: Samples were prepared for analysis in one analytical batch. Samples were extracted within 7-d of collection and analyzed within 40 days of extraction.

HOLDING TIMES (Cont.):

Batch	Extraction Date	Analysis Date
04-0113	3/31/2004	4/16-4/17/2004

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PAH WATER QA/QC SUMMARY
QC Batch 04-0113

DETECTION LIMITS: PAHs results are reported relative to the sample-specific reporting limits for that compound. The sample-specific RL is based on the low calibration standard and adjusted for sample specific processing factors and volumes, as follow:

RL = (Concentration in Low Std. × final extract volume × dilution factors)/ Sample size

Where,
Concentration in Low Std. = 0.010 µg/mL for PAHs
Final Extract Volume = 500 µL
Dilution Factor = 2.0
Sample Size = Volume water extracted

- Non-detects are reported as "null" and U flagged.
- Compounds detected at a concentration below the ssRL are reported and J flagged.

BLANKS: A laboratory procedural blank (PB) was prepared with each analytical batch. Blanks are analyzed to ensure that the sample extraction and analysis methods were free of contamination.

04-0113 – No exceedance.

Corrective Action – None.

LABORATORY CONTROL SAMPLE One laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of PAHs were calculated to measure data quality in terms of accuracy.

04-0113 – PAHs were recovered within the control limits specified in the QAPP

Recoveries ranged from:

LCS	PAHs
BE153LCS-P	52-104%

SURROGATES: Three PAH surrogate compounds were added to each sample prior to extraction, including Naphthalene-d8, Phenanthrene-d10, and Chrysene-d12. Recovery data were calculated to measure data quality in terms of accuracy (extraction efficiency).

04-0113 – PAH surrogates were recovered within the control limits specified in the QAPP.

INSTRUMENT CHECK STANDARD: An instrument check standard was run with each analytical sequence. The PDs against the laboratory consensus values were calculated to measure data quality in terms of precision.

04-0118 – PDs ranged from 0.1 to 11.6%.

Corrective Action – None.

REFERENCES: EA 2004. *Quality Assurance Project Plan Addendum for Additional Sampling and Characterization Phase II Remedial Investigation IR Program Site 16, Naval Construction Battalion Center Davisville North Kingstown, Rhode Island.* Delivery Order No. 0097. February 2004.

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PAH QA/QC SUMMARY
QC Batch 04-0118

PROJECT: Davisville Naval Sediment Study
PARAMETER: PAH
LABORATORY: Battelle, Duxbury, MA
MATRIX: Sediment
SAMPLE CUSTODY: 85 Sediment samples were collected in the field between March 22 and March 27, 2004. Samples arrived at Battelle Duxbury in multiple shipments between March 23 and March 29, 2004. Cooler temperatures ranged from 2 to 10 °C upon receipt. All samples were received in good condition. Samples were stored frozen after login. 19 samples were identified for quantitative PAH analysis, and 20 samples were identified for forensic PAH analysis.

Batch 04-0118 contains 19 soil samples (quantitative PAH analysis)

QA/QC MEASUREMENT PERFORMANCE CRITERIA:

	Reference Method	Blank	Surrogate Recovery	LCS/MS Recovery	SRM % Diff.	MS/MSD Replicate Relative Precision	ICC Precision
PAH	Battelle SOP 5-157	<ssMDL[a]	40-120% Recovery	40-120% Recovery [b]	<30% PD [c]	≤30% RPD [b]	<15% PD

[a] Or analyte concentrations in associated samples >5 × blank values.
[b] For 80% of analytes in MS/MSD; Analyte concentration in MS/MSD must be >5× background to be used for data quality assessment
[c] From a range of certified values; using surrogate corrected data; certified values in SRM must be >5× the detection limit to be used for data quality assessment

METHOD: Sediment samples were prepared and analyzed for PAHs following Battelle's Standard Operating Procedures (SOP). Briefly,

Sediment Sample Preparation – Sediment samples were extracted for PAHs following Battelle Duxbury SOP 5-203, *Extraction of Soil/Sediment Samples for Petroleum Analysis*. Briefly, approximately 30 g of wet sediment material was weighed into an extraction vessel and spiked with the surrogate internal standard (SIS) compounds. Next, the sample was extracted three times with 100 mL dichloromethane (DCM) using shaker techniques. The combined extract was dried over sodium sulfate, concentrated to approximately 2 to 3 mL using Kuderna-Danish and nitrogen evaporation techniques. Sample extracts were treated with activated copper to remove elemental sulfur. The extract was then processed through an alumina cleanup column. Gravimetric analysis was performed for both pre-column and post-column extracts to estimate the dilution factor for the sample extracts. The extract was concentrated under nitrogen, split, one half for archive, the other half was fortified with recovery internal standard (RIS) compounds that are used for quantification, and submitted to GC/MS anlysis.

GC/MS Analysis – PAHs were analyzed by GC/MS (Hewlett Packard 6890) using a 60-m DB5 column and helium as the carrier gas. A minimum of a five-point calibration curve was used for PAH analysis, ranging from approximately 0.01 to 10.0 µg/mL. Concentrations of PAH/hopane were determined by the method of internal standards, using the RIS. All sediment results were reported in a microgram per kilogram dry-weight concentration basis (µg/kg).

PAH QA/QC SUMMARY
QC Batch 04-0118

HOLDING TIMES:

Samples were prepared for analysis in one analytical batch. Samples were extracted and analyzed within holding times. Sediment samples were held frozen and in the dark until extraction.

Batch	Extraction Date	Analysis Date
04-0118	4/05/2004	4/17–4/19/2004

DETECTION LIMITS:

PAHs results are reported relative to the sample-specific reporting limits for that compound. The sample-specific RL is based on the low calibration standard and adjusted for sample specific processing factors and volumes, as follow:

RL = (Concentration in Low Std. × final extract volume × dilution factors)/ Sample size

Where,
Concentration in Low Std. = 0.010 µg/mL for PAHs
Final Extract Volume = 500 µL
Dilution Factor = ~ 2.0
Sample Size = amount sediment extracted

- Non-detects are reported as "null" and U flagged.
- Compounds detected at a concentration below the ssRL are reported and J flagged.

BLANKS:

A laboratory procedural blank (PB) was prepared with each analytical batch. Blanks are analyzed to ensure that the sample extraction and analysis methods were free of contamination.

04-0118 – All PAH analytes were recovered within control limits with the exception of 2-Methylnaphthalene and Naphthalene in sample S1442-P and Naphthalene in S1443-P.

Corrective Action – These analytes ng amounts were greater than 10 times the PB. However, when the concentration were calculated the analytes were less than 5 times the PB due to differing weights and dilution factors.

LABORATORY CONTROL SAMPLE

One laboratory control sample (LCS) was prepared with each analytical batch. The percent recoveries of PAH's were calculated to measure data quality in terms of accuracy.

04-0118 – PAHs were recovered within the control limits specified in the QAPP.

LCS recoveries ranged from:

	PCB
04-0118	57-108%

Corrective Action – None.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATES:

One pair of matrix spike (MS) and matrix spike duplicate (MSD) samples was prepared with the sediment batch to measure data quality in terms of accuracy and precision. The MS/MSD were fortified with PAHs to monitor data quality in terms of accuracy and precision.

04-0118 – PAH congeners were recovered within the control limits specified in the QAPP in the MS/MSD samples, but precision data was outside the control limit for Fluoranthene, Chrysene, and Benzo(j/k)fluoranthene.

page 1 e of f BL 5-4-04

PAH QA/QC SUMMARY
QC Batch 04-0118

Recoveries and RPDs ranged from:

	Recovery	Precision
04-0118	45% – 125%	3.8%–62.5%

Corrective Action – No corrective action was taken because analyte concentrations were less than 5 times that of the background. The exceedances were qualified properly.

SURROGATES: Three PAH surrogate compounds were added to each sample prior to extraction, including Naphthalene-d8, Phenanthrene-d10, and Chrysene-d12. Recovery data were calculated to measure data quality in terms of accuracy (extraction efficiency).

04-0118 – All PAH surrogates were recovered within control limits.

Corrective Action – None.

DUPLICATES: A laboratory duplicate was prepared with the batch. The relative percent difference (RPDs) between laboratory duplicate analyses for PAHs and hopane were calculated to measure data quality in terms of precision.

04-0118 – Fifteen analytes were found outside QC limits.

RPDs ranged from 12.8 to 168.0%.

Corrective Action – Exceedences are likely due to non-homogeneity of the sample. No Integration errors were found.

CONTROL OIL: A North Slope Crude oil was prepared with the batch. The percent difference (PD) between measured and historical values was calculated to measure data quality in terms of accuracy.

04-0118 – All compounds met the QC criteria.

PDs ranged from 5.5 to 15.9%.

SRM: A standard reference material (SRM, NIST 1944) was prepared with the sediment analytical batch. The PD between detected concentrations and *certified values* was calculated to measure data quality in terms of accuracy. ***Note*** – Data qualified using PD is > 30% plus a 95% confidence level. Also note that the SRM is certified for only 15 of the target compounds.

04-0118 – No exceedances.

PDs ranged from:

	PAH
BC925SRM	0.8 – 31.2%

page 1
of f BL 5-4-04

PAH QA/QC SUMMARY
QC Batch 04-0118

INSTRUMENT CHECK STANDARD: An instrument check standard was run with each analytical sequence. The PDs against the laboratory consensus values were calculated to measure data quality in terms of precision.

04-0118 – PDs ranged from 0.1 to 11.6%.

Corrective Action – None.

REFERENCES:

EA 2004. *Quality Assurance Project Plan Addendum for Additional Sampling and Characterization Phase II Remedial Investigation IR Program Site 16, Naval Construction Battalion Center Davisville North Kingstown, Rhode Island.* Delivery Order No. 0097. February 2004.

Workplan

REVIEWED BY:
(For QAU use only)

BATTELLE DUXBURY OPERATIONS
QUALITY ASSURANCE WORKPLAN/QAPP REVISION FORM

PROJECT TITLE: **Davisville Naval Sediment Study**

Internal distribution:
Mark Guilmain
Bob Lizotte
James Roush
Brian Massa

PROJECT NUMBER:

CLIENT: EA Engineering, Science, and Technology
175 Middlesex Turnpike, 3rd Floor
Bedford, MA 01730
Contact Mr. Jim Shultz
Phone: 508-485-2982

PROJECT MANAGER: Jeffery Hardenstine

PROJECT INITIATION DATE: October 1, 2002

REVISION NUMBER: 2

OJECT STANDING: √NEW ONGOING (check one)

REVISION APPROVAL: Project Manager:_____ Date: 4/12/04

Please detail any Workplan/QAPP modifications cited by the Project Team or Client during the initial kickoff meeting or throughout the duration of the project. Please check the box beside the section number and insert a complete description of the modification. Once the Project Manager approves the revisions, a copy of the form must be provided to the Project Team and each individual on the distribution list. The revision form should then be filed with the appropriate documentation (i.e. original Workplan/QAPP). If significant modifications are required, please submit a new version of the original Workplan/QAPP rather than using this revision form.

☐ Section 1.0

x Section 2.0 - Objective and General Information:

Another sample (sample ID: AH28, Battelle ID: S1468) was identified by Dr. Dan Hinckley on 4/7/04 for quantitative PAH analysis and TOC analysis. Per client direction, S1468 was extracted/grouped with the Forensic analysis batch 04-0117, within 24 hrs of the initiation of the first extraction, with no additional QC samples.

The TOC split for S1468 was sent to AMS on 4/7/04.

BATTELLE DUXBURY OPERATIONS
QUALITY ASSURANCE WORK-PLAN/QAPP ADDENDUM FORM

- ☐ Section 3.0 – Quality:
- ☐ Section 4.0 – Organization and Communication:
- ☐ Section 5.0 – Schedule: (required for ongoing projects)
- ☐ Section 6.0 – Budget:
- ☐ Section 7.0 – Staff Development:
- ☐ Attachments:

REVIEWED BY:
(For QAU use only)

4

BATTELLE DUXBURY OPERATIONS
QUALITY ASSURANCE WORKPLAN/QAPP REVISION FORM

PROJECT TITLE: **Davisville Naval Sediment Study**

PROJECT NUMBER:

CLIENT:

EA Engineering, Science, and Technology
175 Middlesex Turnpike, 3rd Floor
Bedford, MA 01730
Contact Mr. Jim Shultz
Phone: 508-485-2982

PROJECT MANAGER: Jeffery Hardenstine

PROJECT INITIATION DATE: October 1, 2002

REVISION NUMBER: 1

PROJECT STANDING: √NEW ONGOING (check one)

REVISION APPROVAL: Project Manager: Jeffy Hardenstine Date: 4-6-04

Please detail any Workplan/QAPP modifications cited by the Project Team or Client during the initial kickoff meeting or throughout the duration of the project. Please check the box beside the section number and insert a complete description of the modification. Once the Project Manager approves the revisions, a copy of the form must be provided to the Project Team and each individual on the distribution list. The revision form should then be filed with the appropriate documentation (i.e. original Workplan/QAPP). If significant modifications are required, please submit a new version of the original Workplan/QAPP rather than using this revision form.

☐ Section 1.0

x Section 2.0 - Objective and General Information:

Preparation and Analysis of Soil and Sediment– semi-volatile analysis

Samples will be weighed, spiked, extracted, concentrated and a gravimetric weight performed as per workplan dated October 1, 2002. Process approximately 50 mg of sample extract, if possible, based on the gravimetric weight through an alumina column. Sample extract will be concentrated, treated with activated copper and a post column weight taken. A minimum of a one half split will be performed and archived for possible biomarker fraction. The remaining extract will be concentrated or split to achieve a 3-5 mg/mL concentration, and spiked with RIS as per table 4. The post RIS extract

will be split and submitted for target compound list PAHs by GC/MS (Attachment 1), and the remainder will be archived for possible GC/FID analysis. A sample list is provided as Attachment 3.

Based on the target compound list PAHs, selected samples will be identified for detailed forensics analysis and will consist of detailed PAH quantification (PAH Tier 1, Tier 3 and Attachment 2), FID chromatogram and biomarker fractionation and analysis per original workplan dated October 1, 2002.

Biomarker Fractionation – The post alumina archive will be spiked with 5B-Cholane as per table 3 and fractionated using silica gel per Battelle SOP 5-293-01 *Total Petroleum Hydrocarbons (TPH) and Fraction-specific Hydrocarbons (FSH) by Gas Chromatography/ Mass Spectrometry.* Only the F1 fraction containing biomarkers will be collected, concentrated, spiked with RIS per table 4 and submitted at a 3-5 mg/mL concentration.

Preparation and Analysis of Rinsate Water Blanks– semi-volatile analysis

Water Sample Extraction. The water samples will be extracted per Battelle SOP 5-200-03 "Water Extraction For Trace Level Semi-Volatile Organic Contaminant Analysis". Water samples will be analyzed for the target compound list PAHs only (Attachment 1). Each water sample consists of 1 liter and will be spiked at the low level with PAH surrogates as listed in table 3. The water samples will be extracted, concentrated and split in half. One half will be archived and the other half will be spiked with PAH RIS as stated in table 4 and submitted for analysis at a 500 uL PIV. The QC samples will include a PB, LCS.

QC Type

Table 2: Quality Control Samples

QC Type	QC Name	QC Description	Frequency	Comments
PB	Procedural Blank	Laboratory Control Reagent blank	1 per batch	Pre-extracted Sigma-Aldrich Silicon dioxide (Soil/Sediment)
LCS	Laboratory control spike	Blank spike recovery sample	1 per batch	Pre-extracted Sigma-Aldrich Silicon dioxide (Soil/Sediment)
MS/MSD	Matrix Spike/Matrix spike duplicate	Field sample fortified with target compounds	1 per batch	1 Soil/Sediment to be designated by EA field team
Duplicate	Lab Duplicate	Duplicate extraction and analysis of a field sample	1 per batch	1 Soil/Sediment to be designated by Battelle Project Manager
SRM	Standard Reference Material	NIST 1944 with one soil/sediment batch	1 per batch	Calculate % Rec using NIST reference values for all applicable analytes with acceptable recovery range +/- 25% Rec (see attached)
NSC	North Slope Crude	Reference Oil (5 mg/mL) with historic values	1 per batch	Use during GC analysis only – not required for prep. Compare v. historical average +/- 25% Rec (for internal Battelle use only)

x Section 3.0 – Quality:

Table 5. Data Quality Objectives

QC Type/Parameter	DQO Targets	Comment/Corrective Action
Procedural Blank	Less than five times MDL (,5xMDL), or associated samples must be greater than five times the blank concentration (>5xPB)	Review with Project Manager; re-analyze or justify results in project records
Laboratory Control Sample	Recovery values 40-120% for at least 80% of the analytes	Review with project manager; re-analyze or justify reporting the results in project records
Standard Reference Material Accuracy	Organics Percent Difference less than 30% from a range of certified values on average	Analyte concentration must be greater than five times the Method Detection Limit (>5xMDL).
Matrix Spike/Matrix Spike Duplicate	Recovery values 40-120% for at least 80% of the analytes. 30% Relative Percent Difference (RPD)	Analyte concentration in MS must be greater thatn five times reported background concentration. Review with project manager; re-analyze or justify reporting the results in project records
Surrogate Compound Recovery	Recovery results between 40% and 120%	Review with project manager; re-analyze or justify reporting the results in project records
Analytical Duplicate Precision	Organics results less than 30% Relative percent Difference (RPD)	Review with project manager; re-analyze or justify reporting the results in project records
Independent Calibration Check Solution	Less than fifteen percent difference from true value (<15%PD)	Review with Project Manager; re-analyze or justify in project records.

☐ Section 4.0 – Organization and Communication:

☐ Section 5.0 – Schedule: (required for ongoing projects)

☐ Section 6.0 – Budget:

☐ Section 7.0 – Staff Development:

x Attachments:

8

Attachment 1

Target Compound List PAHs

Analyte/Analyte Groups	Analyte/Analyte Groups
Naphthalene	Benz(a)anthracene
2-methylnaphthalene	Chrysene
Acenaphthylene	Benzo(b)fluoranthene
Acenaphthene	Benzo(k)fluoranthene
Fluorene	Benzo(a)pyrene
Anthracene	Indeno(1,2,3-c,d)pyrene
Phenanthrene	Dibenz(a,h)anthracene
Fluoranthene	Benzo(g,h,i)perylene
Pyrene	
	TPAH = sum N through GHI

Attachment 2

Additional Detailed Forensic PAH Analytes

Analyte/Analyte Groups
Benzo(b)naphtho(2,1-d)thiophene
C1-Benzo(b)naphtho(2,1-d)thiophene
C2-Benzo(b)naphtho(2,1-d)thiophene
C3-Benzo(b)naphtho(2,1-d)thiophene

REVIEWED BY:
(For QAU use only)

Attachment 3. Sample List

Area	Station ID	DATE COMPLETED	Battelle ID	Comments	Quantitative Analysis?	Forensic Analysis ?	TOC
	AH-03	3/23/2004	S1438	external marina	Yes	Yes	Yes
	AH-06	3/23/2004	S1432	MS/MSD and duplicate	Yes	Yes	Yes
	AH-08	3/22/2004	S1421	external marina	Yes		Yes
	AH-11	3/22/2004	S1424	MS/MSD and duplicate	Yes		Yes
	AH-17	3/23/2004	S1435	internal marina, 23 ppm PAH	Yes	Yes	Yes
	AH-23	3/24/2004	S1452	Inner Marina (23 ppm)	Yes		Yes
	AH-26	3/27/2004	S1505	Gradation from Outfall and Marina	Yes	Yes	Yes
	AH-29	3/26/2004	S1491	Inner Marina (48 ppm PAH)	Yes	Yes	Yes
	AH-32	3/26/2004	S1490	Inner Marina (19 ppm PAH) and Site 16	Yes		Yes
	AH-33	3/26/2004	A1476	Both marina and Site 16	Yes		Yes
	AH-35	3/26/2004	S1479	Gradation from seep	Yes		Yes
	AH-40	3/27/2004	S1509	Seep sample	Yes	Yes	Yes
	AH-42	3/27/2004	S1507	Gradation from Outfall	Yes		Yes
	AH-45	3/26/2004	S1474	Close to Site 16, but not seep or outfall	Yes	Yes	Yes
	AH-47	3/26/2004	S1494	Capture second seep	Yes		Yes
	AH-49	3/25/2004	S1471	Closest to outfall	Yes	Yes	Yes
	AH-51	3/27/2004	S1502	Black Beauty	Yes		Yes
Coggeshall Cove-Prudence Is.	REF1-1	3/24/2004	S1442	<1 ppm PAH	Yes		Yes
	REF1-2	3/24/2004	S1443	1.1 ppm PAH	Yes		Yes
	REF1-4	3/24/2004	S1445	3 ppm PAH	Yes	Yes	Yes
Northeast Shoreline-Jamestown Is.	REF2-1	3/24/2004	S1447	4.4 ppm PAH	Yes	Yes	Yes
	REF2-3	3/24/2004	S1449	2.2 ppm PAH	Yes		Yes
	REF2-5	3/24/2004	S1451	1.1 ppm PAH	Yes		Yes
Fishing Cove	REF3-1	3/25/2004	S1467	6.5 ppm PAH	Yes		Yes
	REF3-2	3/25/2004	S1481	7.3 ppm PAH	Yes	Yes	Yes
	REF3-4	3/25/2004	S1464	4.7 ppm PAH	Yes		Yes

BATTELLE DUXBURY OPERATIONS
QUALITY ASSURANCE WORK-PLAN/QAPP ADDENDUM FORM

Area	Station ID	DATE COMPLETED	Battelle ID	Comments	Quantitative Analysis?	Forensic Analysis ?	TOC
Field duplicate-	DUP-01	3/22/2004	S1426	dup of AH-11	Yes		Yes
Field duplicate-	DUP-03	3/23/2004	S1430	dup of AH-6	Yes	Yes	Yes
Field duplicate-	DUP-07	3/26/2004	S1473	dup of AH-33	Yes		Yes
Matrix Spike/M.S. Duplicate-indicate station location	AH-11-MS/MSD	3/23/2004	S1424		Yes		
	AH-06-MS/MSD	3/23/2004	S1432		Yes		
Rinsate Blanks	RINS-01	X	S1487		Yes		
	RINS-02	X	S1489		Yes		
Seep-core sample Top	Core 1-top	3/27/2004	S1510		Yes		Yes
Seep-core sample Bottom	Core 1- bot	3/27/2004	S1511		Yes		Yes
Source 1 - Dip Tank Area	SOURCE1-1	3/26/2004	S1483			Yes	
	SOURCE1-2	3/26/2004	S1485			Yes	
Source 2 - MW16-07S area	SOURCE2-1	3/26/2004	S1484			Yes	
	SOURCE2-2	3/26/2004	S1486			Yes	
Source 3 - FFFTA	SOURCE3-1	3/26/2004	S1481			Yes	
	SOURCE3-2	3/26/2004	S1482			Yes	
Source 4 - SW Catch Basin	SOURCE4-1		S1457			Yes	

Battelle

The Business of Innovation

ShpNo SHP-040323-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 2960097.3203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Tuesday, March 23, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959704

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	2.0	8

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1420 - S1427

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/23/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 9:09:

Authorized By: **Authorized On:**

4.5
2.0 Temp Blank.

Battelle
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Chain of Custody

Proj. No	Proj. Name
29600097.3203	Allen Harbor Sediment Sampling

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	TOC OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3.22.04	1635	S1420	AH-07	Sediment				X				X			2
3.22.04	1540	S1421	AH-08	Sediment				X				X			2
3.22.04	1450	S1422	AH-09	Sediment				X				X			2
3.22.04	1410	S1423	AH-10	Sediment				X				X			2
3.22.04	1215	S1424	AH-11	Sediment				X				X			2
3.22.04	1215 S1424	~~S1425~~ ①	AH-11 MS/MSD	Sediment				X				X			4
3.22.04	—	S1426	AH-DUP01	Sediment				X				X			2
3.22.04	—	S1427	AH-DUP02	Sediment				X				X			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	03/22/04 1900	[signature]	3/23/04 10:30
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: ① Sample given same ID as background sample per PM's request 4/5/04 JMF.
all 6 jars have ID S1424

ORIGINAL

Battelle

The Business of Innovation

ShpNo SHP-040323-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑

Project Number: 2960097.3203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Tuesday, March 23, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1420	AH-07	03/22/04 16:35	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1421	AH-08	03/22/04 15:40	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1422	AH-09	03/22/04 14:50	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1423	AH-10	03/22/04 14:10	03/23/04 13:56	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1424	AH-11	03/22/04 12:15	03/23/04 13:56	6	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	Jars 1 & 2 are AH-11, J
S1426	AH-DUP 01	03/22/04 0:00	03/23/04 13:58	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1427	AH-DUP 02	03/22/04 0:00	03/23/04 13:58	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	

Total Samples: 7

Battelle

The Business of Innovation

ShpNo SHP-040324-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑ ☐

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Wednesday, March 24, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959645

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	5.4	13

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☐ Sample containers intact
☑ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 5.4 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1428 - S1440

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/24/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:30:0

Authorized By: **Authorized On:**

Battelle

The Business of Innovation

ShpNo: SHP-040324-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved:

COC Client: EA Engineering

COC Project: Allen Harbor Sediment Sampling

COC Date: 3/24/2004 10:38:00 AM

	Description of Problem:	Explanation:
Sample Container Integrity	Cap broken	Several samples received with damaged caps: AH-16 (S1436, 1of2), AH-15 (S1437, 2of2), Dup3 (S1430)

Documentation of project manager notification

Sample Custodian	Newell, Jeffrey	**Date:**	3/24/2004 11:31:00 A
Laboratory Manager:	Peven-McCarthy, Carole	**Date:**	4/1/2004 10:50:00 AM
Project Manager:	Hardenstine, Jeffery	**Date:**	3/26/2004 1:03:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Sent e-mail to Dan Hinkley of EA Engineering on 3-26-04 notifing of samples with cracked caps. Note sample intergrity is not compromised. Caps are replaced

Date this form was received back to the custodian: _____

Reference Number: _____

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Chain of Custody

Proj. No: 9100173203

Proj. Name: Allen Harbor Sediment Sampling

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	Battelle ID #	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3/23/04	0930	~~AH-12~~	AH-12	Sediment	S1428				X				X			2
3/23/04	1005		AH-06 MS	Sediment	S1432 ~~S1429~~ ①				X				X			2
			DUP 3	Sediment	S1430				X				X			2
3/23/04	1005		AH-06 MSD	Sediment	S1432 ~~S1431~~ ①				X				X			2
3/23/04	1005		AH-06	Sediment	S1432				X				X			2
3/23/04	1123		AH-05	Sediment	S1433				X				X			2
~~3/23/04~~	~~1555~~		Temp Blank													
3/23/04	1555		AH-19	Sediment	S1434				X				X			2
3/23/04	1625		AH-17	Sed	S1435				X				X			2
3/23/04	1530		AH-16	Sed	S1436				X				X			2
3/23/04	1505		AH-15	Sed	S1437				X				X			2
3/23/04	1350		AH03	Sed	S1438				X				X			2
3/23/04	1375		AH-04	Sed	S1439				X				X			2
3/23/04	1430		AH-14	Sed	S1440				X				X			2

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/23/04	18:00	[signature]	3/24/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

① samples were given same ID as background sample. all 6 jars are now logged in as S1432 per PM's request. JMF 4/5/04

ORIGINAL

Battelle

The Business of Innovation

ShpNo SHP-040324-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Wednesday, March 24, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1428	AH-12	03/23/04 9:30	03/24/04 11:12	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1430	Dup3		03/24/04 11:13	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1432	AH-06	03/23/04 10:05	03/24/04 11:15	6	SEDIMENT	5.4	NA	NA	NA	29 Freezer			Jars 1 & 2 are AH06, Ja
S1433	AH-05	03/23/04 11:25	03/24/04 11:16	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1434	AH-19	03/23/04 15:55	03/24/04 11:17	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1435	AH-17	03/23/04 16:25	03/24/04 11:19	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1436	AH-16	03/23/04 15:30	03/24/04 11:21	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1437	AH-15	03/23/04 15:05	03/24/04 11:22	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1438	AH-03	03/23/04 13:50	03/24/04 11:23	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1439	AH-04	03/23/04 13:25	03/24/04 11:24	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1440	AH-14	03/23/04 14:30	03/24/04 11:24	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			

Total Samples: 11

Battelle

The Business of Innovation

ShpNo SHP-040325-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Thursday, March 25, 2004 10:00 AM

No. of Shipping Containers: 2

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959634

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 2	Cooler	Tape	Intact	Intact	0.8	7
2 of 2	Cooler	Tape	Intact	Intact	2.3	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2.3 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1442 - S1457

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/25/2004 10:00 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:50:0

Authorized By: **Authorized On:**

Battelle

The Business of Innovation

ShpNo: SHP-040325-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved:

COC Client: EA Engineering

COC Project: AH Sediment Sampling

COC Date: 3/25/2004 10:21:00 AM

	Description of Problem:	Explanation:
Sample Container Integrity	Cap broken	SAMPLE REF 1-1(S1442) BOTTLE 2 OF 2 CAP BROKEN; NO SAMPLE LOST

Documentation of project manager notification

Sample Custodian	Newell, Jeffrey	**Date:**	3/25/2004 12:00:00 PM
Laboratory Manager:	Peven-McCarthy, Carole	**Date:**	4/1/2004 10:43:00 AM
Project Manager:	Hardenstine, Jeffery	**Date:**	3/26/2004 1:13:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Sent Dan Hinkley of EA Engineering an e-mail on 3-26-04 notifing of samples received with broken cap. Note, sample integrity is not compromised. The cap is replaced.

Date this form was received back to the custodian: _____

Reference Number: _____

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Chain of Custody

Proj. No	Proj. Name
29600973303	AH Sed. Sampling

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3/24/04	0840	51442	REF 1-1									TOC			
3/24/04	0900	51443	REF 1-2					X				X			2
3/24/04	0925	51444	REF 1-3					X				X			2
3/24/04	1005	51445	REF 1-4					X				X			2
3/24/04	1030	51446	REF 1-5					X				X			2
3/24/04	1150	51447	REF 2-1					X				X			2
3/24/04	1215	51448	REF 2-2					X				X			2
3/24/04	1235	51449	REF 2-3					X				X			2
3/24/04	1305	51450	REF 2-4					X				X			2
3/24/04	1325	51451	REF 2-5					X				X			2
3/24/04	1530	51452	AH-23					X				X			2
3/24/04	1615	51453	AH-21					X				X			2
3/24/04	1600	51454	AH-24					X				X			2
			Temp blank					~~X~~	RC			~~X~~ RC			1
3/24/04	1636	51455	AH-18					X				X			2
		51456	DUP 04					X				X			2
3/24/04	1715	51457	SD Source					X				X			2

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/24/04	18:08	[signature]	3/25/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

Battelle
The Business of Innovation

ShpNo SHP-040325-01

Battelle Project No:

Sample Receipt Form Details

Approved:

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Thursday, March 25, 2004 10:00 AM

No. of Shipping Containers: 2

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1442	REF 1-1	03/24/04 8:40	03/25/04 11:01	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1443	REF 1-2	03/24/04 9:00	03/25/04 11:01	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1444	REF 1-3	03/24/04 9:25	03/25/04 11:02	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1445	REF 1-4	03/24/04 10:05	03/25/04 11:09	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1446	REF 1-5	03/24/04 10:30	03/25/04 11:10	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1447	REF 2-1	03/24/04 11:50	03/25/04 11:15	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1448	REF 2-2	03/24/04 12:15	03/25/04 11:16	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1449	REF 2-3	03/24/04 12:35	03/25/04 11:20	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1450	REF 2-4	03/24/04 13:05	03/25/04 11:21	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1451	REF 2-5	03/24/04 13:25	03/25/04 11:24	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1452	AH-23	03/24/04 15:30	03/25/04 11:25	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1453	AH-21	03/24/04 16:15	03/25/04 11:26	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1454	AH-24	03/24/04 16:00	03/25/04 11:27	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1455	AH-18	03/24/04 16:35	03/25/04 11:27	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1456	Dup 04		03/25/04 11:29	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1457	SID Source 4-1	03/24/04 17:15	03/25/04 11:30	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			

Total Samples: 16

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Battelle

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ShpNo SHP-040326-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Friday, March 26, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959601

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	1.5	15

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☐ Sample containers intact
☑ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 1.5 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1458 - S1472

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/26/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:41:0

Authorized By: **Authorized On:**

Battelle

The Business of Innovation

ShpNo: SHP-040326-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved: ☑

COC Client: EA Engineering

COC Project: AH Sediment Sampling

COC Date: 3/26/2004 10:25:00 AM

	Description of Problem:	Explanation:
Custody	Jars and C-O-C do not match for time/date	JARS FOR SAMPLE AH-39 (S1469) LIST COLLECTION TIME AS 15:35; COC LISTS TIME AS 15:39
Sample Container Integrity	Cap broken	SAMPLE REF 3-1 (S1467) JAR 2OF2 CAP BROKEN; NO SAMPLE LOST

Documentation of project manager notification

Sample Custodian	Newell, Jeffrey	**Date:**	3/26/2004 11:10:00 A
Laboratory Manager:	Peven-McCarthy, Carole	**Date:**	4/1/2004 10:45:00 AM
Project Manager:	Hardenstine, Jeffery	**Date:**	3/26/2004 1:17:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinckley, Daniel **at** EA Engineering, Science, and Technology

Results of communication with client (Describe any corrective action directed by the client):

Sent Dan e-mail. Corrective action for sample lids is to replace with clean lid. Correct collection time for sample AH-39 is 15:35

Date this form was received back to the custodian: _____

Reference Number: _____

5 7B

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Chain of Custody

Proj. No: 2960097 3203
Proj. Name: AH Sediment Sampl

SAMPLERS: Signature: [signature]

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
												TOC			
3/25/04	1135	S1458	AH-20					✓				✓			2
		S1459	DUP05					✓				✓			2
3/25/04	1215	S1460	AH-13					✓				✓			2
3/25/04	1250	S1461	AH-02					✓				✓			2
3/25/04	1315	S1462	AH-01					✓				✓			2
3/25/04	1005	S1463	REF 3-5					✓				✓			2
3/25/04	0940	S1464	REF 3-4					✓				✓			2
3/25/04	0930	S1465	REF 3-3					✓				✓			2
3/25/04	0855	S1466	REF 3-2					✓				✓			2
3/25/04	0825 *	S1467	REF 3-1					✓				✓			2
3/25/04	1500	S1468	AH-28					✓				✓			2
3/25/04	1539 *	S1469	AH-39					✓				✓			2
		S1470	DUP06					✓				✓			2
3/25/04	1645	S1471	AH-49					✓				✓			2
3/25/04	1670	S1472	AH-50					✓				✓			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	03/25/04 1750	[signature]	3/26/04 10:30
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Hold Till Further notice

ORIGINAL

Battelle
The Business of Innovation

ShpNo SHP-040326-01

Battelle Project No:: A Davisville

Sample Receipt Form Details

Approved: ☑ Submitted: ☐

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Friday, March 26, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1458	AH-20	03/25/04 11:35	03/26/04 10:56	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1459	DUP 05		03/26/04 10:56	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1460	AH-13	03/25/04 12:15	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1461	AH-02	03/25/04 12:50	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1462	AH-01	03/25/04 13:15	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1463	REF 3-5	03/25/04 10:05	03/26/04 10:59	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1464	REF 3-4	03/25/04 9:40	03/26/04 11:00	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1465	REF 3-3	03/25/04 9:20	03/26/04 11:01	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1466	REF 3-2	03/25/04 8:55	03/26/04 11:01	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1467	REF 3-1	03/25/04 8:25	03/26/04 11:02	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1468	AH-28	03/25/04 15:00	03/26/04 11:03	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1469	AH-39	03/25/04 15:35	03/26/04 11:04	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1470	DUP 06		03/26/04 11:04	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1471	AH-49	03/25/04 16:45	03/26/04 11:05	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1472	AH-50	03/25/04 16:20	03/26/04 11:07	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			

Total Samples: 15

Battelle

The Business of Innovation

ShpNo SHP-040327-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑ ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Saturday, March 27, 2004 12:15 PM

No. of Shipping Containers: 2

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** Not Recorded

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 2	Cooler	Tape	Intact	Intact	3.6	11
2 of 2	Cooler	None	Not Applicable	Intact	10.0	15

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 10 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1473 - S1498

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/27/2004 12:15 PM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 12:1

Authorized By: Hardenstine, Jeffery **Authorized On:** 3/31/2004 10:04:0

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Battelle

The Business of Innovation

ShpNo: SHP-040327-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved: ☑

COC Client: EA Engineering

COC Project: Allen Harbor

COC Date: 3/27/2004 1:22:00 PM

	Description of Problem:	Explanation:
Client Id	Extra samples not listed on the C-O-C	Extra samples Source 1-1 3/26/04 10:15
	Missing samples listed on the C-O-C	Missing sample Source 1-2 3/26/04 10:15
Sample Container Integrity	Cap broken	Lid cracked for sample Source 2-1 (S1484 1of2)
	Cap broken	Lid cracked for sample AH-45 (S1474 1of2)
Temperature and Preservation	Receipt temperature outside of acceptability	Cooler 2 had a temperature of 10.0 which is out of the acceptable range. The spout was open and their was no tape sealing the cooler shut.

Documentation of project manager notification

Sample Custodian Fahey, Jessica **Date:** 3/27/2004 1:26:00 PM

Laboratory Manager: Peven-McCarthy, Carole **Date:** 4/1/2004 10:47:00 AM

Project Manager: Hardenstine, Jeffery **Date:** 4/1/2004 8:29:00 AM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 30-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Note cooler temp, proceed with analysis. Source 1-1 is listed on COC twice with same date and different collection times. Source 1-1 collected at 10:15 should be Source 1-2 collected 1/26/04 at 10:15. Per client request please ammend COC. Note cracked lid

Date this form was received back to the custodian: _____

Reference Number: _____

Battelle
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Chain of Custody

Proj. No: 29600973203
Proj. Name: AH Sed Sample

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
												TOC			
		S1473	DUP07	Sediment				✓				✓			2
3-26-04	1140	S1474	AH-45	Sediment				✓				✓			2
3-26-04	1200	S1475	AH-36	Sediment				✓				✓			2
3-26-04	1105	S1476	AH-33	Sediment				✓				✓			2
3-26-04	1045	S1477	AH-43	Sediment				✓				✓			2
3-26-04	1015	S1478	AH-41	Sediment				✓				✓			2
3-26-04	0940	S1479	AH-35	Sediment				✓				✓			2
3-26-04	0900	S1480	AH-31	Sediment				✓				✓			2
3-26-04	1220	S1481	Source 3-1	Sediment				✓				✓			2
3-26-04	1155	S1482	Source 3-2	Sediment				✓				✓			2
3-26-04	0930	S1483	Source 1-1	Sediment				✓				✓			2
3-26-04	0900	S1484	Source 2-1	Sediment				✓				✓			2
3-26-04	1015	~~S1485~~ ①	Source 1-X2 ②	Sediment				✓				✓			2
3-26-04	0930	S1486	Source 2-2	Sediment				✓				✓			2
3-26-04	1230	S1487	RINS01	Water — Sediment Unless - Forward				✓							1
3-26-04	—	S1488	DUP08	Sediment				✓				✓			2
3-26-04	1000	S1489	RINS02	Water — Split Spoon Source Forward				✓							1

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	3/26/04 1150	[signature]	3/27/04 12:15 pm
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Hold Until Further Notice

① WL 3/29/04 JMF

② change per client's request. Please see corrective action JMF 4/1/04 S1485

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Chain of Custody

Proj. No: 29600973003
Proj. Name: AH Sed. Sample
SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3-26-04	1515	S1490	AH-32	Sediment				✓				TOC ✓			2
-26-04	1445	S1491	AH-29					✓				✓			2
-26-04	1550	S1492	AH-25					✓				✓			2
-26-04	1535	S1493	AH-30					✓				✓			2
-26-04	1350	S1494	AH-47					✓				✓			2
-26-04	1305	S1495	AH-46					✓				✓			2
-26-04	1330	S1496	AH-44					✓				✓			2
-26-04	1420	S1497	AH-38					✓				✓			2
-26-04	1410	S1498	AH-37					✓				✓			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	3/26/04 1650	[signature]	3/27/04 12 15 pm
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

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Chain of Custody

Proj. No	Proj. Name
	Allen Harbor

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3-26-04	10:15	S1485	Source 1-2	Sediment											2

Relinquished by:	Date/Time	Received by:	Date/Time
		[signature]	3-27-04 12:15 pm
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Extra Sample not on original COC.

ORIGINAL

Battelle
The Business of Innovation

ShpNo SHP-040327-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Saturday, March 27, 2004 12:15 PM

No. of Shipping Containers: 2

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1473	DUP 07		03/29/04 8:58	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1474	AH-45	03/26/04 11:40	03/29/04 8:58	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1475	AH-36	03/26/04 12:00	03/29/04 8:59	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1476	AH-33	03/26/04 11:05	03/29/04 9:01	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1477	AH-43	03/26/04 10:45	03/29/04 9:02	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1478	AH-41	03/26/04 10:15	03/29/04 9:03	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1479	AH-35	03/26/04 9:40	03/29/04 9:04	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1480	AH-31	03/26/04 9:00	03/29/04 9:05	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1481	Source 3-1	03/26/04 12:20	03/29/04 9:06	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1482	Source 3-2	03/26/04 11:55	03/29/04 9:09	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1483	Source 1-1	03/26/04 9:50	03/29/04 9:10	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1484	Source 2-1	03/26/04 9:00	03/29/04 9:13	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1485	Source 1-2	03/26/04 10:15	03/29/04 9:15	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1486	Source 2-2	03/26/04 9:20	03/29/04 9:21	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1487	Rins01	03/26/04 12:30	03/29/04 9:40	1	WATER	10	NA	NA	NA	29 Freezer			
S1488	Dup08	03/26/04 0:00	03/29/04 9:40	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1489	Rins02	03/26/04 10:00	03/29/04 9:41	1	WATER	10	NA	NA	NA	29 Freezer			
S1490	AH-32	03/26/04 15:15	03/29/04 9:41	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1491	AH-29	03/26/04 14:45	03/29/04 9:43	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1492	AH-25	03/26/04 15:50	03/29/04 9:44	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1493	AH-30	03/26/04 15:35	03/29/04 9:45	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1494	AH-47	03/26/04 13:50	03/29/04 9:46	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1495	AH-46	03/26/04 13:05	03/29/04 9:48	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1496	AH-44	03/26/04 13:30	03/29/04 9:57	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1497	AH-38	03/26/04 14:20	03/29/04 9:58	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1498	AH-37	03/26/04 14:10	03/29/04 9:58	2	SEDIMENT	10	NA	NA	NA	29 Freezer			

Total Samples: 26

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ShpNo SHP-040329-01

Battelle Project No:

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Monday, March 29, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959520

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	2.8	10

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2.8 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1502 - S1511

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/29/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 12:2

Authorized By: **Authorized On:**

Battelle

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ShpNo: SHP-040329-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved: ☑

COC Client: EA Engineering

COC Project: AH Sediment Sampling

COC Date: 3/29/2004 10:22:

	Description of Problem:	Explanation:
Custody	Jars and C-O-C do not match for time/date	Jars list collection time for sample AH-51 (S1502) as 13:45; COC states time as 13:15

Documentation of project manager notification

Sample Custodian	Newell, Jeffrey	**Date:**	3/29/2004 11:24:00 A
Laboratory Manager:	Peven-McCarthy, Carole	**Date:**	4/1/2004 10:48:00 AM
Project Manager:	Hardenstine, Jeffery	**Date:**	4/1/2004 12:16:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 30-Mar-04 **I contacted** Hinckley, Daniel **at** EA Engineering, Science, and Technology

Results of communication with client (Describe any corrective action directed by the client):

Correct collection time is 13:45

Date this form was received back to the custodian: _____

Reference Number: _____

2.8

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Chain of Custody

1 of 1

Proj. No	Proj. Name
2960097 3203	AH Sedi Sampling

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3-27-04	1315	S1502	AH-51	Sediment				✓				✓			2
	1245	S1503	AH-48					✓				✓			2
	0750	S1504	AH-22					✓				✓			2
	0820	S1505	AH-26					✓				✓			2
	0900	S1506	AH-27					✓				✓			2
	0920	S1507	AH-42					✓				✓			2
	0940	S1508	AH-34					✓				✓			2
	1030	S1509	AH-40					✓				✓			2
	1200	S1510	Core 1-Top					✓				✓			2
	1200	S1511	Core 1-BOT					✓				✓			2
			Temp Blank												1

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/27/04	1745	[signature]	3/29/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

Hold until further notice.

ORIGINAL

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ShpNo SHP-040329-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑ ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Monday, March 29, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1502	AH-51	03/27/04 13:45	03/29/04 11:09	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1503	AH-48	03/27/04 12:45	03/29/04 11:10	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1504	AH-22	03/27/04 7:50	03/29/04 11:11	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1505	AH-26	03/27/04 8:20	03/29/04 11:13	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1506	AH-27	03/27/04 9:00	03/29/04 11:14	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1507	AH-42	03/27/04 9:20	03/29/04 11:15	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1508	AH-34	03/27/04 9:40	03/29/04 11:16	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1509	AH-40	03/27/04 10:30	03/29/04 11:19	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1510	Core 1-Top	03/27/04 12:00	03/29/04 11:21	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1511	Core 1-Bot	03/27/04 12:00	03/29/04 11:22	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			

Total Samples: 10

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Work/Quality Assurance Project Plan

Approved: ■ Authorized ■

Workplan Title:	**Davisville Naval Sediment Study**
Project Number:	**EADavisville**
Client:	EA Engineering, Science, and Technology 175 Middlesex Turnpike, 3rd Floor Bedford, MA 01730 Contact:Mr. Jim Shultz Phone: 5084852982
QAPP Effective Date:	October 1, 2002
Version Number:	2
Project Manager:	Stephen Emsbo-Mattingly
Prepared By:	Stephen Emsbo-Mattingly
Prepared Date:	October 18, 2002
Reviewed By:	
Reviewed Date:	
Deliverable Due Date:	October 30, 2002

Scope of Work

Technical Approach

Sample Receipt, Storage and Handling:

Refer to EA QAPP Table 9-1

Table 1: Sample Storage and Holding Times

Sample Type	Storage	Applies to	Holding Times
Soil/Sediment	Refrigerated	BIOMARKER_ TIER_1	14 days
		FID_TRACES	14 days
		PAH_TIER_3	14 days
		PAH_TIER_1	14 days

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Work/Quality Assurance Project Plan Approved: Authorized:

Workplan Title: Davisville Naval Sediment Study
Project Number: EADavisville

Spiking Levels:

Table 3. SIS, LCS/MS/ICC Spiking Levels

Standard Type	Standard Contents	Spike Amount (ng)	Standard ID (or equivalent)	Volume (uL)	Comments
SIS			FU81	200 uL	
	O-Terphenyl	~ 40000 ng	200 ug/mL stock		All Matrices
	Naphthalene-d8, Phananthrene-d10, Chrysene-d12	~ 1000 ng	12 ug/mL stock		
SIS			FV29	100 uL	
	5B-Cholane	~ 1 ng	10 ug/mL stock		All Matrices
LCS/MS			FW67	100 uL	
	Selected PAH Analytes	~ 100 ng	10 ug/mL stock		All Matrices

Table 4. RIS Spiking Levels

Standard Type	Standard Contents	Spike Amount (ng)	Standard ID (or equivalent)	Volume (uL)	Comments
RIS			FU82	200 uL	
	5a-Androstane	~ 40000 ng	200 ug/mL stock		All Matrices
	Acenaphthene-d10, Fluorene-d10, Benzo(a)pyrene-d12	~ 2000 ng	10 ug/mL stock		

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Work/Quality Assurance Project Plan Approved: Authorized:

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

Documentation and Reporting

Deliverables:

Miscellaneous Documentation:
Narrative for performance anomalies should be prepared for Project Manager's review.

Sample Preparation:
Print sample prep sheets for Project Manager's review.

Independent Instrument Checks:
Run after every ICal and report for Project Manager's review.

North Slope Crude:
Report comparison to mean and +/- 25%D window for Project Manager's review

Final Report:
Battelle Project Manager will compile data and produce a forensic interpretation within 3 months of the last sample reciept date.

Archive:
Battelle will dispose of all samples after 1 year, sample extracts after 40 days from sample extraction, data after 5 years from date reported.

Refer to EA QAPP Table 17-1.

Table 6. Project Deliverables

Name	Type/Format	Description	Reviews	Date Due
Chromatograms	Analytical Data/Data Package	Triterpanes and Steranes (stacked), Normal Alkanes and Alkylcyclohexanes (stacked), Sesquiterpanes (for internal use only), Use NSC RT windows.	Supervisor plus Project Manager, Frequence = 1/batch	
Electronic Data Tables	Electronic Data Deliverable/Microsoft Excel Tables	Electronic version of hardcopy	Project Manager, Frequency = 1/batch	
Hardcopy Data Tables	Analytical Data/Microsoft Excel Tables	Samples in columns, Analytes in rows, Surrogates on bottom	Supervisor plus Project Manager, Frequency = 1/batch	

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Work/Quality Assurance Project Plan Approved: ■ Authorized ■

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

Schedule

Schedule:

Table 8. Project Schedule

Activity	Start Date	End Date
Sample Preparation		
Sample Analysis		
Sample Collection		
Data Review and Finalization		

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Work/Quality Assurance Project Plan Approved: Authorized

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

TestCodes:

High resolution hydrocarbon fingerprinting method (5-202-05) resembles EPA 8015 with additional QC. PAH and Biomarker method (5-157-07) resembles EPA 8270C using GC/MS in selected ion monitoring mode with additional QC. However, the Battelle procedure does not use the SPCC, CCC, RT check, and internal standard monitoring and other specifications of EPA 8270. PAH measurements are definitive. See EA QAPP Table 7-1 and 12-2.

Table 11. Project Test Codes

Test Code: BIOMARKER_TIER_1

Analyte	Type	RIS	SIS
Hopane	T	Chrysene-d12	5b(H)-Cholane
5b(H)-Cholane	SIS	Chrysene-d12	
Naphthalene-d8	SIS	Chrysene-d12	
Phenanthrene-d10	SIS	Chrysene-d12	
Chrysene-d12	SIS	Chrysene-d12	
Acenaphthene-d10	RIS		
Fluorene-d10	RIS		
Benzo(a)pyrene-d12	RIS		

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Work/Quality Assurance Project Plan

Approved: ■ Authorized ■

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

Test Code: PAH_TIER_1

Analyte	Type	RIS	SIS
Naphthalene	T	Acenaphthene-d10	Naphthalene-d8
C1-Naphthalenes	T	Acenaphthene-d10	Naphthalene-d8
C2-Naphthalenes	T	Acenaphthene-d10	Phenanthrene-d10
C3-Naphthalenes	T	Acenaphthene-d10	Phenanthrene-d10
C4-Naphthalenes	T	Acenaphthene-d10	Phenanthrene-d10
Biphenyl	T	Acenaphthene-d10	Phenanthrene-d10
Acenaphthylene	T	Acenaphthene-d10	Phenanthrene-d10
Acenaphthene	T	Acenaphthene-d10	Phenanthrene-d10
Dibenzofuran	T	Acenaphthene-d10	Phenanthrene-d10
Fluorene	T	Acenaphthene-d10	Phenanthrene-d10
C1-Fluorenes	T	Acenaphthene-d10	Phenanthrene-d10
C2-Fluorenes	T	Acenaphthene-d10	Phenanthrene-d10
C3-Fluorenes	T	Acenaphthene-d10	Phenanthrene-d10
Anthracene	T	Acenaphthene-d10	Phenanthrene-d10
Phenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
C1-Phenanthrenes/Anthracenes	T	Acenaphthene-d10	Phenanthrene-d10
C2-Phenanthrenes/Anthracenes	T	Acenaphthene-d10	Phenanthrene-d10
C3-Phenanthrenes/Anthracenes	T	Acenaphthene-d10	Phenanthrene-d10
C4-Phenanthrenes/Anthracenes	T	Acenaphthene-d10	Phenanthrene-d10
Dibenzothiophene	T	Acenaphthene-d10	Phenanthrene-d10
C1-Dibenzothiophenes	T	Acenaphthene-d10	Phenanthrene-d10
C2-Dibenzothiophenes	T	Acenaphthene-d10	Phenanthrene-d10
C3-Dibenzothiophenes	T	Acenaphthene-d10	Phenanthrene-d10
C4-Dibenzothiophenes	T	Acenaphthene-d10	Phenanthrene-d10
Fluoranthene	T	Acenaphthene-d10	Phenanthrene-d10
Benzo(b)fluorene	T	Acenaphthene-d10	Phenanthrene-d10
Pyrene	T	Acenaphthene-d10	Phenanthrene-d10
C1-Fluoranthenes/Pyrenes	T	Acenaphthene-d10	Phenanthrene-d10
C2-Fluoranthenes/Pyrenes	T	Acenaphthene-d10	Phenanthrene-d10
C3-Fluoranthenes/Pyrenes	T	Acenaphthene-d10	Phenanthrene-d10
Benzo(a)anthracene	T	Benzo(a)pyrene-d12	Chrysene-d12
Chrysene	T	Benzo(a)pyrene-d12	Chrysene-d12
C1-Chrysenes	T	Benzo(a)pyrene-d12	Chrysene-d12
C2-Chrysenes	T	Benzo(a)pyrene-d12	Chrysene-d12
C3-Chrysenes	T	Benzo(a)pyrene-d12	Chrysene-d12
C4-Chrysenes	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(b)fluoranthene	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(j/k)fluoranthene	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(a)fluoranthene	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(e)pyrene	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(a)pyrene	T	Benzo(a)pyrene-d12	Chrysene-d12
Perylene	T	Benzo(a)pyrene-d12	Chrysene-d12
Indeno(1,2,3-cd)pyrene	T	Benzo(a)pyrene-d12	Chrysene-d12
Dibenz(a,h)anthracene	T	Benzo(a)pyrene-d12	Chrysene-d12
Benzo(g,h,i)perylene	T	Benzo(a)pyrene-d12	Chrysene-d12

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Work/Quality Assurance Project Plan

Approved: ■ Authorized ■

Workplan Title: Davisville Naval Sediment Study

Project Number: EADavisville

Test Code: PAH_TIER_3

Analyte	Type	RIS	SIS
1,7-Dimethylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
Cadalene	T	Acenaphthene-d10	Phenanthrene-d10
Retene	T	Acenaphthene-d10	Phenanthrene-d10
Dehydroabietin(e)	T	Acenaphthene-d10	Phenanthrene-d10
4-Methyldibenzothiophene	T	Acenaphthene-d10	Phenanthrene-d10
2/3-Methyldibenzothiophene	T	Acenaphthene-d10	Phenanthrene-d10
1-Methyldibenzothiophene	T	Acenaphthene-d10	Phenanthrene-d10
Naphthalene-d8	SIS	Acenaphthene-d10	
Phenanthrene-d10	SIS	Acenaphthene-d10	
Chrysene-d12	SIS	Benzo(a)pyrene-d12	
Acenaphthene-d10	RIS		
Fluorene-d10	RIS		
Benzo(a)pyrene-d12	RIS		
3-Methylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
2/4-Methylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
2-Methylanthracene	T	Acenaphthene-d10	Phenanthrene-d10
9-Methylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
1-Methylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
2-Methylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
1-Methylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
2,7-Dimethylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
2,6-dimethylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
1,5-Dimethylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
2-Ethylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
1-Ethylnaphthalene	T	Acenaphthene-d10	Phenanthrene-d10
2-Methylfluorene	T	Acenaphthene-d10	Phenanthrene-d10
1-Methylfluorene	T	Acenaphthene-d10	Phenanthrene-d10
2,7-Dimethylphenanthrene	T	Acenaphthene-d10	Phenanthrene-d10
BENZONAPHTHOTHIOPHENES			

Tables

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Procedural Blank
Battelle ID	BE152PB-P
Sample Type	PB
Collection Date	03/31/2004
Extraction Date	03/31/2004
Analysis Date	04/16/2004
Analytical Instrument	MS
% Moisture	NA
% Lipid	NA
Matrix	LIQUID
Sample Size	1.00
Size Unit-Basis	L_LIQUID
Units	NG/L_LIQUID

2-Methylnaphthalene	0.52 J
Naphthalene	1.23 J
Acenaphthylene	U
Acenaphthene	U
Fluorene	0.80 J
Anthracene	U
Phenanthrene	0.86 J
Benzo(a)anthracene	U
Fluoranthene	U
Pyrene	U
Chrysene	U
Benzo(b)fluoranthene	U
Benzo(j/k)fluoranthene	U
Benzo(a)pyrene	U
Indeno(1,2,3-cd)pyrene	U
Dibenz(a,h)anthracene	U
Benzo(g,h,i)perylene	U

Surrogate Recoveries (%)	
Naphthalene-d8	81
Phenanthrene-d10	89
Chrysene-d12	86

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Laboratory Control Sample			
Battelle ID	BE153LCS-P			
Sample Type	LCS			
Collection Date	03/31/2004			
Extraction Date	03/31/2004			
Analysis Date	04/17/2004			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	LIQUID			
Sample Size	1.00			
Size Unit-Basis	NA			
Units	NG/L	**Target**	**% REC**	**Qual**
2-Methylnaphthalene	523.02	1000.50	52	
Naphthalene	823.36	1000.55	82	
Acenaphthylene	837.09	1000.40	84	
Acenaphthene	853.79	1000.40	85	
Fluorene	851.95	1000.50	85	
Anthracene	994.17	1000.40	99	
Phenanthrene	892.77	1000.45	89	
Benzo(a)anthracene	960.51	1000.55	96	
Fluoranthene	965.33	1000.40	96	
Pyrene	984.45	1000.40	98	
Chrysene	971.32	1000.50	97	
Benzo(b)fluoranthene	937.29	1000.50	94	
Benzo(j/k)fluoranthene	1041.40	1000.35	104	
Benzo(a)pyrene	946.75	1000.55	95	
Indeno(1,2,3-cd)pyrene	857.45	1000.60	86	
Dibenz(a,h)anthracene	934.06	1000.40	93	
Benzo(g,h,i)perylene	895.03	1000.50	89	
Surrogate Recoveries (%)				
Naphthalene-d8	85			
Phenanthrene-d10	92			
Chrysene-d12	89			

Not Surrogate Corrected

Analyzed By Roush, James
4/26/2004

L04-0113MS-MOTIVA_PAH:FINAL

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Rins01		Rins02	
Battelle ID	S1487-P		S1489-P	
Sample Type	SA		SA	
Collection Date	03/26/2004		03/26/2004	
Extraction Date	03/31/2004		03/31/2004	
Analysis Date	04/17/2004		04/17/2004	
Analytical Instrument	MS		MS	
% Moisture	NA		NA	
% Lipid	NA		NA	
Matrix	WATER		WATER	
Sample Size	1.02		1.06	
Size Unit-Basis	L_LIQUID		L_LIQUID	
Units	NG/L_LIQUID		NG/L_LIQUID	
2-Methylnaphthalene	6.03	J	1.26	J
Naphthalene	15.00		7.42	J
Acenaphthylene	2.27	J		U
Acenaphthene		U		U
Fluorene	1.02	J	0.70	J
Anthracene	1.96	J		U
Phenanthrene	6.23	J	2.91	J
Benzo(a)anthracene	2.86	J		U
Fluoranthene	10.22		0.92	J
Pyrene	10.72		1.07	J
Chrysene	5.40	J		U
Benzo(b)fluoranthene	3.23	J		U
Benzo(j/k)fluoranthene	4.66	J		U
Benzo(a)pyrene	3.69	J		U
Indeno(1,2,3-cd)pyrene	2.34	J		U
Dibenz(a,h)anthracene	0.83	J		U
Benzo(g,h,i)perylene	2.85	J		U
Surrogate Recoveries (%)				
Naphthalene-d8	79		77	
Phenanthrene-d10	91		91	
Chrysene-d12	86		84	

Not Surrogate Corrected

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ssary of Data Qualifiers

Flag:	Application:
B	Analyte concentration found in the sample at a concentration <5x the level found in the procedural blank.
D	Dilution Run. Initial run outside linear range of instrument.
E	Estimate, result is greater than the highest concentration level in the calibration.
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract.
J	Analyte detected below the sample-specific Reporting Limit (RL).
ME	Significant Matrix Interference - Estimated value.
MI	Significant Matrix Interference - value could not be determined or estimated.
n	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets the contingency criteria.
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not applicable
T	Holding Time (HT) exceeded.
U	Analyte not detected at 3:1 signal:noise ratio. The sample-specific method detection limit (MDL) reported.

Battelle
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Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Procedural Blank
Battelle ID	BE164PB-P
Sample Type	PB
Collection Date	04/05/2004
Extraction Date	04/05/2004
Analysis Date	04/17/2004
Analytical Instrument	MS
% Moisture	46.95
% Lipid	NA
Matrix	SEDIMENT
Sample Size	16.02
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

2-Methylnaphthalene	0.07 J
Naphthalene	0.26 J
Acenaphthylene	U
Acenaphthene	U
Fluorene	U
Anthracene	U
Phenanthrene	U
Benzo(a)anthracene	U
Fluoranthene	U
Pyrene	U
Chrysene	U
Benzo(b)fluoranthene	U
Benzo(j/k)fluoranthene	U
Benzo(a)pyrene	U
Indeno(1,2,3-cd)pyrene	U
Dibenz(a,h)anthracene	U
Benzo(g,h,i)perylene	U

Surrogate Recoveries (%)	
Naphthalene-d8	88
Phenanthrene-d10	85
Chrysene-d12	80

Not Surrogate Corrected

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4/26/2004

S04-0118MS-MOTIVA_PAH:FINAL

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Laboratory Control Sample			
Battelle ID	BE165LCS-P			
Sample Type	LCS			
Collection Date	04/05/2004			
Extraction Date	04/05/2004			
Analysis Date	04/17/2004			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	NA			
Size Unit-Basis	NA			
Units	NG	**Target**	**% REC**	**Qual**
2-Methylnaphthalene	571.45	1000.50	57	
Naphthalene	920.93	1000.55	92	
Acenaphthylene	918.15	1000.40	92	
Acenaphthene	948.51	1000.40	95	
Fluorene	934.40	1000.50	93	
Anthracene	978.60	1000.40	98	
Phenanthrene	946.98	1000.45	95	
Benzo(a)anthracene	957.33	1000.55	96	
Fluoranthene	1005.30	1000.40	100	
Pyrene	1011.58	1000.40	101	
Chrysene	1010.13	1000.50	101	
Benzo(b)fluoranthene	875.89	1000.50	88	
Benzo(j/k)fluoranthene	1075.93	1000.35	108	
Benzo(a)pyrene	908.10	1000.55	91	
Indeno(1,2,3-cd)pyrene	721.94	1000.60	72	
Dibenz(a,h)anthracene	831.47	1000.40	83	
Benzo(g,h,i)perylene	843.76	1000.50	84	
Surrogate Recoveries (%)				
Naphthalene-d8	93			
Phenanthrene-d10	95			
Chrysene-d12	91			

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Core 1-Bot	Core 1-Bot		
Battelle ID	S1511-P	S1511DUP-P		
Sample Type	SA	QADU		
Collection Date	03/27/2004	03/27/2004		
Extraction Date	04/05/2004	04/05/2004		
Analysis Date	04/19/2004	04/19/2004		
Analytical Instrument	MS	MS		
% Moisture	23.84	23.84		
% Lipid	NA	NA		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	22.79	22.86		
Size Unit-Basis	G_DRY	G_DRY		
Units	UG/KG_DRY	UG/KG_DRY	**RPD**	**Qual**
2-Methylnaphthalene	6.28	7.14	12.8	
Naphthalene	9.45	10.80	13.3	
Acenaphthylene	33.33	183.83	138.6	N
Acenaphthene	18.98	27.07	35.1	N
Fluorene	16.33	28.77	55.2	N
Anthracene	79.68	299.81	116.0	N
Phenanthrene	134.43	203.16	40.7	N
Benzo(a)anthracene	145.37	1674.22	168.0	N
Fluoranthene	776.86	2393.46	102.0	N
Pyrene	604.18	1960.25	105.8	N
Chrysene	274.36	1707.09	144.6	N
Benzo(b)fluoranthene	196.12	1179.35	143.0	N
Benzo(j/k)fluoranthene	188.42	1094.68	141.3	N
Benzo(a)pyrene	110.10	756.50	149.2	N
Indeno(1,2,3-cd)pyrene	101.67	501.44	132.6	N
Dibenz(a,h)anthracene	22.72	121.65	137.1	N
Benzo(g,h,i)perylene	84.54	356.01	123.2	N
Surrogate Recoveries (%)				
Naphthalene-d8	74	77		
Phenanthrene-d10	80	86		
Chrysene-d12	73	79		

Not Surrogate Corrected

Analyzed By Roush, James
4/26/2004

S04-0118MS-MOTIVA_PAH:FINAL

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	AH-11	AH-11		
Battelle ID	S1424-P	S1424MS-P		
Sample Type	SA	MS		
Collection Date	03/22/2004	03/22/2004		
Extraction Date	04/05/2004	04/05/2004		
Analysis Date	04/17/2004	04/17/2004		
Analytical Instrument	MS	MS		
% Moisture	65.57	63.02		
% Lipid	NA	NA		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	10.27	5.69		
Size Unit-Basis	G_DRY	G_DRY		
Units	UG/KG_DRY	UG/KG_DRY	**Target**	**% REC Qual**
2-Methylnaphthalene	13.37	92.78	175.83	45
Naphthalene	26.77	134.47	175.84	61
Acenaphthylene	121.50	259.36	175.82	78
Acenaphthene	20.33	160.13	175.82	80
Fluorene	30.13	180.45	175.83	85
Anthracene	166.67	337.42	175.82	97
Phenanthrene	396.25	501.49	175.83	60
Benzo(a)anthracene	324.68	478.66	175.84	88
Fluoranthene	694.90	772.06	175.82	44
Pyrene	790.88	935.67	175.82	82
Chrysene	549.07	648.09	175.83	56
Benzo(b)fluoranthene	525.88	712.06	175.83	106
Benzo(j/k)fluoranthene	500.30	630.86	175.81	74
Benzo(a)pyrene	425.84	578.82	175.84	87
Indeno(1,2,3-cd)pyrene	367.47	547.58	175.85	102
Dibenz(a,h)anthracene	82.28	261.35	175.82	102
Benzo(g,h,i)perylene	326.92	475.11	175.83	84
Surrogate Recoveries (%)				
Naphthalene-d8	64	64		
Phenanthrene-d10	85	91		
Chrysene-d12	77	82		

Not Surrogate Corrected

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4/26/2004

S04-0118MS-MOTIVA_PAH:FINAL

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	AH-11
Battelle ID	S1424MSD-P
Sample Type	MSD
Collection Date	03/22/2004
Extraction Date	04/05/2004
Analysis Date	04/17/2004
Analytical Instrument	MS
% Moisture	65.97
% Lipid	NA
Matrix	SEDIMENT
Sample Size	5.36
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

		Target	% REC	Qual	RPD	Qual
2-Methylnaphthalene	103.58	186.66	48		6.5	
Naphthalene	151.89	186.67	67		9.4	
Acenaphthylene	272.83	186.64	81		3.8	
Acenaphthene	177.67	186.64	84		4.9	
Fluorene	201.25	186.66	92		7.9	
Anthracene	372.37	186.64	110		12.6	
Phenanthrene	529.48	186.65	71		16.8	
Benzo(a)anthracene	526.06	186.67	108		20.4	
Fluoranthene	852.06	186.64	84		62.5	
Pyrene	917.79	186.64	68		18.7	
Chrysene	737.28	186.66	101		57.3	
Benzo(b)fluoranthene	759.40	186.66	125	n	16.5	
Benzo(j/k)fluoranthene	697.05	186.63	105		34.6	
Benzo(a)pyrene	625.50	186.67	107		20.6	
Indeno(1,2,3-cd)pyrene	596.50	186.68	123	n	18.7	
Dibenz(a,h)anthracene	291.81	186.64	112		9.3	
Benzo(g,h,i)perylene	522.52	186.66	105		22.2	

Surrogate Recoveries (%)

Naphthalene-d8	72
Phenanthrene-d10	98
Chrysene-d12	90

Not Surrogate Corrected

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4/26/2004

S04-0118MS-MOTIVA_PAH:FINAL

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	020326-01: SRM 1944
Battelle ID	BE166SRM-P
Sample Type	SRM
Collection Date	04/05/2004
Extraction Date	04/05/2004
Analysis Date	04/17/2004
Analytical Instrument	MS
% Moisture	1.25
% Lipid	NA
Matrix	SEDIMENT
Sample Size	1.15
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

		Target	% Diff	Qual
2-Methylnaphthalene	388.15			
Naphthalene	1135.98	1650.00	31.2	
Acenaphthylene	859.84			
Acenaphthene	269.03			
Fluorene	363.33			
Anthracene	1333.93	1770.00	24.6	
Phenanthrene	4287.45	5270.00	18.6	
Benzo(a)anthracene	4202.37	4720.00	11.0	
Fluoranthene	7137.27	8920.00	20.0	
Pyrene	7496.80	9700.00	22.7	
Chrysene	5332.97	5900.00	9.6	
Benzo(b)fluoranthene	3771.93	3870.00	2.5	
Benzo(j/k)fluoranthene	4105.00	4390.00	6.5	
Benzo(a)pyrene	3438.80	4300.00	20.0	
Indeno(1,2,3-cd)pyrene	2957.45	2780.00	6.4	
Dibenz(a,h)anthracene	748.54	759.00	1.4	
Benzo(g,h,i)perylene	2816.15	2840.00	0.8	
Surrogate Recoveries (%)				
Naphthalene-d8	81			
Phenanthrene-d10	101			
Chrysene-d12	93			

Surrogate Corrected

Analyzed By Roush, James
4/26/2004

S04-0118MS-MOTIVA_PAH:FINAL

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	GD81: North Slope Crude			
Battelle ID	BE174NSC-P			
Sample Type	NSC			
Collection Date	04/12/2004			
Extraction Date	04/12/2004			
Analysis Date	04/17/2004			
Analytical Instrument	MS			
% Moisture	NA			
% Lipid	NA			
Matrix	SEDIMENT			
Sample Size	5.28			
Size Unit-Basis	MG_OIL			
Units	MG/KG_OIL		**Target**	**% Diff** **Qual**
2-Methylnaphthalene	825.13			
Naphthalene	664.37		714.43	7.0
Acenaphthylene		U		
Acenaphthene	12.61			
Fluorene	73.60		87.56	15.9
Anthracene		U		
Phenanthrene	257.65		272.58	5.5
Benzo(a)anthracene		U		
Fluoranthene	3.76			
Pyrene	11.08			
Chrysene	45.35		50.99	11.1
Benzo(b)fluoranthene	6.55			
Benzo(j/k)fluoranthene		U		
Benzo(a)pyrene		U		
Indeno(1,2,3-cd)pyrene		U		
Dibenz(a,h)anthracene	0.79	J		
Benzo(g,h,i)perylene	2.98			
Surrogate Recoveries (%)				
Naphthalene-d8	93			
Phenanthrene-d10	98			
Chrysene-d12	88			

Not Surrogate Corrected

Analyzed By Roush, James
5/5/2004

S04-0118MS-MCTIVA_PAH:DRAFT

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	AH-08	AH-11	AH-DUP 01	REF 1-1	
Battelle ID	S1421-P	S1424-P	S1426-P	S1442-P	
Sample Type	SA	SA	SA	SA	
Collection Date	03/22/2004	03/22/2004	03/22/2004	03/24/2004	
Extraction Date	04/05/2004	04/05/2004	04/05/2004	04/05/2004	
Analysis Date	04/17/2004	04/17/2004	04/17/2004	04/18/2004	
Analytical Instrument	MS	MS	MS	MS	
% Moisture	70.53	65.57	63.33	16.87	
% Lipid	NA	NA	NA	NA	
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
Sample Size	8.87	10.27	11.15	25.43	
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	
2-Methylnaphthalene	16.12	13.37	16.31	0.25	B
Naphthalene	29.74	26.77	32.90	0.86	B
Acenaphthylene	115.95	121.50	148.52	0.56	
Acenaphthene	13.69	20.33	22.77	0.10	J
Fluorene	25.07	30.13	33.55	0.28	
Anthracene	180.96	166.67	188.33	0.86	
Phenanthrene	303.89	396.25	474.38	3.12	
Benzo(a)anthracene	333.13	324.68	326.25	2.01	
Fluoranthene	660.03	694.90	746.19	4.73	
Pyrene	1125.23	790.88	894.36	4.15	
Chrysene	615.92	549.07	571.49	2.35	
Benzo(b)fluoranthene	572.41	525.88	584.48	2.52	
Benzo(j/k)fluoranthene	518.85	500.30	551.87	2.42	
Benzo(a)pyrene	386.33	425.84	465.48	2.41	
Indeno(1,2,3-cd)pyrene	356.55	367.47	411.62	2.45	
Dibenz(a,h)anthracene	74.94	82.28	90.56	0.44	
Benzo(g,h,i)perylene	309.96	326.92	359.99	2.16	
Surrogate Recoveries (%)					
Naphthalene-d8	67	64	70	73	
Phenanthrene-d10	80	85	86	90	
Chrysene-d12	71	77	78	83	

Analyzed By Roush, James
4/26/2004

Not Surrogate Corrected

S04-0118MS-MOTIVA_PAH:FINAL

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	REF 1-2		REF 2-3	REF 2-5	AH-23
Battelle ID	S1443-P		S1449-P	S1451-P	S1452-P
Sample Type	SA		SA	SA	SA
Collection Date	03/24/2004		03/24/2004	03/24/2004	03/24/2004
Extraction Date	04/05/2004		04/05/2004	04/05/2004	04/05/2004
Analysis Date	04/18/2004		04/18/2004	04/18/2004	04/18/2004
Analytical Instrument	MS		MS	MS	MS
% Moisture	21.07		44.88	19.57	63.48
% Lipid	NA		NA	NA	NA
Matrix	SEDIMENT		SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	23.92		16.57	24.14	11.05
Size Unit-Basis	G_DRY		G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY		UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
2-Methylnaphthalene	0.43		5.02	0.91	23.13
Naphthalene	1.00	B	10.33	2.78	46.10
Acenaphthylene	0.92		11.84	2.32	259.86
Acenaphthene	0.15	J	2.11	0.46	56.52
Fluorene	0.43		5.25	1.01	73.35
Anthracene	1.24		15.87	2.95	390.41
Phenanthrene	2.83		31.00	7.41	924.53
Benzo(a)anthracene	2.51		31.22	6.96	665.32
Fluoranthene	6.22		68.33	14.47	1914.77
Pyrene	5.76		64.50	13.73	1957.11
Chrysene	3.67		43.40	8.54	1110.94
Benzo(b)fluoranthene	4.76		57.66	10.15	1137.00
Benzo(j/k)fluoranthene	4.58		50.46	10.00	999.91
Benzo(a)pyrene	3.90		48.35	9.49	829.48
Indeno(1,2,3-cd)pyrene	4.86		53.12	9.98	722.15
Dibenz(a,h)anthracene	0.92		10.59	1.89	160.00
Benzo(g,h,i)perylene	4.36		46.21	8.70	605.79
Surrogate Recoveries (%)					
Naphthalene-d8	59		67	73	86
Phenanthrene-d10	90		93	97	97
Chrysene-d12	83		83	88	90

Battelle
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Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	REF 3-4	REF 3-1	DUP 07	AH-33
Battelle ID	S1464-P	S1467-P	S1473-P	S1476-P
Sample Type	SA	SA	SA	SA
Collection Date	03/25/2004	03/25/2004		03/26/2004
Extraction Date	04/05/2004	04/05/2004	04/05/2004	04/05/2004
Analysis Date	04/18/2004	04/18/2004	04/18/2004	04/18/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	42.62	56.08	59.96	63.68
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	17.36	13.20	12.17	10.93
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
2-Methylnaphthalene	3.18	4.77	17.83	25.49
Naphthalene	7.23	10.41	33.56	51.39
Acenaphthylene	12.51	18.54	196.76	275.93
Acenaphthene	3.27	4.08	34.08	70.70
Fluorene	7.01	9.77	50.89	87.36
Anthracene	24.61	28.79	254.17	373.96
Phenanthrene	64.80	78.59	758.70	1169.38
Benzo(a)anthracene	74.24	86.82	452.28	684.19
Fluoranthene	168.96	199.60	1548.52	2003.94
Pyrene	143.79	172.48	1390.76	1904.58
Chrysene	78.42	103.70	745.64	1095.87
Benzo(b)fluoranthene	89.22	120.11	723.68	981.63
Benzo(j/k)fluoranthene	83.62	119.13	657.52	983.43
Benzo(a)pyrene	90.04	115.78	543.51	819.88
Indeno(1,2,3-cd)pyrene	79.31	112.25	500.69	733.91
Dibenz(a,h)anthracene	15.99	21.04	109.07	163.99
Benzo(g,h,i)perylene	65.50	91.76	426.88	634.64
Surrogate Recoveries (%)				
Naphthalene-d8	63	60	62	85
Phenanthrene-d10	91	85	79	97
Chrysene-d12	84	78	71	87

Not Surrogate Corrected

Analyzed By Roush, James
4/26/2004

S04-0118MS-MOTIVA_PAH:FINAL

Battelle
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Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	AH-35	AH-47	AH-32	AH-51
Battelle ID	S1479-P	S1494-P	S1490-P	S1502-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/2004	03/26/2004	03/26/2004	03/27/2004
Extraction Date	04/05/2004	04/05/2004	04/05/2004	04/05/2004
Analysis Date	04/18/2004	04/18/2004	04/18/2004	04/18/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	69.32	21.50	64.53	70.20
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	9.28	23.59	10.62	8.90
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
2-Methylnaphthalene	44.83	16.05	23.61	22.80
Naphthalene	91.66	31.40	47.25	39.27
Acenaphthylene	231.15	238.43	272.86	354.73
Acenaphthene	294.89	32.71	39.09	33.37
Fluorene	248.78	63.44	60.21	52.88
Anthracene	693.13	244.43	308.66	358.53
Phenanthrene	2544.73	1028.61	981.88	1114.52
Benzo(a)anthracene	1596.69	502.65	504.90	530.25
Fluoranthene	3720.28	1455.37	1441.22	1947.41
Pyrene	3322.77	1353.15	1579.40	1780.72
Chrysene	2034.63	738.64	892.57	981.43
Benzo(b)fluoranthene	1765.93	554.41	850.15	906.18
Benzo(j/k)fluoranthene	1643.93	568.44	826.73	876.16
Benzo(a)pyrene	1560.65	549.11	702.88	739.58
Indeno(1,2,3-cd)pyrene	1233.47	433.05	643.03	689.38
Dibenz(a,h)anthracene	292.59	100.96	142.26	157.21
Benzo(g,h,i)perylene	1000.56	386.32	569.33	633.68
Surrogate Recoveries (%)				
Naphthalene-d8	90	87	79	73
Phenanthrene-d10	96	90	92	87
Chrysene-d12	87	82	84	78

Not Surrogate Corrected

Analyzed By Roush, James
4/26/2004

S04-0118MS-MOTIVA_PAH:FINAL

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	AH-42	Core 1-Top	Core 1-Bot
Battelle ID	S1507-P	S1510-P	S1511-P
Sample Type	SA	SA	SA
Collection Date	03/27/2004	03/27/2004	03/27/2004
Extraction Date	04/05/2004	04/05/2004	04/05/2004
Analysis Date	04/18/2004	04/18/2004	04/19/2004
Analytical Instrument	MS	MS	MS
% Moisture	28.66	26.29	23.84
% Lipid	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	21.97	22.45	22.79
Size Unit-Basis	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
2-Methylnaphthalene	16.52	32.75	6.28
Naphthalene	32.19	92.86	9.45
Acenaphthylene	314.45	54.24	33.33
Acenaphthene	30.65	213.90	18.98
Fluorene	82.30	155.10	16.33
Anthracene	324.70	302.24	79.68
Phenanthrene	1430.20	1441.84	134.43
Benzo(a)anthracene	700.42	737.41	145.37
Fluoranthene	1742.77	1783.54	776.86
Pyrene	1705.00	1560.92	604.18
Chrysene	1078.97	855.55	274.36
Benzo(b)fluoranthene	952.29	718.80	196.12
Benzo(j/k)fluoranthene	931.27	717.41	188.42
Benzo(a)pyrene	847.16	668.48	110.10
Indeno(1,2,3-cd)pyrene	658.06	506.20	101.67
Dibenz(a,h)anthracene	163.45	124.04	22.72
Benzo(g,h,i)perylene	575.27	401.58	84.54
Surrogate Recoveries (%)			
Naphthalene-d8	88	84	74
Phenanthrene-d10	98	88	80
Chrysene-d12	89	80	73

ssary of Data Qualifiers

Flag:	Application:
B	Analyte concentration found in the sample at a concentration <5x the level found in the procedural blank.
D	Dilution Run. Initial run outside linear range of instrument.
E	Estimate, result is greater than the highest concentration level in the calibration.
H	Surrogate diluted out. Used when surrogate recovery is affected by excessive dilution of the sample extract.
J	Analyte detected below the sample-specific Reporting Limit (RL).
ME	Significant Matrix Interference - Estimated value.
MI	Significant Matrix Interference - value could not be determined or estimated.
n	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO), but meets the contingency criteria.
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not applicable
T	Holding Time (HT) exceeded.
U	Analyte not detected at 3:1 signal:noise ratio. The sample-specific method detection limit (MDL) reported.

Misc. Docs

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Miscellaneous Documentation Form

Project Number: EA Davisville | Batch 04-0113 | Entered By: James Roush

Project Title: Davisville Naval Sediment Study | Date: 04/21/2004

QC PARAMETER	CONTROL LIMITS	NUMBER OF DQO EXCEEDENCES	CORRECTIVE ACTION
Procedural Blank	<5xMDL or samples >5x PB conc.	0	
Surrogates	40% - 120%	0	
LCS recoveries	40% - 120%	0	
Independent Calibration Check	<15% difference	0	
Initial Calibration	Initial: ±25% RSD	0	
Continuing Calibration	<25% Difference, 15% on average.	0	

- The RF of Naphthalene was used for the quantification of 2-Methylnaphthalene.
- Units on all sample quant reports read "ng/µl", but should be "ng".
- DATA FOR THE SRM WAS QUALIFIED USING THE STANDARD BATTELLE QUALIFIER CRITERIA OF 30% DIFFERENCE PLUS THE 95% CONFIDENCE LEVEL, NOT THE WORKPLAN CRITERIA OF 30% DIFFERENCE.

JR
5/3/04

Approved: [signature] Date: 4-26-04

Approved: [signature] Date: 4.26.04

Battelle
The Business of Innovation
Miscellaneous Documentation Form

Project Number: EA Davisville | Batch 04-0118 | Entered By: James Roush

Project Title: Davisville Naval Sediment Study | Date: 04/21/2004

QC PARAMETER	CONTROL LIMITS	NUMBER OF DQO EXCEEDENCES	CORRECTIVE ACTION
Procedural Blank	<5xMDL or samples >5x PB conc.	3	2-Methylnaphthalene & Naphthalene in S1442-P and Naphthalene in S1443-P. The ng amounts of these analytes in these samples are greater than 10x the PB ng amounts, but when concentrations are calculated, these analytes become <5x PB concentrations due to differing weights and dilution factors. An overlay is included in the Unused Data section of package for reference.
Surrogates	40% - 120%	0	
LCS recoveries	40% - 120%	0	
Duplicate Precision	<30% RPD	15	These exceedances are likely due to sample non-homogeneity. Integrations checked and are correct. TIC's included in Unused Data section of package for reference.
MS/MSD Recoveries	40% - 120% for at least 80% of analytes	0	
MS/MSD Precision	<30% RPD	3	The three exceedances have MS/MSD analyte concentrations <5x the background concentration as stated in Workplan Revision 1, so no corrective action taken.
Standard Reference Material	<30% difference from a range of certified values	0	
North Slope Crude	< 30% difference from laboratory average	0	
Independent Calibration Check	<15% difference	0	
Initial Calibration	Initial: ±25% RSD	0	
Continuing Calibration	<25% Difference, 15% on average.	0	

- The RF of Naphthalene was used for the quantification of 2-Methylnaphthalene.
- Units on all sample quant reports read "ng/μl", but should be "ng".

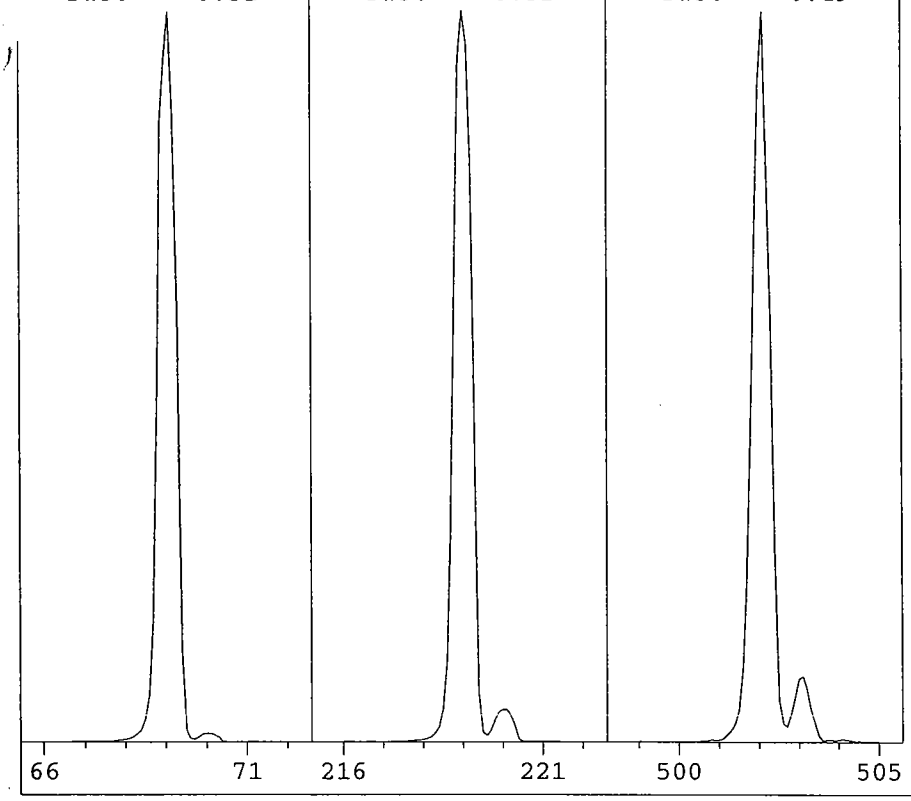
Approved: _____ Date: 4-26-04

Approved: _____ Date: 4.26.04

633

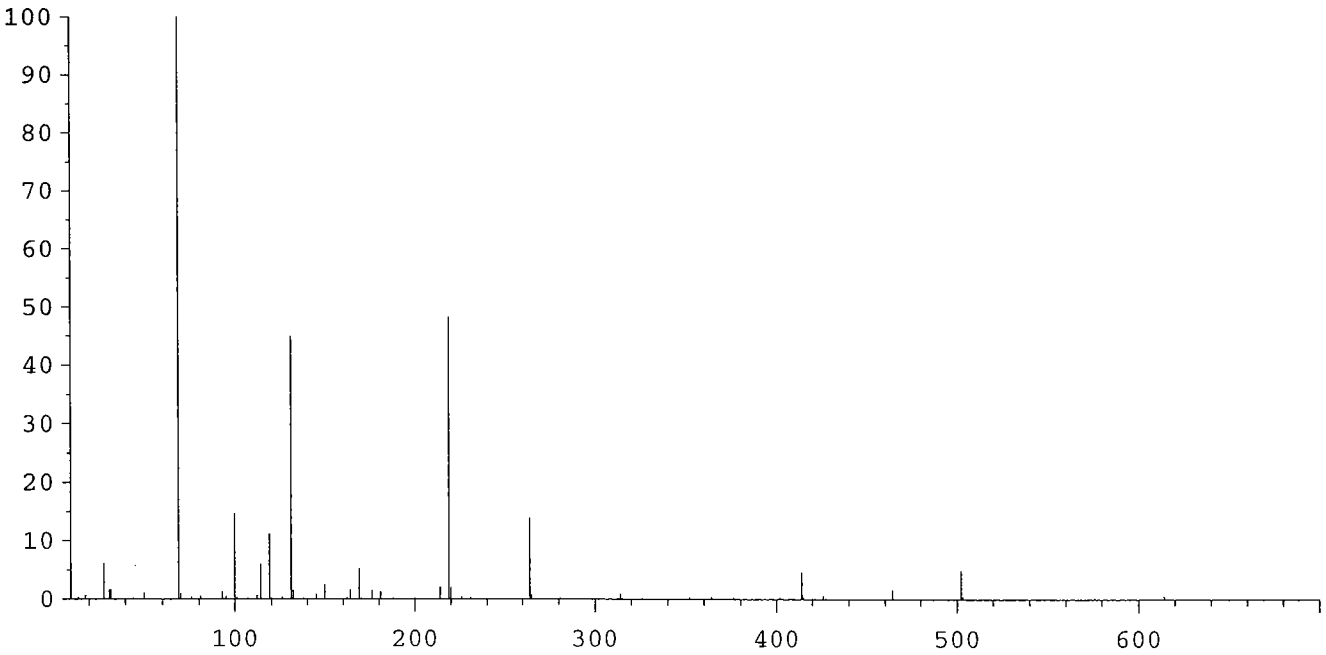
Instrument: Inst. E
Fri Apr 16 09:49:22 2004 C:\MSDCHEM\2\5973N\ATUNE.U

Mass	69.10	Mass	219.00	Mass	502.10
Ab	460798	Ab	221084	Ab	23684
Pw50	0.51	Pw50	0.52	Pw50	0.49



Ion Pol	POS	MassGain	210
		MassOffs	-10
Emission	34.6	AmuGain	2362
EleEnergy	69.9	AmuOffs	137
Filament	1	Wid219	-0.002
		DC Pol	NEG
Repeller	34.81		
IonFocus	90.2	HED	ON
EntLens	0.0	EMVolts	1765
EntOffs	VAR		
		Samples	8
PFTBA	OPEN	Averages	3
		StepSize	0.10
Zones:			
MS Source	230	TurboSpd	100
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100 Step: 0.10
148 peaks Base: 69.10 Abundance: 404800

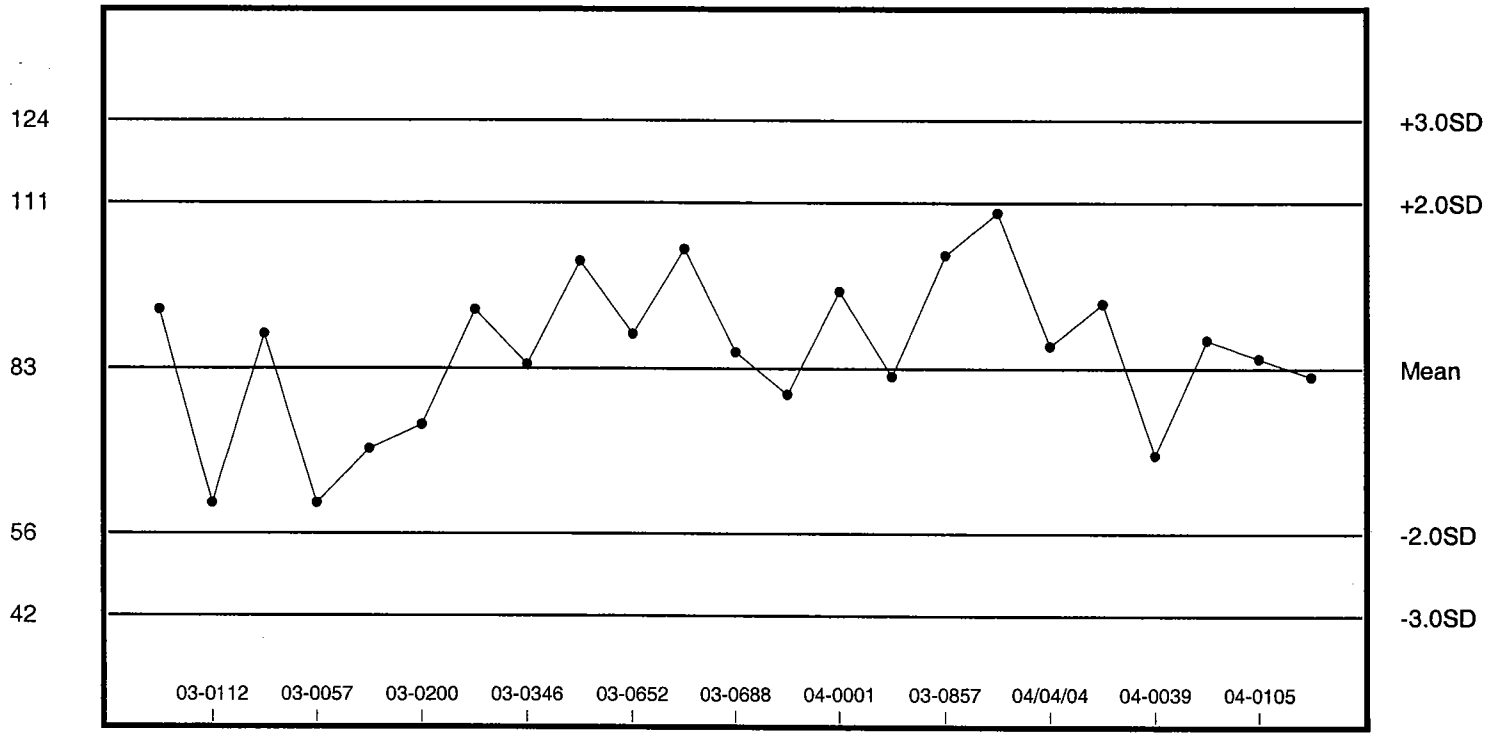


Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.10	404800	100.00	70.10	4081	1.01
219.00	195264	48.24	220.00	8348	4.28
502.10	20000	4.94	503.10	2062	10.31

TARGET MASS:	50	69	131	219	414	502
DYNAMIC ENT OFFSET:	13.8	14.3	15.3	16.8	20.1	22.3
TARGET ABUND(%):	1.0	100.0	45.0	50.0	5.0	5.0
ACTUAL TUNE ABUND(%):	1.0	100.0	44.9	48.2	4.7	4.9

BATTELLE ORGANIC LABORATORY

Naphthalene Waters - 2004



n= 13 mean= 83 SD= 14 %CV= 16.40% min= 61 max= 103

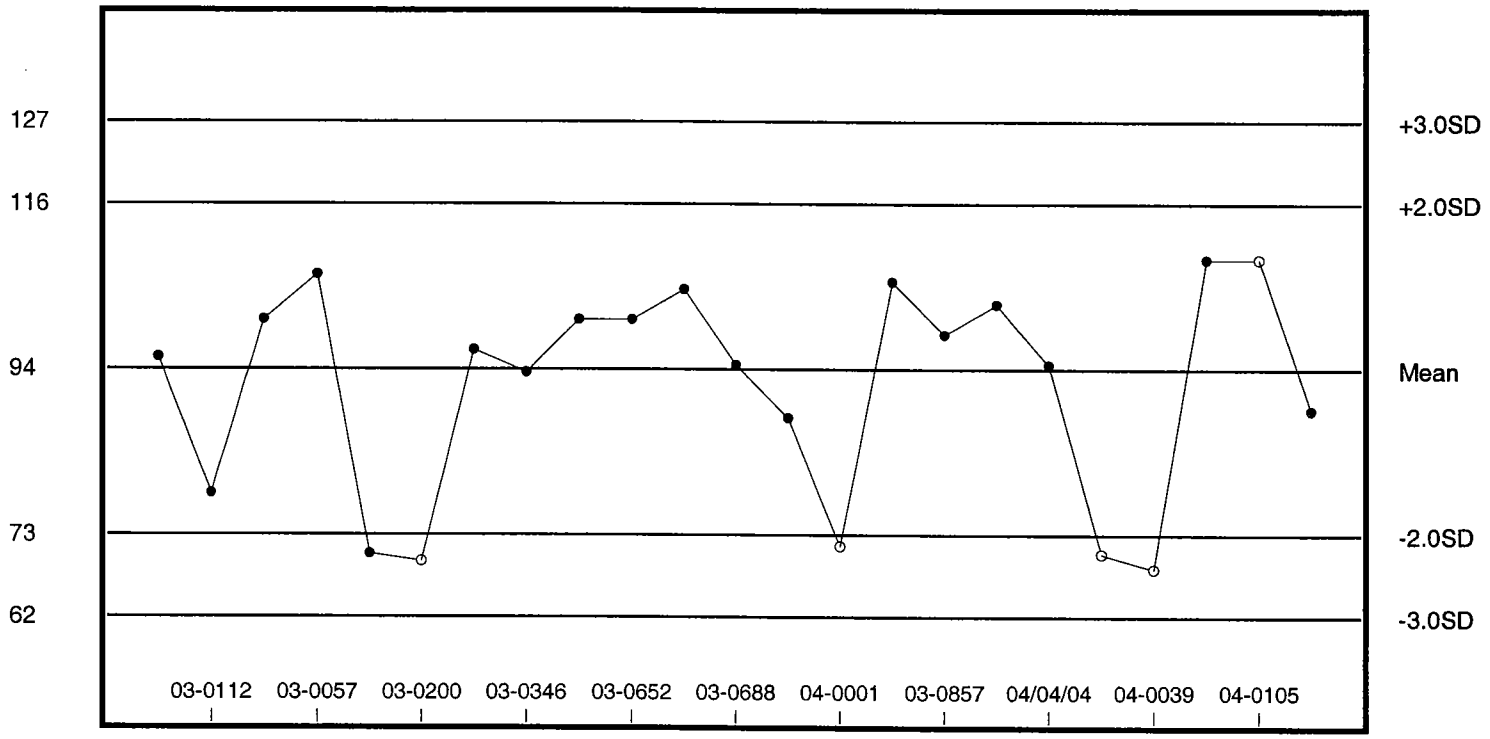
BL 4.28.04

File: C:\Active\Control Chart 2004\MS\Waters\Wat.ccp

Naphthalene

BATTELLE ORGANIC LABORATORY

Benzo(g,h,i)perylene Waters - 2004



n= 12 mean= 94 SD= 11 %CV= 11.59% min= 70 max= 107

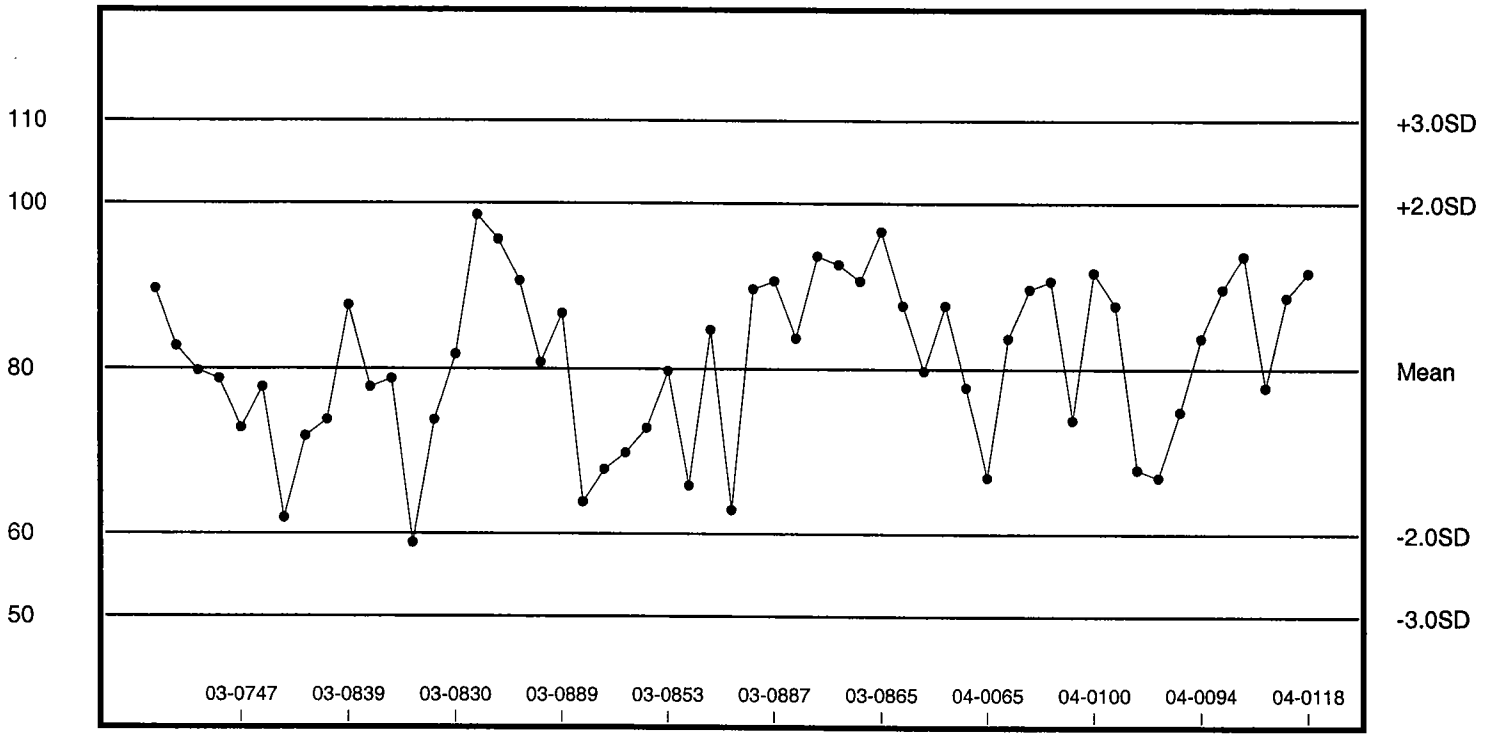
TDL 4-26-04

File: C:\Active\Control Chart 2004\MS\Waters\Wat.ccp

Benzo(g h i)perylene

BATTELLE ORGANIC LABORATORY

Naphthalene Sediments - 2004



n= 20 mean= 80 SD= 10 %CV= 12.54% min= 59 max= 99

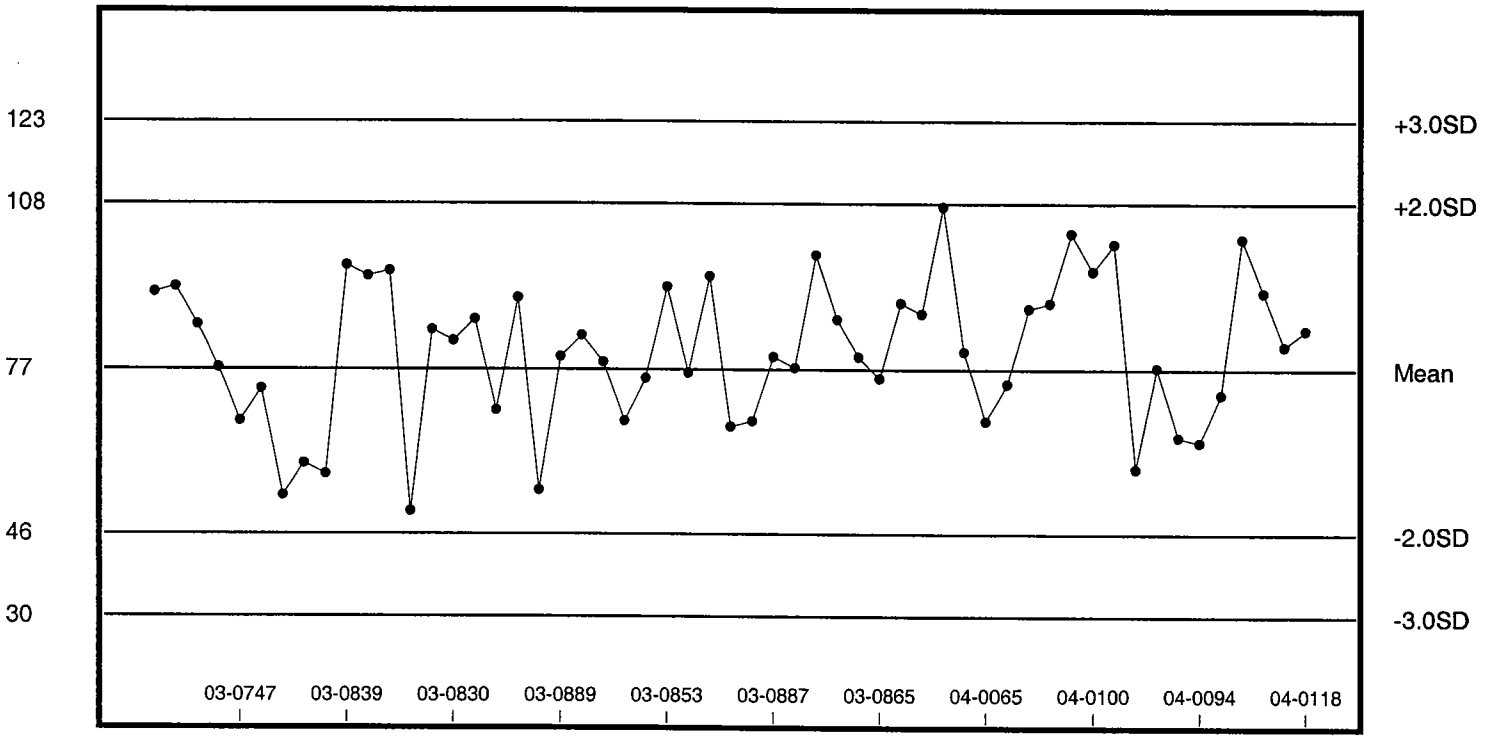
TSL
4·26·04

File: C:\Active\Control Chart 2004\MS\Sediments\Pah Seds.ccp

Naphthalene

BATTELLE ORGANIC LABORATORY

Benzo(g,h,i)perylene Sediments - 2004



n= 20 mean= 77 SD= 15 %CV= 20.13% min= 50 max= 96

BL
4.26.04

File: C:\Active\Control Chart 2004\MS\Sediments\Pah Seds.ccp

Benzo(g h i)perylene

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Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: GB67

Description: Universal SIS Solution

Stock Id: 030708-01

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Cl3(34)	4000	100.50	1	100.000	1	1000	0.4020

Stock Id: 030708-02

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Cl2(14)	4000	100.00	1	100.000	1	1000	0.4000

Stock Id: 030708-03

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Cl5(112)	4000	100.50	1	100.000	1	1000	0.4020

Stock Id: 030708-04

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Cl5(104)	4000	100.40	1	100.000	1	1000	0.4016

Stock Id: 030708-05

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Naphthalene-d8	2500	4002.00	1	100.000	1	1000	10.0050

Stock Id: 030708-06

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Phenanthrene-d10	2500	3977.00	1	99.300	1	1000	9.9425

Stock Id: 030708-07

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Chrysene-d12	2500	4008.00	1	98.400	1	1000	10.0200

Stock Id: GB66

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
O-Terphenyl	10000	19999.00	---	---	1	1000	199.9900

Final Concentrations:

Analyte:	Conc (ug/mL):
Chrysene-d12	10.0200
Cl2(14)	0.4000

Solution Prepared By: Barber, Theresa **Date Prepared:** 7/28/2003 **Expiration Date:** 7/18/2004

Solution Volume 4 **mL X** 242 **Vials** **Refrigerator/Freezor No** MW

Comment:

Approved By: Motta, Richard **Date:** 10/24/2003 9:03:00 AM

Battelle

The Business of Innovation

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: **GB67**

Description: Universal SIS Solution

Cl3(34)	0.4020
Cl5(104)	0.4016
Cl5(112)	0.4020
Naphthalene-d8	10.0050
O-Terphenyl	199.9900
Phenanthrene-d10	9.9425

Solution Prepared By: Barber, Theresa **Date Prepared:** 7/28/2003 **Expiration Date:** 7/18/2004

Solution Volume 4 **mL X** 242 **Vials** **Refrigerator/Freezor No** MW

Comment:

Approved By: Motta, Richard **Date:** 10/24/2003 9:03:00 AM

Battelle

The Business of Innovation

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: FZ70

Description: Universal RIS Solution

Stock Id: 030319-01

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Acenaphthene-d10	2500	4004.00	1	98.300	1	1000	10.0100

Stock Id: 030319-02

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Fluorene-d10	5000	2076.00	1	96.300	1	1000	10.3800

Stock Id: 030319-03

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Benzo(a)pyrene-d12	10000	1032.00	1	96.900	1	1000	10.3200

Stock Id: 030319-04

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Cl5(96)	4000	100.40	1	100.000	1	1000	0.4016

Stock Id: 030319-05

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Cl5(103)	4000	100.40	1	100.000	1	1000	0.4016

Stock Id: 030319-06

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Cl6(166)	4000	100.50	1	100.000	1	1000	0.4020

Stock Id: FZ69

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
5a-androstane	10000	20022.80	---	---	1	1000	200.2280

Final Concentrations:

Analyte:	Conc (ug/mL):
5a-androstane	200.2280
Acenaphthene-d10	10.0100
Benzo(a)pyrene-d12	10.3200
Cl5(103)	0.4016
Cl5(96)	0.4016
Cl6(166)	0.4020

Solution Prepared By: Murphy, Bryan **Date Prepared:** 3/19/2003 **Expiration Date:** 8/15/2004

Solution Volume 4 **mL X** 238 **Vials** **Refrigerator/Freezor No** MW

Comment:

Approved By: Motta, Richard **Date:** 5/19/2003 2:57:00 PM

Battelle

The Business *of* Innovation

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: **FZ70**

Description: Universal RIS Solution

Fluorene-d10	10.3800

Solution Prepared By: Murphy, Bryan	**Date Prepared:**	3/19/2003 **Expiration Date:**	8/15/2004
Solution Volume 4 **mL X** 238 **Vials** **Refrigerator/Freezor No** MW			

Comment:

Approved By: Motta, Richard **Date:** 5/19/2003 2:57:00 PM

Battelle

The Business of Innovation

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: GC37

Description: Universal Matrix Spike Solution (No Alkanes)

Stock Id: 030822-02

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Biphenyl	1000	1003.00	1	99.000	1	100	10.0300

Stock Id: 030822-05

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
2,6-dimethylnaphthalene	500	2002.00	1	99.000	1	100	10.0100

Stock Id: 030822-06

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
2,3,5-trimethylnaphthalene	500	2000.30	1	98.000	1	100	10.0015

Stock Id: 030822-07

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
1-Methylphenanthrene	500	2000.60	1	98.600	1	100	10.0030

Stock Id: 030822-08

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perylene	500	2000.40	1	99.900	1	100	10.0020

Stock Id: 030827-01

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
1-Methylnaphthalene	500	2005.00	1	98.200	1	100	10.0250

Stock Id: 030827-03

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
2-Methylnaphthalene	500	2001.00	1	99.500	1	100	10.0050

Stock Id: 030827-12

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Acenaphthene	500	2000.80	1	99.000	1	100	10.0040
Acenaphthylene	500	2000.80	1	99.000	1	100	10.0040
Anthracene	500	2000.80	1	99.000	1	100	10.0040
Benzo(a)anthracene	500	2001.10	1	99.000	1	100	10.0055
Benzo(a)pyrene	500	2001.10	1	98.000	1	100	10.0055
Benzo(b)fluoranthene	500	2001.00	1	99.000	1	100	10.0050

Solution Prepared By: Barber, Theresa **Date Prepared:** 9/29/2003 **Expiration Date:** 5/4/2004

Solution Volume 4 **mL X** 25 **Vials** **Refrigerator/Freezor No** MW

Comment:

Approved By: Motta, Richard **Date:** 11/4/2003 9:28:00 AM

Battelle

The Business of Innovation

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: GC37

Description: Universal Matrix Spike Solution (No Alkanes)

Benzo(g,h,i)perylene	500	2001.00	1	99.000	1	100	10.0050
Benzo(k)fluoranthene	500	2000.70	1	99.000	1	100	10.0035
Chrysene	500	2001.00	1	99.000	1	100	10.0050
Dibenz(a,h)anthracene	500	2000.80	1	98.000	1	100	10.0040
Fluoranthene	500	2000.80	1	98.000	1	100	10.0040
Fluorene	500	2001.00	1	98.000	1	100	10.0050
Indeno(1,2,3-cd)pyrene	500	2001.20	1	99.000	1	100	10.0060
Naphthalene	500	2001.10	1	99.000	1	100	10.0055
Phenanthrene	500	2000.90	1	99.000	1	100	10.0045
Pyrene	500	2000.80	1	98.000	1	100	10.0040

Stock Id: FZ21

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Cl4(49)	3000	10.04	---	---	1	100	0.3012
Cl5(110)	3000	10.00	---	---	1	100	0.3000
Cl5(87)	3000	10.00	---	---	1	100	0.3000
Cl6(129)	3000	10.04	---	---	1	100	0.3012
Cl6(169)	3000	10.04	---	---	1	100	0.3012
Cl7(183)	3000	10.00	---	---	1	100	0.3000
Cl7(184)	3000	10.04	---	---	1	100	0.3012

Stock Id: FZ39

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Benzo(e)pyrene	2000	498.80	---	---	1	100	9.9760

Stock Id: GA26

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
2,4'-DDD	300	100.14	---	---	1	100	0.3004
2,4'-DDE	300	100.32	---	---	1	100	0.3010
2,4'-DDT	300	100.07	---	---	1	100	0.3002
Mirex	300	100.08	---	---	1	100	0.3002
trans-nonachlor	300	100.10	---	---	1	100	0.3003

Stock Id: GA27

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Hexachloroethane	80	50.33	---	---	1	100	0.0403

Solution Prepared By: Barber, Theresa **Date Prepared:** 9/29/2003 **Expiration Date:** 5/4/2004

Solution Volume 4 **mL X** 25 **Vials** **Refrigerator/Freezor No** MW

Comment:

Approved By: Motta, Richard **Date:** 11/4/2003 9:28:00 AM

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The Business of Innovation

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: GC37

Description: Universal Matrix Spike Solution (No Alkanes)

Stock Id: GA30

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Cl10(209)	3000	9.97	---	---	1	100	0.2991
Cl2(8)	3000	9.91	---	---	1	100	0.2973
Cl3(18)	3000	10.00	---	---	1	100	0.3000
Cl3(28)	3000	9.97	---	---	1	100	0.2991
Cl4(44)	3000	9.90	---	---	1	100	0.2970
Cl4(52)	3000	9.91	---	---	1	100	0.2973
Cl4(66)	3000	10.00	---	---	1	100	0.3000
Cl4(77)	3000	10.01	---	---	1	100	0.3003
Cl5(101)	3000	9.98	---	---	1	100	0.2994
Cl5(105)	3000	9.91	---	---	1	100	0.2973
Cl5(118)	3000	9.93	---	---	1	100	0.2979
Cl5(126)	3000	10.00	---	---	1	100	0.3000
Cl6(128)	3000	9.97	---	---	1	100	0.2991
Cl6(138)	3000	9.99	---	---	1	100	0.2997
Cl6(153)	3000	9.93	---	---	1	100	0.2979
Cl7(170)	3000	9.91	---	---	1	100	0.2973
Cl7(180)	3000	10.01	---	---	1	100	0.3003
Cl7(187)	3000	9.91	---	---	1	100	0.2973
Cl8(195)	3000	10.00	---	---	1	100	0.3000
Cl9(206)	3000	9.90	---	---	1	100	0.2970

Stock Id: GA76

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
1,4-Dichlorobenzene	200	501.50	---	---	1	100	1.0030

Stock Id: GC34

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
4,4'-DDMU	3000	10.04	---	---	1	100	0.3012

Stock Id: GC35

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
1,2-Dichlorobenzene	1000	100.13	---	---	1	100	1.0013

Stock Id: GC36

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)

Solution Prepared By: Barber, Theresa **Date Prepared:** 9/29/2003 **Expiration Date:** 5/4/2004

Solution Volume 4 **mL X** 25 **Vials** **Refrigerator/Freezor No** MW

Comment:

Approved By: Motta, Richard **Date:** 11/4/2003 9:28:00 AM

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The Business of Innovation

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: GC37

Description: Universal Matrix Spike Solution (No Alkanes)

4,4'-DDD	300	100.04	---	---	1	100	0.3001
4,4'-DDE	300	100.06	---	---	1	100	0.3002
4,4'-DDT	300	100.04	---	---	1	100	0.3001
a-BHC	300	100.05	---	---	1	100	0.3002
a-chlordane	300	100.50	---	---	1	100	0.3015
aldrin	300	100.05	---	---	1	100	0.3002
b-BHC	300	100.04	---	---	1	100	0.3001
Chlorpyrifos	300	100.13	---	---	1	100	0.3004
cis-nonachlor	300	100.10	---	---	1	100	0.3003
d-BHC	300	100.04	---	---	1	100	0.3001
dieldrin	300	100.05	---	---	1	100	0.3002
endosulfanI	300	100.04	---	---	1	100	0.3001
endosulfanII	300	100.04	---	---	1	100	0.3001
endosulfansulfate	300	100.04	---	---	1	100	0.3001
endrin	300	100.06	---	---	1	100	0.3002
endrinaldehyde	300	100.05	---	---	1	100	0.3002
endrinketone	300	100.04	---	---	1	100	0.3001
g-BHC	300	100.04	---	---	1	100	0.3001
g-chlordane	300	100.02	---	---	1	100	0.3001
heptachlor	300	100.05	---	---	1	100	0.3002
heptachlorepoxide	300	100.05	---	---	1	100	0.3001
Hexachlorobenzene	300	100.05	---	---	1	100	0.3002
methoxychlor	300	100.04	---	---	1	100	0.3001
oxychlordane	300	100.07	---	---	1	100	0.3002

Final Concentrations:

Analyte:	Conc (ug/mL):
1,2-Dichlorobenzene	1.0013
1,4-Dichlorobenzene	1.0030
1-Methylnaphthalene	10.0250
1-Methylphenanthrene	10.0030
2,3,5-trimethylnaphthalene	10.0015
2,4'-DDD	0.3004
2,4'-DDE	0.3010
2,4'-DDT	0.3002
2,6-dimethylnaphthalene	10.0100
2-Methylnaphthalene	10.0050
4,4'-DDD	0.3001
4,4'-DDE	0.3002

Solution Prepared By: Barber, Theresa **Date Prepared:** 9/29/2003 **Expiration Date:** 5/4/2004

Solution Volume 4 **mL X** 25 **Vials** **Refrigerator/Freezor No** MW

Comment:

Approved By: Motta, Richard **Date:** 11/4/2003 9:28:00 AM

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The Business of Innovation

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: GC37

Description: Universal Matrix Spike Solution (No Alkanes)

4,4'-DDMU	0.3012
4,4'-DDT	0.3001
a-BHC	0.3002
Acenaphthene	10.0040
Acenaphthylene	10.0040
a-chlordane	0.3015
aldrin	0.3002
Anthracene	10.0040
b-BHC	0.3001
Benzo(a)anthracene	10.0055
Benzo(a)pyrene	10.0055
Benzo(b)fluoranthene	10.0050
Benzo(e)pyrene	9.9760
Benzo(g,h,i)perylene	10.0050
Benzo(k)fluoranthene	10.0035
Biphenyl	10.0300
Chlorpyrifos	0.3004
Chrysene	10.0050
cis-nonachlor	0.3003
Cl10(209)	0.2991
Cl2(8)	0.2973
Cl3(18)	0.3000
Cl3(28)	0.2991
Cl4(44)	0.2970
Cl4(49)	0.3012
Cl4(52)	0.2973
Cl4(66)	0.3000
Cl4(77)	0.3003
Cl5(101)	0.2994
Cl5(105)	0.2973
Cl5(110)	0.3000
Cl5(118)	0.2979
Cl5(126)	0.3000
Cl5(87)	0.3000
Cl6(128)	0.2991
Cl6(129)	0.3012
Cl6(138)	0.2997
Cl6(153)	0.2979
Cl6(169)	0.3012

Solution Prepared By: Barber, Theresa **Date Prepared:** 9/29/2003 **Expiration Date:** 5/4/2004

Solution Volume 4 **mL X** 25 **Vials** **Refrigerator/Freezor No** MW

Comment:

Approved By: Motta, Richard **Date:** 11/4/2003 9:28:00 AM

Battelle

The Business of Innovation

Standard Solution Concentrations

Approved: ☑

Standard Laboratory ID Number: GC37

Description: Universal Matrix Spike Solution (No Alkanes)

Cl7(170)	0.2973
Cl7(180)	0.3003
Cl7(183)	0.3000
Cl7(184)	0.3012
Cl7(187)	0.2973
Cl8(195)	0.3000
Cl9(206)	0.2970
d-BHC	0.3001
Dibenz(a,h)anthracene	10.0040
dieldrin	0.3002
endosulfanI	0.3001
endosulfanII	0.3001
endosulfansulfate	0.3001
endrin	0.3002
endrinaldehyde	0.3002
endrinketone	0.3001
Fluoranthene	10.0040
Fluorene	10.0050
g-BHC	0.3001
g-chlordane	0.3001
heptachlor	0.3002
heptachlorepoxide	0.3001
Hexachlorobenzene	0.3002
Hexachloroethane	0.0403
Indeno(1,2,3-cd)pyrene	10.0060
methoxychlor	0.3001
Mirex	0.3002
Naphthalene	10.0055
oxychlordane	0.3002
Perylene	10.0020
Phenanthrene	10.0045
Pyrene	10.0040
trans-nonachlor	0.3003

Solution Prepared By: Barber, Theresa **Date Prepared:** 9/29/2003 **Expiration Date:** 5/4/2004

Solution Volume 4 **mL X** 25 **Vials** **Refrigerator/Freezor No** MW

Comment:

Approved By: Motta, Richard **Date:** 11/4/2003 9:28:00 AM

Sample Prep

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BATTELLE - DUXBURY OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0113

Davisville Naval Sediment Study (GC/MS)

WATER

SOP Numbers (see workplan for modifications)

Extraction SOP No. 5-200

This Batch Contains The Following Samples:

BE152PB-P
BE153LCS-P
S1487-P
S1489-P

Laboratory Preparation Records
COMPLETE AND VALIDATED

Prep Task Leader: Robert Rebello

Approved By	# Pages	Date	Initials
Robert Rebello	14	04/01/2004	RPR

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BATTELLE - DUXBURY OPERATIONS
SAMPLE CUSTODY LOG

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0113
Davisville Naval Sediment Study (GC/MS)
WATER

Requested On/By:	Mar 31 2004 10:08AM RPR	**Purpose:**	Sample Preparation
Relinquished On/By:	Mar 31 2004 10:08AM JN	**Last Activity:**	Transfer

Accepted On/By:	Mar 31 2004 10:08AM RPR	**Returned On/To:**	
Stored In Facility:	Forensics	**Returned To Facility:**	
Stored Until	3/31/2004		
Stored Comment:	NA	**Returned Comment:**	NA

No.	BDO-ID	Ctrs	*	Condition	Custody Comment
1	S1487	1	C	Consumed	NA
2	S1489	1	C	Consumed	NA
Total Samples	2	* "C" = Consumed Container			

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BATTELLE - DUXBURY OPERATIONS
LIQUID SAMPLE ID FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0113

Davisville Naval Sediment Study (GC/MS)

WATER

Sample ID	Description	Volume (mL)	Bottles	*	Date Initials
BE152PB-P	Procedural Blank	1000.0	NA	--	03/31/04 RPR
BE153LCS-P	Laboratory Control Sample	1000.0	NA	--	03/31/04 RPR
S1487-P	Rins01	1020.0	1	C	03/31/04 RPR
S1489-P	Rins02	1060.0	1	C	03/31/04 RPR

Comments:

Samples Assigned By: Robert Rebello Date : March 31, 2004

* - "C" = Sample is Consumed

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BATTELLE - DUXBURY OPERATIONS
SAMPLE EXTRACTION FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0113

Davisville Naval Sediment Study (GC/MS)

WATER

Sample ID	First Extraction	Second Extraction	Third Extraction	Turbo °C	Turbo PSI	KD °C	Comment
BE152PB-P	03/31/04 RPR	03/31/04 RPR	03/31/04 RPR	NA	NA	65	NA
BE153LCS-P	03/31/04 RPR	03/31/04 RPR	03/31/04 RPR	NA	NA	65	NA
S1487-P	03/31/04 RPR	03/31/04 RPR	03/31/04 RPR	NA	NA	65	NA
S1489-P	03/31/04 RPR	03/31/04 RPR	03/31/04 RPR	NA	NA	65	NA

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SURROGATE SPIKE FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0113

Davisville Naval Sediment Study (GC/MS)

WATER

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Wtn'd By	Comment
BE152PB-P	GB67	SIS	115	200	03/31/04 RPR	RMB	NA
BE153LCS-P	GB67	SIS	115	200	03/31/04 RPR	RMB	NA
BE153LCS-P	GC37	LCS/MS	21	100	03/31/04 RPR	RMB	NA
S1487-P	GB67	SIS	115	200	03/31/04 RPR	RMB	NA
S1489-P	GB67	SIS	115	200	03/31/04 RPR	RMB	NA

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BATTELLE - DUXBURY OPERATIONS
PREPARATION EXTRACT SPLIT FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0113

Davisville Naval Sediment Study (GC/MS)

WATER

Extract Name	#	*	Extract Date	Source Name	#	Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
BE152PB-P	0	C	3/31/2004	NA		NA	NA	1.000	1.000	03/31/04 RPR
BE152PB-P-A	2	--	3/31/2004	BE152PB-P	0	1000	500	2.000	2.000	03/31/04 RPR
BE152PB-P	3	--	3/31/2004	BE152PB-P	0	1000	500	2.000	2.000	03/31/04 RPR
BE153LCS-P	0	C	3/31/2004	NA		NA	NA	1.000	1.000	03/31/04 RPR
BE153LCS-P-A	2	--	3/31/2004	BE153LCS-P	0	1000	500	2.000	2.000	03/31/04 RPR
BE153LCS-P	3	--	3/31/2004	BE153LCS-P	0	1000	500	2.000	2.000	03/31/04 RPR
S1487-P	0	C	3/31/2004	NA		NA	NA	1.000	1.000	03/31/04 RPR
S1487-P-A	2	--	3/31/2004	S1487-P	0	1000	500	2.000	2.000	03/31/04 RPR
S1487-P	3	--	3/31/2004	S1487-P	0	1000	500	2.000	2.000	03/31/04 RPR
S1489-P	0	C	3/31/2004	NA		NA	NA	1.000	1.000	03/31/04 RPR
S1489-P-A	2	--	3/31/2004	S1489-P	0	1000	500	2.000	2.000	03/31/04 RPR
S1489-P	3	--	3/31/2004	S1489-P	0	1000	500	2.000	2.000	03/31/04 RPR

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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BATTELLE - DUXBURY OPERATIONS
INTERNAL STANDARD SPIKING FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0113

Davisville Naval Sediment Study (GC/MS)

WATER

(N/A Fraction)

ExtractId	Extr. Vol. (uL)	Added (uL)	Std Id	Accm (uL)	Vial No.	Pre Inj Vol. (uL)^	Final Dilution	Date Spiked/ Spiked By	Wt'ed By
BE152PB-P(3)	400	100	FZ70	100	39	500	2.000	03/31/04 RPR	ALD
BE153LCS-P(3)	400	100	FZ70	100	39	500	2.000	03/31/04 RPR	ALD
S1487-P(3)	400	100	FZ70	100	39	500	2.000	03/31/04 RPR	ALD
S1489-P(3)	400	100	FZ70	100	39	500	2.000	03/31/04 RPR	ALD

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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BATTELLE - DUXBURY OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0113

Davisville Naval Sediment Study (GC/MS)

WATER

Purpose:	GC/MSD TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Mar 31 2004 3:17PM RPR	**Received On/By:**	Mar 31 2004 3:35PM JAR
Relinquished From:	Forensics: NA	**Received Location:**	GC Room: NA
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO ID	PIV	DF	Condition	Custody Comment
1	BE152PB-P(3)	500	2	Intact	NA
2	BE153LCS-P(3)	500	2	Intact	NA
3	S1487-P(3)	500	2	Intact	NA
4	S1489-P(3)	500	2	Intact	NA

Total Extracts: 4

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ShpNo SHP-040327-01

Battelle Project No:

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Saturday, March 27, 2004 12:15 PM

No. of Shipping Containers: 2

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** Not Recorded

COC Forms: ☑ **Shipped with samples** ☐ **No Forms**

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 2	Cooler	Tape	Intact	Intact	3.6	11
2 of 2	Cooler	None	Not Applicable	Intact	10.0	15

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 10 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1473 - S1498

Samples logged in by: Fahey, Jessica **Date/Time:** 03/27/2004 12:15 PM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 12:1

Authorized By: **Authorized On:**

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ShpNo: SHP-040327-01

Battelle Project No:

Report Corrective Actions

1 1

Approved:

COC Client: EA Engineering

COC Project: Allen Harbor

COC Date: 3/27/2004 1:22:00 PM

	Description of Problem:	Explanation:
Client Id	Extra samples not listed on the C-O-C	Extra samples Source 1-1 3/26/04 10:15
	Missing samples listed on the C-O-C	Missing sample Source 1-2 3/26/04 10:15
Sample Container Integrity	Cap broken	Lid cracked for sample Source 2-1 (S1484)
Temperature and Preservation	Receipt temperature outside of acceptability	Cooler 2 had a temperature of 10.0 which is out of the acceptable range.

Documentation of project manager notification

Sample Custodian Fahey, Jessica **Date:** 3/27/2004 1:26:00 PM

Laboratory Manager: _____ **Date:** _____

Project Manager: _____ **Date:** _____

Documentation of client notification (should be completed by project manager within 24 hrs):

On _____ **I contacted** _____ **at**

Results of communication with client (Describe any corrective action directed by the client):

Date this form was received back to the custodian: _____

Reference Number: _____

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. . . Putting Technology To Work

Chain of Custody

Proj. No: 29600973203
Proj. Name: AH Sed Sample

SAMPLERS: Signature: JGm

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
		51473	DUP07	Sediment				✓				✓			2
3-26-04	1140	51474	AH-45	Sediment				✓				✓			2
3-26-04	1200	51475	AH-36	Sediment				✓				✓			2
3-26-04	1105	51476	AH-33	Sediment				✓				✓			2
3-26-04	1045	51477	AH-43	Sediment				✓				✓			2
3-26-04	1015	51478	AH-41	Sediment				✓				✓			2
3-26-04	0940	51479	AH-35	Sediment				✓				✓			2
3-26-04	0900	51480	AH-31	Sediment				✓				✓			2
3-26-04	1220	51481	Source 3-1	Sediment				✓				✓			2
3-26-04	1155	51482	Source 3-2	Sediment				✓				✓			2
3-26-04	0930	51483	Source 1-1	Sediment				✓				✓			2
3-26-04	0900	51484	Source 2-1	Sediment				✓				✓			2
3-26-04	1015	~~51485~~ ①	Source 1-1	Sediment				✓				✓			2
3-26-04	0920	51486	Source 2-2	Sediment				✓				✓			2
3-26-04	1230	51487	RINS01	Water				✓							1
3-26-04	—	51488	DUP08	Sediment				✓				✓			2
3-26-04	1000	51489	RINS02	Water				✓							1

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/26/04	1650	[signature]	3/27/04	12:15 pm
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments: Hold Until Further Notice.

① WL 3/29/04 JMF

ORIGINAL

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Chain of Custody

Proj. No	Proj. Name
29600973203	AH Sed. Sample

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3-26-04	1515	S1490	AH-32	Sediment				✓				✓			2
3-26-04	1445	S1491	AH-29					✓				✓			2
3-26-04	1550	S1492	AH-25					✓				✓			2
3-26-04	1535	S1493	AH-30					✓				✓			2
3-26-04	1350	S1494	AH-47					✓				✓			2
3-26-04	1305	S1495	AH-46					✓				✓			2
3-26-04	1330	S1496	AH-44					✓				✓			2
3-26-04	1420	S1497	AH-38					✓				✓			2
3-26-04	1410	S1498	AH-37					✓				✓			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	3/26/04 1650	[signature]	3/27/04 12 15 pm
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

Battelle
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Chain of Custody

Proj. No	Proj. Name
	Allen Harbor

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3-26-04	10:15	S1485	Source 1-2	Sediment											2

Relinquished by:	Date/Time	Received by:	Date/Time
		[signature]	3-27-04 12:15 pm
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Extra Sample not on original COC.

ORIGINAL

Battelle

The Business of Innovation

ShpNo SHP-040327-01

Battelle Project No: _____

Sample Receipt Form Details

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Saturday, March 27, 2004 12:15 PM

No. of Shipping Containers: 2

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1473	DUP 07		03/29/04 8:58	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1474	AH-45	03/26/04 11:40	03/29/04 8:58	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1475	AH-36	03/26/04 12:00	03/29/04 8:59	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1476	AH-33	03/26/04 11:05	03/29/04 9:01	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1477	AH-43	03/26/04 10:45	03/29/04 9:02	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1478	AH-41	03/26/04 10:15	03/29/04 9:03	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1479	AH-35	03/26/04 9:40	03/29/04 9:04	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1480	AH-31	03/26/04 9:00	03/29/04 9:05	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1481	Source 3-1	03/26/04 12:20	03/29/04 9:06	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1482	Source 3-2	03/26/04 11:55	03/29/04 9:09	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1483	Source 1-1	03/26/04 9:50	03/29/04 9:10	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1484	Source 2-1	03/26/04 9:00	03/29/04 9:13	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1485	Source 1-2	03/26/04 10:15	03/29/04 9:15	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1486	Source 2-2	03/26/04 9:20	03/29/04 9:21	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1487	Rins01	03/26/04 12:30	03/29/04 9:40	1	WATER	10	NA	NA	NA	29 Freezer			
S1488	Dup08	03/26/04 0:00	03/29/04 9:40	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1489	Rins02	03/26/04 10:00	03/29/04 9:41	1	WATER	10	NA	NA	NA	29 Freezer			
S1490	AH-32	03/26/04 15:15	03/29/04 9:41	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1491	AH-29	03/26/04 14:45	03/29/04 9:43	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1492	AH-25	03/26/04 15:50	03/29/04 9:44	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1493	AH-30	03/26/04 15:35	03/29/04 9:45	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1494	AH-47	03/26/04 13:50	03/29/04 9:46	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1495	AH-46	03/26/04 13:05	03/29/04 9:48	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1496	AH-44	03/26/04 13:30	03/29/04 9:57	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1497	AH-38	03/26/04 14:20	03/29/04 9:58	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1498	AH-37	03/26/04 14:10	03/29/04 9:58	2	SEDIMENT	10	NA	NA	NA	29 Freezer			

Total Samples: 26

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BATTELLE - DUXBURY OPERATIONS
SAMPLE PREPARATION RECORDS

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

SOP Numbers (see workplan for modifications)
Extraction SOP No. 5-203

This Batch Contains The Following Samples:				
BE164PB-P	S1424MS-P	S1451-P	S1479-P	S1511-P
BE165LCS-P	S1424MSD-P	S1452-P	S1490-P	S1511DUP-P
BE166SRM-P	S1426-P	S1464-P	S1494-P	
BE174NSC-P	S1442-P	S1467-P	S1502-P	
S1421-P	S1443-P	S1473-P	S1507-P	
S1424-P	S1449-P	S1476-P	S1510-P	

* This prep package contains the custody for B# 04-0117 as well as the custody for this batch
4/20/04 BM

Laboratory Preparation Records
COMPLETE AND VALIDATED

Prep Task Leader: Bryan Massa

Approved By:	# Pages	Date	Initials
Bryan Massa	66	04/20/2004	BM

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BATTELLE - DUXBURY OPERATIONS
SAMPLE CUSTODY LOG

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Requested On/By:	Apr 5 2004 11:31AM BJM	**Purpose:**	Sample Preparation
Relinquished On/By:	Apr 5 2004 11:31AM JN	**Last Activity:**	Return

Accepted On/By:	Apr 5 2004 11:31AM BJM	**Returned On/To:**	Apr ~~20~~ 5 2004 11:37AM JN
Stored In Facility:	TBT	**Returned To Facility:**	Chem South: 29 JR JN 4/20/04
Stored Until	4/5/2004 5:00:00 PM		
Stored Comment:	NA	**Returned Comment:**	NA

No.	BDO-ID:	Ctrs	*	Condition:	Custody Comment:
1	S1421	1,2	--	Intact	NA
2	S1424	2	--	Intact	NA
3	S1426	1,2	--	Intact	NA
4	S1442	1,2	--	Intact	NA
5	S1443	1,2	--	Intact	NA
6	S1449	1,2	C	Intact	NA
7	S1451	1,2	--	Intact	NA
8	S1452	1,2	--	Intact	NA
9	S1464	1,2	--	Intact	NA
10	S1467	1,2	--	Intact	NA
11	S1473	1	--	Intact	NA
12	S1476	1	--	Intact	NA
13	S1479	1	--	Intact	NA
14	S1490	1	--	Intact	NA
15	S1494	1	--	Intact	NA
16	S1502	1,2	--	Intact	NA
17	S1507	1,2	--	Intact	NA
18	S1510	1,2	--	Intact	NA
19	S1511	1,2	C	Intact	NA
Total Samples	19	* "C" = Consumed Container			

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BATTELLE - DUXBURY OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID	Description
BE164PB-P	Procedural Blank
BE165LCS-P	Laboratory Control Sample
BE166SRM-P	Standard Reference Material - SRM 1944 (020326-01)
BE174NSC-P	North Slope Crude North Slope Crude (GD81)
S1421-P	AH-08
S1424-P	AH-11
S1424MS-P	Matrix Spike of AH-11
S1424MSD-P	Matrix Spike Duplicate of AH-11
S1426-P	AH-DUP 01
S1442-P	REF 1-1
S1443-P	REF 1-2
S1449-P	REF 2-3
S1451-P	REF 2-5
S1452-P	AH-23
S1464-P	REF 3-4
S1467-P	REF 3-1
S1473-P	DUP 07
S1476-P	AH-33
S1479-P	AH-35
S1490-P	AH-32
S1494-P	AH-47

Samples Assigned By: Bryan Massa Date : April 5, 2004

Comments: All sample (PB,LCS,ans SRM where split 50:50) volumes where adjusted so that they contained ~3-5 mg of oil. Samples that had a PIV of 500 where spiked with 1/2 the amount of RIS as stated in the work plan per order of PM. Please refer to the gravemetric weight page to see how sample volumes where adjusted.

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BATTELLE - DUXBURY OPERATIONS
SAMPLE IDENTIFICATION PAGE

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID	Description
S1502-P	AH-51
S1507-P	AH-42
S1510-P	Core 1-Top
S1511-P	Core 1-Bot
S1511DUP-P	Lab Duplicate of Core 1-Bot

Samples Assigned By: Bryan Massa Date : April 5, 2004

Comments: All sample (PB,LCS,ans SRM where split 50:50) volumes where adjusted so that they contained ~3-5 mg of oil. Samples that had a PIV of 500 where spiked with 1/2 the amount of RIS as stated in the work plan per order of PM. Please refer to the gravemetric weight page to see how sample volumes where adjusted.

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)
BE164PB-P	NA	--	NA	NA	NA	30.19	53.05	46.95	16.02
BE165LCS-P	NA	--	NA	NA	NA	NA	NA	NA	NA
BE166SRM-P	NA	--	NA	NA	NA	1.16	98.75	1.25	1.15
BE174NSC-P	NA	--	NA	NA	NA	NA	NA	NA	NA
S1421-P	1,2	--	1.15	10.89	4.02	30.09	29.47	70.53	8.87
S1424-P	2	--	1.15	10.59	4.40	29.84	34.43	65.57	10.27
S1424MS-P	1	--	1.14	10.01	4.42	15.40	36.98	63.02	5.69
S1424MSD-P	1,6	--	1.14	11.13	4.54	15.75	34.03	65.97	5.36
S1426-P	1,2	--	1.15	10.15	4.45	30.40	36.67	63.33	11.15
S1442-P	1,2	--	1.14	9.97	8.48	30.59	83.13	16.87	25.43
S1443-P	1,2	--	1.15	10.69	8.68	30.31	78.93	21.07	23.92
S1449-P	1,2	C	1.15	10.24	6.16	30.06	55.12	44.88	16.57
S1451-P	1,2	--	1.14	10.44	8.62	30.01	80.43	19.57	24.14
S1452-P	1,2	--	1.15	9.83	4.32	30.26	36.52	63.48	11.05
S1464-P	1,2	--	1.15	10.23	6.36	30.25	57.38	42.62	17.36
S1467-P	1,2	--	1.13	10.17	5.10	30.05	43.92	56.08	13.20
S1473-P	1	--	1.15	10.44	4.87	30.39	40.04	59.96	12.17
S1476-P	1	--	1.14	9.51	4.18	30.08	36.32	63.68	10.93
S1479-P	1	--	1.15	9.33	3.66	30.24	30.68	69.32	9.28
S1490-P	1	--	1.15	10.65	4.52	29.93	35.47	64.53	10.62
S1494-P	1	--	1.14	9.79	7.93	30.05	78.50	21.50	23.59
S1502-P	1,2	--	1.13	9.82	3.72	29.86	29.80	70.20	8.90
S1507-P	1,2	--	1.14	10.84	8.06	30.79	71.34	28.66	21.97

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100
Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]
* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)
S1510-P	1,2	--	1.15	11.04	8.44	30.46	73.71	26.29	22.45
S1511-P	1,2	C	1.14	10.16	8.01	29.93	76.16	23.84	22.79
S1511DUP-P	1,2	--	1.14	10.16	8.01	30.01	76.16	23.84	22.86

Validation of:	Performed:
% Dry	04/19/04 BJM
	04/20/04 BJM
Wet Wt.	04/19/04 BJM
	04/20/04 BJM

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100
Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]
* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Balance Data:

Task: **Wet Weight**

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
BE164PB-P	04/20/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
BE165LCS-P	--	--	--	--	--	--
BE166SRM-P	04/06/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
BE174NSC-P	--	--	--	--	--	--
S1421-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424MS-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424MSD-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1426-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1442-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1443-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1449-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1451-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1452-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1464-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1467-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1473-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1476-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1479-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1490-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1494-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1502-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1507-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1510-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1511-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1511DUP-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100

Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]

* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Task: **Tare Weight**

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
BE164PB-P	--	--	--	--	--	--
BE165LCS-P	--	--	--	--	--	--
BE166SRM-P	--	--	--	--	--	--
BE174NSC-P	--	--	--	--	--	--
S1421-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424MS-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424MSD-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1426-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1442-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1443-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1449-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1451-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1452-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1464-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1467-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1473-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1476-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1479-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1490-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1494-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1502-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1507-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1510-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1511-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1511DUP-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100

Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]

* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Task: **Aliquot Wet Weight**

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
BE164PB-P	--	--	--	--	--	--
BE165LCS-P	--	--	--	--	--	--
BE166SRM-P	--	--	--	--	--	--
BE174NSC-P	--	--	--	--	--	--
S1421-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424MS-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424MSD-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1426-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1442-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1443-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1449-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1451-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1452-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1464-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1467-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1473-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1476-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1479-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1490-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1494-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1502-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1507-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1510-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1511-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1511DUP-P	04/05/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100
Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]
* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Task: Aliquot Dry Weight

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
BE164PB-P	--	--	--	--	--	--
BE165LCS-P	--	--	--	--	--	--
BE166SRM-P	--	--	--	--	--	--
BE174NSC-P	--	--	--	--	--	--
S1421-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424MS-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1424MSD-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1426-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1442-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1443-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1449-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1451-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1452-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1464-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1467-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1473-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1476-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1479-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1490-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1494-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1502-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1507-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1510-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1511-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120
S1511DUP-P	04/08/2004 BJM	Balance	Prep Lab I	Ohaus	D2771118362173	EOD120

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100

Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]

* "C" = Sample Container Is Consumed

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The Business of Innovation

BATTELLE - DUXBURY OPERATIONS
ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Sample ID:	Comments:	Reference:
BE164PB-P	Average of percent dry weights from authentic samples in Batch No. 04-0118 Davisville Naval Sediment Study (Quantitave) Average of wet weights from authentic samples in Batch No. 04-0118 Davisville Naval Sediment Study (Quantitave)	NA
S1511-P		S1511 (04-0118)
S1511DUP-P		S1511 (04-0118)

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100

Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]

* "C" = Sample Container Is Consumed

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BATTELLE - DUXBURY OPERATIONS
SAMPLE EXTRACTION FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID	First Extraction	Second Extraction	Third Extraction	Turbo °C	Turbo PSI	KD °C	Comment
BE164PB-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
BE165LCS-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
BE166SRM-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
BE174NSC-P	04/12/04 BJM	04/12/04 BJM	04/12/04 BJM	NA	NA	65	See Comments Below
S1421-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1424-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1424MS-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1424MSD-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1426-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1442-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1443-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1449-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1451-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1452-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1464-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1467-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1473-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1476-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1479-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1490-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1494-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1502-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1507-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1510-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1511-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA
S1511DUP-P	04/05/04 BJM	04/06/04 BJM	04/06/04 BJM	NA	NA	65	NA

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BATTELLE - DUXBURY OPERATIONS
SAMPLE EXTRACTION FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
G004976-0001

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID	First Extraction	Second Extraction	Third Extraction	Turbo °C	Turbo PSI	KD °C	Comment

Sample Id:	Comments:
BE174NSC-	Extraction date was changed per BJM's instructions. NSC extraction dates were incorrect and should be 4/12/04 - GWD

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BATTELLE - DUXBURY OPERATIONS
SURROGATE SPIKE FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
BE164PB-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
BE165LCS-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
BE165LCS-P	GC37	LCS/MS	3	100	04/05/04 BJM	ALD	NA
BE166SRM-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
BE174NSC-P	GB67	SIS	37	200	04/12/04 BJM	RPR	NA
S1421-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1424-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1424MS-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1424MS-P	GC37	LCS/MS	3	100	04/05/04 BJM	ALD	NA
S1424MSD-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1424MSD-P	GC37	LCS/MS	3	100	04/05/04 BJM	ALD	NA
S1426-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1442-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1443-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1449-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1451-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1452-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1464-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1467-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1473-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1476-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1479-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1490-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1494-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1502-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1507-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA

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BATTELLE - DUXBURY OPERATIONS
SURROGATE SPIKE FORM

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
S1510-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1511-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA
S1511DUP-P	GB67	SIS	34	200	04/05/04 BJM	RPR	NA

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BATTELLELIMS - LABORATORY OPERATIONS
GRAVIMETRIC ANALYSIS FORM (Pre-Column)

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Extract ID	Alq. #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials
S1421-P(0)	1	25000	50	0.085	42.50	24950	42.415	1.002	04/08/04 BJM
S1424-P(0)	1	10000	50	0.146	29.20	9950	29.055	1.005	04/08/04 BJM
S1424MS-P(0)	1	10000	50	0.091	18.20	9950	18.109	1.005	04/08/04 BJM
S1424MSD-P(0)	1	10000	50	0.095	19.00	9950	18.905	1.005	04/08/04 BJM
S1426-P(0)	1	25000	50	0.048	24.00	24950	23.952	1.002	04/08/04 BJM
S1442-P(0)	1	5000	50	0.073	7.30	4950	7.228	1.010	04/08/04 BJM
S1443-P(0)	1	5000	50	0.067	6.70	4950	6.634	1.010	04/08/04 BJM
S1449-P(0)	1	10000	50	0.134	26.80	9950	26.667	1.005	04/08/04 BJM
S1451-P(0)	1	5000	50	0.115	11.50	4950	11.386	1.010	04/08/04 BJM
S1452-P(0)	1	25000	50	0.085	42.50	24950	42.415	1.002	04/08/04 BJM
S1464-P(0)	1	5000	50	0.084	8.40	4950	8.317	1.010	04/08/04 BJM
S1467-P(0)	1	5000	50	0.185	18.50	4950	18.317	1.010	04/08/04 BJM
S1473-P(0)	1	25000	50	0.072	36.00	24950	35.928	1.002	04/08/04 BJM
S1476-P(0)	1	25000	50	0.063	31.50	24950	31.437	1.002	04/08/04 BJM
S1479-P(0)	1	25000	50	0.126	63.00	24950	62.874	1.002	04/08/04 BJM
S1490-P(0)	1	25000	50	0.072	36.00	24950	35.928	1.002	04/08/04 BJM
S1494-P(0)	1	25000	50	0.103	51.50	24950	51.397	1.002	04/08/04 BJM
S1502-P(0)	1	25000	50	0.055	27.50	24950	27.445	1.002	04/08/04 BJM
S1507-P(0)	1	25000	50	0.074	37.00	24950	36.926	1.002	04/08/04 BJM
S1510-P(0)	1	25000	50	0.119	59.50	24950	59.381	1.002	04/08/04 BJM
S1511-P(0)	1	5000	50	0.722	72.20	4950	71.485	1.010	04/08/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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BATTELLELIMS - LABORATORY OPERATIONS
GRAVIMETRIC ANALYSIS FORM (Pre-Column)

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Extract ID	Alq. #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials
S1511DUP-P(0)	1	5000	50	0.784	78.40	4950	77.624	1.010	04/08/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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BATTELLELIMS - LABORATORY OPERATIONS
GRAVIMETRIC ANALYSIS FORM (Pre-Column)

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Extract ID	Alq. #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials

Validation of:	Performed:
Grav. Wt.	Not Validated

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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BATTELLELIMS - LABORATORY OPERATIONS
GRAVIMETRIC ANALYSIS FORM (Pre-Column)

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Extract ID	Alq. #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials

Gravimetric Balance Data

Task: Gravimetric Aliquot Weight

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
S1421-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1424-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1424MS-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1424MSD-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1426-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1442-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1443-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1449-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1451-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1452-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1464-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1467-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1473-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1476-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1479-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1490-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1494-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1502-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1507-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1510-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1511-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1511DUP-P-GW1(3)	04/08/2004 BJM	Balance	Forensics	Cahn	70187	C28

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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BATTELLELIMS - LABORATORY OPERATIONS
GRAVIMETRIC ANALYSIS FORM (Post Column)

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Extract ID	Alq. #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials
S1421-P(5)	2	1000	50	0.401	1/2 1ml 8.04	950	7.617	1.055	04/09/04 BJM
S1424-P(5)	2	1000	50	0.348	⊥ 7.00	950	6.612	1.058	04/09/04 BJM
S1424MS-P(5)	2	1000	50	0.209	1/2 500 4.20	950	3.971	1.058	04/09/04 BJM
S1424MSD-P(5)	2	1000	50	0.206	⊥ 4.14	950	3.914	1.058	04/09/04 BJM
S1426-P(5)	2	1000	50	0.414	1/2 1ml 8.30	950	7.864	1.055	04/09/04 BJM
S1442-P(5)	2	1000	50	0.049	500ul 0.99	950	0.931	1.063	04/09/04 BJM
S1443-P(5)	2	1000	50	0.036	⊥ 0.73	950	0.684	1.063	04/09/04 BJM
S1449-P(5)	2	1000	50	0.156	1/2 500 3.14	950	2.964	1.058	04/09/04 BJM
S1451-P(5)	2	1000	50	0.101	⊥ 2.04	950	1.919	1.063	04/09/04 BJM
S1452-P(5)	2	1000	50	0.717	1/4 1ml 14.37	950	13.620	1.055	04/09/04 BJM
S1464-P(5)	2	1000	50	0.120	1/2 500 2.42	950	2.281	1.063	04/09/04 BJM
S1467-P(5)	2	1000	50	0.179	⊥ 3.62	950	3.402	1.063	04/09/04 BJM
S1473-P(5)	2	1000	50	0.559	1/4 1ml 11.20	950	10.618	1.055	04/09/04 BJM
S1476-P(5)	2	1000	50	0.655	13.13	950	12.442	1.055	04/09/04 BJM
S1479-P(5)	2	1000	50	0.607	12.16	950	11.530	1.055	04/09/04 BJM
S1490-P(5)	2	1000	50	0.559	⊥ 11.20	950	10.618	1.055	04/09/04 BJM
S1494-P(5)	2	1000	50	1.270	1/20 ml 25.45	950	24.124	1.055	04/09/04 BJM
S1502-P(5)	2	1000	50	0.533	1/4 1ml 10.68	950	10.124	1.055	04/09/04 BJM
S1507-P(5)	2	1000	50	0.718	⊥ 14.39	950	13.639	1.055	04/09/04 BJM
S1510-P(5)	2	1000	50	1.257	1/5 1ml 25.19	950	23.877	1.055	04/09/04 BJM
S1511-P(5)	2	1000	50	1.315	26.57	950	24.991	1.063	04/09/04 BJM
S1511DUP-P(5)	2	1000	50	1.607	⊥ 32.46	950	30.541	1.063	04/09/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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GRAVIMETRIC ANALYSIS FORM (Post Column)

Project Title(s)
Davisville Naval Sediment Study

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EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Extract ID	Alq. #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials

Validation of:	Performed:
Grav. Wt.	Not Validated

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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SEDIMENT

Extract ID	Alq. #	Initial Ext. Vol (uL)	Aliquot Vol (ul)	Aliquot Wt (mg)	Pre-Column Total Oil (mg)	Volume for Analysis (uL)	Total Oil After Dilution (mg)	Dilution Factor	Date/Initials

Gravimetric Balance Dat

Task: Gravimetric Aliquot Weight

BDO-ID:	Date/Initials:	Equiptment:	Location:	Vendor:	Battelle-ID:	Model:
S1421-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1424-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1424MSD-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1424MS-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1426-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1442-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1443-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1449-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1451-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1452-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1464-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1467-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1473-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1476-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1479-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1490-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1494-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1502-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1507-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1510-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1511-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28
S1511DUP-P-GW2(5)	04/09/2004 BJM	Balance	Forensics	Cahn	70187	C28

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

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Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Extract		*	Extract Date	Source		Initial Extract	Extract	Extract	Total	Date/Initials
Name	#			Name	#	Vol (uL)	Split	Split	Dilution	
BE164PB-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
BE164PB-P-A	2	--	4/12/2004 11:56:00 AM	BE164PB-P	0	1000	500	2.000	2.000	04/12/04 BJM
BE164PB-P	3	--	4/12/2004 11:56:00 AM	BE164PB-P	0	1000	500	2.000	2.000	04/12/04 BJM
BE165LCS-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
BE165LCS-P-A	2	--	4/12/2004 11:56:00 AM	BE165LCS-P	0	1000	500	2.000	2.000	04/12/04 BJM
BE165LCS-P	3	--	4/12/2004 11:56:00 AM	BE165LCS-P	0	1000	500	2.000	2.000	04/12/04 BJM
BE166SRM-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
BE166SRM-P-A	2	--	4/12/2004 11:56:00 AM	BE166SRM-P	0	1000	500	2.000	2.000	04/12/04 BJM
BE166SRM-P	3	--	4/12/2004 11:56:00 AM	BE166SRM-P	0	1000	500	2.000	2.000	04/12/04 BJM
BE174NSC-P	0	--	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1421-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1421-P	2	C	4/8/2004 11:22:00 AM	S1421-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1421-P-GW1	3	C	4/8/2004 11:22:00 AM	S1421-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1421-P	4	C	4/9/2004 4:15:00 PM	S1421-P	2	1000	950	1.053	1.055	04/09/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1421-P-GW2	5	C	4/9/2004 4:15:00 PM	S1421-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1421-P-A	6	--	4/12/2004 11:56:00 AM	S1421-P	4	1000	500	2.000	2.109	04/12/04 BJM
S1421-P	7	--	4/12/2004 11:56:00 AM	S1421-P	4	1000	500	2.000	2.109	04/12/04 BJM
S1424-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1424-P	2	C	4/8/2004 11:09:00 AM	S1424-P	0	10000	9950	1.005	1.005	04/08/04 BJM
S1424-P-GW1	3	C	4/8/2004 11:09:00 AM	S1424-P	0	10000	50	200.000	200.000	04/08/04 BJM
S1424-P	4	C	4/9/2004 4:15:00 PM	S1424-P	2	1000	950	1.053	1.058	04/09/04 BJM
S1424-P-GW2	5	C	4/9/2004 4:15:00 PM	S1424-P	2	1000	50	20.000	20.101	04/09/04 BJM
S1424-P-A	6	--	4/12/2004 11:56:00 AM	S1424-P	4	1000	500	2.000	2.116	04/12/04 BJM
S1424-P	7	--	4/12/2004 11:56:00 AM	S1424-P	4	1000	500	2.000	2.116	04/12/04 BJM
S1424MS-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1424MS-P	2	C	4/8/2004 11:09:00 AM	S1424MS-P	0	10000	9950	1.005	1.005	04/08/04 BJM
S1424MS-P-GW1	3	C	4/8/2004 11:09:00 AM	S1424MS-P	0	10000	50	200.000	200.000	04/08/04 BJM
S1424MS-P	4	C	4/9/2004 4:15:00 PM	S1424MS-P	2	1000	950	1.053	1.058	04/09/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1424MS-P-GW2	5	C	4/9/2004 4:15:00 PM	S1424MS-P	2	1000	50	20.000	20.101	04/09/04 BJM
S1424MS-P-A	6	--	4/12/2004 11:56:00 AM	S1424MS-P	4	500	250	2.000	2.116	04/12/04 BJM
S1424MS-P	7	--	4/12/2004 11:56:00 AM	S1424MS-P	4	500	250	2.000	2.116	04/12/04 BJM
S1424MSD-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1424MSD-P	2	C	4/8/2004 11:09:00 AM	S1424MSD-P	0	10000	9950	1.005	1.005	04/08/04 BJM
S1424MSD-P-GW1	3	C	4/8/2004 11:09:00 AM	S1424MSD-P	0	10000	50	200.000	200.000	04/08/04 BJM
S1424MSD-P	4	C	4/9/2004 4:15:00 PM	S1424MSD-P	2	1000	950	1.053	1.058	04/09/04 BJM
S1424MSD-P-GW2	5	C	4/9/2004 4:15:00 PM	S1424MSD-P	2	1000	50	20.000	20.101	04/09/04 BJM
S1424MSD-P-A	6	--	4/12/2004 11:56:00 AM	S1424MSD-P	4	500	250	2.000	2.116	04/12/04 BJM
S1424MSD-P	7	--	4/12/2004 11:56:00 AM	S1424MSD-P	4	500	250	2.000	2.116	04/12/04 BJM
S1426-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1426-P	2	C	4/8/2004 11:22:00 AM	S1426-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1426-P-GW1	3	C	4/8/2004 11:22:00 AM	S1426-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1426-P	4	C	4/9/2004 4:15:00 PM	S1426-P	2	1000	950	1.053	1.055	04/09/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1426-P-GW2	5	C	4/9/2004 4:15:00 PM	S1426-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1426-P-A	6	--	4/12/2004 11:56:00 AM	S1426-P	4	1000	500	2.000	2.109	04/12/04 BJM
S1426-P	7	--	4/12/2004 11:56:00 AM	S1426-P	4	1000	500	2.000	2.109	04/12/04 BJM
S1442-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1442-P	2	C	4/8/2004 10:37:00 AM	S1442-P	0	5000	4950	1.010	1.010	04/08/04 BJM
S1442-P-GW1	3	C	4/8/2004 10:37:00 AM	S1442-P	0	5000	50	100.000	100.000	04/08/04 BJM
S1442-P	4	--	4/9/2004 4:15:00 PM	S1442-P	2	1000	950	1.053	1.063	04/09/04 BJM
S1442-P-GW2	5	C	4/9/2004 4:15:00 PM	S1442-P	2	1000	50	20.000	20.202	04/09/04 BJM
S1443-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1443-P	2	C	4/8/2004 10:37:00 AM	S1443-P	0	5000	4950	1.010	1.010	04/08/04 BJM
S1443-P-GW1	3	C	4/8/2004 10:37:00 AM	S1443-P	0	5000	50	100.000	100.000	04/08/04 BJM
S1443-P	4	--	4/9/2004 4:15:00 PM	S1443-P	2	1000	950	1.053	1.063	04/09/04 BJM
S1443-P-GW2	5	C	4/9/2004 4:15:00 PM	S1443-P	2	1000	50	20.000	20.202	04/09/04 BJM
S1449-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1449-P	2	C	4/8/2004 11:09:00 AM	S1449-P	0	10000	9950	1.005	1.005	04/08/04 BJM
S1449-P-GW1	3	C	4/8/2004 11:09:00 AM	S1449-P	0	10000	50	200.000	200.000	04/08/04 BJM
S1449-P	4	C	4/9/2004 4:15:00 PM	S1449-P	2	1000	950	1.053	1.058	04/09/04 BJM
S1449-P-GW2	5	C	4/9/2004 4:15:00 PM	S1449-P	2	1000	50	20.000	20.101	04/09/04 BJM
S1449-P-A	6	--	4/12/2004 11:56:00 AM	S1449-P	4	500	250	2.000	2.116	04/12/04 BJM
S1449-P	7	--	4/12/2004 11:56:00 AM	S1449-P	4	500	250	2.000	2.116	04/12/04 BJM
S1451-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1451-P	2	C	4/8/2004 10:37:00 AM	S1451-P	0	5000	4950	1.010	1.010	04/08/04 BJM
S1451-P-GW1	3	C	4/8/2004 10:37:00 AM	S1451-P	0	5000	50	100.000	100.000	04/08/04 BJM
S1451-P	4	C	4/9/2004 4:15:00 PM	S1451-P	2	1000	950	1.053	1.063	04/09/04 BJM
S1451-P-GW2	5	C	4/9/2004 4:15:00 PM	S1451-P	2	1000	50	20.000	20.202	04/09/04 BJM
S1451-P-A	6	--	4/12/2004 11:56:00 AM	S1451-P	4	500	250	2.000	2.127	04/12/04 BJM
S1451-P	7	--	4/12/2004 11:56:00 AM	S1451-P	4	500	250	2.000	2.127	04/12/04 BJM
S1452-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1452-P	2	C	4/8/2004 11:22:00 AM	S1452-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1452-P-GW1	3	C	4/8/2004 11:22:00 AM	S1452-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1452-P	4	C	4/9/2004 4:15:00 PM	S1452-P	2	1000	950	1.053	1.055	04/09/04 BJM
S1452-P-GW2	5	C	4/9/2004 4:15:00 PM	S1452-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1452-P-A	6	--	4/12/2004 11:56:00 AM	S1452-P	4	1000	750	1.333	1.406	04/12/04 BJM
S1452-P	7	--	4/12/2004 11:56:00 AM	S1452-P	4	1000	250	4.000	4.219	04/12/04 BJM
S1464-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1464-P	2	C	4/8/2004 10:37:00 AM	S1464-P	0	5000	4950	1.010	1.010	04/08/04 BJM
S1464-P-GW1	3	C	4/8/2004 10:37:00 AM	S1464-P	0	5000	50	100.000	100.000	04/08/04 BJM
S1464-P	4	C	4/9/2004 4:15:00 PM	S1464-P	2	1000	950	1.053	1.063	04/09/04 BJM
S1464-P-GW2	5	C	4/9/2004 4:15:00 PM	S1464-P	2	1000	50	20.000	20.202	04/09/04 BJM
S1464-P-A	6	--	4/12/2004 11:56:00 AM	S1464-P	4	500	250	2.000	2.127	04/12/04 BJM
S1464-P	7	--	4/12/2004 11:56:00 AM	S1464-P	4	500	250	2.000	2.127	04/12/04 BJM
S1467-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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SEDIMENT

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1467-P	2	C	4/8/2004 10:37:00 AM	S1467-P	0	5000	4950	1.010	1.010	04/08/04 BJM
S1467-P-GW1	3	C	4/8/2004 10:37:00 AM	S1467-P	0	5000	50	100.000	100.000	04/08/04 BJM
S1467-P	4	C	4/9/2004 4:15:00 PM	S1467-P	2	1000	950	1.053	1.063	04/09/04 BJM
S1467-P-GW2	5	C	4/9/2004 4:15:00 PM	S1467-P	2	1000	50	20.000	20.202	04/09/04 BJM
S1467-P-A	6	--	4/12/2004 11:56:00 AM	S1467-P	4	500	250	2.000	2.127	04/12/04 BJM
S1467-P	7	--	4/12/2004 11:56:00 AM	S1467-P	4	500	250	2.000	2.127	04/12/04 BJM
S1473-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1473-P	2	C	4/8/2004 11:22:00 AM	S1473-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1473-P-GW1	3	C	4/8/2004 11:22:00 AM	S1473-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1473-P	4	C	4/9/2004 4:15:00 PM	S1473-P	2	1000	950	1.053	1.055	04/09/04 BJM
S1473-P-GW2	5	C	4/9/2004 4:15:00 PM	S1473-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1473-P-A	6	--	4/12/2004 11:56:00 AM	S1473-P	4	1000	750	1.333	1.406	04/12/04 BJM
S1473-P	7	--	4/12/2004 11:56:00 AM	S1473-P	4	1000	250	4.000	4.219	04/12/04 BJM
S1476-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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SEDIMENT

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1476-P	2	C	4/8/2004 11:22:00 AM	S1476-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1476-P-GW1	3	C	4/8/2004 11:22:00 AM	S1476-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1476-P	4	C	4/9/2004 4:15:00 PM	S1476-P	2	1000	950	1.053	1.055	04/09/04 BJM
S1476-P-GW2	5	C	4/9/2004 4:15:00 PM	S1476-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1476-P-A	6	--	4/12/2004 11:56:00 AM	S1476-P	4	1000	750	1.333	1.406	04/12/04 BJM
S1476-P	7	--	4/12/2004 11:56:00 AM	S1476-P	4	1000	250	4.000	4.219	04/12/04 BJM
S1479-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1479-P	2	C	4/8/2004 11:22:00 AM	S1479-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1479-P-GW1	3	C	4/8/2004 11:22:00 AM	S1479-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1479-P	4	C	4/9/2004 4:15:00 PM	S1479-P	2	1000	950	1.053	1.055	04/09/04 BJM
S1479-P-GW2	5	C	4/9/2004 4:15:00 PM	S1479-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1479-P-A	6	--	4/12/2004 11:56:00 AM	S1479-P	4	1000	750	1.333	1.406	04/12/04 BJM
S1479-P	7	--	4/12/2004 11:56:00 AM	S1479-P	4	1000	250	4.000	4.219	04/12/04 BJM
S1490-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1490-P	2	C	4/8/2004 11:22:00 AM	S1490-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1490-P-GW1	3	C	4/8/2004 11:22:00 AM	S1490-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1490-P	4	C	4/9/2004 4:15:00 PM	S1490-P	2	1000	950	1.053	1.055	04/09/04 BJM
S1490-P-GW2	5	C	4/9/2004 4:15:00 PM	S1490-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1490-P-A	6	--	4/12/2004 11:56:00 AM	S1490-P	4	1000	750	1.333	1.406	04/12/04 BJM
S1490-P	7	--	4/12/2004 11:56:00 AM	S1490-P	4	1000	250	4.000	4.219	04/12/04 BJM
S1494-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1494-P	2	C	4/8/2004 11:22:00 AM	S1494-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1494-P-GW1	3	C	4/8/2004 11:22:00 AM	S1494-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1494-P	4	C	4/9/2004 4:15:00 PM	S1494-P	2	1000	950	1.053	1.055	04/09/04 BJM
S1494-P-GW2	5	C	4/9/2004 4:15:00 PM	S1494-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1494-P-A	6	--	4/12/2004 11:56:00 AM	S1494-P	4	1000	900	1.111	1.172	04/12/04 BJM
S1494-P	7	--	4/12/2004 11:56:00 AM	S1494-P	4	1000	100	10.000	10.547	04/12/04 BJM
S1502-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1502-P	2	C	4/8/2004 11:22:00 AM	S1502-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1502-P-GW1	3	C	4/8/2004 11:22:00 AM	S1502-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1502-P	4	C	4/9/2004 4:15:00 PM	S1502-P	2	1000	950	1.053	1.055	04/09/04 BJM
S1502-P-GW2	5	C	4/9/2004 4:15:00 PM	S1502-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1502-P-A	6	--	4/12/2004 11:56:00 AM	S1502-P	4	1000	750	1.333	1.406	04/12/04 BJM
S1502-P	7	--	4/12/2004 11:56:00 AM	S1502-P	4	1000	250	4.000	4.219	04/12/04 BJM
S1507-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1507-P	2	C	4/8/2004 11:22:00 AM	S1507-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1507-P-GW1	3	C	4/8/2004 11:22:00 AM	S1507-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1507-P	4	C	4/9/2004 4:15:00 PM	S1507-P	2	1000	950	1.053	1.055	04/09/04 BJM
S1507-P-GW2	5	C	4/9/2004 4:15:00 PM	S1507-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1507-P-A	6	--	4/12/2004 11:56:00 AM	S1507-P	4	1000	750	1.333	1.406	04/12/04 BJM
S1507-P	7	--	4/12/2004 11:56:00 AM	S1507-P	4	1000	250	4.000	4.219	04/12/04 BJM
S1510-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1510-P	2	C	4/8/2004 11:22:00 AM	S1510-P	0	25000	24950	1.002	1.002	04/08/04 BJM
S1510-P-GW1	3	C	4/8/2004 11:22:00 AM	S1510-P	0	25000	50	500.000	500.000	04/08/04 BJM
S1510-P	4	C	4/9/2004 4:15:00 PM	S1510-P	2	1000	950	1.053	1.055	04/09/04 BJM
S1510-P-GW2	5	C	4/9/2004 4:15:00 PM	S1510-P	2	1000	50	20.000	20.040	04/09/04 BJM
S1510-P-A	6	--	4/12/2004 11:56:00 AM	S1510-P	4	1000	900	1.111	1.172	04/12/04 BJM
S1510-P	7	--	4/12/2004 11:56:00 AM	S1510-P	4	1000	100	10.000	10.547	04/12/04 BJM
S1511-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM
S1511-P	2	C	4/8/2004 10:37:00 AM	S1511-P	0	5000	4950	1.010	1.010	04/08/04 BJM
S1511-P-GW1	3	C	4/8/2004 10:37:00 AM	S1511-P	0	5000	50	100.000	100.000	04/08/04 BJM
S1511-P	4	C	4/9/2004 4:15:00 PM	S1511-P	2	1000	950	1.053	1.063	04/09/04 BJM
S1511-P-GW2	5	C	4/9/2004 4:15:00 PM	S1511-P	2	1000	50	20.000	20.202	04/09/04 BJM
S1511-P-A	6	--	4/12/2004 11:56:00 AM	S1511-P	4	1000	900	1.111	1.181	04/12/04 BJM
S1511-P	7	--	4/12/2004 11:56:00 AM	S1511-P	4	1000	100	10.000	10.633	04/12/04 BJM
S1511DUP-P	0	C	4/5/2004	NA		NA	NA	1.000	1.000	04/05/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor

* - "C" = Extract is Consumed

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Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
S1511DUP-P	2	C	4/8/2004 10:37:00 AM	S1511DUP-P	0	5000	4950	1.010	1.010	04/08/04 BJM
S1511DUP-P-GW1	3	C	4/8/2004 10:37:00 AM	S1511DUP-P	0	5000	50	100.000	100.000	04/08/04 BJM
S1511DUP-P	4	C	4/9/2004 4:15:00 PM	S1511DUP-P	2	1000	950	1.053	1.063	04/09/04 BJM
S1511DUP-P-GW2	5	C	4/9/2004 4:15:00 PM	S1511DUP-P	2	1000	50	20.000	20.202	04/09/04 BJM
S1511DUP-P-A	6	--	4/12/2004 11:56:00 AM	S1511DUP-P	4	1000	900	1.111	1.181	04/12/04 BJM
S1511DUP-P	7	--	4/12/2004 11:56:00 AM	S1511DUP-P	4	1000	100	10.000	10.633	04/12/04 BJM

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]
Dilution Factor = [Sample Volume (uL) / Aliqot Volume (uL))] * Prior Dilution Factor
* - "C" = Extract is Consumed

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COLUMN FRACTIONATION FORM

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Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Extract Id	Date	Init.	Sample Specific Comments
BE164PB-P(0)	04/09/04	BJM	NA
BE165LCS-P(0)	04/09/04	BJM	NA
BE166SRM-P(0)	04/09/04	BJM	NA
S1421-P(2)	04/09/04	BJM	NA
S1424-P(2)	04/09/04	BJM	NA
S1424MS-P(2)	04/09/04	BJM	NA
S1424MSD-P(2)	04/09/04	BJM	NA
S1426-P(2)	04/09/04	BJM	NA
S1442-P(2)	04/09/04	BJM	NA
S1443-P(2)	04/09/04	BJM	NA
S1449-P(2)	04/09/04	BJM	NA
S1451-P(2)	04/09/04	BJM	NA
S1452-P(2)	04/09/04	BJM	NA
S1464-P(2)	04/09/04	BJM	NA
S1467-P(2)	04/09/04	BJM	NA
S1473-P(2)	04/09/04	BJM	NA
S1476-P(2)	04/09/04	BJM	NA

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SEDIMENT

Extract Id	Date	Init.	Sample Specific Comments
S1479-P(2)	04/09/04	BJM	NA
S1490-P(2)	04/09/04	BJM	NA
S1494-P(2)	04/09/04	BJM	NA
S1502-P(2)	04/09/04	BJM	NA
S1507-P(2)	04/09/04	BJM	NA
S1510-P(2)	04/09/04	BJM	NA
S1511-P(2)	04/09/04	BJM	NA
S1511DUP-P(2)	04/09/04	BJM	NA

Column Diameter: 13 mm **Procedure Comment:**

Elution Volume: 40 mL

Solvents

Name	Lot No
DCM	Y46E07

Reagents

Weight g	Name	Expires	Lot No	Procedure
10	6% Deactivated Alumina	04/10/04	23	250 g Alumina shaken for 2 hours with 15 mL Milli-Q water

Fractions

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EXTRACT CLEANUP FORM

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Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Extract Id	Date	Init.	Comments
BE164PB-P(0)	04/09/04	BJM	NA
BE165LCS-P(0)	04/09/04	BJM	NA
BE166SRM-P(0)	04/09/04	BJM	NA
S1421-P(2)	04/09/04	BJM	NA
S1424-P(2)	04/09/04	BJM	NA
S1424MS-P(2)	04/09/04	BJM	NA
S1424MSD-P(2)	04/09/04	BJM	NA
S1426-P(2)	04/09/04	BJM	NA
S1442-P(2)	04/09/04	BJM	NA
S1443-P(2)	04/09/04	BJM	NA
S1449-P(2)	04/09/04	BJM	NA
S1451-P(2)	04/09/04	BJM	NA
S1452-P(2)	04/09/04	BJM	NA
S1464-P(2)	04/09/04	BJM	NA
S1467-P(2)	04/09/04	BJM	NA
S1473-P(2)	04/09/04	BJM	NA
S1476-P(2)	04/09/04	BJM	NA
S1479-P(2)	04/09/04	BJM	NA

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EXTRACT CLEANUP FORM

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SEDIMENT

Extract Id	Date	Init.	Comments
S1490-P(2)	04/09/04	BJM	NA
S1494-P(2)	04/09/04	BJM	NA
S1502-P(2)	04/09/04	BJM	NA
S1507-P(2)	04/09/04	BJM	NA
S1510-P(2)	04/09/04	BJM	NA
S1511-P(2)	04/09/04	BJM	NA
S1511DUP-P(2)	04/09/04	BJM	NA

Cleanup:
Copper Cleanup

Reagents:

Name	Expires	Lot No.	Procedure
Activated Copper	04/10/04	X34595	Activated according to Extraction SOP

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INTERNAL STANDARD SPIKING FORM

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Davisville Naval Sediment Study (Quantitave)
SEDIMENT

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
BE164PB-P(3)	800	200	FZ70	200	98	1000	2.000	04/12/04 BJM	RPR
BE165LCS-P(3)	800	200	FZ70	200	98	1000	2.000	04/12/04 BJM	RPR
BE166SRM-P(3)	800	200	FZ70	200	98	1000	2.000	04/12/04 BJM	RPR
BE174NSC-P(0)	1200	200	FZ70	200	98	1400	1.000	04/12/04 BJM	RPR
S1421-P(7)	800	200	FZ70	200	98	1000	2.109	04/12/04 BJM	RPR
S1424-P(7)	800	200	FZ70	200	98	1000	2.116	04/12/04 BJM	RPR
S1424MS-P(7)	400	100	FZ70	100	98	500	2.116	04/12/04 BJM	RPR
S1424MSD-P(7)	400	100	FZ70	100	98	500	2.116	04/12/04 BJM	RPR
S1426-P(7)	800	200	FZ70	200	98	1000	2.109	04/12/04 BJM	RPR
S1442-P(4)	400	100	FZ70	100	98	500	1.063	04/12/04 BJM	RPR
S1443-P(4)	400	100	FZ70	100	98	500	1.063	04/12/04 BJM	RPR
S1449-P(7)	400	100	FZ70	100	98	500	2.116	04/12/04 BJM	RPR
S1451-P(7)	400	100	FZ70	100	98	500	2.127	04/12/04 BJM	RPR
S1452-P(7)	800	200	FZ70	200	98	1000	4.219	04/12/04 BJM	RPR
S1464-P(7)	400	100	FZ70	100	98	500	2.127	04/12/04 BJM	RPR
S1467-P(7)	400	100	FZ70	100	98	500	2.127	04/12/04 BJM	RPR
S1473-P(7)	800	200	FZ70	200	98	1000	4.219	04/12/04 BJM	RPR
S1476-P(7)	800	200	FZ70	200	98	1000	4.219	04/12/04 BJM	RPR
S1479-P(7)	800	200	FZ70	200	98	1000	4.219	04/12/04 BJM	RPR

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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INTERNAL STANDARD SPIKING FORM

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Davisville Naval Sediment Study (Quantitave)

SEDIMENT

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm. (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
S1490-P(7)	800	200	FZ70	200	98	1000	4.219	04/12/04 BJM	RPR
S1494-P(7)	800	200	FZ70	200	98	1000	10.547	04/12/04 BJM	RPR
S1502-P(7)	800	200	FZ70	200	98	1000	4.219	04/12/04 BJM	RPR
S1507-P(7)	800	200	FZ70	200	98	1000	4.219	04/12/04 BJM	RPR
S1510-P(7)	800	200	FZ70	200	98	1000	10.547	04/12/04 BJM	RPR
S1511-P(7)	800	200	FZ70	200	98	1000	10.633	04/12/04 BJM	RPR
S1511DUP-P(7)	800	200	FZ70	200	98	1000	10.633	04/12/04 BJM	RPR

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.

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SAMPLE SPECIFIC COMMENTS

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EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

SEDIMENT

Sample ID:	Comment:	Date/Initials:
BE164PB-P	NA	NA
BE165LCS-P	NA	NA
BE166SRM-P	NA	NA
BE174NSC-P	NA	NA
S1421-P	NA	NA
S1424-P	NA	NA
S1424MS-P	NA	NA
S1424MSD-P	NA	NA
S1426-P	NA	NA
S1442-P	NA	NA
S1443-P	NA	NA
S1449-P	NA	NA
S1451-P	NA	NA
S1452-P	NA	NA
S1464-P	NA	NA
S1467-P	NA	NA
S1473-P	NA	NA
S1476-P	NA	NA
S1479-P	NA	NA
S1490-P	NA	NA
S1494-P	NA	NA
S1502-P	NA	NA
S1507-P	NA	NA
S1510-P	NA	NA
S1511-P	NA	NA
S1511DUP-P	NA	NA

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BATTELLE - DUXBURY OPERATIONS
EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)
Davisville Naval Sediment Study

Project No.(s)
EA Davisville

04-0118

Davisville Naval Sediment Study (Quantitave)

Purpose:	GC/MSD TRANSFER	**Last Activity:**	Prep->Inst
Relinquished On/By:	Apr 12 2004 1:46PM BJM	**Received On/By:**	Apr 12 2004 1:55PM JAR
Relinquished From:	Forensics: NA	**Received Location:**	GC Room: NA
Relinquish Comment:	NA	**Received Comment:**	NA

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	BE164PB-P(3)	1000	2	Intact	NA
2	BE165LCS-P(3)	1000	2	Intact	NA
3	BE166SRM-P(3)	1000	2	Intact	NA
4	BE174NSC-P(0)	1400	1	Intact	NA
5	S1421-P(7)	1000	2.109	Intact	NA
6	S1424-P(7)	1000	2.116	Intact	NA
7	S1424MS-P(7)	500	2.116	Intact	NA
8	S1424MSD-P(7)	500	2.116	Intact	NA
9	S1426-P(7)	1000	2.109	Intact	NA
10	S1442-P(4)	500	1.063	Intact	NA
11	S1443-P(4)	500	1.063	Intact	NA
12	S1449-P(7)	500	2.116	Intact	NA
13	S1451-P(7)	500	2.127	Intact	NA
14	S1452-P(7)	1000	4.219	Intact	NA
15	S1464-P(7)	500	2.127	Intact	NA
16	S1467-P(7)	500	2.127	Intact	NA
17	S1473-P(7)	1000	4.219	Intact	NA
18	S1476-P(7)	1000	4.219	Intact	NA
19	S1479-P(7)	1000	4.219	Intact	NA
20	S1490-P(7)	1000	4.219	Intact	NA
21	S1494-P(7)	1000	10.547	Intact	NA
22	S1502-P(7)	1000	4.219	Intact	NA
23	S1507-P(7)	1000	4.219	Intact	NA
24	S1510-P(7)	1000	10.547	Intact	NA
25	S1511-P(7)	1000	10.633	Intact	NA
26	S1511DUP-P(7)	1000	10.633	Intact	NA

Total Extracts: 26

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ShpNo SHP-040323-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 2960097.3203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Tuesday, March 23, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959704

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	2.0	8

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1420 - S1427

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/23/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 9:09:

Authorized By: **Authorized On:**

4.5
2.0 Temp Blank:

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Chain of Custody

Proj. No	Proj. Name
29600097.3203	Allen Harbor Sediment Sampling

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	TOC OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3.22.04	1035	51420	AH-07	Sediment				X				X			2
3.22.04	1540	51421	AH-08	Sediment				X				X			2
3.22.04	1450	51422	AH-09	Sediment				X				X			2
3.22.04	1410	51423	AH-10	Sediment				X				X			2
3.22.04	1215	51424	AH-11	Sediment				X				X			2
3.22.04	1215	51424 ~~51425~~ ①	AH-11 MS/MSD	Sediment				X				X			4
3.22.04	—	51426	AH-DUP01	Sediment				X				X			2
3.22.04	—	51427	AH-DUP02	Sediment				X				X			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	03/22/04 1900	[signature]	3/23/04 10:30
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: ① Sample given same ID as background sample per PM's request 4/5/04 JMF.
All 6 jars have ID 51424

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ShpNo SHP-040323-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑

Project Number: 2960097.3203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Tuesday, March 23, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1420	AH-07	03/22/04 16:35	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1421	AH-08	03/22/04 15:40	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1422	AH-09	03/22/04 14:50	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1423	AH-10	03/22/04 14:10	03/23/04 13:56	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1424	AH-11	03/22/04 12:15	03/23/04 13:56	6	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	Jars 1 & 2 are AH-11, J
S1426	AH-DUP 01	03/22/04 0:00	03/23/04 13:58	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1427	AH-DUP 02	03/22/04 0:00	03/23/04 13:58	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	

Total Samples: 7

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ShpNo SHP-040324-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑ ☐

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Wednesday, March 24, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959645

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	5.4	13

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☐ Sample containers intact
☑ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 5.4 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1428 - S1440

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/24/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:30:0

Authorized By: **Authorized On:**

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ShpNo: SHP-040324-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved:

COC Client: EA Engineering

COC Project: Allen Harbor Sediment Sampling

COC Date: 3/24/2004 10:38:00 AM

	Description of Problem:	Explanation:
Sample Container Integrity	Cap broken	Several samples received with damaged caps: AH-16 (S1436, 1of2), AH-15 (S1437, 2of2), Dup3 (S1430)

Documentation of project manager notification

Sample Custodian Newell, Jeffrey **Date:** 3/24/2004 11:31:00 A

Laboratory Manager: Peven-McCarthy, Carole **Date:** 4/1/2004 10:50:00 AM

Project Manager: Hardenstine, Jeffery **Date:** 3/26/2004 1:03:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Sent e-mail to Dan Hinkley of EA Engineering on 3-26-04 notifing of samples with cracked caps. Note sample intergrity is not compromised. Caps are replaced

Date this form was received back to the custodian: _____

Reference Number: _____

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Chain of Custody

Proj. No: 9100173203

Proj. Name: Allen Harbor Sediment Sampling

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION		Bettelle ID #	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3/23/04	0930	~~AH-12~~	AH-12	Sediment		S1428				X				X			2
3/23/04	1005		AH-06 MS	Sediment	S1432	~~S1429~~ ①				X				X			2
			DUP 3	Sediment		S1430				X				X			2
3/23/04	1005		AH-06 MSD	Sediment	S1432	~~S1431~~ ①				X				X			2
3/23/04	1005		AH-06	Sediment		S1432				X				X			2
3/23/04	1123		AH-05	Sediment		S1433				X				X			2
~~3/23/04~~	~~1555~~		Temp Blank														
3/23/04	1555		AH-19	Sediment		S1434				X				X			2
3/23/04	1625		AH-17	Sed		S1435				X				X			2
3/23/04	1530		AH-16	Sed		S1436				X				X			2
3/23/04	1505		AH-15	Sed		S1437				X				X			2
3/23/04	1350		AH03	Sed		S1438				X				X			2
3/23/04	1325		AH-04	Sed		S1439				X				X			2
3/23/04	1430		AH-14	Sed		S1440				X				X			2

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/23/04	18:00	[signature]	3/24/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

① samples were given same ID as background sample. all 6 jars are now logged in as S1432 per PM's request. JMF 4/5/04

ORIGINAL

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ShpNo SHP-040324-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Wednesday, March 24, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1428	AH-12	03/23/04 9:30	03/24/04 11:12	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1430	Dup3		03/24/04 11:13	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1432	AH-06	03/23/04 10:05	03/24/04 11:15	6	SEDIMENT	5.4	NA	NA	NA	29 Freezer			Jars 1 & 2 are AH06, Ja
S1433	AH-05	03/23/04 11:25	03/24/04 11:16	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1434	AH-19	03/23/04 15:55	03/24/04 11:17	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1435	AH-17	03/23/04 16:25	03/24/04 11:19	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1436	AH-16	03/23/04 15:30	03/24/04 11:21	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1437	AH-15	03/23/04 15:05	03/24/04 11:22	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1438	AH-03	03/23/04 13:50	03/24/04 11:23	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1439	AH-04	03/23/04 13:25	03/24/04 11:24	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1440	AH-14	03/23/04 14:30	03/24/04 11:24	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			

Total Samples: 11

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ShpNo SHP-040325-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Thursday, March 25, 2004 10:00 AM

No. of Shipping Containers: 2

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959634

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 2	Cooler	Tape	Intact	Intact	0.8	7
2 of 2	Cooler	Tape	Intact	Intact	2.3	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2.3 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1442 - S1457

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/25/2004 10:00 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:50:0

Authorized By: **Authorized On:**

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ShpNo: SHP-040325-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved:

COC Client: EA Engineering

COC Project: AH Sediment Sampling

COC Date: 3/25/2004 10:21:00 AM

	Description of Problem:	Explanation:
Sample Container Integrity	Cap broken	SAMPLE REF 1-1(S1442) BOTTLE 2 OF 2 CAP BROKEN; NO SAMPLE LOST

Documentation of project manager notification

Sample Custodian	Newell, Jeffrey	**Date:**	3/25/2004 12:00:00 PM
Laboratory Manager:	Peven-McCarthy, Carole	**Date:**	4/1/2004 10:43:00 AM
Project Manager:	Hardenstine, Jeffery	**Date:**	3/26/2004 1:13:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Sent Dan Hinkley of EA Engineering an e-mail on 3-26-04 notifing of samples received with broken cap. Note, sample integrity is not compromised. The cap is replaced.

Date this form was received back to the custodian: _____

Reference Number: _____

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Chain of Custody

Proj. No	Proj. Name
29600973203	AH Sed. Sampling

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3/24/04	0840	51442	REF 1-1 1					X				TOC X			2
3/24/04	0900	51443	REF 1-2 1					X				X			2
3/24/04	0925	51444	REF 1-3 2					X				X			2
3/24/04	1005	51445	REF 1-4 2					X				X			2
3/24/04	1030	51446	REF 1-5 2					X				X			2
3/24/04	1150	51447	REF 2-1 1					X				X			2
3/24/04	1215	51448	REF 2-2 1					X				X			2
3/24/04	1235	51449	REF 2-3 1					X				X			2
3/24/04	1305	51450	REF 2-4 1					X				X			2
3/24/04	1325	51451	REF 2-5 1					X				X			2
3/24/04	1530	51452	AH-23 2					X				X			2
3/24/04	1615	51453	AH-21 2					X				X			2
3/24/04	1600	51454	AH-24 2					X				X			2
			Temp blank					X				X			2
3/24/04	1635	51455	AH-18 2					~~X~~	RC			~~X~~ RC			1
—	—	51456	DUP 04 2					X				X			2
3/24/04	1715	51457	STD Source 4					X				X			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	3/24/04 18:08	[signature]	3/25/04 10:30
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

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The Business of Innovation

ShpNo SHP-040325-01

Battelle Project No:

Sample Receipt Form Details

Approved:

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Thursday, March 25, 2004 10:00 AM

No. of Shipping Containers: 2

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1442	REF 1-1	03/24/04 8:40	03/25/04 11:01	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1443	REF 1-2	03/24/04 9:00	03/25/04 11:01	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1444	REF 1-3	03/24/04 9:25	03/25/04 11:02	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1445	REF 1-4	03/24/04 10:05	03/25/04 11:09	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1446	REF 1-5	03/24/04 10:30	03/25/04 11:10	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1447	REF 2-1	03/24/04 11:50	03/25/04 11:15	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1448	REF 2-2	03/24/04 12:15	03/25/04 11:16	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1449	REF 2-3	03/24/04 12:35	03/25/04 11:20	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1450	REF 2-4	03/24/04 13:05	03/25/04 11:21	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1451	REF 2-5	03/24/04 13:25	03/25/04 11:24	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1452	AH-23	03/24/04 15:30	03/25/04 11:25	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1453	AH-21	03/24/04 16:15	03/25/04 11:26	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1454	AH-24	03/24/04 16:00	03/25/04 11:27	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1455	AH-18	03/24/04 16:35	03/25/04 11:27	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1456	Dup 04		03/25/04 11:29	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1457	SID Source 4-1	03/24/04 17:15	03/25/04 11:30	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			

Total Samples: 16

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Battelle

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ShpNo SHP-040326-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑ ☐

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Friday, March 26, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959601

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	1.5	15

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☐ Sample containers intact
☑ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 1.5 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1458 - S1472

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/26/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:41:0

Authorized By: **Authorized On:**

Battelle

The Business of Innovation

ShpNo: SHP-040326-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved: ☑

COC Client: EA Engineering

COC Project: AH Sediment Sampling

COC Date: 3/26/2004 10:25:00 AM

	Description of Problem:	Explanation:
Custody	Jars and C-O-C do not match for time/date	JARS FOR SAMPLE AH-39 (S1469) LIST COLLECTION TIME AS 15:35; COC LISTS TIME AS 15:39
Sample Container Integrity	Cap broken	SAMPLE REF 3-1 (S1467) JAR 2OF2 CAP BROKEN; NO SAMPLE LOST

Documentation of project manager notification

Sample Custodian Newell, Jeffrey **Date:** 3/26/2004 11:10:00 A

Laboratory Manager: Peven-McCarthy, Carole **Date:** 4/1/2004 10:45:00 AM

Project Manager: Hardenstine, Jeffery **Date:** 3/26/2004 1:17:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinckley, Daniel **at** EA Engineering, Science, and Technology

Results of communication with client (Describe any corrective action directed by the client):

Sent Dan e-mail. Corrective action for sample lids is to replace with clean lid. Correct collection time for sample AH-39 is 15:35

Date this form was received back to the custodian: _____

Reference Number: _____

5 7B

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Chain of Custody

Proj. No: 29600973203
Proj. Name: AH Sediment Sampl

SAMPLERS: Signature: JKm

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
												TOC			
3/25/04	1135	S1458	AH-20					✓				✓			2
		S1459	DUP05					✓				✓			2
3/25/04	1215	S1460	AH-13					✓				✓			2
3/25/04	1250	S1461	AH-02					✓				✓			2
3/25/04	1315	S1462	AH-01					✓				✓			2
3/25/04	1005	S1463	REF 3-5					✓				✓			2
3/25/04	0940	S1464	REF 3-4					✓				✓			2
3/25/04	0920	S1465	REF 3-3					✓				✓			2
3/25/04	0855	S1466	REF 3-2					✓				✓			2
3/25/04	0825 *	S1467	REF 3-1					✓				✓			2
3/25/04	1500	S1468	AH-28					✓				✓			2
3/25/04	1539 *	S1469	AH-39					✓				✓			2
		S1470	DUP06					✓				✓			2
3/25/04	1645	S1471	AH-49					✓				✓			2
3/25/04	1670	S1472	AH-50					✓				✓			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	03/25/04 1750	[signature]	3/26/04 10:30
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Hold Till Further notice

ORIGINAL

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Battelle

The Business of Innovation

ShpNo SHP-040326-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑ Authorized ☐

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Friday, March 26, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1458	AH-20	03/25/04 11:35	03/26/04 10:56	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1459	DUP 05		03/26/04 10:56	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1460	AH-13	03/25/04 12:15	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1461	AH-02	03/25/04 12:50	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1462	AH-01	03/25/04 13:15	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1463	REF 3-5	03/25/04 10:05	03/26/04 10:59	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1464	REF 3-4	03/25/04 9:40	03/26/04 11:00	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1465	REF 3-3	03/25/04 9:20	03/26/04 11:01	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1466	REF 3-2	03/25/04 8:55	03/26/04 11:01	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1467	REF 3-1	03/25/04 8:25	03/26/04 11:02	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1468	AH-28	03/25/04 15:00	03/26/04 11:03	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1469	AH-39	03/25/04 15:35	03/26/04 11:04	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1470	DUP 06		03/26/04 11:04	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1471	AH-49	03/25/04 16:45	03/26/04 11:05	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1472	AH-50	03/25/04 16:20	03/26/04 11:07	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			

Total Samples: 15

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ShpNo SHP-040327-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑ ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Saturday, March 27, 2004 12:15 PM

No. of Shipping Containers: 2

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** Not Recorded

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 2	Cooler	Tape	Intact	Intact	3.6	11
2 of 2	Cooler	None	Not Applicable	Intact	10.0	15

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 10 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1473 - S1498

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/27/2004 12:15 PM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 12:1

Authorized By: Hardenstine, Jeffery **Authorized On:** 3/31/2004 10:04:0

Battelle

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ShpNo: SHP-040327-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

☑ Approved: ☑

COC Client: EA Engineering

COC Project: Allen Harbor

COC Date: 3/27/2004 1:22:00 PM

	Description of Problem:	Explanation:
Client Id	Extra samples not listed on the C-O-C	Extra samples Source 1-1 3/26/04 10:15
	Missing samples listed on the C-O-C	Missing sample Source 1-2 3/26/04 10:15
Sample Container Integrity	Cap broken	Lid cracked for sample Source 2-1 (S1484 1of2)
	Cap broken	Lid cracked for sample AH-45 (S1474 1of2)
Temperature and Preservation	Receipt temperature outside of acceptability	Cooler 2 had a temperature of 10.0 which is out of the acceptable range. The spout was open and their was no tape sealing the cooler shut.

Documentation of project manager notification

Sample Custodian Fahey, Jessica **Date:** 3/27/2004 1:26:00 PM

Laboratory Manager: Peven-McCarthy, Carole **Date:** 4/1/2004 10:47:00 AM

Project Manager: Hardenstine, Jeffery **Date:** 4/1/2004 8:29:00 AM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 30-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Note cooler temp, proceed with analysis. Source 1-1 is listed on COC twice with same date and different collection times. Source 1-1 collected at 10:15 should be Source 1-2 collected 1/26/04 at 10:15. Per client request please ammend COC. Note cracked lid

Date this form was received back to the custodian: _____

Reference Number: _____

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Chain of Custody

Proj. No: 29600973203
Proj. Name: AH Sed Sample

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
												TOC			
		51473	DUP07	Sediment				✓				✓			2
3-26-04	1140	51474	AH-45	Sediment				✓				✓			2
3-26-04	1200	51475	AH-36	Sediment				✓				✓			2
3-26-04	1105	51476	AH-33	Sediment				✓				✓			2
3-26-04	1045	51477	AH-43	Sediment				✓				✓			2
3-26-04	1015	51478	AH-41	Sediment				✓				✓			2
3-26-04	0940	51479	AH-35	Sediment				✓				✓			2
3-26-04	0900	51480	AH-31	Sediment				✓				✓			2
3-26-04	1220	51481	Source 3-1	Sediment				✓				✓			2
3-26-04	1135	51482	Source 3-2	Sediment				✓				✓			2
3-26-04	0930	51483	Source 1-1	Sediment				✓				✓			2
3-26-04	0900	51484	Source 2-1	Sediment				✓				✓			2
3-26-04	1015	~~51485~~ ①	Source 1-~~X~~2 ②	Sediment				✓				✓			2
3-26-04	0930	51486	Source 2-2	Sediment				✓				✓			2
3-26-04	1230	51487	RINS01	Water				✓							2
3-26-04	—	51488	DUP08	Sediment				✓				✓			1
3-26-04	1000	51489	RINS02	Water				✓							2

Sediment Unless - Forensic

Split Spoon Source Forensic

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	3/26/04 1150	[signature]	3/27/04 12:15 pm
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Hold Until Further Notice

① WL 3/29/04 JMF

② change per client's request. Please see corrective action JMF 4/1/04 21485

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Chain of Custody

Proj. No	Proj. Name
29600973203	AH Sed Sample

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3-26-04	1515	S1490	AH-32	Sediment				✓				TOC ✓			2
3-26-04	1445	S1491	AH-29					✓				✓			2
3-26-04	1550	S1492	AH-25					✓				✓			2
3-26-04	1535	S1493	AH-30					✓				✓			2
3-26-04	1350	S1494	AH-47					✓				✓			2
3-26-04	1305	S1495	AH-46					✓				✓			2
3-26-04	1330	S1496	AH-44					✓				✓			2
3-26-04	1420	S1497	AH-38					✓				✓			2
3-26-04	1410	S1498	AH-37					✓				✓			2

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/26/04	1650	[signature]	3/27/04	12 15 pm
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

ORIGINAL

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Chain of Custody

Proj. No	Proj. Name
	Allen Harbor

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3-26-04	10:15	S1485	Source 1-2	Sediment											2

Relinquished by:	Date/Time	Received by:	Date/Time
		[signature]	3-27-04 12:15 pm
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Extra Sample not on original COC.

ORIGINAL

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Battelle
The Business of Innovation

ShpNo SHP-040327-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Saturday, March 27, 2004 12:15 PM

No. of Shipping Containers: 2

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1473	DUP 07		03/29/04 8:58	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1474	AH-45	03/26/04 11:40	03/29/04 8:58	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1475	AH-36	03/26/04 12:00	03/29/04 8:59	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1476	AH-33	03/26/04 11:05	03/29/04 9:01	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1477	AH-43	03/26/04 10:45	03/29/04 9:02	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1478	AH-41	03/26/04 10:15	03/29/04 9:03	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1479	AH-35	03/26/04 9:40	03/29/04 9:04	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1480	AH-31	03/26/04 9:00	03/29/04 9:05	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1481	Source 3-1	03/26/04 12:20	03/29/04 9:06	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1482	Source 3-2	03/26/04 11:55	03/29/04 9:09	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1483	Source 1-1	03/26/04 9:50	03/29/04 9:10	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1484	Source 2-1	03/26/04 9:00	03/29/04 9:13	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1485	Source 1-2	03/26/04 10:15	03/29/04 9:15	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1486	Source 2-2	03/26/04 9:20	03/29/04 9:21	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1487	Rins01	03/26/04 12:30	03/29/04 9:40	1	WATER	10	NA	NA	NA	29 Freezer			
S1488	Dup08	03/26/04 0:00	03/29/04 9:40	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1489	Rins02	03/26/04 10:00	03/29/04 9:41	1	WATER	10	NA	NA	NA	29 Freezer			
S1490	AH-32	03/26/04 15:15	03/29/04 9:41	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1491	AH-29	03/26/04 14:45	03/29/04 9:43	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1492	AH-25	03/26/04 15:50	03/29/04 9:44	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1493	AH-30	03/26/04 15:35	03/29/04 9:45	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1494	AH-47	03/26/04 13:50	03/29/04 9:46	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1495	AH-46	03/26/04 13:05	03/29/04 9:48	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1496	AH-44	03/26/04 13:30	03/29/04 9:57	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1497	AH-38	03/26/04 14:20	03/29/04 9:58	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1498	AH-37	03/26/04 14:10	03/29/04 9:58	2	SEDIMENT	10	NA	NA	NA	29 Freezer			

Total Samples: 26

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ShpNo SHP-040329-01

Battelle Project No:

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Monday, March 29, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959520

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	2.8	10

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2.8 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1502 - S1511

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/29/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 12:2

Authorized By: **Authorized On:**

Battelle

The Business of Innovation

ShpNo: SHP-040329-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No. 1 of 1

Approved: ☑

COC Client: EA Engineering

COC Project: AH Sediment Sampling

COC Date: 3/29/2004 10:22:

	Description of Problem:	Explanation:
Custody	Jars and C-O-C do not match for time/date	Jars list collection time for sample AH-51 (S1502) as 13:45; COC states time as 13:15

Documentation of project manager notification

Sample Custodian Newell, Jeffrey **Date:** 3/29/2004 11:24:00 A

Laboratory Manager: Peven-McCarthy, Carole **Date:** 4/1/2004 10:48:00 AM

Project Manager: Hardenstine, Jeffery **Date:** 4/1/2004 12:16:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 30-Mar-04 **I contacted** Hinckley, Daniel **at** EA Engineering, Science, and Technology

Results of communication with client (Describe any corrective action directed by the client):

Correct collection time is 13:45

Date this form was received back to the custodian: _____

Reference Number: _____

2.8

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1 of 1

Proj. No	Proj. Name
2960097 3203	AH Sedi Sampling

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3-27-04	1315	S1502	AH-51	Sediment				✓				✓			2
	1245	S1503	AH-48					✓				✓			2
	0750	S1504	AH-22					✓				✓			2
	0820	S1505	AH-26					✓				✓			2
	0900	S1506	AH-27					✓				✓			2
	0920	S1507	AH-42					✓				✓			2
	0940	S1508	AH-34					✓				✓			2
	1030	S1509	AH-40					✓				✓			2
	1200	S1510	Core 1-Top					✓				✓			2
	1200	S1511	Core 1-Bot					✓				✓			2
			Temp Blank												1

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/27/04	1745	[signature]	3/29/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

Hold until further notice.

ORIGINAL

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Battelle
The Business of Innovation

ShpNo SHP-040329-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑ ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Monday, March 29, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1502	AH-51	03/27/04 13:45	03/29/04 11:09	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1503	AH-48	03/27/04 12:45	03/29/04 11:10	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1504	AH-22	03/27/04 7:50	03/29/04 11:11	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1505	AH-26	03/27/04 8:20	03/29/04 11:13	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1506	AH-27	03/27/04 9:00	03/29/04 11:14	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1507	AH-42	03/27/04 9:20	03/29/04 11:15	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1508	AH-34	03/27/04 9:40	03/29/04 11:16	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1509	AH-40	03/27/04 10:30	03/29/04 11:19	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1510	Core 1-Top	03/27/04 12:00	03/29/04 11:21	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1511	Core 1-Bot	03/27/04 12:00	03/29/04 11:22	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			

Total Samples: 10

Calibrations

Response Factor Report Inst. E

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Initial Calibration

① ANALYTE NOT USED FOR THIS PROJECT. JR 4/21/04

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Calibration Files
GD34 =W8583.D GD35 =W8584.D GD36 =W8585.D
GD37 =W8586.D GD38 =W8587.D GD39 =W8588.D

		Compound	GD34	GD35	GD36	GD37	GD38	GD39	Avg	%RSD	
1)	I	Acenaphthene-d10	----------ISTD----------								
2)	S	Naphthalene-d8	1.883	1.873	1.867	1.889	1.906	1.883	1.884	0.72	
3)	J1	Naphthalene	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
4)	J2	C1-Naphthalenes	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
5)	J2	2-Methylnaphtha	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
6)	J2	1-Methylnaphtha	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
7)	J2	C2-Naphthalenes	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
8)	J2	2-Ethylnaphthal	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
9)	J2	1-Ethylnaphthal	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
10)	J2	2,6-Dimethylnap	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
11)	J2	1,5-Dimethylnap	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
12)	J2	C3-Naphthalenes	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
13)	J2	C4-Naphthalenes	2.202	2.143	2.217	2.111	2.072	1.947	2.115	4.68	
14)		Biphenyl	1.736	1.639	1.650	1.640	1.625	1.539	1.638	3.84	
15)		Acenaphthylene	2.246	2.035	2.094	2.069	2.048	1.967	2.077	4.50	
16)		Acenaphthene	1.259	1.248	1.289	1.236	1.218	1.175	1.238	3.15	
17)		Dibenzofuran	1.625	1.674	1.740	1.731	1.740	1.679	1.698	2.74	
18)		Cadalene	0.463	0.463	0.469	0.470	0.469	0.466	0.467	0.67	
19)	S	Fluorene-d10	1.197	1.197	1.222	1.348	1.921	2.570	1.576	35.57	①
20)	J1	Fluorene	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
21)	J2	C1-Fluorenes	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
22)	J2	2-Methylfluoren	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
	J2	1-Methylfluoren	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
	J2	C2-Fluorenes	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
25)	J2	C3-Fluorenes	1.531	1.460	1.518	1.497	1.493	1.442	1.490	2.26	
26)	J1	Dibenzothiophen	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
27)	J2	C1-Dibenzothiop	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
28)	J2	4-Methyldibenzo	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
29)	J2	2/3-Methyldiben	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
30)	J2	1-Methyldibenzo	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
31)	J2	C2-Dibenzothiop	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
32)	J2	C3-Dibenzothiop	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
33)	J2	C4-Dibenzothiop	1.892	1.760	1.953	1.921	1.916	1.844	1.881	3.69	
34)	S	Phenanthrene-d1	1.542	1.541	1.556	1.587	1.622	1.616	1.577	2.30	
35)	J1	Phenanthrene	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
36)		Anthracene	1.785	1.804	1.867	1.954	1.868	1.801	1.846	3.44	
37)	J2	C1-Phenanthrene	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
38)	J2	3-Methylphenant	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
39)	J2	2/4-Methylphena	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
40)	J2	2-Methylanthrac	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
41)	J2	9-Methylphenant	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
42)	J2	1-Methylphenant	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
43)	J2	C2-Phenanthrene	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
44)	J2	2,7-Dimethylphe	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
45)	J2	1,7-Dimethylphe	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
46)	J2	C3-Phenanthrene	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
47)	J2	C4-Phenanthrene	2.305	2.074	2.144	2.131	2.106	2.026	2.131	4.48	
48)		Dehydroabietin(	0.176	0.155	0.164	0.167	0.165	0.167	0.166	4.08	
49)		Retene	0.482	0.427	0.442	0.453	0.465	0.453	0.454	4.19	
50)		Benzo(b)fluoren	1.235	1.242	1.329	1.381	1.460	1.397	1.341	6.70	
51)	J1	Fluoranthene	2.185	2.139	2.269	2.260	2.274	2.173	2.217	2.62	
52)	J1	Pyrene	2.289	2.242	2.322	2.332	2.331	2.223	2.290	2.07	
53)	J2	C1-Fluoranthene	2.289	2.242	2.322	2.332	2.331	2.223	2.290	2.07	
	2	C2-Fluoranthene	2.289	2.242	2.322	2.332	2.331	2.223	2.290	2.07	
,	J2	C3-Fluoranthene	2.289	2.242	2.322	2.332	2.331	2.223	2.290	2.07	
56)	J1	Benzo(b)naphtho	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56	

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report Inst. E

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
esponse via : Initial Calibration

Calibration Files
GD34 =W8583.D GD35 =W8584.D GD36 =W8585.D
GD37 =W8586.D GD38 =W8587.D GD39 =W8588.D

		Compound	GD34	GD35	GD36	GD37	GD38	GD39	Avg	%RSD
57)	J2	Benzo(b)naphtho	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
58)	J2	Benzo(b)naphtho	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
59)	J2	C1-Benzo(b)naph	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
60)	J2	C2-Benzo(b)naph	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
61)	J2	C3-Benzo(b)naph	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
62)	J2	C4-Benzo(b)naph	1.897	1.865	2.014	2.019	2.028	1.942	1.961	3.56
63)		Benzo(a)anthrac	2.081	2.102	2.130	2.130	2.181	2.129	2.125	1.58
64)	S	Chrysene-d12	1.698	1.698	1.692	1.734	1.759	1.749	1.722	1.72
65)	J1	Chrysene	2.156	2.169	2.242	2.214	2.196	2.104	2.180	2.22
66)	J2	C1-Chrysenes	2.156	2.169	2.242	2.214	2.196	2.104	2.180	2.22
67)	J2	C2-Chrysenes	2.156	2.169	2.242	2.214	2.196	2.104	2.180	2.22
68)	J2	C3-Chrysenes	2.156	2.169	2.242	2.214	2.196	2.104	2.180	2.22
69)	J2	C4-Chrysenes	2.156	2.169	2.242	2.214	2.196	2.104	2.180	2.22
70)		Benzo(b)fluoran	2.073	2.017	2.041	2.182	2.235	2.265	2.135	4.94
71)		Benzo(j/k)fluor	2.218	2.112	2.262	2.220	2.252	2.140	2.201	2.77
72)		Benzo(a)fluoran	1.830	1.754	1.774	1.848	1.852	1.863	1.820	2.48
73)		Benzo(e)pyrene	2.053	1.972	2.025	2.029	2.079	2.001	2.027	1.86
74)	S	Benzo(a)pyrene-	1.537	1.502	1.477	1.512	1.522	1.548	1.516	1.68
75)		Benzo(a)pyrene	2.052	2.024	2.128	2.128	2.194	2.152	2.113	3.00
76)		Perylene	2.008	1.880	2.030	2.083	2.166	2.113	2.046	4.87
77)		Indeno(1,2,3-cd	1.707	1.730	1.781	1.796	1.978	1.970	1.827	6.48
78)		Dibenz(a,h)anth	1.778	1.744	1.895	1.916	2.044	2.041	1.903	6.64
79)		Benzo(g,h,i)per	2.317	2.152	2.182	2.179	2.222	2.174	2.204	2.70

(#) = Out of Range ### Number of calibration levels exceeded format ###

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8583.D
Acq On : 16 Apr 2004 11:17 am
Sample : GD34
Misc :
M. ntegration Params: RTEINT.P
c Time: Apr 16 14:18:31 2004

Vial: 2
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 14:18:11 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	129224	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	242821	0.000 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 0.00%	
19) Fluorene-d10	27.35	176	154345	0.000 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 0.00%	
34) Phenanthrene-d10	31.17	188	198846	0.000 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 0.00%	
64) Chrysene-d12	41.78	240	218952	0.000 ng/µl	-0.02
Spiked Amount 1.002			Recovery	= 0.00%	
74) Benzo(a)pyrene-d12	47.89	264	197840	0.000 ng/µl	-0.03
Spiked Amount 1.000			Recovery	= 0.00%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	2834	No Calib	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.05	154	2235	No Calib	
15) Acenaphthylene	24.71	152	2891	No Calib	
16) Acenaphthene	25.45	154	1621	No Calib	
17) Dibenzofuran	26.11	168	2092	No Calib	
18) Cadalene	29.15	198	596	No Calib	
20) Fluorene	27.46	166	1970	No Calib	
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.77	184	2435	No Calib	
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	2967	No Calib	
36) Anthracene	31.46	178	2297	No Calib	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8583.D
Acq On : 16 Apr 2004 11:17 am
Sample : GD34
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 16 14:18:31 2004

Vial: 2
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 14:18:11 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	227	No Calib	
49)	Retene	38.30	234	621	No Calib	
50)	Benzo(b)fluorene	38.58	216	1589	No Calib	
51)	Fluoranthene	36.04	202	2812	No Calib	
52)	Pyrene	36.92	202	2946	No Calib	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	2442	No Calib	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	2679	No Calib	
)	Chrysene	41.88	228	2775	No Calib	
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.36	252	2668	No Calib	
71)	Benzo(j/k)fluoranthene	46.45	252	5710	No Calib	
72)	Benzo(a)fluoranthene	46.89	252	2356	No Calib	
73)	Benzo(e)pyrene	47.75	252	2643	No Calib	
75)	Benzo(a)pyrene	48.03	252	2641	No Calib	
76)	Perylene	48.48	252	2584	No Calib	
77)	Indeno(1,2,3-cd)pyrene	54.56	276	2197	No Calib	
78)	Dibenz(a,h)anthracene	54.68	278	2289	No Calib	
79)	Benzo(g,h,i)perylene	55.74	276	2982	No Calib	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8584.D
Acq On : 16 Apr 2004 12:43 pm
Sample : GD35
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 16 14:14:17 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 09:16:03 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	134469	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	251323	1.006 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 100.40%	
19) Fluorene-d10	27.35	176	160670	0.764 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 76.25%	
34) Phenanthrene-d10	31.17	188	206858	0.971 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 96.91%	
64) Chrysene-d12	41.79	240	227862	0.976 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 97.41%	
74) Benzo(a)pyrene-d12	47.89	264	201109	1.059 ng/µl	-0.03
Spiked Amount 1.000			Recovery	= 105.90%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	14409m	0.051 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	11000	0.051 ng/µl	100
15) Acenaphthylene	24.71	152	13683m	0.050 ng/µl	
16) Acenaphthene	25.45	154	8390	0.050 ng/µl	99
17) Dibenzofuran	26.10	168	11233	0.048 ng/µl	100
18) Cadalene	29.15	198	3102m	0.050 ng/µl	
20) Fluorene	27.46	166	9816	0.050 ng/µl	99
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.77	184	11812m	0.044 ng/µl	
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	13943m	0.050 ng/µl	
36) Anthracene	31.45	178	12128m	0.048 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8584.D
Acq On : 16 Apr 2004 12:43 pm
Sample : GD35
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 16 14:14:17 2004

Vial: 3
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 09:16:03 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	1040	0.054 ng/µl#	85
49)	Retene	38.29	234	2864m	0.050 ng/µl	
50)	Benzo(b)fluorene	38.58	216	8331	0.045 ng/µl#	70
51)	Fluoranthene	36.04	202	14382	0.048 ng/µl	99
52)	Pyrene	36.92	202	15045m	0.048 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	12514	0.046 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	14132	0.051 ng/µl	99
)	Chrysene	41.88	228	14581m	0.047 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.36	252	13561	0.051 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.44	252	28848m	0.098 ng/µl	
72)	Benzo(a)fluoranthene	46.89	252	11748	0.051 ng/µl	94
73)	Benzo(e)pyrene	47.75	252	13234	0.049 ng/µl	95
75)	Benzo(a)pyrene	48.03	252	13609m	0.048 ng/µl	
76)	Perylene	48.49	252	12613	0.048 ng/µl	100
77)	Indeno(1,2,3-cd)pyrene	54.56	276	11631	0.051 ng/µl	98
78)	Dibenz(a,h)anthracene	54.67	278	11723m	0.047 ng/µl	
79)	Benzo(g,h,i)perylene	55.74	276	14472	0.049 ng/µl	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

164

Data File : H:\E\DATA\SE0041\W8585.D
Acq On : 16 Apr 2004 2:08 pm
Sample : GD36
Misc :
M. ntegration Params: RTEINT.P
c Time: Apr 16 15:27:18 2004

Vial: 4
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 14:23:51 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	134376	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	250431	0.996 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 99.40%	
19) Fluorene-d10	27.35	176	163867	1.023 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 102.10%	
34) Phenanthrene-d10	31.17	188	208637	1.011 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 100.90%	
64) Chrysene-d12	41.79	240	226855	0.998 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 99.60%	
74) Benzo(a)pyrene-d12	47.89	264	197711	0.972 ng/µl	-0.03
Spiked Amount 1.000			Recovery	= 97.20%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	59590	0.205 ng/µl	99
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	44252	0.196 ng/µl	99
15) Acenaphthylene	24.71	152	56230m	0.196 ng/µl	
16) Acenaphthene	25.45	154	34649	0.207 ng/µl	100
17) Dibenzofuran	26.10	168	46659	0.211 ng/µl	99
18) Cadalene	29.14	198	12562	0.203 ng/µl#	76
20) Fluorene	27.46	166	40751	0.204 ng/µl	98
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.77	184	52374	0.214 ng/µl	96
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	57610	0.197 ng/µl	99
36) Anthracene	31.45	178	50120m	0.209 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8585.D
Acq On : 16 Apr 2004 2:08 pm
Sample : GD36
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 16 15:27:18 2004

Vial: 4
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 14:23:51 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	4401	0.198 ng/µl#	90
49)	Retene	38.29	234	11860m	0.195 ng/µl	
50)	Benzo(b)fluorene	38.58	216	35646m	0.215 ng/µl	
51)	Fluoranthene	36.04	202	60925	0.211 ng/µl	98
52)	Pyrene	36.91	202	62267m	0.205 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.79	234	54006	0.215 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.72	228	57188	0.204 ng/µl	100
)	Chrysene	41.88	228	60264m	0.208 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.35	252	54851	0.200 ng/µl	95
71)	Benzo(j/k)fluoranthene	46.44	252	121324m	0.419 ng/µl	
72)	Benzo(a)fluoranthene	46.88	252	47486	0.198 ng/µl	100
73)	Benzo(e)pyrene	47.75	252	54311m	0.202 ng/µl	
75)	Benzo(a)pyrene	48.03	252	57141m	0.209 ng/µl	
76)	Perylene	48.49	252	54437m	0.209 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.55	276	47816	0.208 ng/µl	100
78)	Dibenz(a,h)anthracene	54.66	278	50939m	0.216 ng/µl	
79)	Benzo(g,h,i)perylene	55.73	276	58631	0.196 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8586.D
Acq On : 16 Apr 2004 3:34 pm
Sample : GD37
Misc :
M[illegible] Integration Params: RTEINT.P
[illegible] Time: Apr 16 16:53:49 2004

Vial: 5
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 15:29:54 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	132342	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	249545	1.010 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 100.80%	
19) Fluorene-d10	27.35	176	178088	1.121 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 111.88%	
34) Phenanthrene-d10	31.17	188	209555	1.028 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 102.59%	
64) Chrysene-d12	41.78	240	228991	1.024 ng/µl	-0.02
Spiked Amount 1.002			Recovery	= 102.20%	
74) Benzo(a)pyrene-d12	47.89	264	199295	1.004 ng/µl	-0.03
Spiked Amount 1.000			Recovery	= 100.40%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	279370	0.969 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
[illegible]) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
[illegible]) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	216574	0.981 ng/µl	99
15) Acenaphthylene	24.70	152	273494m	0.976 ng/µl	
16) Acenaphthene	25.45	154	163630	0.981 ng/µl	99
17) Dibenzofuran	26.09	168	228633m	1.033 ng/µl	
18) Cadalene	29.14	198	61911	1.010 ng/µl#	80
20) Fluorene	27.46	166	197907	0.999 ng/µl	100
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.76	184	253767	1.030 ng/µl	100
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	282024	0.984 ng/µl	99
36) Anthracene	31.44	178	258341m	1.078 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
[illegible]) 9-Methylphenanthrene	0.00	192	0	N.D. d	
[illegible]) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8586.D
Acq On : 16 Apr 2004 3:34 pm
Sample : GD37
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 16 16:53:49 2004

Vial: 5
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Fri Apr 16 15:29:54 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	21983	1.009 ng/µl#	92
49)	Retene	38.29	234	59836m	1.008 ng/µl	
50)	Benzo(b)fluorene	38.57	216	182409m	1.091 ng/µl	
51)	Fluoranthene	36.03	202	298737	1.031 ng/µl	99
52)	Pyrene	36.91	202	308037	1.023 ng/µl	100
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.79	234	266680	1.051 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.72	228	281588	1.015 ng/µl	100
)	Chrysene	41.88	228	293024m	1.016 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.34	252	288804	1.072 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.44	252	586395m	2.025 ng/µl	
72)	Benzo(a)fluoranthene	46.88	252	243610	1.035 ng/µl	97
73)	Benzo(e)pyrene	47.74	252	267935m	1.008 ng/µl	
75)	Benzo(a)pyrene	48.02	252	281306m	1.032 ng/µl	
76)	Perylene	48.48	252	275057m	1.058 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.54	276	237434m	1.036 ng/µl	
78)	Dibenz(a,h)anthracene	54.66	278	253597m	1.065 ng/µl	
79)	Benzo(g,h,i)perylene	55.73	276	288356	0.987 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8587.D
Acq On : 16 Apr 2004 4:58 pm
Sample : GD38
Misc :
M ntegration Params: RTEINT.P
c Time: Apr 20 09:11:32 2004

Vial: 6
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:11:28 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	136241	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	259155	1.017 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 101.50%	
19) Fluorene-d10	27.35	176	261165	1.551 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 154.79%	
34) Phenanthrene-d10	31.17	188	220566	1.044 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 104.19%	
64) Chrysene-d12	41.79	240	239233	1.034 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 103.19%	
74) Benzo(a)pyrene-d12	47.89	264	206538	1.010 ng/µl	-0.03
Spiked Amount 1.000			Recovery	= 101.00%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	1411249	4.796 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	1104951	4.887 ng/µl	98
15) Acenaphthylene	24.70	152	1393640m	4.865 ng/µl	
16) Acenaphthene	25.45	154	829949	4.861 ng/µl	100
17) Dibenzofuran	26.09	168	1182843	5.150 ng/µl	99
18) Cadalene	29.14	198	127400	2.013 ng/µl#	81
20) Fluorene	27.46	166	1015881	4.986 ng/µl	99
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.76	184	1302618	5.102 ng/µl	98
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	1434379	4.886 ng/µl	100
36) Anthracene	31.44	178	1271460m	5.058 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8587.D
Acq On : 16 Apr 2004 4:58 pm
Sample : GD38
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 09:11:32 2004

Vial: 6
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:11:28 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	44713	1.988 ng/µl	94
49)	Retene	38.29	234	316040m	5.163 ng/µl	
50)	Benzo(b)fluorene	38.57	216	992660m	5.642 ng/µl	
51)	Fluoranthene	36.04	202	1547500	5.153 ng/µl	99
52)	Pyrene	36.91	202	1584727	5.086 ng/µl	97
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.79	234	1379012m	5.215 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	1484155	5.182 ng/µl	100
)	Chrysene	41.88	228	1496020m	5.022 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.36	252	1522673m	5.399 ng/µl	
71)	Benzo(j/k)fluoranthene	46.47	252	3061514m	10.242 ng/µl	
72)	Benzo(a)fluoranthene	46.88	252	502597	2.056 ng/µl	98
73)	Benzo(e)pyrene	47.76	252	1413610	5.158 ng/µl	98
75)	Benzo(a)pyrene	48.03	252	1493025m	5.282 ng/µl	
76)	Perylene	48.49	252	1472580m	5.426 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.55	276	1345955	5.657 ng/µl	100
78)	Dibenz(a,h)anthracene	54.67	278	1392044m	5.595 ng/µl	
79)	Benzo(g,h,i)perylene	55.74	276	1513771	5.054 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

170

Data File : H:\E\DATA\SE0041\W8588.D
Acq On : 16 Apr 2004 6:23 pm
Sample : GD39
Misc :
M' ntegration Params: RTEINT.P
c Time: Apr 20 09:15:10 2004

Vial: 7
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:15:04 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	141046	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	265120	1.002 ng/µl	-0.02
Spiked Amount 1.002			Recovery	= 100.00%	
19) Fluorene-d10	27.35	176	361738	1.870 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 186.63%	
34) Phenanthrene-d10	31.17	188	227425	1.031 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 102.89%	
64) Chrysene-d12	41.79	240	246255m	1.021 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 101.90%	
74) Benzo(a)pyrene-d12	47.90	264	217477	1.025 ng/µl	-0.02
Spiked Amount 1.000			Recovery	= 102.50%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	2745839	9.095 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	2166784	9.302 ng/µl	97
15) Acenaphthylene	24.70	152	2772305	9.404 ng/µl	100
16) Acenaphthene	25.45	154	1656836	9.433 ng/µl	100
17) Dibenzofuran	26.09	168	2363049	9.883 ng/µl	99
18) Cadalene	29.15	198	327240	4.989 ng/µl	96
20) Fluorene	27.46	166	2031835	9.645 ng/µl	100
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.76	184	2595292	9.783 ng/µl	98
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	2856931	9.451 ng/µl	99
36) Anthracene	31.45	178	2537425m	9.734 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8588.D
Acq On : 16 Apr 2004 6:23 pm
Sample : GD39
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 09:15:10 2004

Vial: 7
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:15:04 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	117574	5.056 ng/µl	93
49)	Retene	38.29	234	637459m	9.997 ng/µl	
50)	Benzo(b)fluorene	38.58	216	1966884m	10.533 ng/µl	
51)	Fluoranthene	36.04	202	3062013	9.795 ng/µl	99
52)	Pyrene	36.92	202	3129545	9.672 ng/µl	99
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.80	234	2734131m	9.906 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	2999334m	10.048 ng/µl	
)	Chrysene	41.89	228	2968225m	9.624 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.38	252	3194005	10.777 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.49	252	6025559m	19.385 ng/µl	
72)	Benzo(a)fluoranthene	46.90	252	1832210	7.199 ng/µl	98
73)	Benzo(e)pyrene	47.78	252	2817083	9.870 ng/µl	98
75)	Benzo(a)pyrene	48.06	252	3031660m	10.251 ng/µl	
76)	Perylene	48.52	252	2974960m	10.416 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	2775343m	10.986 ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	2878159m	10.924 ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	3066375	9.875 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Independant Calibration Check

Data File Name W8589.D
Data File Path H:\E\DATA\SE0041\
Operator JAR
Date Acquired 4/16/2004 19:48
Acq. Method File PYRSIM0
Sample Name GC44 - ICC
Misc Info
Vial Number 8
Instrument Name Inst. E
Number of Compounds 79.
Sample Multiplier 1

JR 4/21/04

Name	Ret Time	Amount Found	Units	GC44	% Difference
Naphthalene-d8	18.39	0.954	ng/µl	1.0005	4.7
Naphthalene	18.47	0.927	ng/µl	1.0006	7.4
C1-Naphthalenes	0.00	0.000	ng/µl		
2-Methylnaphthalene	0.00	0.000	ng/µl		
1-Methylnaphthalene	0.00	0.000	ng/µl		
C2-Naphthalenes	0.00	0.000	ng/µl		
2-Ethylnaphthalene	0.00	0.000	ng/µl		
1-Ethylnaphthalene	0.00	0.000	ng/µl		
2,6-Dimethylnaphthalene	0.00	0.000	ng/µl		
1,5-Dimethylnaphthalene	0.00	0.000	ng/µl		
C3-Naphthalenes	0.00	0.000	ng/µl		
C4-Naphthalenes	0.00	0.000	ng/µl		
Biphenyl	23.04	0.927	ng/µl	1.003	7.6
Acenaphthylene	24.70	0.964	ng/µl	1.0004	3.7
Acenaphthene	25.45	0.955	ng/µl	1.0004	4.5
Dibenzofuran	0.00	0.000	ng/µl		
Cadalene	0.00	0.000	ng/µl		
Fluorene	27.46	0.950	ng/µl	1.0005	5.1
C1-Fluorenes	0.00	0.000	ng/µl		
2-Methylfluorene	0.00	0.000	ng/µl		
1-Methylfluorene	0.00	0.000	ng/µl		
C2-Fluorenes	0.00	0.000	ng/µl		
C3-Fluorenes	0.00	0.000	ng/µl		
Dibenzothiophene	0.00	0.000	ng/µl		
C1-Dibenzothiophenes	0.00	0.000	ng/µl		
4-Methyldibenzothiophene	0.00	0.000	ng/µl		
2/3-Methyldibenzothiophene	0.00	0.000	ng/µl		
1-Methyldibenzothiophene	0.00	0.000	ng/µl		
C2-Dibenzothiophenes	0.00	0.000	ng/µl		
C3-Dibenzothiophenes	0.00	0.000	ng/µl		
C4-Dibenzothiophenes	0.00	0.000	ng/µl		
Phenanthrene-d10	31.17	0.955	ng/µl	0.99425	4.0
Phenanthrene	31.26	0.936	ng/µl	1.0005	6.5
Anthracene	31.44	1.068	ng/µl	1.0004	6.7
C1-Phenanthrenes/Anthracenes	0.00	0.000	ng/µl		
3-Methylphenanthrene	0.00	0.000	ng/µl		
2/4-Methylphenanthrene	0.00	0.000	ng/µl		
2-Methylanthracene	0.00	0.000	ng/µl		
9-Methylphenanthrene	0.00	0.000	ng/µl		
1-Methylphenanthrene	0.00	0.000	ng/µl		
C2-Phenanthrenes/Anthracenes	0.00	0.000	ng/µl		
2,7-Dimethylphenanthrene	0.00	0.000	ng/µl		
1,7-Dimethylphenanthrene	0.00	0.000	ng/µl		
C3-Phenanthrenes/Anthracenes	0.00	0.000	ng/µl		
C4-Phenanthrenes/Anthracenes	0.00	0.000	ng/µl		
Dehydroabietin(e)	0.00	0.000	ng/µl		
Retene	0.00	0.000	ng/µl		
Benzo(b)fluorene	0.00	0.000	ng/µl		
Fluoranthene	36.03	0.988	ng/µl	1.0004	1.3
Pyrene	36.91	0.999	ng/µl	1.0004	0.1
C1-Fluoranthenes/Pyrenes	0.00	0.000	ng/µl		
C2-Fluoranthenes/Pyrenes	0.00	0.000	ng/µl		
C3-Fluoranthenes/Pyrenes	0.00	0.000	ng/µl		
Benzo(b)naphtho(2,1-d)thiophene	0.00	0.000	ng/µl		
Benzo(b)naphtho(1,2-d)thiophene	0.00	0.000	ng/µl		
Benzo(b)naphtho(2,3-d)thiophene	0.00	0.000	ng/µl		
C1-Benzo(b)naphthothiophenes	0.00	0.000	ng/µl		
C2-Benzo(b)naphthothiophenes	0.00	0.000	ng/µl		
C3-Benzo(b)naphthothiophenes	0.00	0.000	ng/µl		
C4-Benzo(b)naphthothiophenes	0.00	0.000	ng/µl		
Benzo(a)anthracene	41.72	0.975	ng/µl	1.0006	2.5
Chrysene-d12	41.78	0.886	ng/µl	1.002	11.6
Chrysene	41.88	0.979	ng/µl	1.0005	2.2
C1-Chrysenes	0.00	0.000	ng/µl		
C2-Chrysenes	0.00	0.000	ng/µl		
C3-Chrysenes	0.00	0.000	ng/µl		
C4-Chrysenes	0.00	0.000	ng/µl		
Benzo(b)fluoranthene	46.34	0.969	ng/µl	1.0005	3.2
Benzo(j/k)fluoranthene	46.46	1.063	ng/µl	1.0004	6.2
Benzo(a)fluoranthene	0.00	0.000	ng/µl		
Benzo(e)pyrene	47.75	1.008	ng/µl	0.9888	2.0
Benzo(a)pyrene	48.02	0.985	ng/µl	1.0006	1.6
Perylene	48.47	0.989	ng/µl	1.0002	1.1
Indeno(1,2,3-cd)pyrene	54.54	0.932	ng/µl	1.0006	6.8
Dibenz(a,h)anthracene	54.66	0.989	ng/µl	1.0004	1.2
Benzo(g,h,i)perylene	55.73	0.938	ng/µl	1.0005	6.3

N - QC value outside the accuracy or precision data quality objective

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8589.D
Acq On : 16 Apr 2004 7:48 pm
Sample : GC44 - ICC
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 11:54:10 2004

Vial: 8
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 11:54:05 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	139925	1.001	ng/µl	-0.01
System Monitoring Compounds						
2) Naphthalene-d8	18.39	136	251171	0.954	ng/µl	-0.01
Spiked Amount 1.000			Recovery	=	95.35%	
19) Fluorene-d10	27.35	176	155067	0.704	ng/µl	-0.01
Spiked Amount 1.038			Recovery	=	67.82%	
34) Phenanthrene-d10	31.17	188	210443	0.955	ng/µl	-0.01
Spiked Amount 0.994			Recovery	=	96.05%	
64) Chrysene-d12	41.78	240	213115m	0.886	ng/µl	-0.02
Spiked Amount 1.002			Recovery	=	88.42%	
74) Benzo(a)pyrene-d12	47.88	264	198194	0.935	ng/µl	-0.04
Spiked Amount 1.032			Recovery	=	90.60%	
Target Compounds						Qvalue
3) Naphthalene	18.47	128	274111	0.927	ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D.	d	
5) 2-Methylnaphthalene	0.00	142	0	N.D.	d	
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d	
7) C2-Naphthalenes	0.00	156	0	N.D.	d	
) 2-Ethylnaphthalene	0.00	156	0	N.D.	d	
) 1-Ethylnaphthalene	0.00	156	0	N.D.	d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.		
12) C3-Naphthalenes	0.00	170	0	N.D.		
13) C4-Naphthalenes	0.00	184	0	N.D.		
14) Biphenyl	23.04	154	212293	0.927	ng/µl	100
15) Acenaphthylene	24.70	152	279738	0.964	ng/µl	99
16) Acenaphthene	25.45	154	165230	0.955	ng/µl	100
17) Dibenzofuran	0.00	168	0	N.D.	d	
18) Cadalene	0.00	198	0	N.D.		
20) Fluorene	27.46	166	197795	0.950	ng/µl	99
21) C1-Fluorenes	0.00	180	0	N.D.		
22) 2-Methylfluorene	0.00	180	0	N.D.		
23) 1-Methylfluorene	0.00	180	0	N.D.		
24) C2-Fluorenes	0.00	194	0	N.D.		
25) C3-Fluorenes	0.00	208	0	N.D.		
26) Dibenzothiophene	0.00	184	0	N.D.	d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.		
32) C3-Dibenzothiophenes	0.00	226	0	N.D.		
33) C4-Dibenzothiophenes	0.00	240	0	N.D.		
35) Phenanthrene	31.26	178	278748	0.936	ng/µl	99
36) Anthracene	31.44	178	275612m	1.068	ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d	
) 2-Methylanthracene	0.00	192	0	N.D.	d	
) 9-Methylphenanthrene	0.00	192	0	N.D.	d	
) 1-Methylphenanthrene	0.00	192	0	N.D.	d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8589.D
Acq On : 16 Apr 2004 7:48 pm
Sample : GC44 - ICC
Misc :
M ntegration Params: RTEINT.P
c Time: Apr 20 11:54:10 2004

Vial: 8
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 11:54:05 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D.	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	
51)	Fluoranthene	36.03	202	306015	0.988 ng/µl	99
52)	Pyrene	36.91	202	319818	0.999 ng/µl	99
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.72	228	289767	0.975 ng/µl	100
)	Chrysene	41.88	228	298351m	0.979 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.34	252	289167	0.969 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.46	252	326900m	1.063 ng/µl	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	47.75	252	285639m	1.008 ng/µl	
75)	Benzo(a)pyrene	48.02	252	290801m	0.985 ng/µl	
76)	Perylene	48.47	252	282929m	0.989 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.54	276	238081	0.932 ng/µl	100
78)	Dibenz(a,h)anthracene	54.66	278	263003m	0.989 ng/µl	
79)	Benzo(g,h,i)perylene	55.73	276	288975	0.938 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8596.D
Acq On : 17 Apr 2004 5:46 am
Sample : GD37
Misc :
Integration Params: RTEINT.P

Vial: 15
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	107	-0.02
2	S	Naphthalene-d8	1.884	1.861	1.2	105	-0.01
3	J1	Naphthalene	2.115	2.102	0.6	107	-0.01
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	1.631	0.4	106	-0.01
15		Acenaphthylene	2.077	1.990	4.2	103	-0.01
16		Acenaphthene	1.238	1.238	0.0	107	-0.02
17		Dibenzofuran	1.698	1.736	-2.2	107	-0.01
18		Cadalene	0.467	0.471	-0.9	107	-0.02
19	S	Fluorene-d10	1.576	1.351	14.3	107	-0.01
[illegible]		Fluorene	1.490	1.488	0.1	106	-0.01
[illegible]	J2	C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	1.942	-3.2	108	0.00
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	1.602	-1.6	108	-0.01
35	J1	Phenanthrene	2.131	2.159	-1.3	108	-0.02
36		Anthracene	1.846	1.840	0.3	101	-0.02
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.169	-1.8	108	-0.02
49		Retene	0.454	0.451	0.7	106	-0.02
50		Benzo(b)fluorene	1.341	1.347	-0.4	104	-0.03
[illegible]		Fluoranthene	2.217	2.306	-4.0	109	-0.02
[illegible]	J1	Pyrene	2.290	2.353	-2.8	108	-0.02
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8596.D
Acq On : 17 Apr 2004 5:46 am
Sample : GD37
Misc :
Integration Params: RTEINT.P

Vial: 15
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	2.068	-5.5	110	-0.02
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0#	0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0#	0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-47.11#
63		Benzo(a)anthracene	2.125	2.140	-0.7	108	-0.02
64	S	Chrysene-d12	1.722	1.783	-3.5	110	-0.02
65	J1	Chrysene	2.180	2.277	-4.4	110	-0.02
66	J2	C1-Chrysenes	2.180	0.000	100.0#	0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0#	0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0#	0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0#	0#	-46.96#
70		Benzo(b)fluoranthene	2.135	2.240	-4.9	110	-0.03
71		Benzo(j/k)fluoranthene	2.201	2.253	-2.4	109	-0.03
72		Benzo(a)fluoranthene	1.820	1.766	3.0	102	-0.04
73		Benzo(e)pyrene	2.027	2.074	-2.3	109	-0.04
7		Benzo(a)pyrene-d12	1.516	1.496	1.3	106	-0.04
		Benzo(a)pyrene	2.113	2.114	-0.0	106	-0.03
76		Perylene	2.046	2.071	-1.2	106	-0.04
77		Indeno(1,2,3-cd)pyrene	1.827	1.582	13.4	94	-0.04
78		Dibenz(a,h)anthracene	1.903	1.821	4.3	102	-0.04
79		Benzo(g,h,i)perylene	2.204	2.074	5.9	102	-0.04

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8596.D
Acq On : 17 Apr 2004 5:46 am
Sample : GD37
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 09:21:27 2004

Vial: 15
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:20:31 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	25.31	164	141628	1.004	ng/µl	-0.02
System Monitoring Compounds						
2) Naphthalene-d8	18.39	136	263090	0.990	ng/µl	-0.01
Spiked Amount 1.002			Recovery	=	98.80%	
19) Fluorene-d10	27.35	176	191020	0.859	ng/µl	-0.01
Spiked Amount 1.002			Recovery	=	85.73%	
34) Phenanthrene-d10	31.17	188	226440	1.018	ng/µl	-0.01
Spiked Amount 1.002			Recovery	=	101.60%	
64) Chrysene-d12	41.78	240	252029	1.038	ng/µl	-0.02
Spiked Amount 1.002			Recovery	=	103.59%	
74) Benzo(a)pyrene-d12	47.88	264	211037	0.987	ng/µl	-0.04
Spiked Amount 1.000			Recovery	=	98.70%	
Target Compounds						Qvalue
3) Naphthalene	18.47	128	297715	0.998	ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D.	d	
5) 2-Methylnaphthalene	0.00	142	0	N.D.	d	
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d	
7) C2-Naphthalenes	0.00	156	0	N.D.	d	
) 2-Ethylnaphthalene	0.00	156	0	N.D.	d	
) 1-Ethylnaphthalene	0.00	156	0	N.D.	d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.		
12) C3-Naphthalenes	0.00	170	0	N.D.		
13) C4-Naphthalenes	0.00	184	0	N.D.		
14) Biphenyl	23.04	154	230523	0.997	ng/µl	100
15) Acenaphthylene	24.70	152	281560m	0.961	ng/µl	
16) Acenaphthene	25.44	154	175379	1.005	ng/µl	99
17) Dibenzofuran	26.09	168	245339	1.024	ng/µl	100
18) Cadalene	29.14	198	66414	1.009	ng/µl#	87
20) Fluorene	27.46	166	210475	1.001	ng/µl	99
21) C1-Fluorenes	0.00	180	0	N.D.		
22) 2-Methylfluorene	0.00	180	0	N.D.		
23) 1-Methylfluorene	0.00	180	0	N.D.		
24) C2-Fluorenes	0.00	194	0	N.D.		
25) C3-Fluorenes	0.00	208	0	N.D.		
26) Dibenzothiophene	30.76	184	274447	1.034	ng/µl	98
27) C1-Dibenzothiophenes	0.00	198	0	N.D.		
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.		
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.		
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.		
31) C2-Dibenzothiophenes	0.00	212	0	N.D.		
32) C3-Dibenzothiophenes	0.00	226	0	N.D.		
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	d	
35) Phenanthrene	31.25	178	305800	1.017	ng/µl	100
36) Anthracene	31.44	178	260317m	0.999	ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d	
38) 3-Methylphenanthrene	0.00	192	0	N.D.		
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d	
) 2-Methylanthracene	0.00	192	0	N.D.	d	
) 9-Methylphenanthrene	0.00	192	0	N.D.	d	
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8596.D
Acq On : 17 Apr 2004 5:46 am
Sample : GD37
Misc :
M Integration Params: RTEINT.P
t Time: Apr 20 09:21:27 2004

Vial: 15
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:20:31 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.16	256	23786	1.017 ng/µl	96
49)	Retene	38.28	234	63699	0.995 ng/µl	97
50)	Benzo(b)fluorene	38.57	216	190328	1.006 ng/µl#	69
51)	Fluoranthene	36.03	202	326288	1.044 ng/µl	100
52)	Pyrene	36.91	202	332552	1.030 ng/µl	100
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.78	234	292326	1.057 ng/µl	100
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.72	228	302776	1.010 ng/µl	99
[illegible])	Chrysene	41.88	228	322491m	1.049 ng/µl	
[illegible])	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.34	252	317270	1.053 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.44	252	636767m	2.051 ng/µl	
72)	Benzo(a)fluoranthene	46.87	252	249151	0.970 ng/µl	98
73)	Benzo(e)pyrene	47.74	252	293096	1.025 ng/µl	98
75)	Benzo(a)pyrene	48.02	252	299041m	1.003 ng/µl	
76)	Perylene	48.47	252	292704m	1.014 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.54	276	223866	0.869 ng/µl	100
78)	Dibenz(a,h)anthracene	54.65	278	257944m	0.961 ng/µl	
79)	Benzo(g,h,i)perylene	55.73	276	293727	0.945 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8607.D
Acq On : 17 Apr 2004 9:26 pm
Sample : GD37
Misc :
Integration Params: RTEINT.P

Vial: 26
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	130	-0.01
2	S	Naphthalene-d8	1.884	1.874	0.5	129	-0.01
3	J1	Naphthalene	2.115	2.107	0.4	130	-0.01
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	1.612	1.6	128	-0.01
15		Acenaphthylene	2.077	2.037	1.9	128	-0.01
16		Acenaphthene	1.238	1.225	1.1	129	-0.01
17		Dibenzofuran	1.698	1.736	-2.2	131	-0.01
18		Cadalene	0.467	0.472	-1.1	131	0.00
19	S	Fluorene-d10	1.576	1.339	15.0	129	-0.01
[illegible]		Fluorene	1.490	1.481	0.6	129	-0.01
[illegible]		C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	1.902	-1.1	129	0.00
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	1.582	-0.3	130	-0.01
35	J1	Phenanthrene	2.131	2.091	1.9	128	-0.01
36		Anthracene	1.846	1.831	0.8	122	-0.01
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.165	0.6	129	0.00
49		Retene	0.454	0.461	-1.5	132	0.00
50		Benzo(b)fluorene	1.341	1.403	-4.6	132	-0.03
[illegible]		Fluoranthene	2.217	2.261	-2.0	130	-0.01
[illegible]		Pyrene	2.290	2.320	-1.3	130	-0.02
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

100

Data File : H:\E\DATA\SE0041\W8607.D
Acq On : 17 Apr 2004 9:26 pm
Sample : GD37
Misc :
` Integration Params: RTEINT.P

Vial: 26
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	1.988	-1.4	128	-0.01
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0#	0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0#	0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-47.11#
63		Benzo(a)anthracene	2.125	2.182	-2.7	133	-0.01
64	S	Chrysene-d12	1.722	1.746	-1.4	131	-0.01
65	J1	Chrysene	2.180	2.197	-0.8	129	-0.02
66	J2	C1-Chrysenes	2.180	0.000	100.0#	0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0#	0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0#	0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0#	0#	-46.96#
70		Benzo(b)fluoranthene	2.135	2.421	-13.4	145	-0.02
71		Benzo(j/k)fluoranthene	2.201	2.171	1.4	127	-0.02
72		Benzo(a)fluoranthene	1.820	1.895	-4.1	134	-0.03
73		Benzo(e)pyrene	2.027	2.077	-2.5	133	-0.03
		Benzo(a)pyrene-d12	1.516	1.583	-4.4	136	-0.03
		Benzo(a)pyrene	2.113	2.216	-4.9	136	-0.02
76		Perylene	2.046	2.165	-5.8	135	-0.03
77		Indeno(1,2,3-cd)pyrene	1.827	2.062	-12.9	150	-0.03
78		Dibenz(a,h)anthracene	1.903	2.100	-10.4	143	-0.03
79		Benzo(g,h,i)perylene	2.204	2.309	-4.8	138	-0.03

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8607.D
Acq On : 17 Apr 2004 9:26 pm
Sample : GD37
Misc :
M ıtegration Params: RTEINT.P
.c Time: Apr 20 09:25:30 2004

Vial: 26
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:20:31 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	172441	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	322536	0.997 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 99.50%	
19) Fluorene-d10	27.35	176	230466	0.852 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 85.03%	
34) Phenanthrene-d10	31.17	188	272207	1.005 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 100.30%	
64) Chrysene-d12	41.79	240	300565	1.016 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 101.40%	
74) Benzo(a)pyrene-d12	47.89	264	271888	1.044 ng/µl	-0.03
Spiked Amount 1.000			Recovery	= 104.40%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	363300	1.000 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	277456	0.986 ng/µl	99
15) Acenaphthylene	24.70	152	350851m	0.984 ng/µl	
16) Acenaphthene	25.45	154	211160	0.993 ng/µl	100
17) Dibenzofuran	26.09	168	298723	1.024 ng/µl	99
18) Cadalene	29.15	198	81069	1.011 ng/µl	94
20) Fluorene	27.46	166	255066	0.997 ng/µl	100
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.76	184	327311	1.013 ng/µl	99
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	360584	0.985 ng/µl	99
36) Anthracene	31.45	178	315366m	0.994 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8607.D
Acq On : 17 Apr 2004 9:26 pm
Sample : GD37
Misc :
M - ntegration Params: RTEINT.P
c Time: Apr 20 09:25:30 2004

Vial: 26
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:20:31 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	28291	0.993 ng/µl	92
49)	Retene	38.29	234	79259	1.017 ng/µl	96
50)	Benzo(b)fluorene	38.57	216	241532m	1.049 ng/µl	
51)	Fluoranthene	36.04	202	389495	1.023 ng/µl	98
52)	Pyrene	36.91	202	399248	1.015 ng/µl	99
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.79	234	342111m	1.016 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	375866	1.030 ng/µl	99
[illegible]	Chrysene	41.88	228	378872m	1.012 ng/µl	
[illegible]	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.35	252	417415	1.138 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.45	252	747153m	1.977 ng/µl	
72)	Benzo(a)fluoranthene	46.88	252	325559	1.041 ng/µl	98
73)	Benzo(e)pyrene	47.75	252	357441m	1.027 ng/µl	
75)	Benzo(a)pyrene	48.03	252	381807m	1.052 ng/µl	
76)	Perylene	48.48	252	372676m	1.060 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.55	276	355164	1.132 ng/µl	100
78)	Dibenz(a,h)anthracene	54.66	278	362212m	1.108 ng/µl	
79)	Benzo(g,h,i)perylene	55.74	276	398137	1.052 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8618.D
Acq On : 18 Apr 2004 1:08 pm
Sample : GD37
Misc :
Integration Params: RTEINT.P

Vial: 37
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	126	-0.01
2	S	Naphthalene-d8	1.884	1.899	-0.8	127	-0.01
3	J1	Naphthalene	2.115	2.133	-0.9	128	-0.01
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	1.629	0.5	125	-0.01
15		Acenaphthylene	2.077	2.057	1.0	126	0.00
16		Acenaphthene	1.238	1.232	0.5	126	-0.01
17		Dibenzofuran	1.698	1.749	-3.0	128	-0.01
18		Cadalene	0.467	0.475	-1.7	128	0.00
19	S	Fluorene-d10	1.576	1.349	14.4	126	0.00
[illegible]		Fluorene	1.490	1.511	-1.4	127	0.00
[illegible]	J2	C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	1.907	-1.4	125	0.00
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	1.595	-1.1	127	0.00
35	J1	Phenanthrene	2.131	2.118	0.6	125	-0.01
36		Anthracene	1.846	1.830	0.9	118	-0.01
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.160	3.6	121	0.00
49		Retene	0.454	0.466	-2.6	130	0.00
50		Benzo(b)fluorene	1.341	1.417	-5.7	130	-0.02
		Fluoranthene	2.217	2.268	-2.3	127	-0.01
[illegible]	J1	Pyrene	2.290	2.321	-1.4	126	-0.01
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8618.D
Acq On : 18 Apr 2004 1:08 pm
Sample : GD37
Misc :
Integration Params: RTEINT.P

Vial: 37
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	2.040	-4.0	128	-0.01
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0#	0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0#	0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-47.11#
63		Benzo(a)anthracene	2.125	2.186	-2.9	130	-0.01
64	S	Chrysene-d12	1.722	1.739	-1.0	127	-0.01
65	J1	Chrysene	2.180	2.207	-1.2	126	-0.01
66	J2	C1-Chrysenes	2.180	0.000	100.0#	0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0#	0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0#	0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0#	0#	-46.96#
70		Benzo(b)fluoranthene	2.135	2.311	-8.2	134	0.00
71		Benzo(j/k)fluoranthene	2.201	2.247	-2.1	128	-0.02
72		Benzo(a)fluoranthene	1.820	1.932	-6.2	132	-0.02
73		Benzo(e)pyrene	2.027	2.107	-3.9	131	-0.02
[illegible]		Benzo(a)pyrene-d12	1.516	1.599	-5.5	134	-0.02
[illegible]		Benzo(a)pyrene	2.113	2.238	-5.9	133	-0.02
76		Perylene	2.046	2.205	-7.8	134	-0.02
77		Indeno(1,2,3-cd)pyrene	1.827	2.059	-12.7	145	-0.02
78		Dibenz(a,h)anthracene	1.903	2.124	-11.6	140	-0.02
79		Benzo(g,h,i)perylene	2.204	2.316	-5.1	134	-0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8618.D
Acq On : 18 Apr 2004 1:08 pm
Sample : GD37
Misc :
M ntegration Params: RTEINT.P
c Time: Apr 20 09:36:35 2004

Vial: 37
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:20:31 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	167044	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	316512	1.010 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 100.80%	
19) Fluorene-d10	27.36	176	224886	0.858 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 85.63%	
34) Phenanthrene-d10	31.18	188	265970	1.014 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 101.20%	
64) Chrysene-d12	41.79	240	289973	1.012 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 101.00%	
74) Benzo(a)pyrene-d12	47.90	264	266089	1.055 ng/µl	-0.02
Spiked Amount 1.000			Recovery	= 105.50%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	356310	1.012 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	271644	0.997 ng/µl	98
15) Acenaphthylene	24.71	152	343325m	0.994 ng/µl	
16) Acenaphthene	25.45	154	205785	0.999 ng/µl	99
17) Dibenzofuran	26.09	168	291561	1.032 ng/µl	100
18) Cadalene	29.15	198	79011	1.017 ng/µl	91
20) Fluorene	27.47	166	252177	1.017 ng/µl	98
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.77	184	317856	1.016 ng/µl	97
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	353717	0.998 ng/µl	100
36) Anthracene	31.45	178	305306m	0.994 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8618.D
Acq On : 18 Apr 2004 1:08 pm
Sample : GD37
Misc :
M ntegration Params: RTEINT.P
c Time: Apr 20 09:36:35 2004

Vial: 37
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:20:31 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	26676	0.967 ng/µl	98
49)	Retene	38.29	234	77613	1.028 ng/µl	99
50)	Benzo(b)fluorene	38.58	216	236229	1.059 ng/µl#	68
51)	Fluoranthene	36.04	202	378540	1.026 ng/µl	100
52)	Pyrene	36.92	202	386954	1.016 ng/µl	99
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.79	234	340113m	1.042 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	364805	1.032 ng/µl	100
)	Chrysene	41.89	228	368589m	1.016 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.36	252	386107	1.087 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.45	252	749324m	2.047 ng/µl	
72)	Benzo(a)fluoranthene	46.89	252	321488	1.061 ng/µl	98
73)	Benzo(e)pyrene	47.76	252	351297m	1.042 ng/µl	
75)	Benzo(a)pyrene	48.03	252	373454m	1.062 ng/µl	
76)	Perylene	48.49	252	367530m	1.079 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.56	276	343675	1.131 ng/µl	100
78)	Dibenz(a,h)anthracene	54.67	278	354727m	1.120 ng/µl	
79)	Benzo(g,h,i)perylene	55.75	276	386817	1.055 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8629.D
Acq On : 19 Apr 2004 4:45 am
Sample : GC37
Misc :
Integration Params: RTEINT.P

Vial: 48
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Acenaphthene-d10	1.000	1.000	0.0	110	-0.01
2	S	Naphthalene-d8	1.884	1.873	0.6	109	-0.01
3	J1	Naphthalene	2.115	2.094	1.0	109	-0.01
4	J2	C1-Naphthalenes	2.115	0.000	100.0#	0#	-21.16#
5	J2	2-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.16#
6	J2	1-Methylnaphthalene	2.115	0.000	100.0#	0#	-21.58#
7	J2	C2-Naphthalenes	2.115	0.000	100.0#	0#	-23.42#
8	J2	2-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.42#
9	J2	1-Ethylnaphthalene	2.115	0.000	100.0#	0#	-23.51#
10	J2	2,6-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-23.66#
11	J2	1,5-Dimethylnaphthalene	2.115	0.000	100.0#	0#	-24.53#
12	J2	C3-Naphthalenes	2.115	0.000	100.0#	0#	-25.38#
13	J2	C4-Naphthalenes	2.115	0.000	100.0#	0#	-26.50#
14		Biphenyl	1.638	1.632	0.4	109	-0.01
15		Acenaphthylene	2.077	2.062	0.7	110	0.00
16		Acenaphthene	1.238	1.252	-1.1	111	-0.01
17		Dibenzofuran	1.698	1.742	-2.6	111	0.00
18		Cadalene	0.467	0.475	-1.7	111	0.00
19	S	Fluorene-d10	1.576	1.365	13.4	111	0.00
2[illegible]		Fluorene	1.490	1.503	-0.9	110	0.00
		C1-Fluorenes	1.490	0.000	100.0#	0#	-29.66#
22	J2	2-Methylfluorene	1.490	0.000	100.0#	0#	-29.71#
23	J2	1-Methylfluorene	1.490	0.000	100.0#	0#	-29.85#
24	J2	C2-Fluorenes	1.490	0.000	100.0#	0#	-31.35#
25	J2	C3-Fluorenes	1.490	0.000	100.0#	0#	-33.25#
26	J1	Dibenzothiophene	1.881	1.934	-2.8	111	0.00
27	J2	C1-Dibenzothiophenes	1.881	0.000	100.0#	0#	-32.56#
28	J2	4-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.56#
29	J2	2/3-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-32.92#
30	J2	1-Methyldibenzothiophene	1.881	0.000	100.0#	0#	-33.33#
31	J2	C2-Dibenzothiophenes	1.881	0.000	100.0#	0#	-34.11#
32	J2	C3-Dibenzothiophenes	1.881	0.000	100.0#	0#	-35.54#
33	J2	C4-Dibenzothiophenes	1.881	0.000	100.0#	0#	-36.98#
34	S	Phenanthrene-d10	1.577	1.603	-1.6	111	0.00
35	J1	Phenanthrene	2.131	2.139	-0.4	110	-0.01
36		Anthracene	1.846	1.831	0.8	103	-0.01
37	J2	C1-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-33.25#
38	J2	3-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.25#
39	J2	2/4-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.36#
40	J2	2-Methylanthracene	2.131	0.000	100.0#	0#	-33.52#
41	J2	9-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.70#
42	J2	1-Methylphenanthrene	2.131	0.000	100.0#	0#	-33.80#
43	J2	C2-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-34.78#
44	J2	2,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.31#
45	J2	1,7-Dimethylphenanthrene	2.131	0.000	100.0#	0#	-35.76#
46	J2	C3-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-36.88#
47	J2	C4-Phenanthrenes/Anthracene	2.131	0.000	100.0#	0#	-38.25#
48		Dehydroabietin(e)	0.166	0.164	1.2	108	0.00
49		Retene	0.454	0.461	-1.5	112	0.00
50		Benzo(b)fluorene	1.341	1.418	-5.7	113	-0.02
[illegible]		Fluoranthene	2.217	2.298	-3.7	112	-0.01
[illegible]	J1	Pyrene	2.290	2.348	-2.5	111	-0.01
53	J2	C1-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-37.91#
54	J2	C2-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-40.04#

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : H:\E\DATA\SE0041\W8629.D
Acq On : 19 Apr 2004 4:45 am
Sample : GC37
Misc :
Integration Params: RTEINT.P

Vial: 48
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:43:12 2004
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	J2	C3-Fluoranthenes/Pyrenes	2.290	0.000	100.0#	0#	-41.34#
56	J1	Benzo(b)naphtho(2,1-d)thiop	1.961	2.055	-4.8	112	-0.01
57	J2	Benzo(b)naphtho(1,2-d)thiop	1.961	0.000	100.0#	0#	-41.16#
58	J2	Benzo(b)naphtho(2,3-d)thiop	1.961	0.000	100.0#	0#	-41.46#
59	J2	C1-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-42.22#
60	J2	C2-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-43.73#
61	J2	C3-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-44.89#
62	J2	C4-Benzo(b)naphthothiophene	1.961	0.000	100.0#	0#	-47.11#
63		Benzo(a)anthracene	2.125	2.210	-4.0	114	-0.01
64	S	Chrysene-d12	1.722	1.756	-2.0	111	-0.01
65	J1	Chrysene	2.180	2.234	-2.5	111	-0.01
66	J2	C1-Chrysenes	2.180	0.000	100.0#	0#	-43.42#
67	J2	C2-Chrysenes	2.180	0.000	100.0#	0#	-45.12#
68	J2	C3-Chrysenes	2.180	0.000	100.0#	0#	-46.24#
69	J2	C4-Chrysenes	2.180	0.000	100.0#	0#	-46.96#
70		Benzo(b)fluoranthene	2.135	2.382	-11.6	120	0.00
71		Benzo(j/k)fluoranthene	2.201	2.226	-1.1	110	0.00
72		Benzo(a)fluoranthene	1.820	1.907	-4.8	113	-0.01
73		Benzo(e)pyrene	2.027	2.115	-4.3	115	0.00
[illegible]		Benzo(a)pyrene-d12	1.516	1.586	-4.6	115	-0.01
[illegible]		Benzo(a)pyrene	2.113	2.225	-5.3	115	0.00
76		Perylene	2.046	2.176	-6.4	115	-0.02
77		Indeno(1,2,3-cd)pyrene	1.827	2.027	-10.9	124	-0.01
78		Dibenz(a,h)anthracene	1.903	2.104	-10.6	121	0.00
79		Benzo(g,h,i)perylene	2.204	2.268	-2.9	114	-0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8629.D
Acq On : 19 Apr 2004 4:45 am
Sample : GC37
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 09:39:29 2004

Vial: 48
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:20:31 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	145422	1.004 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	271828	0.996 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 99.40%	
19) Fluorene-d10	27.36	176	198043	0.868 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 86.63%	
34) Phenanthrene-d10	31.18	188	232645	1.018 ng/µl	0.00
Spiked Amount 1.002			Recovery	= 101.60%	
64) Chrysene-d12	41.79	240	254918	1.022 ng/µl	-0.01
Spiked Amount 1.002			Recovery	= 102.00%	
74) Benzo(a)pyrene-d12	47.91	264	229777	1.046 ng/µl	-0.01
Spiked Amount 1.000			Recovery	= 104.60%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	304523	0.994 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	0.00	142	0	N.D. d	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	23.04	154	236786	0.998 ng/µl	98
15) Acenaphthylene	24.71	152	299514m	0.996 ng/µl	
16) Acenaphthene	25.45	154	182049	1.016 ng/µl	99
17) Dibenzofuran	26.10	168	252804	1.028 ng/µl	100
18) Cadalene	29.15	198	68798m	1.018 ng/µl	
20) Fluorene	27.47	166	218338	1.012 ng/µl	98
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	30.77	184	280662	1.030 ng/µl	98
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	311010	1.008 ng/µl	100
36) Anthracene	31.45	178	265993m	0.995 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8629.D
Acq On : 19 Apr 2004 4:45 am
Sample : GC37
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 20 09:39:29 2004

Vial: 48
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 09:20:31 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	35.17	256	23685	0.986 ng/µl	98
49)	Retene	38.30	234	66838m	1.017 ng/µl	
50)	Benzo(b)fluorene	38.58	216	205850	1.060 ng/µl#	69
51)	Fluoranthene	36.04	202	333835	1.040 ng/µl	100
52)	Pyrene	36.92	202	340756	1.027 ng/µl	98
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	40.79	234	298260m	1.050 ng/µl	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	321107	1.043 ng/µl	100
[illegible])	Chrysene	41.89	228	324814m	1.029 ng/µl	
[illegible])	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.36	252	346440	1.120 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.47	252	646085m	2.027 ng/µl	
72)	Benzo(a)fluoranthene	46.90	252	276251	1.048 ng/µl	98
73)	Benzo(e)pyrene	47.77	252	306938m	1.046 ng/µl	
75)	Benzo(a)pyrene	48.05	252	323302m	1.056 ng/µl	
76)	Perylene	48.49	252	315872m	1.066 ng/µl	
77)	Indeno(1,2,3-cd)pyrene	54.57	276	294541	1.113 ng/µl	99
78)	Dibenz(a,h)anthracene	54.68	278	305904m	1.110 ng/µl	
79)	Benzo(g,h,i)perylene	55.75	276	329864	1.033 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sample Data

Injection Log

Directory: H:\E\DATA\SE0041

ACQUIRED WITH METHOD PYRSIMO.M

JM 4/21/04

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Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1		W8582.d	1.	DCM (4)		16 Apr 2004 09:51
2	2	W8583.d	1.	GD34 (1)	(1) INITIAL AND CONTINUING CALIBRATION FILES USED WITH THESE BATCHES.	16 Apr 2004 11:17
3	3	W8584.d	1.	GD35		16 Apr 2004 12:43
4	4	W8585.d	1.	GD36		16 Apr 2004 14:08
5	5	W8586.d	1.	GD37		16 Apr 2004 15:34
6	6	W8587.d	1.	GD38	(2) SAMPLE FILES FROM BATCH 04-0113.	16 Apr 2004 16:58
7	7	W8588.d	1.	GD39		16 Apr 2004 18:23
8	8	W8589.d	1.	GC44 - ICC (1)	(3) SAMPLE FILES FROM BATCH 04-0118.	16 Apr 2004 19:48
9	9	W8590.d	1.	DCM (4)	(4) NOT USED.	16 Apr 2004 21:13
10	10	W8591.d	1.	BE152PB-P(3) (2)		16 Apr 2004 22:38
11	11	W8592.d	1.	BE153LCS-P(3)	JM 4/21/04	17 Apr 2004 00:04
12	12	W8593.d	1.	S1487-P(3)		17 Apr 2004 01:29
13	13	W8594.d	1.	S1489-P(3)		17 Apr 2004 02:55
14	14	W8595.d	1.	DCM (4)		17 Apr 2004 04:20
15	15	W8596.d	1.	GD37 (1)		17 Apr 2004 05:46
16	16	W8597.d	1.	DCM (4)		17 Apr 2004 07:11
17	17	W8598.d	1.	BE164PB-P(3) (3)		17 Apr 2004 08:37
18	18	W8599.d	1.	BE165LCS-P(3)		17 Apr 2004 10:03
19	19	W8600.d	1.	BE166SRM-P(3)		17 Apr 2004 11:29
20	20	W8601.d	1.	BE174NSC-P(0)		17 Apr 2004 12:55
21	21	W8602.d	1.	S1421-P(7)		17 Apr 2004 14:20
22	22	W8603.d	1.	S1424-P(7)		17 Apr 2004 15:45
23	23	W8604.d	1.	S1424MS-P(7)		17 Apr 2004 17:10
24	24	W8605.d	1.	S1424MSD-P(7)		17 Apr 2004 18:35
25	25	W8606.d	1.	DCM (4)		17 Apr 2004 20:00
26	[illegible]	W8607.d	1.	GD37 (1)		17 Apr 2004 21:26
[illegible]		W8608.d	1.	S1426-P(7) (3)		17 Apr 2004 22:51
28	28	W8609.d	1.	S1442-P(4)		18 Apr 2004 00:17
29	29	W8610.d	1.	S1443-P(4)		18 Apr 2004 01:43
30	30	W8611.d	1.	S1449-P(7)		18 Apr 2004 03:09
31	31	W8612.d	1.	S1451-P(7)		18 Apr 2004 04:34
32	32	W8613.d	1.	S1452-P(7)		18 Apr 2004 06:00
33	33	W8614.d	1.	S1464-P(7)		18 Apr 2004 07:26
34	34	W8615.d	1.	S1467-P(7)		18 Apr 2004 08:52
35	35	W8616.d	1.	S1473-P(7)		18 Apr 2004 10:18
36	36	W8617.d	1.	DCM (4)		18 Apr 2004 11:43
37	37	W8618.d	1.	GD37 (1)		18 Apr 2004 13:08
38	38	W8619.d	1.	S1476-P(7) (3)		18 Apr 2004 14:33
39	39	W8620.d	1.	S1479-P(7)		18 Apr 2004 15:58
40	40	W8621.d	1.	S1490-P(7)		18 Apr 2004 17:22
41	41	W8622.d	1.	S1494-P(7)		18 Apr 2004 18:47
42	42	W8623.d	1.	S1502-P(7)		18 Apr 2004 20:12
43	43	W8624.d	1.	S1507-P(7)		18 Apr 2004 21:37
44	44	W8625.d	1.	S1510-P(7)		18 Apr 2004 23:03
45	45	W8626.d	1.	S1511-P(7)		19 Apr 2004 00:28
46	46	W8627.d	1.	S1511DUP-P(7) (3)		19 Apr 2004 01:54
47	47	W8628.d	1.	DCM (4)		19 Apr 2004 03:20
48	48	W8629.d	1.	GC37 (1)		19 Apr 2004 04:45
49	1	W8630.d	1.	DCM (4)		20 Apr 2004 11:16
50	2	W8631.d	1.	GD37		20 Apr 2004 12:41
51	3	W8632.d	1.	BE161PB-P(3) (4)		20 Apr 2004 14:13
[illegible]		W8633.d	1.	BE162LCS-P(3)		20 Apr 2004 15:38
[illegible]	[illegible]	W8634.d	1.	BE163SRM-P(3)		20 Apr 2004 17:03
54	6	W8635.d	1.	BE212NSC-P(0)		20 Apr 2004 18:28
55	7	W8636.d	1.	S1430-P(7)		20 Apr 2004 19:52

21 Apr 2004 12:17

Injection Log

Directory: H:\E\DATA\SE0041

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Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
5		W8637.d	1.	S1432-P(7) (4)		20 Apr 2004 21:18
57	9	W8638.d	1.	S1432MS-P(7)		20 Apr 2004 22:43
58	10	W8639.d	1.	S1432MSD-P(7)		21 Apr 2004 00:08
59	11	W8640.d	1.	S1435-P(7)		21 Apr 2004 01:34
60	12	W8641.d	1.	DCM		21 Apr 2004 02:59
61	13	W8642.d	1.	GD37		21 Apr 2004 04:25
62	14	W8643.d	1.	S1438-P(7)		21 Apr 2004 05:50
63	15	W8644.d	1.	S1445-P(7)		21 Apr 2004 07:16
64	16	W8645.d	1.	S1447-P(7)		21 Apr 2004 08:42
65	17	W8646.d	1.	S1457-P(9)		21 Apr 2004 10:08
66		W8647.d	1.	No MS or GC data present		

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8591.D
Acq On : 16 Apr 2004 10:38 pm
Sample : BE152PB-P(3)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 20 13:19:40 2004

Vial: 10
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

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Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	305145	1001.000	ng/µl	-0.01
System Monitoring Compounds						
2) Naphthalene-d8	18.38	136	465936	811.449	ng/µl	-0.02
Spiked Amount 2001.000			Recovery =	40.55%		✓ BL 4.26.04
19) Fluorene-d10	27.35	176	335831	699.111	ng/µl	-0.01
Spiked Amount 1038.000			Recovery =	67.35%		
34) Phenanthrene-d10	31.17	188	426268	886.575	ng/µl	-0.01
Spiked Amount 1988.500			Recovery =	44.59%		
64) Chrysene-d12	41.78	240	450241	857.887	ng/µl	-0.02
Spiked Amount 2004.000			Recovery =	42.81%		
74) Benzo(a)pyrene-d12	47.88	264	422469	913.971	ng/µl	-0.04
Spiked Amount 1032.000			Recovery =	88.56%		

Target Compounds						Qvalue
3) Naphthalene	18.47	128	395m	0.613	ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D.		
5) 2-Methylnaphthalene	21.18	142	167m	0.259	ng/µl	✓ BL 4.26.04
6) 1-Methylnaphthalene	0.00	142	0	N.D.		
7) C2-Naphthalenes	0.00	156	0	N.D.		
8) 2-Ethylnaphthalene	0.00	156	0	N.D.		
9) 1-Ethylnaphthalene	0.00	156	0	N.D.		
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.		
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.		
12) C3-Naphthalenes	0.00	170	0	N.D.		
13) C4-Naphthalenes	0.00	184	0	N.D.		
14) Biphenyl	0.00	154	0	N.D.		
15) Acenaphthylene	0.00	152	0	N.D.		
16) Acenaphthene	0.00	154	0	N.D.		d
17) Dibenzofuran	0.00	168	0	N.D.		
18) Cadalene	0.00	198	0	N.D.		
20) Fluorene	27.47	166	181m	0.398	ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D.		
22) 2-Methylfluorene	0.00	180	0	N.D.		
23) 1-Methylfluorene	0.00	180	0	N.D.		
24) C2-Fluorenes	0.00	194	0	N.D.		
25) C3-Fluorenes	0.00	208	0	N.D.		
26) Dibenzothiophene	0.00	184	0	N.D.		
27) C1-Dibenzothiophenes	0.00	198	0	N.D.		d
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.		d
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.		d
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.		d
31) C2-Dibenzothiophenes	0.00	212	0	N.D.		
32) C3-Dibenzothiophenes	0.00	226	0	N.D.		
33) C4-Dibenzothiophenes	0.00	240	0	N.D.		
35) Phenanthrene	31.26	178	279m	0.430	ng/µl	
36) Anthracene	0.00	178	0	N.D.		d
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.		
38) 3-Methylphenanthrene	0.00	192	0	N.D.		d
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.		d
40) 2-Methylanthracene	0.00	192	0	N.D.		
9-Methylphenanthrene	0.00	192	0	N.D.		
1-Methylphenanthrene	0.00	192	0	N.D.		
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.		d
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.		d

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8591.D
Acq On : 16 Apr 2004 10:38 pm
Sample : BE152PB-P(3)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 13:19:40 2004

Vial: 10
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D.	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	
51)	Fluoranthene	0.00	202	0	N.D.	
52)	Pyrene	0.00	202	0	N.D.	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	0.00	228	0	N.D. d	
)	Chrysene	0.00	228	0	N.D. d	
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	0.00	252	0	N.D.	
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D.	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	0.00	252	0	N.D. d	
76)	Perylene	0.00	252	0	N.D.	
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D.	
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D.	
79)	Benzo(g,h,i)perylene	0.00	276	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8592.D
Acq On : 17 Apr 2004 12:04 am
Sample : BE153LCS-P(3)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:21:35 2004

Vial: 11
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	275867	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	439367	846.387 ng/µl	-0.02
Spiked Amount 2001.000			Recovery =	42.30%	
19) Fluorene-d10	27.35	176	306653	706.121 ng/µl	-0.01
Spiked Amount 1038.000			Recovery =	68.03%	
34) Phenanthrene-d10	31.17	188	395716	910.380 ng/µl	-0.01
Spiked Amount 1988.500			Recovery =	45.78%	
64) Chrysene-d12	41.78	240	422383m	890.221 ng/µl	-0.02
Spiked Amount 2004.000			Recovery =	44.42% ✓BL 4-26-04	
74) Benzo(a)pyrene-d12	47.88	264	390320	934.039 ng/µl	-0.04
Spiked Amount 1032.000			Recovery =	90.51%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	239991	411.682 ng/µl	99
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	152448	261.510 ng/µl	99
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.70	152	239530m	418.544 ng/µl	
16) Acenaphthene	25.44	154	145609	426.893 ng/µl	98
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	27.46	166	174920	425.976 ng/µl ✓BL 4-26-04	99 ✓BL 4-26-04
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.25	178	262131	446.385 ng/µl	99
36) Anthracene	31.44	178	252942m	497.083 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
0) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8592.D
Acq On : 17 Apr 2004 12:04 am
Sample : BE153LCS-P(3)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 13:21:35 2004

Vial: 11
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D.	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	
51)	Fluoranthene	36.03	202	294850	482.664 ng/µl	100
52)	Pyrene	36.91	202	310624	492.226 ng/µl	100
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.72	228	281313	480.256 ng/µl	99
)	Chrysene	41.88	228	291819m	485.660 ng/µl	
5)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.34	252	275805	468.643 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.46	252	315780m	520.700 ng/µl	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.02	252	275648m	473.377 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.54	276	215849	428.725 ng/µl	100
78)	Dibenz(a,h)anthracene	54.65	278	244929m	467.031 ng/µl	
79)	Benzo(g,h,i)perylene	55.73	276	271865	447.517 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8593.D
Acq On : 17 Apr 2004 1:29 am
Sample : S1487-P(3)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:28:55 2004

Vial: 12
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	294724	1001.000	ng/µl	-0.01
System Monitoring Compounds						
2) Naphthalene-d8	18.38	136	441069	795.303	ng/µl	-0.02
Spiked Amount 2001.000			Recovery =	39.75%		
19) Fluorene-d10	27.35	176	326822	704.413	ng/µl	-0.01
Spiked Amount 1038.000			Recovery =	67.86%		
34) Phenanthrene-d10	31.17	188	422254	909.279	ng/µl	-0.01
Spiked Amount 1988.500			Recovery =	45.73%		
64) Chrysene-d12	41.78	240	437285	862.661	ng/µl	-0.02
Spiked Amount 2004.000			Recovery =	43.05%		
74) Benzo(a)pyrene-d12	47.88	264	407986	913.847	ng/µl	-0.04
Spiked Amount 1032.000			Recovery =	88.55%		
Target Compounds						Qvalue
3) Naphthalene	18.47	128	4765	7.651	ng/µl	99
4) C1-Naphthalenes	0.00	142	0	N.D.	d	
5) 2-Methylnaphthalene	21.16	142	1914m	3.073	ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d	
7) C2-Naphthalenes	0.00	156	0	N.D.		
) 2-Ethylnaphthalene	0.00	156	0	N.D.		
) 1-Ethylnaphthalene	0.00	156	0	N.D.		
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.		
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.		
12) C3-Naphthalenes	0.00	170	0	N.D.		
13) C4-Naphthalenes	0.00	184	0	N.D.		
14) Biphenyl	0.00	154	0	N.D.		
15) Acenaphthylene	24.71	152	707m	1.156	ng/µl	
16) Acenaphthene	0.00	154	0	N.D.	d	
17) Dibenzofuran	0.00	168	0	N.D.		
18) Cadalene	0.00	198	0	N.D.		
20) Fluorene	27.46	166	228m	0.520	ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D.		
22) 2-Methylfluorene	0.00	180	0	N.D.		
23) 1-Methylfluorene	0.00	180	0	N.D.		
24) C2-Fluorenes	0.00	194	0	N.D.		
25) C3-Fluorenes	0.00	208	0	N.D.		
26) Dibenzothiophene	0.00	184	0	N.D.		
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.		
32) C3-Dibenzothiophenes	0.00	226	0	N.D.		
33) C4-Dibenzothiophenes	0.00	240	0	N.D.		
35) Phenanthrene	31.25	178	1994m	3.178	ng/µl	
36) Anthracene	31.46	178	544m	1.001	ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d	
40) 2-Methylanthracene	0.00	192	0	N.D.	d	
) 9-Methylphenanthrene	0.00	192	0	N.D.		
42) 1-Methylphenanthrene	0.00	192	0	N.D.		
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8593.D
Acq On : 17 Apr 2004 1:29 am
Sample : S1487-P(3)
Misc :
M' Integration Params: RTEINT.P
t Time: Apr 20 13:28:55 2004

Vial: 12
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D.	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	
51)	Fluoranthene	36.04	202	3403m	5.214 ng/µl	
52)	Pyrene	36.92	202	3687m	5.469 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.72	228	913	1.459 ng/µl	76
)	Chrysene	41.88	228	1769	2.756 ng/µl	86
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.37	252	1036	1.648 ng/µl	77
71)	Benzo(j/k)fluoranthene	46.47	252	1541m	2.378 ng/µl	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.01	252	1171	1.882 ng/µl	71
76)	Perylene	0.00	252	0	N.D.	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	641	1.192 ng/µl	83
78)	Dibenz(a,h)anthracene	54.71	278	237m	0.423 ng/µl	
79)	Benzo(g,h,i)perylene	55.76	276	942	1.451 ng/µl	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8594.D
Acq On : 17 Apr 2004 2:55 am
Sample : S1489-P(3)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:30:56 2004

Vial: 13
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	25.31	164	287570	1001.000	ng/µl	-0.02
System Monitoring Compounds						
2) Naphthalene-d8	18.38	136	416809	770.256	ng/µl	-0.02
Spiked Amount 2001.000			Recovery =	38.49%		
19) Fluorene-d10	27.35	176	318286	703.082	ng/µl	-0.01
Spiked Amount 1038.000			Recovery =	67.73%		
34) Phenanthrene-d10	31.17	188	409644	904.070	ng/µl	-0.01
Spiked Amount 1988.500			Recovery =	45.46%		✓ BLY 26-04
64) Chrysene-d12	41.78	240	416146	841.382	ng/µl	-0.02
Spiked Amount 2004.000			Recovery =	41.99%		
74) Benzo(a)pyrene-d12	47.88	264	389543	894.243	ng/µl	-0.04
Spiked Amount 1032.000			Recovery =	86.65%		

Target Compounds						Qvalue
3) Naphthalene	18.47	128	2389m	3.931	ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D.	d	
5) 2-Methylnaphthalene	21.16	142	406m	0.668	ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d	
7) C2-Naphthalenes	0.00	156	0	N.D.		
) 2-Ethylnaphthalene	0.00	156	0	N.D.		
) 1-Ethylnaphthalene	0.00	156	0	N.D.		
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.		
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.		
12) C3-Naphthalenes	0.00	170	0	N.D.		
13) C4-Naphthalenes	0.00	184	0	N.D.		
14) Biphenyl	0.00	154	0	N.D.		
15) Acenaphthylene	0.00	152	0	N.D.		
16) Acenaphthene	0.00	154	0	N.D.	d	
17) Dibenzofuran	0.00	168	0	N.D.		
18) Cadalene	0.00	198	0	N.D.		
20) Fluorene	27.46	166	158m	0.369	ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D.		
22) 2-Methylfluorene	0.00	180	0	N.D.		
23) 1-Methylfluorene	0.00	180	0	N.D.		
24) C2-Fluorenes	0.00	194	0	N.D.		
25) C3-Fluorenes	0.00	208	0	N.D.		
26) Dibenzothiophene	0.00	184	0	N.D.		
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.		
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.		
32) C3-Dibenzothiophenes	0.00	226	0	N.D.		
33) C4-Dibenzothiophenes	0.00	240	0	N.D.		
35) Phenanthrene	31.26	178	944	1.542	ng/µl	97
36) Anthracene	0.00	178	0	N.D.	d	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.		
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d	
40) 2-Methylanthracene	0.00	192	0	N.D.		
) 9-Methylphenanthrene	0.00	192	0	N.D.		
42) 1-Methylphenanthrene	0.00	192	0	N.D.		
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8594.D
Acq On : 17 Apr 2004 2:55 am
Sample : S1489-P(3)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:30:56 2004

Vial: 13
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d
49)	Retene	0.00	234	0	N.D.	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	
51)	Fluoranthene	36.04	202	310m	0.487 ng/µl	
52)	Pyrene	36.93	202	372m	0.565 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	0.00	228	0	N.D.	d
)	Chrysene	0.00	228	0	N.D.	d
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	0.00	252	0	N.D.	
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D.	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d
75)	Benzo(a)pyrene	0.00	252	0	N.D.	d
76)	Perylene	0.00	252	0	N.D.	
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D.	
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D.	
79)	Benzo(g,h,i)perylene	0.00	276	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8598.D
Acq On : 17 Apr 2004 8:37 am
Sample : BE164PB-P(3)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:55:13 2004

Vial: 17
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.31	164	278175	2002.000 ng/µl	-0.02
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	229497	876.860 ng/µl	0.00
Spiked Amount 2001.000			Recovery =	43.82%	
19) Fluorene-d10	27.35	176	304524	1390.801 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	66.99%	
34) Phenanthrene-d10	31.17	188	184863	843.531 ng/µl	-0.01
Spiked Amount 1988.500			Recovery =	42.42%	
64) Chrysene-d12	41.78	240	192183m	803.375 ng/µl	-0.02
Spiked Amount 2004.000			Recovery =	40.09%	
74) Benzo(a)pyrene-d12	47.88	264	363576	1725.643 ng/µl	-0.04
Spiked Amount 2064.000			Recovery =	83.61%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	606m	2.062 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D.	
5) 2-Methylnaphthalene	21.18	142	170m	0.578 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D.	
7) C2-Naphthalenes	0.00	156	0	N.D.	
) 2-Ethylnaphthalene	0.00	156	0	N.D.	
) 1-Ethylnaphthalene	0.00	156	0	N.D.	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D.	
15) Acenaphthylene	0.00	152	0	N.D.	
16) Acenaphthene	0.00	154	0	N.D. d	
17) Dibenzofuran	0.00	168	0	N.D.	
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	0.00	166	0	N.D. d	
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	0.00	184	0	N.D.	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	0.00	178	0	N.D. d	
36) Anthracene	0.00	178	0	N.D. d	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D.	
) 9-Methylphenanthrene	0.00	192	0	N.D.	
42) 1-Methylphenanthrene	0.00	192	0	N.D.	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8598.D
Acq On : 17 Apr 2004 8:37 am
Sample : BE164PB-P(3)
Misc :
M ntegration Params: RTEINT.P
c Time: Apr 20 13:55:13 2004

Vial: 17
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	
48)	Dehydroabietin(e)	35.19	256	3586	155.629 ng/µl#	1
49)	Retene	0.00	234	0	N.D.	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	
51)	Fluoranthene	0.00	202	0	N.D.	
52)	Pyrene	0.00	202	0	N.D. d	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	0.00	228	0	N.D. d	
[illegible])	Chrysene	0.00	228	0	N.D. d	
[illegible])	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	0.00	252	0	N.D.	
71)	Benzo(j/k)fluoranthene	0.00	252	0	N.D.	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	0.00	252	0	N.D. d	
76)	Perylene	0.00	252	0	N.D.	
77)	Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D.	
78)	Dibenz(a,h)anthracene	0.00	278	0	N.D.	
79)	Benzo(g,h,i)perylene	0.00	276	0	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8599.D
Acq On : 17 Apr 2004 10:03 am
Sample : BE165LCS-P(3)
Misc :
M' Integration Params: RTEINT.P
t Time: Apr 20 13:55:15 2004

Vial: 18
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	294438	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	257510	929.548 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	46.45%	
19) Fluorene-d10	27.35	176	327850	1414.631 ng/µl	-0.01
Spiked Amount 2076.000			Recovery =	68.14%	
34) Phenanthrene-d10	31.17	188	218889	943.624 ng/µl	-0.01
Spiked Amount 1988.500			Recovery =	47.45%	
64) Chrysene-d12	41.78	240	231009m	912.339 ng/µl	-0.02
Spiked Amount 2004.000			Recovery =	45.53%	
74) Benzo(a)pyrene-d12	47.88	264	406174	1821.344 ng/µl	-0.04
Spiked Amount 2064.000			Recovery =	88.24%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	143250	460.465 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	88888	285.723 ng/µl	97
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	
12) C3-Naphthalenes	0.00	170	0	N.D.	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.70	152	140206	459.075 ng/µl	99
16) Acenaphthene	25.45	154	86327	474.256 ng/µl	99
17) Dibenzofuran	0.00	168	0	N.D.	
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	27.46	166	102381	467.198 ng/µl	100
21) C1-Fluorenes	0.00	180	0	N.D.	
22) 2-Methylfluorene	0.00	180	0	N.D.	
23) 1-Methylfluorene	0.00	180	0	N.D.	
24) C2-Fluorenes	0.00	194	0	N.D.	
25) C3-Fluorenes	0.00	208	0	N.D.	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.25	178	148383	473.491 ng/µl	100
36) Anthracene	31.45	178	132871m	489.298 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8599.D
Acq On : 17 Apr 2004 10:03 am
Sample : BE165LCS-P(3)
Misc :
M' ntegration Params: RTEINT.P
t Time: Apr 20 13:55:15 2004

Vial: 18
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D.	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	
51)	Fluoranthene	36.03	202	163865	502.650 ng/µl	99
52)	Pyrene	36.91	202	170335	505.789 ng/µl	100
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.72	228	149628	478.665 ng/µl	99
)	Chrysene	41.88	228	161954m	505.064 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D.	
67)	C2-Chrysenes	0.00	256	0	N.D.	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.34	252	137545	437.946 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.46	252	174107m	537.966 ng/µl	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.01	252	141097m	454.052 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.54	276	96985	360.968 ng/µl	98
78)	Dibenz(a,h)anthracene	54.66	278	116352m	415.734 ng/µl	
79)	Benzo(g,h,i)perylene	55.73	276	136771	421.878 ng/µl	99

✓ 4-26-04

✓ 4-26-04

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8600.D
Acq On : 17 Apr 2004 11:29 am
Sample : BE166SRM-P(3)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 13:55:17 2004

Vial: 19
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.31	164	307366	2002.000 ng/µl	-0.02
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	233842	808.608 ng/µl	-0.02
Spiked Amount 2001.000			Recovery = 40.41%		
19) Fluorene-d10	27.35	176	355031	1467.480 ng/µl	-0.01
Spiked Amount 2076.000			Recovery = 70.69%		
34) Phenanthrene-d10	31.17	188	244338	1009.030 ng/µl	-0.01
Spiked Amount 1988.500			Recovery = 50.74%		
64) Chrysene-d12	41.79	240	245506	928.811 ng/µl	-0.01
Spiked Amount 2004.000			Recovery = 46.35%		
74) Benzo(a)pyrene-d12	47.90	264	491427	2110.945 ng/µl	-0.02
Spiked Amount 2064.000			Recovery = 102.27%		
Target Compounds					Qvalue
3) Naphthalene	18.46	128	171823	529.080 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.14	142	58710	180.781 ng/µl	97
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D. d	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.70	152	159204m	499.354 ng/µl	
16) Acenaphthene	25.44	154	29688	156.237 ng/µl	99
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	48269	211.003 ng/µl	95
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.25	178	814559	2489.935 ng/µl	100
36) Anthracene	31.44	178	219604m	774.679 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8600.D
Acq On : 17 Apr 2004 11:29 am
Sample : BE166SRM-P(3)
Misc :
M Integration Params: RTEINT.P
Quant Time: Apr 20 13:55:17 2004

Vial: 19
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.04	202	1410599m	4144.967 ng/µl	
52)	Pyrene	36.91	202	1530599m	4353.764 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.73	228	733311m	2247.216 ng/µl	
[illegible])	Chrysene	41.89	228	954613	2851.805 ng/µl	99
[illegible])	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.36	252	661303	2017.040 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.46	252	741631	2195.151 ng/µl	98
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.04	252	596529m	1838.897 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.56	276	443574m	1581.498 ng/µl	
78)	Dibenz(a,h)anthracene	54.67	278	116946m	400.281 ng/µl	
79)	Benzo(g,h,i)perylene	55.75	276	509654	1505.934 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

207

Data File : H:\E\DATA\SE0041\W8601.D
Acq On : 17 Apr 2004 12:55 pm
Sample : BE174NSC-P(0)
Misc :
M^ ^ntegration Params: RTEINT.P
ε Time: Apr 20 13:55:19 2004

Vial: 20
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	239232m	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	418723	1860.283 ng/µl	-0.02
Spiked Amount 2001.000			Recovery =	92.97%	
19) Fluorene-d10	27.35	176	273638	1453.178 ng/µl	-0.01
Spiked Amount 2076.000			Recovery =	70.00%	
34) Phenanthrene-d10	31.17	188	369062	1958.164 ng/µl	-0.01
Spiked Amount 1988.500			Recovery =	98.47%	
64) Chrysene-d12	41.78	240	356623	1733.450 ng/µl	-0.02
Spiked Amount 2004.000			Recovery =	86.50% ✓ 4.26.04	
74) Benzo(a)pyrene-d12	47.89	264	364512	2011.714 ng/µl	-0.03
Spiked Amount 2064.000			Recovery =	97.47%	
Target Compounds					Qvalue
3) Naphthalene	18.46	128	886013	3505.234 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.14	142	1100401	4353.394 ng/µl	97
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D. d	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	0.00	152	0	N.D. d	
16) Acenaphthene	25.44	154	9836m	66.506 ng/µl	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	69142m	388.328 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	346123	1359.354 ng/µl ✓ 4.26.04	✓ 4.26.04
36) Anthracene	0.00	178	0	N.D. d	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8601.D
Acq On : 17 Apr 2004 12:55 pm
Sample : BE174NSC-P(0)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 20 13:55:19 2004

Vial: 20
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45) 1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46) C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47) C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48) Dehydroabietin(e)	0.00	256	0	N.D. d	
49) Retene	0.00	234	0	N.D. d	
50) Benzo(b)fluorene	0.00	216	0	N.D. d	
51) Fluoranthene	36.03	202	5254	19.836 ng/µl	89
52) Pyrene	36.91	202	15990m	58.437 ng/µl	
53) C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54) C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55) C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56) Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57) Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58) Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59) C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60) C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61) C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62) C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63) Benzo(a)anthracene	0.00	228	0	N.D. d	
[illegible]) Chrysene	41.85	228	62333m	239.247 ng/µl	
[illegible]) C1-Chrysenes	0.00	242	0	N.D. d	
67) C2-Chrysenes	0.00	256	0	N.D. d	
68) C3-Chrysenes	0.00	270	0	N.D. d	
69) C4-Chrysenes	0.00	284	0	N.D. d	
70) Benzo(b)fluoranthene	46.36	252	8824m	34.579 ng/µl	
71) Benzo(j/k)fluoranthene	0.00	252	0	N.D. d	
72) Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73) Benzo(e)pyrene	0.00	252	0	N.D. d	
75) Benzo(a)pyrene	0.00	252	0	N.D. d	
76) Perylene	0.00	252	0	N.D. d	
77) Indeno(1,2,3-cd)pyrene	0.00	276	0	N.D. d	
78) Dibenz(a,h)anthracene	54.65	278	950	4.178 ng/µl	94
79) Benzo(g,h,i)perylene	55.75	276	4142m	15.725 ng/µl	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

209

Data File : H:\E\DATA\SE0041\W8602.D
Acq On : 17 Apr 2004 2:20 pm
Sample : S1421-P(7)
Misc :
M' ntegration Params: RTEINT.P
t Time: Apr 20 13:55:21 2004

Vial: 21
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.31	164	331999	2002.000 ng/µl	-0.02
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	197593	632.566 ng/µl	-0.02
Spiked Amount 2001.000			Recovery =	31.61%	
19) Fluorene-d10	27.35	176	374694	1433.843 ng/µl	-0.01
Spiked Amount 2076.000			Recovery =	69.07%	
34) Phenanthrene-d10	31.17	188	197812	756.284 ng/µl	-0.01
Spiked Amount 1988.500			Recovery =	38.03%	
64) Chrysene-d12	41.79	240	191773	671.695 ng/µl	-0.01
Spiked Amount 2004.000			Recovery =	33.52%	
74) Benzo(a)pyrene-d12	47.90	264	534547	2125.802 ng/µl	-0.02
Spiked Amount 2064.000			Recovery =	102.99%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	43881m	125.094 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.14	142	23780	67.791 ng/µl	98
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.70	152	167932m	487.649 ng/µl	
16) Acenaphthene	25.44	154	11817	57.575 ng/µl	99
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	26051m	105.430 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.25	178	451629	1278.105 ng/µl	100
36) Anthracene	31.44	178	233037m	761.072 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

210

Data File : H:\E\DATA\SE0041\W8602.D
Acq On : 17 Apr 2004 2:20 pm
Sample : S1421-P(7)
Misc :
M' ntegration Params: RTEINT.P
t Time: Apr 20 13:55:21 2004

Vial: 21
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.03	202	1020416m	2775.964 ng/µl	
52)	Pyrene	36.91	202	1797080m	4732.493 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.73	228	493845m	1401.091 ng/µl	
)	Chrysene	41.88	228	936616	2590.438 ng/µl	100
)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.36	252	852546	2407.414 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.45	252	796336	2182.187 ng/µl	98
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.04	252	569320m	1624.805 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.57	276	454298m	1499.555 ng/µl	
78)	Dibenz(a,h)anthracene	54.68	278	99461m	315.175 ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	476547	1303.633 ng/µl	99

PSL 4-26-04

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8603.D
Acq On : 17 Apr 2004 3:45 pm
Sample : S1424-P(7)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 13:55:23 2004

Vial: 22
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.31	164	343473	2002.000 ng/µl	-0.02
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	195572	605.181 ng/µl	-0.02
Spiked Amount 2001.000			Recovery = 30.24%		
19) Fluorene-d10	27.35	176	389524	1440.799 ng/µl	0.00
Spiked Amount 2076.000			Recovery = 69.40%		
34) Phenanthrene-d10	31.17	188	215626	796.852 ng/µl	-0.01
Spiked Amount 1988.500			Recovery = 40.07%		
64) Chrysene-d12	41.79	240	214131	724.950 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 36.18%		
74) Benzo(a)pyrene-d12	47.91	264	556130	2137.753 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 103.57%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	47145	129.909 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.14	142	23546	64.881 ng/µl	96
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.70	152	210089m	589.686 ng/µl	
16) Acenaphthene	25.44	154	20949	98.658 ng/µl	99
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	37386m	146.249 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	703070	1923.213 ng/µl	99
36) Anthracene	31.44	178	256253m	808.935 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8603.D
Acq On : 17 Apr 2004 3:45 pm
Sample : S1424-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:55:23 2004

Vial: 22
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.04	202	1282615m	3372.695 ng/µl	
52)	Pyrene	36.92	202	1507987m	3838.524 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.73	228	574637m	1575.845 ng/µl	
)	Chrysene	41.88	228	996837	2664.894 ng/µl	99
66)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.36	252	935106	2552.337 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.46	252	916734	2428.192 ng/µl	98
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.05	252	749233m	2066.835 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.57	276	558997m	1783.509 ng/µl	
78)	Dibenz(a,h)anthracene	54.68	278	130383m	399.360 ng/µl	
79)	Benzo(g,h,i)perylene	55.76	276	600079	1586.727 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

213

Data File : H:\E\DATA\SE0041\W8604.D
Acq On : 17 Apr 2004 5:10 pm
Sample : S1424MS-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:37:12 2004

Vial: 23
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	360518	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	408403	602.010 ng/µl	-0.02
Spiked Amount 2001.000			Recovery =	30.09%	
19) Fluorene-d10	27.35	176	410051	722.508 ng/µl	-0.01
Spiked Amount 1038.000			Recovery =	69.61%	
34) Phenanthrene-d10	31.17	188	484862	853.552 ng/µl	-0.01
Spiked Amount 1988.500			Recovery =	42.92%	
64) Chrysene-d12	41.79	240	483222	779.311 ng/µl	-0.01
Spiked Amount 2004.000			Recovery =	38.89%	
74) Benzo(a)pyrene-d12	47.92	264	586822	1074.542 ng/µl	0.00
Spiked Amount 1032.000			Recovery =	104.12%	
Target Compounds					Qvalue
3) Naphthalene	18.46	128	275468	361.585 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.14	142	190067	249.486 ng/µl	98
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.70	152	521619m	697.440 ng/µl	
16) Acenaphthene	25.44	154	191937m	430.588 ng/µl	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	260402m	485.247 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	1034882	1348.513 ng/µl	100
36) Anthracene	31.45	178	603383m	907.348 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8604.D
Acq On : 17 Apr 2004 5:10 pm
Sample : S1424MS-P(7)
Misc :
M ntegration Params: RTEINT.P
c Time: Apr 20 13:37:12 2004

Vial: 23
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.04	202	1657406m	2076.086 ng/µl	
52)	Pyrene	36.92	202	2074989m	2516.044 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.73	228	985291m	1287.123 ng/µl	
[illegible])	Chrysene	41.89	228	1368492	1742.744 ng/µl	100
[illegible])	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.37	252	1472662	1914.767 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.48	252	1344488	1696.416 ng/µl	98
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.06	252	1184454m	1556.478 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	968825	1472.471 ng/µl	98
78)	Dibenz(a,h)anthracene	54.69	278	481662m	702.783 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	1014280	1277.578 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8605.D
Acq On : 17 Apr 2004 6:35 pm
Sample : S1424MSD-P(7)
Misc :
M[illegible] Integration Params: RTEINT.P
[illegible]t Time: Apr 20 13:37:14 2004

Vial: 24
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	361486m	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	464218m	682.452 ng/µl	-0.02
Spiked Amount 2001.000			Recovery	= 34.11%	
19) Fluorene-d10	27.35	176	412924	725.622 ng/µl	-0.01
Spiked Amount 1038.000			Recovery	= 69.91%	
34) Phenanthrene-d10	31.17	188	523074	918.355 ng/µl	-0.01
Spiked Amount 1988.500			Recovery	= 46.18%	
64) Chrysene-d12	41.80	240	530631	853.478 ng/µl	0.00
Spiked Amount 2004.000			Recovery	= 42.59%	
74) Benzo(a)pyrene-d12	47.92	264	592008	1081.135 ng/µl	0.00
Spiked Amount 1032.000			Recovery	= 104.76%	
Target Compounds					Qvalue
3) Naphthalene	18.46	128	293901	384.748 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.14	142	200427m	262.380 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.70	152	518258m	691.091 ng/µl	
16) Acenaphthene	25.45	154	201154m	450.057 ng/µl	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	274310m	509.795 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	1032051	1341.223 ng/µl	100
36) Anthracene	31.45	178	628940m	943.247 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8605.D
Acq On : 17 Apr 2004 6:35 pm
Sample : S1424MSD-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:37:14 2004

Vial: 24
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	0.00	234	0	N.D.	d	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	d	
51)	Fluoranthene	36.04	202	1727691m	2158.331	ng/µl	
52)	Pyrene	36.92	202	1922457m	2324.847	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	d	
63)	Benzo(a)anthracene	41.74	228	1022814m	1332.563	ng/µl	
)	Chrysene	41.89	228	1470473	1867.600	ng/µl	99
)	C1-Chrysenes	0.00	242	0	N.D.	d	
67)	C2-Chrysenes	0.00	256	0	N.D.	d	
68)	C3-Chrysenes	0.00	270	0	N.D.	d	
69)	C4-Chrysenes	0.00	284	0	N.D.	d	
70)	Benzo(b)fluoranthene	46.37	252	1483446	1923.623	ng/µl	99
71)	Benzo(j/k)fluoranthene	46.48	252	1403140	1765.679	ng/µl	99
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d	
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d	
75)	Benzo(a)pyrene	48.06	252	1208965m	1584.433	ng/µl	
76)	Perylene	0.00	252	0	N.D.	d	
77)	Indeno(1,2,3-cd)pyrene	54.59	276	996834	1510.984	ng/µl	98
78)	Dibenz(a,h)anthracene	54.70	278	507958m	739.166	ng/µl	
79)	Benzo(g,h,i)perylene	55.79	276	1053618	1323.574	ng/µl	100

✓ 4-26-04 ✓ Y.Rec 4-26-04 ✓ RPD 4-26-04

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8608.D
Acq On : 17 Apr 2004 10:51 pm
Sample : S1426-P(7)
Misc :
M ntegration Params: RTEINT.P
c Time: Apr 20 13:55:25 2004

Vial: 27
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	321062	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	201212	666.095 ng/µl	-0.02
Spiked Amount 2001.000			Recovery =	33.29%	
19) Fluorene-d10	27.35	176	364528	1442.460 ng/µl	-0.01
Spiked Amount 2076.000			Recovery =	69.48%	
34) Phenanthrene-d10	31.17	188	204702	809.286 ng/µl	-0.01
Spiked Amount 1988.500			Recovery =	40.70%	
64) Chrysene-d12	41.79	240	205013	742.530 ng/µl	-0.01
Spiked Amount 2004.000			Recovery =	37.05%	
74) Benzo(a)pyrene-d12	47.92	264	522959	2150.565 ng/µl	0.00
Spiked Amount 2064.000			Recovery =	104.19%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	59003	173.933 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	29250	86.225 ng/µl	96
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.70	152	261499m	785.220 ng/µl	
16) Acenaphthene	25.45	154	23892	120.372 ng/µl	100
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	42382m	177.365 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	857029	2508.003 ng/µl	100
36) Anthracene	31.45	178	294836m	995.701 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

218

Data File : H:\E\DATA\SE0041\W8608.D
Acq On : 17 Apr 2004 10:51 pm
Sample : S1426-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:55:25 2004

Vial: 27
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	0.00	234	0	N.D.	d	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	d	
51)	Fluoranthene	36.04	202	1402364m	3944.984	ng/µl	
52)	Pyrene	36.92	202	1736353m	4728.337	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	d	
63)	Benzo(a)anthracene	41.73	228	587926m	1724.830	ng/µl	
[illegible])	Chrysene	41.89	228	1056440	3021.373	ng/µl	99
[illegible])	C1-Chrysenes	0.00	242	0	N.D.	d	
67)	C2-Chrysenes	0.00	256	0	N.D.	d	
68)	C3-Chrysenes	0.00	270	0	N.D.	d	
69)	C4-Chrysenes	0.00	284	0	N.D.	d	
70)	Benzo(b)fluoranthene	46.37	252	1058248	3090.070	ng/µl	99
71)	Benzo(j/k)fluoranthene	46.46	252	1029657	2917.669	ng/µl	99
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d	
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d	
75)	Benzo(a)pyrene	48.05	252	833878m	2460.907	ng/µl	
76)	Perylene	0.00	252	0	N.D.	d	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	637564m	2176.172	ng/µl	
78)	Dibenz(a,h)anthracene	54.68	278	146111m	478.773	ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	672801	1903.199	ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

219

Data File : H:\E\DATA\SE0041\W8609.D
Acq On : 18 Apr 2004 12:17 am
Sample : S1442-P(4)
Misc :
M ntegration Params: RTEINT.P
c Time: Apr 20 13:37:16 2004

Vial: 28
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	349598	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.38	136	899610	1367.498 ng/µl	-0.02
Spiked Amount 2001.000			Recovery = 68.34%		
19) Fluorene-d10	27.35	176	396831	721.055 ng/µl	-0.01
Spiked Amount 1038.000			Recovery = 69.47%		
34) Phenanthrene-d10	31.17	188	926274	1681.549 ng/µl	-0.01
Spiked Amount 1988.500			Recovery = 84.56%		
64) Chrysene-d12	41.79	240	935395	1555.670 ng/µl	-0.01
Spiked Amount 2004.000			Recovery = 77.63%		
74) Benzo(a)pyrene-d12	47.90	264	544035	1027.310 ng/µl	-0.02
Spiked Amount 1032.000			Recovery = 99.55%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	15236m	20.624 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	4379m	5.928 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	9787	13.495 ng/µl	96
16) Acenaphthene	25.44	154	1001	2.316 ng/µl#	80
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	27.46	166	3547m	6.816 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	55481	74.553 ng/µl	99
36) Anthracene	31.45	178	13271m	20.580 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

220

Data File : H:\E\DATA\SE0041\W8609.D
Acq On : 18 Apr 2004 12:17 am
Sample : S1442-P(4)
Misc :
M ntegration Params: RTEINT.P
c Time: Apr 20 13:37:16 2004

Vial: 28
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.04	202	87642m	113.211 ng/µl	
52)	Pyrene	36.92	202	79482m	99.387 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	35745m	48.154 ng/µl	
[illegible]	Chrysene	41.88	228	42867	56.295 ng/µl	99
[illegible])	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.35	252	45045	60.397 ng/µl	100
71)	Benzo(j/k)fluoranthene	46.45	252	44413m	57.789 ng/µl	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.03	252	42595	57.722 ng/µl	98
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.56	276	37327m	58.504 ng/µl	
78)	Dibenz(a,h)anthracene	54.67	278	6976m	10.496 ng/µl	
79)	Benzo(g,h,i)perylene	55.75	276	39735	51.613 ng/µl	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

221

Data File : H:\E\DATA\SE0041\W8610.D
Acq On : 18 Apr 2004 1:43 am
Sample : S1443-P(4)
Misc :
MM Integration Params: RTEINT.P
Quant Time: Apr 20 13:37:18 2004

Vial: 29
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	346311	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	728833	1118.415 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 55.89%		
19) Fluorene-d10	27.35	176	394607	723.819 ng/µl	-0.01
Spiked Amount 1038.000			Recovery = 69.73%		
34) Phenanthrene-d10	31.18	188	919574	1685.231 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 84.75%		
64) Chrysene-d12	41.79	240	933335m	1566.977 ng/µl	-0.01
Spiked Amount 2004.000			Recovery = 78.19%		
74) Benzo(a)pyrene-d12	47.90	264	544211	1037.397 ng/µl	-0.02
Spiked Amount 1032.000			Recovery = 100.52%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	16455	22.485 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	7060m	9.647 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
[illegible]) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
[illegible]) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	14880m	20.712 ng/µl	
16) Acenaphthene	25.45	154	1440	3.363 ng/µl	87
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	4983m	9.667 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	
35) Phenanthrene	31.26	178	46977	63.725 ng/µl	100
36) Anthracene	31.45	178	17799	27.864 ng/µl	99
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
[illegible]) 2-Methylanthracene	0.00	192	0	N.D. d	
[illegible] 9-Methylphenanthrene	0.00	192	0	N.D. d	
[illegible]2) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

222

Data File : H:\E\DATA\SE0041\W8610.D
Acq On : 18 Apr 2004 1:43 am
Sample : S1443-P(4)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:37:18 2004

Vial: 29
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.04	202	107269m	139.879 ng/µl	
52)	Pyrene	36.92	202	102686m	129.621 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	
63)	Benzo(a)anthracene	41.73	228	41481m	56.411 ng/µl	
)	Chrysene	41.88	228	62378	82.696 ng/µl	99
)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D.	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.36	252	79177	107.170 ng/µl	97
71)	Benzo(j/k)fluoranthene	46.46	252	78499	103.110 ng/µl	97
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.04	252	64188	87.809 ng/µl	97
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.56	276	69133m	109.382 ng/µl	
78)	Dibenz(a,h)anthracene	54.68	278	13559m	20.595 ng/µl	
79)	Benzo(g,h,i)perylene	55.76	276	74903	98.218 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8611.D
Acq On : 18 Apr 2004 3:09 am
Sample : S1449-P(7)
Misc :
M' ntegration Params: RTEINT.P
t Time: Apr 20 13:37:20 2004

Vial: 30
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	330103	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	391778	630.713 ng/µl	-0.01
Spiked Amount 2001.000			Recovery	= 31.52%	
19) Fluorene-d10	27.35	176	374223	720.133 ng/µl	-0.01
Spiked Amount 1038.000			Recovery	= 69.38%	
34) Phenanthrene-d10	31.17	188	454685	874.178 ng/µl	-0.01
Spiked Amount 1988.500			Recovery	= 43.96%	
64) Chrysene-d12	41.79	240	444954	783.713 ng/µl	-0.01
Spiked Amount 2004.000			Recovery	= 39.11%	
74) Benzo(a)pyrene-d12	47.91	264	524830	1049.574 ng/µl	-0.01
Spiked Amount 1032.000			Recovery	= 101.70%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	56445	80.917 ng/µl	100
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	27434	39.328 ng/µl	94
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	63520m	92.756 ng/µl	
16) Acenaphthene	25.45	154	6758	16.558 ng/µl	92
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	20195m	41.100 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	170581	242.757 ng/µl	100
36) Anthracene	31.45	178	75674m	124.281 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
9-Methylphenanthrene	0.00	192	0	N.D. d	
) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

224

Data File : H:\E\DATA\SE0041\W8611.D
Acq On : 18 Apr 2004 3:09 am
Sample : S1449-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:37:20 2004

Vial: 30
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.04	202	391159m	535.115 ng/µl	
52)	Pyrene	36.92	202	381408m	505.091 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.73	228	171367m	244.489 ng/µl	
)	Chrysene	41.89	228	244371m	339.874 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.36	252	317989	451.546 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.45	252	286751	395.146 ng/µl	98
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.05	252	263803	378.601 ng/µl	97
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.59	276	250595m	415.960 ng/µl	
78)	Dibenz(a,h)anthracene	54.70	278	52060m	82.958 ng/µl	
79)	Benzo(g,h,i)perylene	55.79	276	263028m	361.834 ng/µl	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

225

Data File : H:\E\DATA\SE0041\W8612.D
Acq On : 18 Apr 2004 4:34 am
Sample : S1451-P(7)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 13:37:22 2004

Vial: 31
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	333771	1001.000	ng/µl	-0.01
System Monitoring Compounds						
2) Naphthalene-d8	18.39	136	432494	688.609	ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	34.41%		
19) Fluorene-d10	27.36	176	381224	725.543	ng/µl	0.00
Spiked Amount 1038.000			Recovery =	69.90%		
34) Phenanthrene-d10	31.18	188	475531	904.210	ng/µl	0.00
Spiked Amount 1988.500			Recovery =	45.47%		
64) Chrysene-d12	41.79	240	477148m	831.181	ng/µl	-0.01
Spiked Amount 2004.000			Recovery =	41.48%		
74) Benzo(a)pyrene-d12	47.90	264	520319	1029.117	ng/µl	-0.02
Spiked Amount 1032.000			Recovery =	99.72%		

Target Compounds						Qvalue
3) Naphthalene	18.47	128	22286m	31.597	ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D.	d	
5) 2-Methylnaphthalene	21.15	142	7297m	10.346	ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d	
7) C2-Naphthalenes	0.00	156	0	N.D.	d	
) 2-Ethylnaphthalene	0.00	156	0	N.D.	d	
) 1-Ethylnaphthalene	0.00	156	0	N.D.	d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	d	
12) C3-Naphthalenes	0.00	170	0	N.D.	d	
13) C4-Naphthalenes	0.00	184	0	N.D.		
14) Biphenyl	0.00	154	0	N.D.	d	
15) Acenaphthylene	24.71	152	18216m	26.308	ng/µl	
16) Acenaphthene	25.45	154	2177	5.275	ng/µl	88
17) Dibenzofuran	0.00	168	0	N.D.	d	
18) Cadalene	0.00	198	0	N.D.		
20) Fluorene	27.47	166	5714m	11.501	ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D.	d	
22) 2-Methylfluorene	0.00	180	0	N.D.	d	
23) 1-Methylfluorene	0.00	180	0	N.D.	d	
24) C2-Fluorenes	0.00	194	0	N.D.	d	
25) C3-Fluorenes	0.00	208	0	N.D.	d	
26) Dibenzothiophene	0.00	184	0	N.D.	d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D.		
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	d	
35) Phenanthrene	31.26	178	59715	84.048	ng/µl	98
36) Anthracene	31.45	178	20602m	33.463	ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d	
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d	
) 2-Methylanthracene	0.00	192	0	N.D.	d	
) 9-Methylphenanthrene	0.00	192	0	N.D.	d	
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8612.D
Acq On : 18 Apr 2004 4:34 am
Sample : S1451-P(7)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 13:37:22 2004

Vial: 31
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	0.00	234	0	N.D.	d	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	d	
51)	Fluoranthene	36.04	202	121367m	164.208	ng/µl	
52)	Pyrene	36.92	202	118942m	155.782	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.		
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	d	
63)	Benzo(a)anthracene	41.73	228	55994	79.009	ng/µl	75
)	Chrysene	41.88	228	70431	96.880	ng/µl	99
66)	C1-Chrysenes	0.00	242	0	N.D.	d	
67)	C2-Chrysenes	0.00	256	0	N.D.	d	
68)	C3-Chrysenes	0.00	270	0	N.D.	d	
69)	C4-Chrysenes	0.00	284	0	N.D.		
70)	Benzo(b)fluoranthene	46.36	252	82018	115.186	ng/µl	99
71)	Benzo(j/k)fluoranthene	46.46	252	83304	113.532	ng/µl	96
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d	
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d	
75)	Benzo(a)pyrene	48.04	252	75860	107.675	ng/µl	95
76)	Perylene	0.00	252	0	N.D.	d	
77)	Indeno(1,2,3-cd)pyrene	54.57	276	69021m	113.308	ng/µl	
78)	Dibenz(a,h)anthracene	54.68	278	13642	21.500	ng/µl	99
79)	Benzo(g,h,i)perylene	55.76	276	72543m	98.697	ng/µl	

BL 4-26-04

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8613.D
Acq On : 18 Apr 2004 6:00 am
Sample : S1452-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:55:27 2004

Vial: 32
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	330941	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	127032m	407.975 ng/µl	0.00
Spiked Amount 2001.000			Recovery = 20.39%		
19) Fluorene-d10	27.35	176	374526	1437.782 ng/µl	-0.01
Spiked Amount 2076.000			Recovery = 69.26%		
34) Phenanthrene-d10	31.18	188	119556	458.553 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 23.06%		
64) Chrysene-d12	41.80	240	121147	425.680 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 21.24%		
74) Benzo(a)pyrene-d12	47.92	264	534529	2132.527 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 103.32%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	42219m	120.741 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	21186	60.589 ng/µl	96
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	233635m	680.609 ng/µl	
16) Acenaphthene	25.45	154	30286m	148.031 ng/µl	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	47319m	192.115 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	852906	2421.430 ng/µl	100
36) Anthracene	31.45	178	312096m	1022.528 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8613.D
Acq On : 18 Apr 2004 6:00 am
Sample : S1452-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:55:27 2004

Vial: 32
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45) 1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46) C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47) C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48) Dehydroabietin(e)	0.00	256	0	N.D. d	
49) Retene	0.00	234	0	N.D. d	
50) Benzo(b)fluorene	0.00	216	0	N.D. d	
51) Fluoranthene	36.05	202	1837577m	5014.970 ng/µl	
52) Pyrene	36.92	202	1940256m	5125.872 ng/µl	
53) C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54) C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55) C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56) Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57) Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58) Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59) C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60) C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61) C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62) C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63) Benzo(a)anthracene	41.74	228	612238m	1742.537 ng/µl	
) Chrysene	41.89	228	1048688	2909.672 ng/µl	100
) C1-Chrysenes	0.00	242	0	N.D. d	
67) C2-Chrysenes	0.00	256	0	N.D. d	
68) C3-Chrysenes	0.00	270	0	N.D. d	
69) C4-Chrysenes	0.00	284	0	N.D. d	
70) Benzo(b)fluoranthene	46.37	252	1051221	2977.921 ng/µl	99
71) Benzo(j/k)fluoranthene	46.48	252	952644	2618.861 ng/µl	98
72) Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73) Benzo(e)pyrene	0.00	252	0	N.D. d	
75) Benzo(a)pyrene	48.06	252	758798m	2172.487 ng/µl	
76) Perylene	0.00	252	0	N.D. d	
77) Indeno(1,2,3-cd)pyrene	54.58	276	571176m	1891.376 ng/µl	
78) Dibenz(a,h)anthracene	54.69	278	131818m	419.044 ng/µl	
79) Benzo(g,h,i)perylene	55.77	276	578149	1586.630 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8614.D
Acq On : 18 Apr 2004 7:26 am
Sample : S1464-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 20 13:37:24 2004

Vial: 33
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	342191	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	384591	597.272 ng/µl	0.00
Spiked Amount 2001.000			Recovery =	29.85%	
19) Fluorene-d10	27.36	176	385201	715.073 ng/µl	0.00
Spiked Amount 1038.000			Recovery =	68.89%	
34) Phenanthrene-d10	31.18	188	458856	851.034 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	42.80%	
64) Chrysene-d12	41.79	240	463997m	788.384 ng/µl	0.00
Spiked Amount 2004.000			Recovery =	39.34%	
74) Benzo(a)pyrene-d12	47.91	264	544872m	1051.162 ng/µl	0.00
Spiked Amount 1032.000			Recovery =	101.86%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	42697m	59.047 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	18758m	25.941 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	72497m	102.125 ng/µl	
16) Acenaphthene	25.45	154	11307	26.724 ng/µl	95
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	29161m	57.251 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	385215	528.842 ng/µl	100
36) Anthracene	31.45	178	126774m	200.849 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8614.D
Acq On : 18 Apr 2004 7:26 am
Sample : S1464-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:37:24 2004

Vial: 33
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:19:22 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.04	202	1044960m	1379.032 ng/µl	
52)	Pyrene	36.92	202	918658m	1173.585 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.73	228	440260m	605.931 ng/µl	
)	Chrysene	41.89	228	477064m	640.068 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.37	252	531557	728.150 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.46	252	513397	682.476 ng/µl	99
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.05	252	530801m	734.877 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	404274m	647.345 ng/µl	
78)	Dibenz(a,h)anthracene	54.68	278	84915	130.533 ng/µl	99
79)	Benzo(g,h,i)perylene	55.77	276	402850	534.603 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8615.D
Acq On : 18 Apr 2004 8:52 am
Sample : S1467-P(7)
Misc :
M' ntegration Params: RTEINT.P
c Time: Apr 20 17:36:44 2004

Vial: 34
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 17:36:37 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	336695	1001.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	357032	563.523 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	28.16%	
19) Fluorene-d10	27.36	176	383506	723.548 ng/µl	0.00
Spiked Amount 1038.000			Recovery =	69.71%	
34) Phenanthrene-d10	31.18	188	420999	793.567 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	39.91%	
64) Chrysene-d12	41.80	240	426095	735.802 ng/µl	0.00
Spiked Amount 2004.000			Recovery =	36.72%	
74) Benzo(a)pyrene-d12	47.92	264	544495	1067.581 ng/µl	0.00
Spiked Amount 1032.000			Recovery =	103.45%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	45981	64.626 ng/µl	99
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	21046	29.580 ng/µl	95
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	80354m	115.041 ng/µl	
16) Acenaphthene	25.45	154	10546	25.333 ng/µl	96
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	30382m	60.621 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	349540	487.699 ng/µl	100
36) Anthracene	31.45	178	110976m	178.690 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

232

Data File : H:\E\DATA\SE0041\W8615.D
Acq On : 18 Apr 2004 8:52 am
Sample : S1467-P(7)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 17:36:44 2004

Vial: 34
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 17:36:37 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.05	202	923538m	1238.687 ng/µl	
52)	Pyrene	36.92	202	824439m	1070.412 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.74	228	385178m	538.775 ng/µl	
)	Chrysene	41.89	228	471953m	643.547 ng/µl	
)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.37	252	535424	745.420 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.47	252	547213	739.302 ng/µl	99
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.06	252	510674m	718.553 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.59	276	428056m	696.614 ng/µl	
78)	Dibenz(a,h)anthracene	54.70	278	83566m	130.557 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	422227	569.463 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8616.D
Acq On : 18 Apr 2004 10:18 am
Sample : S1473-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:55:29 2004

Vial: 35
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	322160	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	89745m	296.081 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	14.80%	
19) Fluorene-d10	27.36	176	367021	1447.375 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	69.72%	
34) Phenanthrene-d10	31.18	188	94829	373.627 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	18.79%	
64) Chrysene-d12	41.80	240	93607m	337.876 ng/µl	0.00
Spiked Amount 2004.000			Recovery =	16.86%	
74) Benzo(a)pyrene-d12	47.92	264	518547	2125.153 ng/µl	0.00
Spiked Amount 2064.000			Recovery =	102.96%	

Target Compounds					Qvalue
3) Naphthalene	18.47	128	32953m	96.810 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	17503m	51.421 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	189658m	567.558 ng/µl	
16) Acenaphthene	25.45	154	19581	98.316 ng/µl	98
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	35197m	146.794 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.27	178	750410	2188.509 ng/µl	99
36) Anthracene	31.45	178	217839m	733.165 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

234

Data File : H:\E\DATA\SE0041\W8616.D
Acq On : 18 Apr 2004 10:18 am
Sample : S1473-P(7)
Misc :
M^ ^ntegration Params: RTEINT.P
t Time: Apr 20 13:55:29 2004

Vial: 35
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	0.00	234	0	N.D.	d	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	d	
51)	Fluoranthene	36.05	202	1593297m	4466.820	ng/µl	
52)	Pyrene	36.93	202	1478238m	4011.733	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	d	
63)	Benzo(a)anthracene	41.74	228	446221m	1304.640	ng/µl	
)	Chrysene	41.89	228	754634	2150.865	ng/µl	100
)	C1-Chrysenes	0.00	242	0	N.D.	d	
67)	C2-Chrysenes	0.00	256	0	N.D.	d	
68)	C3-Chrysenes	0.00	270	0	N.D.	d	
69)	C4-Chrysenes	0.00	284	0	N.D.	d	
70)	Benzo(b)fluoranthene	46.37	252	717350	2087.513	ng/µl	99
71)	Benzo(j/k)fluoranthene	46.47	252	671630	1896.666	ng/µl	98
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d	
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d	
75)	Benzo(a)pyrene	48.06	252	533067m	1567.804	ng/µl	
76)	Perylene	0.00	252	0	N.D.	d	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	424586m	1444.283	ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	96340m	314.609	ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	436787	1231.359	ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8619.D
Acq On : 18 Apr 2004 2:33 pm
Sample : S1476-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:55:31 2004

Vial: 38
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	315510	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	119556	402.745 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 20.13%		
19) Fluorene-d10	27.35	176	356959	1437.365 ng/µl	-0.01
Spiked Amount 2076.000			Recovery = 69.24%		
34) Phenanthrene-d10	31.17	188	113673	457.313 ng/µl	-0.01
Spiked Amount 1988.500			Recovery = 23.00%		
64) Chrysene-d12	41.79	240	112426m	414.357 ng/µl	-0.01
Spiked Amount 2004.000			Recovery = 20.68%		
74) Benzo(a)pyrene-d12	47.92	264	503032	2105.020 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 101.99%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	44381m	133.131 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	22012	66.030 ng/µl	97
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	233940m	714.828 ng/µl	
16) Acenaphthene	25.45	154	35727m	183.165 ng/µl	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	53145m	226.321 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	1017322	3029.470 ng/µl	100
36) Anthracene	31.45	178	281914m	968.815 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8619.D
Acq On : 18 Apr 2004 2:33 pm
Sample : S1476-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:55:31 2004

Vial: 38
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	0.00	234	0	N.D.	d	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	d	
51)	Fluoranthene	36.05	202	1813576m	5191.538	ng/µl	
52)	Pyrene	36.92	202	1780593m	4934.133	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	d	
63)	Benzo(a)anthracene	41.73	228	593732m	1772.514	ng/µl	
)	Chrysene	41.89	228	975513	2839.019	ng/µl	100
)	C1-Chrysenes	0.00	242	0	N.D.	d	
67)	C2-Chrysenes	0.00	256	0	N.D.	d	
68)	C3-Chrysenes	0.00	270	0	N.D.	d	
69)	C4-Chrysenes	0.00	284	0	N.D.	d	
70)	Benzo(b)fluoranthene	46.37	252	855857	2543.067	ng/µl	99
71)	Benzo(j/k)fluoranthene	46.47	252	883560	2547.741	ng/µl	98
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d	
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d	
75)	Benzo(a)pyrene	48.05	252	707278m	2124.020	ng/µl	
76)	Perylene	0.00	252	0	N.D.	d	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	547407m	1901.322	ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	127413m	424.851	ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	571170	1644.140	ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8620.D
Acq On : 18 Apr 2004 3:58 pm
Sample : S1479-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:55:33 2004

Vial: 39
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	319476	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	128337	426.958 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 21.34%		
19) Fluorene-d10	27.36	176	362532	1441.683 ng/µl	0.00
Spiked Amount 2076.000			Recovery = 69.45%		
34) Phenanthrene-d10	31.18	188	113867	452.406 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 22.75%		
64) Chrysene-d12	41.80	240	113619	413.556 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 20.64%		
74) Benzo(a)pyrene-d12	47.92	264	508701	2102.317 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 101.86%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	68055	201.613 ng/µl	99
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	33284	98.604 ng/µl	97
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	168484m	508.430 ng/µl	
16) Acenaphthene	25.45	154	128107m	648.627 ng/µl	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.46	166	130110m	547.202 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.27	178	1903258	5597.328 ng/µl	100
36) Anthracene	31.45	178	449216m	1524.595 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8620.D
Acq On : 18 Apr 2004 3:58 pm
Sample : S1479-P(7)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 13:55:33 2004

Vial: 39
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	0.00	234	0	N.D.	d	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	d	
51)	Fluoranthene	36.05	202	2894539m	8183.037	ng/µl	
52)	Pyrene	36.93	202	2670651m	7308.667	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	d	
63)	Benzo(a)anthracene	41.74	228	1191200m	3512.035	ng/µl	
)	Chrysene	41.89	228	1557092	4475.323	ng/µl	100
)	C1-Chrysenes	0.00	242	0	N.D.	d	
67)	C2-Chrysenes	0.00	256	0	N.D.	d	
68)	C3-Chrysenes	0.00	270	0	N.D.	d	
69)	C4-Chrysenes	0.00	284	0	N.D.	d	
70)	Benzo(b)fluoranthene	46.38	252	1323670	3884.286	ng/µl	98
71)	Benzo(j/k)fluoranthene	46.48	252	1269774	3615.934	ng/µl	98
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d	
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d	
75)	Benzo(a)pyrene	48.06	252	1157443m	3432.756	ng/µl	
76)	Perylene	0.00	252	0	N.D.	d	
77)	Indeno(1,2,3-cd)pyrene	54.59	276	790949m	2713.118	ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	195432m	643.566	ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	774168	2200.814	ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8621.D
Acq On : 18 Apr 2004 5:22 pm
Sample : S1490-P(7)
Misc :
M ntegration Params: RTEINT.P
t Time: Apr 20 13:55:35 2004

Vial: 40
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	316535	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	111290	373.685 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 18.67%		
19) Fluorene-d10	27.35	176	355986	1428.805 ng/µl	-0.01
Spiked Amount 2076.000			Recovery = 68.82%		
34) Phenanthrene-d10	31.18	188	107720	431.960 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 21.72%		
64) Chrysene-d12	41.80	240	109025	400.521 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 19.99%		
74) Benzo(a)pyrene-d12	47.92	264	504853	2105.799 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 102.03%		

Target Compounds					Qvalue
3) Naphthalene	18.47	128	39782	118.949 ng/µl	99
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	19876	59.430 ng/µl	94
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	225513m	686.847 ng/µl	
16) Acenaphthene	25.45	154	19256	98.402 ng/µl	99
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	35708m	151.572 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	832674	2471.580 ng/µl	100
36) Anthracene	31.45	178	226819m	776.954 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8621.D
Acq On : 18 Apr 2004 5:22 pm
Sample : S1490-P(7)
Misc :
M[illegible] Integration Params: RTEINT.P
[illegible]t Time: Apr 20 13:55:35 2004

Vial: 40
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.05	202	1271437m	3627.826 ng/µl	
52)	Pyrene	36.92	202	1439357m	3975.631 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.74	228	427103m	1270.935 ng/µl	
[illegible])	Chrysene	41.89	228	774518	2246.767 ng/µl	100
[illegible])	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.37	252	722541	2139.984 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.47	252	724047	2081.025 ng/µl	98
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.06	252	591068m	1769.283 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	467529m	1618.621 ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	107740m	358.089 ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	499473	1433.101 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8622.D
Acq On : 18 Apr 2004 6:47 pm
Sample : S1494-P(7)
Misc :
M ntegration Params: RTEINT.P
c Time: Apr 20 13:55:37 2004

Vial: 41
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	309122	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	47935m	164.814 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	8.24%	
19) Fluorene-d10	27.36	176	346208	1422.882 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	68.54%	
34) Phenanthrene-d10	31.18	188	41331	169.713 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	8.53%	
64) Chrysene-d12	41.79	240	41505	156.132 ng/µl	-0.01
Spiked Amount 2004.000			Recovery =	7.79%	
74) Benzo(a)pyrene-d12	47.91	264	482822	2062.201 ng/µl	-0.01
Spiked Amount 2064.000			Recovery =	99.91%	
Target Compounds					Qvalue
3) Naphthalene	18.47	128	22936m	70.224 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D.	d
5) 2-Methylnaphthalene	21.15	142	11728m	35.908 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D.	d
7) C2-Naphthalenes	0.00	156	0	N.D.	d
) 2-Ethylnaphthalene	0.00	156	0	N.D.	d
) 1-Ethylnaphthalene	0.00	156	0	N.D.	d
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D.	d
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D.	d
12) C3-Naphthalenes	0.00	170	0	N.D.	d
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D.	d
15) Acenaphthylene	24.71	152	170996m	533.294 ng/µl	
16) Acenaphthene	25.45	154	13983m	73.170 ng/µl	
17) Dibenzofuran	0.00	168	0	N.D.	d
18) Cadalene	0.00	198	0	N.D.	
20) Fluorene	27.47	166	32647m	141.902 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D.	d
22) 2-Methylfluorene	0.00	180	0	N.D.	d
23) 1-Methylfluorene	0.00	180	0	N.D.	d
24) C2-Fluorenes	0.00	194	0	N.D.	d
25) C3-Fluorenes	0.00	208	0	N.D.	d
26) Dibenzothiophene	0.00	184	0	N.D.	d
27) C1-Dibenzothiophenes	0.00	198	0	N.D.	d
28) 4-Methyldibenzothiophene	0.00	198	0	N.D.	d
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D.	d
30) 1-Methyldibenzothiophene	0.00	198	0	N.D.	d
31) C2-Dibenzothiophenes	0.00	212	0	N.D.	d
32) C3-Dibenzothiophenes	0.00	226	0	N.D.	d
33) C4-Dibenzothiophenes	0.00	240	0	N.D.	d
35) Phenanthrene	31.26	178	756934	2300.644 ng/µl	100
36) Anthracene	31.45	178	155865m	546.709 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D.	d
38) 3-Methylphenanthrene	0.00	192	0	N.D.	d
39) 2/4-Methylphenanthrene	0.00	192	0	N.D.	d
40) 2-Methylanthracene	0.00	192	0	N.D.	d
) 9-Methylphenanthrene	0.00	192	0	N.D.	d
42) 1-Methylphenanthrene	0.00	192	0	N.D.	d
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D.	d
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D.	d

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8622.D
Acq On : 18 Apr 2004 6:47 pm
Sample : S1494-P(7)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 13:55:37 2004

Vial: 41
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.04	202	1114114m	3255.166 ng/µl	
52)	Pyrene	36.92	202	1070076m	3026.523 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.73	228	368963m	1124.256 ng/µl	
)	Chrysene	41.89	228	556177	1652.081 ng/µl	99
66)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.36	252	408876	1240.028 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.45	252	431997m	1271.403 ng/µl	
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.04	252	400688m	1228.169 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.56	276	273215m	968.574 ng/µl	
78)	Dibenz(a,h)anthracene	54.68	278	66348m	225.805 ng/µl	
79)	Benzo(g,h,i)perylene	55.76	276	294093	864.055 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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Data File : H:\E\DATA\SE0041\W8623.D
Acq On : 18 Apr 2004 8:12 pm
Sample : S1502-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 20 13:55:39 2004

Vial: 42
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	307756	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	99767m	344.550 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 17.22%		
19) Fluorene-d10	27.36	176	350625	1447.432 ng/µl	0.00
Spiked Amount 2076.000			Recovery = 69.72%		
34) Phenanthrene-d10	31.18	188	99414	410.025 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 20.62%		
64) Chrysene-d12	41.80	240	98616m	372.617 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 18.59%		
74) Benzo(a)pyrene-d12	47.92	264	487921	2093.229 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 101.42%		
Target Compounds					Qvalue
3) Naphthalene	18.47	128	26937m	82.840 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	15639m	48.095 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	238874m	748.295 ng/µl	
16) Acenaphthene	25.45	154	13394	70.399 ng/µl	99
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	25552m	111.556 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.26	178	770108	2351.075 ng/µl	100
36) Anthracene	31.45	178	214673m	756.325 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8623.D
Acq On : 18 Apr 2004 8:12 pm
Sample : S1502-P(7)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 13:55:39 2004

Vial: 42
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.05	202	1399813m	4108.061 ng/µl	
52)	Pyrene	36.92	202	1322282m	3756.444 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.74	228	365472m	1118.562 ng/µl	
)	Chrysene	41.89	228	693905	2070.341 ng/µl	100
)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.37	252	627529	1911.600 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.47	252	625230	1848.271 ng/µl	99
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.05	252	506743m	1560.137 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.59	276	408403m	1454.256 ng/µl	
78)	Dibenz(a,h)anthracene	54.70	278	97013m	331.634 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	452968	1336.742 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8624.D
Acq On : 18 Apr 2004 9:37 pm
Sample : S1507-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 20 13:55:41 2004

Vial: 43
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	303893	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	119532	418.056 ng/µl	-0.01
Spiked Amount 2001.000			Recovery = 20.89%		
19) Fluorene-d10	27.36	176	342147	1430.388 ng/µl	0.00
Spiked Amount 2076.000			Recovery = 68.90%		
34) Phenanthrene-d10	31.18	188	110620	462.042 ng/µl	0.00
Spiked Amount 1988.500			Recovery = 23.24%		
64) Chrysene-d12	41.80	240	109865m	420.397 ng/µl	0.00
Spiked Amount 2004.000			Recovery = 20.98%		
74) Benzo(a)pyrene-d12	47.92	264	476439	2069.952 ng/µl	0.00
Spiked Amount 2064.000			Recovery = 100.29%		
Target Compounds					Qvalue
3) Naphthalene	18.47	128	53820	167.617 ng/µl	99
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	27619m	86.017 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	516163m	1637.482 ng/µl	
16) Acenaphthene	25.45	154	29981m	159.583 ng/µl	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	96929m	428.557 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.27	178	2408891	7447.625 ng/µl	100
36) Anthracene	31.45	178	473892m	1690.815 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
) 2-Methylanthracene	0.00	192	0	N.D. d	
) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8624.D
Acq On : 18 Apr 2004 9:37 pm
Sample : S1507-P(7)
Misc :
M ntegration Params: RTEINT.P
.t Time: Apr 20 13:55:41 2004

Vial: 43
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	0.00	234	0	N.D.	d	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	d	
51)	Fluoranthene	36.05	202	3053562m	9075.267	ng/µl	
52)	Pyrene	36.93	202	3086068m	8878.592	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	d	
63)	Benzo(a)anthracene	41.74	228	1176758m	3647.362	ng/µl	
[illegible])	Chrysene	41.90	228	1859534	5618.647	ng/µl	100
[illegible])	C1-Chrysenes	0.00	242	0	N.D.	d	
67)	C2-Chrysenes	0.00	256	0	N.D.	d	
68)	C3-Chrysenes	0.00	270	0	N.D.	d	
69)	C4-Chrysenes	0.00	284	0	N.D.	d	
70)	Benzo(b)fluoranthene	46.38	252	1607459	4958.941	ng/µl	99
71)	Benzo(j/k)fluoranthene	46.48	252	1619882	4849.478	ng/µl	99
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d	
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d	
75)	Benzo(a)pyrene	48.06	252	1414901m	4411.507	ng/µl	
76)	Perylene	0.00	252	0	N.D.	d	
77)	Indeno(1,2,3-cd)pyrene	54.59	276	950276m	3426.790	ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	245860m	851.144	ng/µl	
79)	Benzo(g,h,i)perylene	55.79	276	1002365	2995.654	ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8625.D
Acq On : 18 Apr 2004 11:03 pm
Sample : S1510-P(7)
Misc :
Integration Params: RTEINT.P
Quant Time: Apr 20 13:55:43 2004

Vial: 44
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	293297	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	43771m	158.617 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	7.93%	
19) Fluorene-d10	27.36	176	332919	1442.091 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	69.46%	
34) Phenanthrene-d10	31.18	188	38410m	166.229 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	8.36%	
64) Chrysene-d12	41.80	240	38263m	151.702 ng/µl	0.00
Spiked Amount 2004.000			Recovery =	7.57%	
74) Benzo(a)pyrene-d12	47.93	264	463845	2088.041 ng/µl	0.01
Spiked Amount 2064.000			Recovery =	101.16%	

Target Compounds					Qvalue
3) Naphthalene	18.47	128	61250m	197.649 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	21602	69.708 ng/µl	96
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	35123m	115.450 ng/µl	
16) Acenaphthene	25.45	154	82554m	455.293 ng/µl	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	72067m	330.145 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.27	178	958057	3069.058 ng/µl	99
36) Anthracene	31.45	178	174024m	643.338 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8625.D
Acq On : 18 Apr 2004 11:03 pm
Sample : S1510-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 20 13:55:43 2004

Vial: 44
Operator: JAR
Inst : Inst. E
Multiplr: 1.00
Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.05	202	1232832m	3796.380 ng/µl	
52)	Pyrene	36.92	202	1114595m	3322.529 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D. d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.74	228	488757m	1569.632 ng/µl	
)	Chrysene	41.89	228	581691	1821.097 ng/µl	100
)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D. d	
70)	Benzo(b)fluoranthene	46.37	252	478668	1530.018 ng/µl	99
71)	Benzo(j/k)fluoranthene	46.47	252	492300	1527.055 ng/µl	97
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.06	252	440453m	1422.897 ng/µl	
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.58	276	288378m	1077.489 ng/µl	
78)	Dibenz(a,h)anthracene	54.69	278	73610m	264.037 ng/µl	
79)	Benzo(g,h,i)perylene	55.77	276	276047	854.795 ng/µl	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8626.D
Acq On : 19 Apr 2004 12:28 am
Sample : S1511-P(7)
Misc :
M[illegible] ntegration Params: RTEINT.P
[illegible] Time: Apr 20 13:55:45 2004

Vial: 45
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	302516	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	39813m	139.878 ng/µl	0.00
Spiked Amount 2001.000			Recovery =	6.99%	
19) Fluorene-d10	27.36	176	342394	1437.936 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	69.26%	
34) Phenanthrene-d10	31.18	188	35675m	149.687 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	7.53% ✓ BL 4.26.04	
64) Chrysene-d12	41.80	240	35873m	137.892 ng/µl	0.00
Spiked Amount 2004.000			Recovery =	6.88% ✓	
74) Benzo(a)pyrene-d12	47.93	264	464811	2028.625 ng/µl	0.01
Spiked Amount 2064.000			Recovery =	98.29%	

Target Compounds					Qvalue
3) Naphthalene	18.47	128	6472m	20.248 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	4302m	13.459 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
[illegible] 2-Ethylnaphthalene	0.00	156	0	N.D. d	
[illegible] 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	22413m	71.427 ng/µl	
16) Acenaphthene	25.45	154	7610	40.691 ng/µl ✓ BL 4.26.04	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	7879m	34.994 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.27	178	92773	288.134 ng/µl	100
36) Anthracene	31.46	178	47648m	170.779 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
[illegible]0) 2-Methylanthracene	0.00	192	0	N.D. d	
9-Methylphenanthrene	0.00	192	0	N.D. d	
[illegible]) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8626.D
Acq On : 19 Apr 2004 12:28 am
Sample : S1511-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 20 13:55:45 2004

Vial: 45
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D. d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D. d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D. d	
48)	Dehydroabietin(e)	0.00	256	0	N.D. d	
49)	Retene	0.00	234	0	N.D. d	
50)	Benzo(b)fluorene	0.00	216	0	N.D. d	
51)	Fluoranthene	36.05	202	557709m	1665.071 ng/µl	
52)	Pyrene	36.92	202	448070m	1294.961 ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D. d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D. d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D. d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D. d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D. d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D. d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D. d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D. d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D. d	
63)	Benzo(a)anthracene	41.74	228	100070m	311.579 ng/µl	
)	Chrysene	41.89	228	193734	588.039 ng/µl	99
)	C1-Chrysenes	0.00	242	0	N.D. d	
67)	C2-Chrysenes	0.00	256	0	N.D. d	
68)	C3-Chrysenes	0.00	270	0	N.D. d	
69)	C4-Chrysenes	0.00	284	0	N.D.	
70)	Benzo(b)fluoranthene	46.38	252	135642	420.354 ng/µl	98
71)	Benzo(j/k)fluoranthene	46.48	252	134285	403.842 ng/µl	95
72)	Benzo(a)fluoranthene	0.00	252	0	N.D. d	
73)	Benzo(e)pyrene	0.00	252	0	N.D. d	
75)	Benzo(a)pyrene	48.06	252	75342	235.977 ng/µl	98
76)	Perylene	0.00	252	0	N.D. d	
77)	Indeno(1,2,3-cd)pyrene	54.59	276	60152m	217.901 ng/µl	
78)	Dibenz(a,h)anthracene	54.70	278	14002m	48.694 ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	60352	181.188 ng/µl	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8627.D
Acq On : 19 Apr 2004 1:54 am
Sample : S1511DUP-P(7)
Misc :
Integration Params: RTEINT.P
Proc Time: Apr 20 13:55:47 2004

Vial: 46
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Acenaphthene-d10	25.32	164	295673	2002.000 ng/µl	-0.01
System Monitoring Compounds					
2) Naphthalene-d8	18.39	136	40454m	145.419 ng/µl	-0.01
Spiked Amount 2001.000			Recovery =	7.27%	
19) Fluorene-d10	27.36	176	338038	1452.498 ng/µl	0.00
Spiked Amount 2076.000			Recovery =	69.97%	
34) Phenanthrene-d10	31.18	188	37277m	160.029 ng/µl	0.00
Spiked Amount 1988.500			Recovery =	8.05%	
64) Chrysene-d12	41.80	240	37686m	148.214 ng/µl	0.00
Spiked Amount 2004.000			Recovery =	7.40%	
74) Benzo(a)pyrene-d12	47.93	264	462578	2065.604 ng/µl	0.01
Spiked Amount 2064.000			Recovery =	100.08%	
Target Compounds					Qvalue
3) Naphthalene	18.48	128	7254m	23.220 ng/µl	
4) C1-Naphthalenes	0.00	142	0	N.D. d	
5) 2-Methylnaphthalene	21.15	142	4798m	15.358 ng/µl	
6) 1-Methylnaphthalene	0.00	142	0	N.D. d	
7) C2-Naphthalenes	0.00	156	0	N.D. d	
8) 2-Ethylnaphthalene	0.00	156	0	N.D. d	
9) 1-Ethylnaphthalene	0.00	156	0	N.D. d	
10) 2,6-Dimethylnaphthalene	0.00	156	0	N.D. d	
11) 1,5-Dimethylnaphthalene	0.00	156	0	N.D. d	
12) C3-Naphthalenes	0.00	170	0	N.D. d	
13) C4-Naphthalenes	0.00	184	0	N.D.	
14) Biphenyl	0.00	154	0	N.D. d	
15) Acenaphthylene	24.71	152	121213m	395.228 ng/µl	
16) Acenaphthene	25.45	154	10639m	58.204 ng/µl	
17) Dibenzofuran	0.00	168	0	N.D. d	
18) Cadalene	0.00	198	0	N.D. d	
20) Fluorene	27.47	166	13613m	61.861 ng/µl	
21) C1-Fluorenes	0.00	180	0	N.D. d	
22) 2-Methylfluorene	0.00	180	0	N.D. d	
23) 1-Methylfluorene	0.00	180	0	N.D. d	
24) C2-Fluorenes	0.00	194	0	N.D. d	
25) C3-Fluorenes	0.00	208	0	N.D. d	
26) Dibenzothiophene	0.00	184	0	N.D. d	
27) C1-Dibenzothiophenes	0.00	198	0	N.D. d	
28) 4-Methyldibenzothiophene	0.00	198	0	N.D. d	
29) 2/3-Methyldibenzothiophene	0.00	198	0	N.D. d	
30) 1-Methyldibenzothiophene	0.00	198	0	N.D. d	
31) C2-Dibenzothiophenes	0.00	212	0	N.D. d	
32) C3-Dibenzothiophenes	0.00	226	0	N.D. d	
33) C4-Dibenzothiophenes	0.00	240	0	N.D. d	
35) Phenanthrene	31.27	178	137452	436.778 ng/µl	98
36) Anthracene	31.45	178	175770m	644.571 ng/µl	
37) C1-Phenanthrenes/Anthracen	0.00	192	0	N.D. d	
38) 3-Methylphenanthrene	0.00	192	0	N.D. d	
39) 2/4-Methylphenanthrene	0.00	192	0	N.D. d	
40) 2-Methylanthracene	0.00	192	0	N.D. d	
41) 9-Methylphenanthrene	0.00	192	0	N.D. d	
42) 1-Methylphenanthrene	0.00	192	0	N.D. d	
43) C2-Phenanthrenes/Anthracen	0.00	206	0	N.D. d	
44) 2,7-Dimethylphenanthrene	0.00	206	0	N.D. d	

(#) = qualifier out of range (m) = manual integration

Quantitation Report (QT Reviewed)

Data File : H:\E\DATA\SE0041\W8627.D
Acq On : 19 Apr 2004 1:54 am
Sample : S1511DUP-P(7)
Misc :
MS Integration Params: RTEINT.P
Quant Time: Apr 20 13:55:47 2004

Vial: 46
Operator: JAR
Inst : Inst. E
Multiplr: 1.00

Quant Results File: ME0041.RES

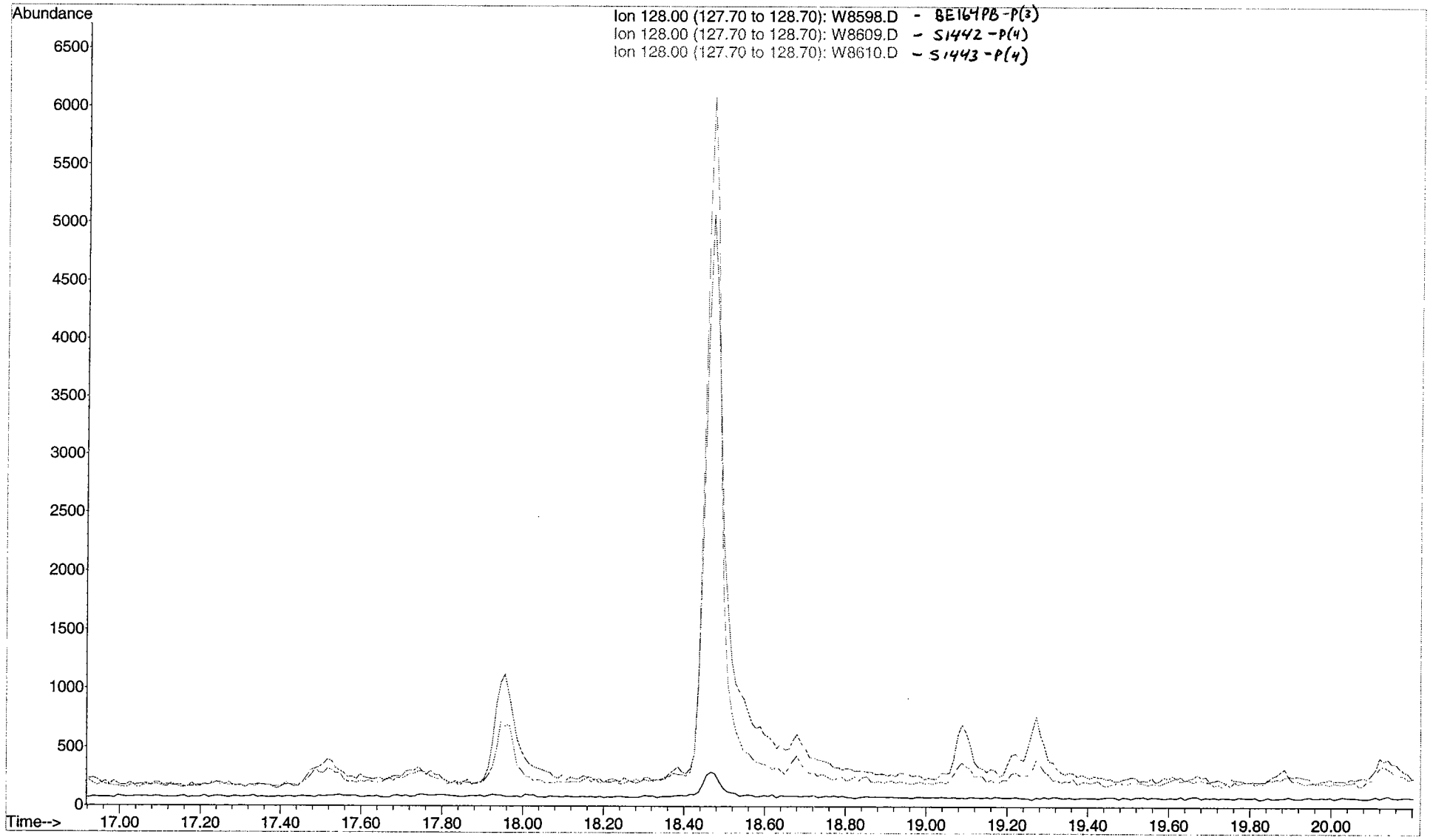
Quant Method : H:\E\DATA\ME0041.M (RTE Integrator)
Title : GD33-GC39 Tier 1 & 3
Last Update : Tue Apr 20 13:54:23 2004
Response via : Initial Calibration
DataAcq Meth : PYRSIM0

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45)	1,7-Dimethylphenanthrene	0.00	206	0	N.D.	d	
46)	C3-Phenanthrenes/Anthracen	0.00	220	0	N.D.	d	
47)	C4-Phenanthrenes/Anthracen	0.00	234	0	N.D.	d	
48)	Dehydroabietin(e)	0.00	256	0	N.D.	d	
49)	Retene	0.00	234	0	N.D.	d	
50)	Benzo(b)fluorene	0.00	216	0	N.D.	d	
51)	Fluoranthene	36.05	202	1684557m	5145.735	ng/µl	
52)	Pyrene	36.93	202	1425230m	4214.369	ng/µl	
53)	C1-Fluoranthenes/Pyrenes	0.00	216	0	N.D.	d	
54)	C2-Fluoranthenes/Pyrenes	0.00	230	0	N.D.	d	
55)	C3-Fluoranthenes/Pyrenes	0.00	244	0	N.D.	d	
56)	Benzo(b)naphtho(2,1-d)thio	0.00	234	0	N.D.	d	
57)	Benzo(b)naphtho(1,2-d)thio	0.00	234	0	N.D.	d	
58)	Benzo(b)naphtho(2,3-d)thio	0.00	234	0	N.D.	d	
59)	C1-Benzo(b)naphthothiophen	0.00	248	0	N.D.	d	
60)	C2-Benzo(b)naphthothiophen	0.00	262	0	N.D.	d	
61)	C3-Benzo(b)naphthothiophen	0.00	276	0	N.D.	d	
62)	C4-Benzo(b)naphthothiophen	0.00	290	0	N.D.	d	
63)	Benzo(a)anthracene	41.75	228	1129879m	3599.421	ng/µl	
)	Chrysene	41.90	228	1181792	3670.099	ng/µl	100
)	C1-Chrysenes	0.00	242	0	N.D.	d	
67)	C2-Chrysenes	0.00	256	0	N.D.	d	
68)	C3-Chrysenes	0.00	270	0	N.D.	d	
69)	C4-Chrysenes	0.00	284	0	N.D.	d	
70)	Benzo(b)fluoranthene	46.38	252	799661	2535.502	ng/µl	99
71)	Benzo(j/k)fluoranthene	46.48	252	764866	2353.456	ng/µl	98
72)	Benzo(a)fluoranthene	0.00	252	0	N.D.	d	
73)	Benzo(e)pyrene	0.00	252	0	N.D.	d	
75)	Benzo(a)pyrene	48.07	252	507528m	1626.410	ng/µl	
76)	Perylene	0.00	252	0	N.D.	d	
77)	Indeno(1,2,3-cd)pyrene	54.59	276	290866m	1078.052	ng/µl	
78)	Dibenz(a,h)anthracene	54.70	278	73504m	261.538	ng/µl	
79)	Benzo(g,h,i)perylene	55.78	276	249178	765.393	ng/µl	99

✓ 4-26-04 ✓ RPD 4-26-04

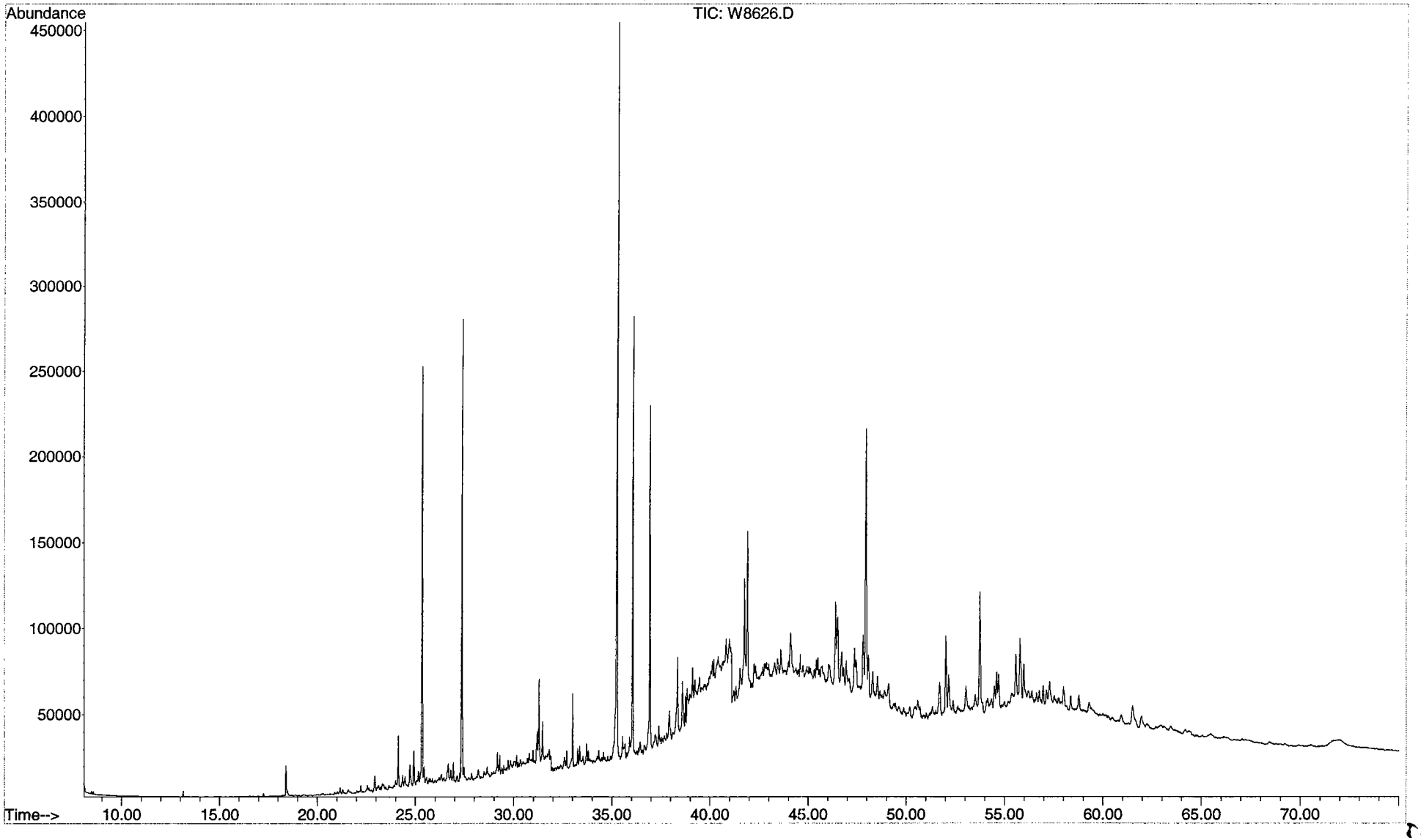
(#) = qualifier out of range (m) = manual integration (+) = signals summed

File : H:\E\DATA\SE0041\W8598.D
Operator : JAR
Acquired : 17 Apr 2004 8:37 am using AcqMethod PYRSIM0
Instrument : Inst. E
Sample Name: BE164PB-P(3)
Misc Info :
Vial Number: 17

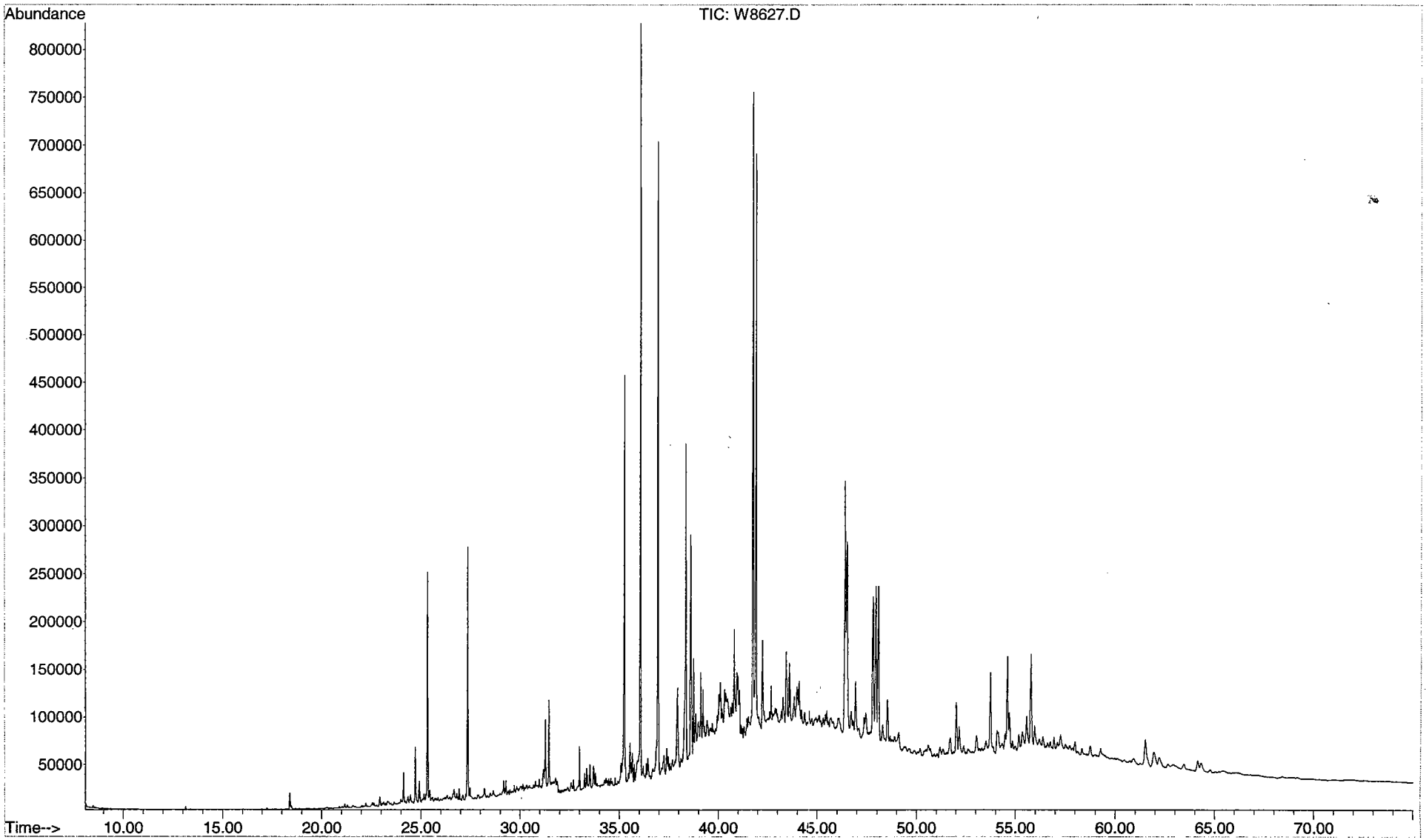


253

File : H:\E\DATA\SE0041\W8626.D
Operator : JAR
Acquired : 19 Apr 2004 12:28 am using AcqMethod PYRSIM0
Instrument : Inst. E
Sample Name: S1511-P(7)
Misc Info :
Vial Number: 45



File : H:\E\DATA\SE0041\W8627.D
Operator : JAR
Acquired : 19 Apr 2004 1:54 am using AcqMethod PYRSIM0
Instrument : Inst. E
Sample Name: S1511DUP-P(7)
Misc Info :
Vial Number: 46



ENVIRONMENTAL
Data Services, Inc.

February 25, 2003

Mr. Dan Hinckley
EA Engineering, Science, and Technology, Inc.
15 Loveton Circle
Sparks, Maryland 21152

Re: Transmittal of Completed Data Validation Reports for NCBC Davisville, Site 16, Allen Harbor, SDGs SED16A, SED16B, 04-0113, 04-0117, 04-0118 and 2004-03-17

Dear Mr. Hinckley:

Environmental Data Services, Inc. (EDS) is pleased to submit the data validation reports with attached completed Region I worksheets and annotated Form Is for the above referenced SDGs.

Please contact me at (603) 226-0118 or via email at nweaver@env-data.com if you have any questions.

Sincerely,
Environmental Data Services, Inc.

Nancy Weaver
Senior Chemist

Enclosed

6B Hills Avenue · Concord, NH 03301 · Telephone: 603-226-0118 · Fax: 603-226-0128 · www.env-data.com

ENVIRONMENTAL
Data Services, Inc.

ORGANIC DATA VALIDATION REPORT
USEPA REGION I - TIER III

SDG No.:	SED16A/040222, 040233
Laboratory:	Ceimic Corporation, Narragansett, Rhode Island
Site:	NCBC Davisville, Allen Harbor, Site 16
Date:	June 2, 2004
Samples:	
VOC:	16/Soil/AH-08, AH-11, AH-DUP01, AH-06, DUP-03, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-28, AH-49 3/Aqueous/AH-TB01, TB16-03, TB16-04
Pesticide:	16/Soil/AH-08, AH-11, AH-DUP01, AH-06, DUP-03, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-28, AH-49
PCB:	16/Soil/AH-08, AH-11, AH-DUP01, AH-06, DUP-03, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-28, AH-49

A Tier III validation was performed on the organic analytical data for sixteen soil samples and three aqueous blank samples collected by EA Engineering, Science, & Technology, Inc. at Allen Harbor, Site 16, NCBC Davisville. The samples were analyzed under USEPA SW-846 Methods 8260B, 8081 and 8082 for volatile organic compounds (VOC), pesticide compounds and PCB compounds, respectively. The data were evaluated as Tier III in accordance with the "Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses" dated December 1996 and were based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues.
- * Data Completeness.
- * Preservation and Technical Holding Times.
- * Gas Chromatograph/Mass Spectrometry (GC/MS) and GC/Electron Capture Detector (GC/ECD) Instrument Performance Checks.
- Initial and Continuing Calibration.
- Blanks.
- Surrogate Compounds.
- * Internal Standards.
- Matrix Spike (MS)/Matrix Spike Duplicates (MSD).
- Field Duplicates.
- NA Sensitivity Check (Method Detection Limit Study or Laboratory Fortified Blank).
- Laboratory Control Sample.
- Target Compound Identification.
- * Sample Quantitation and Reported Quantitation Limits.
- NA Tentatively Identified Compounds (TICs).
- NA SVOC and P/PCB Cleanup.
- * System Performance.

* = All criteria were met for this parameter.
NA = Not Applicable.

Overall Evaluation of Data and Potential Usability Issues

VOC:

VOC sample results were qualified for the following:

- Methylene chloride has been qualified (UJ) in all samples due to high initial calibration %RSD values.
- Acetone has been qualified (J/UJ) in samples TB16-04 and AH-28 due to a high continuing calibration %D value.
- Acetone has been qualified as undetected (U) in samples AH-08, AH-11, AH-DUP01, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5 and AH-23 due to trip blank contamination.
- Methylene chloride has been qualified as undetected (U) in samples AH-08, AH-11, AH-DUP01, AH-TB01, AH-06, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, AH-49, REF2-5, AH-23, TB16-03, AH-28 and TB16-04 due to method blank contamination.
- Carbon disulfide has been qualified as undetected (U) in samples AH-28, AH-08, AH-11, AH-DUP01, AH-06, DUP-03, AH-17, AH-03, REF1-4, REF2-1, REF2-3, REF2-5, AH-23 and AH-49 due to method and trip blank contamination.
- 2-Butanone has been qualified as undetected (U) in samples AH-08, AH-11, AH-DUP01, REF1-2, REF2-3, REF2-5, AH-23, AH-28 and AH-49 due to trip blank contamination.
- 1,2-Dichloroethene, 1,1-dichloroethene, benzene, trichloroethene and chlorobenzene have been qualified (UJ) in sample AH-11 due to high MS/MSD RPD values.
- Acetone has been qualified (J) in field duplicate samples AH-06 and DUP-03 due to poor field duplicate precision.
- Sample AH-08 was 29% solid which did not meet the 30% criteria. All results have been qualified (J/R) in this sample.

Pesticides:

Pesticide sample results were qualified for the following:

- All positive results have been qualified (J) in sample AH-17 due to high surrogate recoveries.
- gamma-BHC has been qualified (UJ) in sample AH-06 due to low MS/MSD recoveries.
- Endrin aldehyde, gamma-BHC, endosulfan I and methoxychlor have been qualified (UJ) in sample AH-11 due to low MS/MSD recoveries.
- gamma-Chlordane and 4,4'-DDE have been qualified (J/UJ) in field duplicate samples AH-11 and AH-DUP01 due to poor field duplicate precision.
- Many compounds in almost all samples exhibited high %D values between columns. These results have been qualified (J/R) based on the severity of the %D. Please refer to the worksheets for specific qualifications.

- Sample AH-08 was 29% solid which did not meet the 30% criteria. All results have been qualified (J/R) in this sample.

PCBs:

PCB sample results were qualified for the following:

- Aroclor-1260 has been qualified (UJ) in sample AH-06 due to low MS/MSD recoveries.
- Aroclor-1260 has been qualified (J) in sample AH-11 due to low MS/MSD recoveries.
- Samples AH-08 and AH-17 were 29% solid which did not meet the 30% criteria. All results have been qualified (J/R) in these samples.

Initial and Continuing Calibrations

Compounds that did not meet criteria in the calibrations are summarized in the following tables:

VOC:

Compound	ICAL 03/17/04	Action	Affected Samples
Methylene Chloride	%RSD=43	J/UJ	All Samples except AH-28, AH-23, AH-49, REF2-5, TB16-03, TB16-04

Compound	ICAL 04/05/04	Action	Affected Samples
Methylene Chloride	%RSD=45	J/UJ	AH-28, AH-23, AH-49, REF2-5, TB16-03, TB16-04

- Methylene chloride has been qualified (UJ) in all samples.

Compound	CCAL 04/07/04	Action	Affected Samples
Acetone	%D=37.5	J/UJ	TB16-04, AH-28

- Acetone has been qualified (J/UJ) in samples TB16-04 and AH-28.

Blanks

The contamination detected in the blanks that resulted in qualifications are summarized in the following section(s):

VOC:

Blank	Compound	Concentration ug/kg	Action Level ug/kg	Affected Samples
VBLKLN	Methylene Chloride	4	40	AH-08, AH-11, AH-DUP01, AH-TB01, AH-06, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1

Blank	Compound	Concentration ug/kg	Action Level ug/kg	Affected Samples
VBLKLQ	Methylene Chloride	0.9	9	AH-49, REF2-5, AH-23, TB16-03
VBLKLR	Methylene Chloride	5	50	AH-28, TB16-04
	Carbon Disulfide	1	5	AH-28
AH-TB01	2-Butanone	3	15	AH-08, AH-11, AH-DUP01
	Acetone	8	80	AH-08, AH-11, AH-DUP01
TB16-03	2-Butanone	4	20	REF1-2, REF2-3, REF2-5, AH-23
	Acetone	46	460	REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23
TB16-04	2-Butanone	5	25	AH-28, AH-49
	Carbon Disulfide	3	15	AH-08, AH-11, AH-DUP01, AH-06, DUP-03, AH-17, AH-03, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-49

- Acetone has been qualified as undetected (U) in samples AH-08, AH-11, AH-DUP01, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5 and AH-23.
- Methylene chloride has been qualified as undetected (U) in samples AH-08, AH-11, AH-DUP01, AH-TB01, AH-06, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, AH-49, REF2-5, AH-23, TB16-03, AH-28 and TB16-04.
- Carbon disulfide has been qualified as undetected (U) in samples AH-28, AH-08, AH-11, AH-DUP01, AH-06, DUP-03, AH-17, AH-03, REF1-4, REF2-1, REF2-3, REF2-5, AH-23 and AH-49.
- 2-Butanone has been qualified as undetected (U) in samples AH-08, AH-11, AH-DUP01, REF1-2, REF2-3, REF2-5, AH-23, AH-28 and AH-49.

Surrogate Compounds

The following surrogate spike recoveries did not meet acceptance criteria:

Pesticides:

Sample	TCX %R	DCB %R	Action
AH-17	230%/705%	Ok	J

- All positive results have been qualified (J) in sample AH-17.

Matrix Spike/Matrix Spike Duplicate Sample

The following compounds did not meet recovery criteria and resulted in qualification:

VOC:

MS/MSD Sample ID	Compound	MS %R	MSD %R	RPD	Action
AH-11	1,2-Dichloroethene	Ok	Ok	38%	J/UJ
	1,1-Dichloroethene	Ok	Ok	42%	
	Benzene	Ok	Ok	33%	
	Trichloroethene	Ok	Ok	32%	
	Chlorobenzene	Ok	Ok	34%	

- 1,2-Dichloroethene, 1,1-dichloroethene, benzene, trichloroethene and chlorobenzene have been qualified (UJ) in sample AH-11.

Pesticide:

MS/MSD Sample ID	Compound	MS %R	MSD %R	RPD	Action
AH-06	Gamma-BHC	Ok	62%	Ok	J/UJ

- gamma-BHC has been qualified (UJ) in sample AH-06.

MS/MSD Sample ID	Compound	MS %R	MSD %R	RPD	Action
AH-11	Endrin Aldehyde	58%	41%	Ok	J/UJ
	Gamma-BHC	Ok	60%	Ok	J/UJ
	Endosulfan I	Ok	31%	62%	J/UJ
	Methoxychlor	Ok	61%	Ok	J/UJ

- Endrin aldehyde, gamma-BHC, endosulfan I and methoxychlor have been qualified (UJ) in sample AH-11.

PCB:

MS/MSD Sample ID	Compound	MS %R	MSD %R	RPD	Action
AH-06	Aroclor-1260	22%	26%	Ok	J/UJ

- Aroclor-1260 has been qualified (UJ) in sample AH-06.

MS/MSD Sample ID	Compound	MS %R	MSD %R	RPD	Action
AH-11	Aroclor-1260	31%	36%	Ok	J/UJ

- Aroclor-1260 has been qualified (J) in sample AH-11.

<u>Field Duplicates</u>

VOC:

Compound	AH-06 ug/kg	DUP-03 ug/kg	RPD	Action
Acetone	390	83	130%	J

- Acetone has been qualified (J) in field duplicate samples AH-06 and DUP-03.

Pesticide:

Compound	AH-11 ug/kg	AH-DUP01 ug/kg	RPD	Action
Gamma-Chlordane	1.7	3.4	67%	J
4,4'-DDE	ND	2.7	NC	J/UJ

- gamma-Chlordane and 4,4'-DDE have been qualified (J/UJ) in field duplicate samples AH-11 and AH-DUP01.

Analyte Identification Confirmation

Pesticides:

- Many compounds in almost all samples exhibited high %D values between columns. These results have been qualified (J/R) based on the severity of the %D. Please refer to the worksheets for specific qualifications.

Target Compound Identification

The following samples did not meet % solid criteria:

VOC:

- Sample AH-08 was 29% solid which did not meet the 30% criteria. All results have been qualified (J/R) in this sample.

Pesticide:

- Sample AH-08 was 29% solid which did not meet the 30% criteria. All results have been qualified (J/R) in this sample.

PCB:

- Samples AH-08 and AH-17 were 29% solid which did not meet the 30% criteria. All results have been qualified (J/R) in these samples.

Attachments: Data Validation Worksheets
Annotated Form Is

DATA SUMMARY KEY
ORGANIC DATA VALIDATION

J = The associated numerical value is an estimated quantity.

R = The data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification. The R replaces the numerical value or sample quantitation limit.

U = The compound was analyzed for, but not detected. The associated numerical value is the sample quantitation limit or the adjusted sample quantitation limit.

UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit.

TB = The compound was analyzed for and detected in the associated trip blank as well as the sample.

REGION I, EPA-NE ORGANIC REGIONAL DATA ASSESSMENT (ORDA)*

CASE # —

SITE NAME: NCBC Davisville Site 16

LAB NAME: Ceramic Corp Narragansett RI

OF SAMPLES/MATRIX: 16 Solid | 3 waters

SDG # SED16A | 040222 | 040233

VALIDATION CONTRACTOR: Env Data Services Inc

SOW #/CONTRACT #: SW846

VALIDATOR'S NAME: Christine Gorny

EPA-NE DV TIER LEVEL: III

DATE DP REC'D BY EPA-NE: —

TPO/PO: **ACTION ____ FYI ____

DV COMPLETION DATE: _____

ANALYTICAL DATA QUALITY SUMMARY

	8260B VOA	SV	8081A Pest	8082 PCB
1. Preservation and Contractual Holding Times	O		O	O
2. GC/MS / GC/ECD Instrument Performance Check	O		O	NA
3. Initial Calibration	O1		O	O
4. Continuing Calibration	O2		O	O
5. Blanks	O3		O3	O
6. Surrogate Compounds	O		O4	O
7. Internal Standards	O		NA	NA
8. Matrix Spike/Matrix Spike Duplicate	O5		O5	O5
9. Sensitivity Check	NA		NA	NA
10. PE Samples-Accuracy Check	O		O	O
11. Target Compound Identification	Z1		Z2	Z3
12. Compound Quantitation and Reported QLs	O		O	O
13. Tentatively Identified Compounds	NA		NA	NA
14. Semivolatile Cleanup/Pesticide/PCB Cleanup	NA		NA	NA
15. Data Completeness	O		O	O
16. Overall Evaluation of Data	O		O	O

o = Data had no problems or were qualified due to minor contractual problems.
m = Data were qualified due to major contractual problems.
z = Data were rejected as unusable due major contractual problems.

ACTION ITEMS: (z items) Z1- one VOA sample qualified (J/R) due to % Solids < 30%
Z2- Pest analytes qualified (R) in several samples due to column difference results - others qual J
one sample qual (J/R) due to % solids 30%
Z3- one PCB sample qualified (J/R) due to % solids < 30%

AREAS OF CONCERN: (m items) _____

COMMENTS: O1 one VOA analyte qualified (J/UJ) in all samples due to ical results O2 - one VOA analyte qualified (J/UJ) in associated samples due to ccal O3 - several VOA analytes qualified (U) due to blank contamination O4 - one Pest sample qualified (J) due to surrogate results O5 - several VOA, Pest + PCB samples qualified (J/UJ) due to MS/MSD or field dup results

*This form assesses the analytical data quality in terms of contractual compliance only. It does not assess sampling errors and/or non-contractual analytical issues that affect data quality.

**Check "ACTION" only if contractual defects resulted in reduced payment/data rejection recommendations

Validator: Christine Gorny

Date: 05/25/04

INSTRUCTIONS ON REVERSE SIDE

EPA-NE
Data Validation Worksheet Cover Page - Page 1

Site Name NCBC Davisville
Reference No. —

REGION I ORGANIC DATA VALIDATION

The following data package has been validated:

Lab Name Cenic Corp
Case/Project No. —
SDG No. SED16A1040222/040233
No. of Samples/Matrix

SOW/Method No. SW846 8260B, 8081A, 8082
Sampling Date(s) 03/22 - 03/25/04
Shipping Date(s) 03/22 - 03/25/04
Date Rec'd by lab 03/22 - 03/25/04

Traffic Report Sample Nos. AH-08, AH-11, AH-DUP01, AH-TB01, AH-06, DUP03, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, TB16-03, AH-28, AH-49, TB16-04
Trip Blank No. AH-TB01, TB16-03, TB16-04
Equipment Blank No. —
Bottle Blank No. —
Field Duplicate Nos. AH-11/AH-DUP01, AH-6/DUP03
PES Nos. —

The Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, revision 12/96 was used to evaluate the data and/or approved modifications to the EPA-NE Functional Guidelines were used to evaluate the data and are attached to this cover page: (attach modified criteria from EPA approved QAPjP or amendment to QAPjP).

A Tier II or Tier III evaluation was used to validate the data (circle one). If a Tier II validation with a partial Tier III was used, then identify samples, parameters, etc. that received partial Tier III validation

The data were evaluated based upon the following parameters:

- Overall Evaluation of Data
- Data Completeness (CSF Audit - Tier I)
- Preservation & Technical Holding Times
- GC/MS & GC/ECD Instrument Performance Check
- Initial & Continuing Calibrations
- Blanks
- Surrogate Compounds
- Internal Standards
- Matrix Spike/Matrix Spike Duplicate
- Field Duplicates
- Sensitivity Check
- PE Samples/Accuracy Check
- Target Compound Identification
- Compound Quantitation and Reported Quantitation Limits
- TICs
- Semivolatile and Pesticide/PCB Cleanup
- System Performance

Region I Definitions and Qualifiers:

A - Acceptable Data
J - Numerical value associated with compound is an estimated quantity.
R - The data are rejected as unusable. The R replaces the numerical value or sample quantitation limit.
U - Compound not detected at that numerical sample quantitation limit.
UJ - The sample quantitation limit is an estimated quantity.
TB, BB, EB - Compound detected in aqueous trip blank, aqueous bottle blank, or aqueous equipment blank associated with soil/sediment samples.

Validator's Name Christine Gomez Company Name Env Data Serv Phone Number 603-226-0118

Date Validation Started 05/25/04 Date Validation Completed

Check if all criteria are met and no hard copy worksheet provided. Indicate NA if worksheet is not applicable to analytical method. Note: there is no standard worksheet for System Performance, however, the validator must document all system performance issues in the Data Validation Memorandum.

VOA/SV worksheets:

VOA/SV-Pest/PCB	COMPLETE SDG FILE (CSF) AUDIT	✓
VOA/SV-Pest/PCB-I	PRESERVATION AND HOLDING TIMES	
VOA/SV-II	GC/MS INSTRUMENT PERFORMANCE CHECK (TUNING)	
VOA/SV-III	INITIAL CALIBRATION	
VOA/SV-IV	CONTINUING CALIBRATION	
VOA/SV-Pest/PCB-V-A	BLANK ANALYSIS	
VOA/SV-Pest/PCB-V-B	BLANK ANALYSIS	
VOA-VI	VOA SURROGATE SPIKE RECOVERIES	
SV-VI	SV SURROGATE SPIKE RECOVERIES	NA
VOA/SV-VII	INTERNAL STANDARD PERFORMANCE	
VOA/SV-Pest/PCB-VIII	MATRIX SPIKE/MATRIX SPIKE DUPLICATE	
VOA/SV-Pest/PCB-IX	FIELD DUPLICATE PRECISION	
VOA/SV-Pest/PCB-X	SENSITIVITY CHECK	NA
VOA/SV-Pest/PCB-XI	ACCURACY CHECK	
VOA/SV-Pest/PCB-XII	TARGET COMPOUND IDENTIFICATION	
VOA/SV-Pest/PCB-XIII	SAMPLE QUANTITATION	
VOA/SV-XIV	TENTATIVELY IDENTIFIED COMPOUNDS	NA
VOA/SV-XV	SEMIVOLATILE CLEANUP	NA
TABLE II-WORKSHEET	OVERALL EVALUATION OF DATA	

Pest/PCB worksheets:

VOA/SV-Pest/PCB	COMPLETE SDG FILE (CSF) AUDIT	✓
VOA/SV-Pest/PCB-I	PRESERVATION AND HOLDING TIMES	
Pest/PCB-IIA	GC/ECD INSTRUMENT PERFORMANCE CHECK-RESOLUTION	
Pest/PCB-IIB	GC/ECD INSTRUMENT PERFORMANCE CHECK-RETENTION TIMES	
Pest/PCB-IIC	GC/ECD INSTRUMENT PERFORMANCE CHECK-ACCURACY CHECK OF INITIAL CALIBRATION	
Pest/PCB-IID	GC/ECD INSTRUMENT PERFORMANCE CHECK-PESTICIDE DEGRADATION	
Pest/PCB-III	INITIAL CALIBRATION	
Pest/PCB-IV	CONTINUING CALIBRATION	
VOA/SV-Pest/PCB-V-A	BLANK ANALYSIS	
VOA/SV-Pest/PCB-V-B	BLANK ANALYSIS	
Pest/PCB-VI	SURROGATE COMPOUNDS: SPIKE RECOVERIES AND RETENTION TIME SHIFT	
Pest/PCB-VII	PESTICIDE CLEANUP	
VOA/SV-Pest/PCB-VIII	MATRIX SPIKE/MATRIX SPIKE DUPLICATE	
VOA/SV-Pest/PCB-IX	FIELD DUPLICATE PRECISION	
VOA/SV-Pest/PCB-X	SENSITIVITY CHECK	NA
VOA/SV-Pest/PCB-XI	ACCURACY CHECK	
Pest/PCB-XII	COMPOUND IDENTIFICATION	
VOA/SV-Pest/PCB-XIII	SAMPLE QUANTITATION	
TABLE II-WORKSHEET	OVERALL EVALUATION OF DATA	

I certify that all criteria were met for the worksheets checked above.

Signature: [illegible]

Name: Christine Garay

Date: 05/25/04

EPA-NE - Data Validation
VOA/SV - Pest/PCB-I

Sampler: — Company: E.A Engineering Contacted: Yes (No) Date: _____

I. **PRESERVATION AND HOLDING TIMES** - Circle sample numbers with exceeded technical holding times or omitted preservation.
List all required preservation codes and circle omitted preservation codes.
Circle all exceeded technical holding times.
Identify extraction technique after "# of Days"/(*Extraction Code).

Sample No. (TR No.)	Matrix	Pres. Code	Date Sampled	VOA Date Analyzed	VOA # of Days from Samp. to Anal.	VOA Action	Pest Date Extracted	Pest # of Days from Samp. to Extr./(*)	Pest Date Analyzed	Pest # of Days from Extr. to Anal.	Pest Action	PCB Date Extracted	PCB # of Days from Samp. to Extr./(*)	PCB Date Analyzed	PCB # of Days from Extr. to Anal.	PCB Action
AH-08	Soil	1	03/22/04	04/02/04	11	None	04/05/04	14/Sox	04/14/04	9	None	04/05/04	14/Sox	04/12/04	7	None
AH-11	↓	↓	↓	04/02/04	11	None	04/02/04	11/Son	04/14/04	12	None	04/02/04	11/Son	04/12/04	10	None
AH-DUP01				04/02/04	11	None	↓	↓	↓	12	None	04/02/04	11/Son	04/13/04	11	None
AH-TB01	water	1/2		04/02/04	11	None	—	—	—	—	—	—	—	—	—	—
AH-06	Soil	1	03/23/04	04/02/04	10	None	04/02/04	10/Son	04/14/04	12	None	04/02/04	10/Son	04/13/04	11	None
DUP-03			03/23/04	04/02/04	10	None	—	—	—	—	—	04/02/04	10/Son	04/13/04	11	None
AH-17				04/02/04	10	None	04/05/04	13/Sox	04/14/04	9	None	04/05/04	13/Sox	04/13/04	8	None
AH-03				04/02/04	10	None	04/02/04	10/Son	04/14/04	9	None	04/02/04	10/Son	04/13/04	11	None
REF 1-1			03/24/04	04/02/04	9	None	04/02/04	9/Son	04/15/04	13	None	04/02/04	9/Son	04/13/04	11	None
REF 1-2				04/02/04	9	None										
REF 1-4				04/02/04	9	None										
REF 2-1				04/02/04	9	None										
REF 2-3				04/02/04	9	None	04/02/04	9/Son	04/16/04	14	None					
REF 2-5				04/06/04	13	None	04/02/04	9/Son	04/15/04	13	None					
AH 23				04/06/04	13	None	04/06/04	13/Son	04/16/04	10	None	04/06/04	13/Son	04/13/04	7	None
TB16-03	water	1/2		04/06/04	13	None	—	—	—	—	—	—	—	—	—	—
AH-28	Soil	1	03/25/04	04/07/04	13	None	04/08/04	14/Son	04/16/04	8	None	04/08/04	14/Son	04/13/04	5	None
AH-49	↓	↓	↓	04/06/04	12	None	04/06/04	12/Son	04/16/04	10	None	04/06/04	12/Son	04/13/04	7	None
TB16-04	water	1/2	↓	04/07/04	13	None	—	—	—	—	—	—	—	—	—	—

Preservation Code:
1. Cool @ 4°C (± 2°)
2. Preserve with HCl to at least pH 2
3. Protect from light
4. Freeze
5. Room Temperature (Avoid excessive heat)

(*Extraction Code:)
L/L - Liquid/Liquid
SON - Sonication
SEP - Separatory Funnel
SOX - Soxhlet
SPE - Solid Phase Extraction

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

Validator: Christine Gonzalez

Date: 05/25/04

II. GC/MS INSTRUMENT PERFORMANCE CHECK (TUNING)

List all Instrument Performance Checks that are outside method QC tuning acceptance criteria.

Volatile Instrument Performance Check (Compound Name)	Analysis Date and Time	Instrument	Ion(s) Affected	Percent Relative Abundance	QC Limits	Samples Affected	Action

Comments:

All acceptance criteria were met

Semivolatile Instrument Performance Check (Compound Name)	Analysis Date and Time	Instrument	Ion(s) Affected	Percent Relative Abundance	QC Limits	Samples Affected	Action

Comments:

If tuning compounds and criteria are different from those specified in CLP SOW OLM03.1, then the validator should include a copy of the method-specific tuning criteria with this worksheet.

Validator: Christine Gomez

Date: 05/26/04

EPA-NE - Data Validation Worksheet
VOA/SV-III

III. INITIAL CALIBRATION - List all analytes that are outside calibration criteria.

Date of ICAL	Instrument	Parameter	Matrix	Compound	% RSD	RRF	Samples Affected	Action
03/17/04	MS 12	VOA	soil/water	methylene chloride	43%	ok	all samples except TB16-03, AH-28 REF 2-5, AH-23, AH-49, TB16-04	J/UJ*
04/05/04	MS 12	VOA	soil/water	methylene chloride	45%	ok	TB16-03, REF 2-5, AH-23, AH-49 TB16-04, AH-28	J/UJ

Comments: * AH-08 qualified due to low % solids

Validator: Christine Garvey

Date: 05/27/04

REGION I
Data Review worksheets

Form 6E

☒ **All Criteria Met**

XI A. PESTICIDE CALIBRATION (Sections 1 and 2)

1. Initial Calibration

List the compounds which did not meet the Relative Standard Deviation (RSD) criteria of less than 20% for the initial calibration on either ~~quantitation~~ column.

	DATE	COMPOUND	%RSD	COLUMN	SAMPLES AFFECTED
Pest	03/16-03/17	Pest	alpha/alpha	DB5/DB35	none
Pest	04/21/04	Pest	alpha/alpha	DB5/DB35	↓
	02/23-02/24/04	PCB	alpha/alpha	DB5/DB1701	none

Flag all associated positive results as estimated (J) for samples which did not meet the %RSD criteria.

Analytical Sequence Form 8D

Did the laboratory follow the correct 72 hour sequence described in the SOW? Yes or No

If no,

The data may be affected. The data reviewer must use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below:

EPA-NE - Data Validation Worksheet
VOA/SV-IV

IV. CONTINUING CALIBRATION - List all analytes that are outside calibration criteria.

Date of ICAL	Date of CCAL	Instrument	Parameter	Matrix	Compound	%D	RRF	Samples Affected	Action
03/17/04	04/02/04	MS12	VOA	soil water	VOA	all ok	all ok	none	none
04/05/04	04/06/04	MS12	VOA	soil water	VOA	all ok	all ok	none	none
↓	04/07/04	↓	↓	soil water	Acetone	37.51	ok	TB16-04, AH28	J1 UJ

Comments:

Validator: Christine Jarvis

Date: 05/27/04

12/96

REGION I
Data Review Worksheets Forms 7D & 7E

☒ **All Criteria Met**

XI B. PESTICIDE CALIBRATION (Section 3)

2. Continuing Calibration - Ind A+B and PEM

List the compounds which did not meet the percent difference (%D) criteria of < 25% (CLP) on either column.

DATE	COMPOUND	%D	COLUMN	SAMPLES AFFECTED
04/13, 04/14 04/15, 04/16, 04/22	Pest	all ok/ all ok	DB5/ DB35	None
04/12, 04/13 04/14	PCB 1016/1260	all ok all ok	DB5/ DB1704	None

If the %D criteria is not met, flag all associated positive results as estimated (J).

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-A

V. BLANK ANALYSIS

Concentration Level: low

List the blank contamination below.

Sampler: _____ Company: EA Engineering Contacted: Yes No Date: _____

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
–	04/02/04	VOA / water soil	VBLKLN	MS12 / RTX624	methylene chloride	4 ug/kg
–	04/06/04	VOA / water soil	VBLKLQ	MS12 / RTX624	Acetone	2 ug/kg
–	↓	↓	↓	↓	methylene chloride	4 ug/kg
–	04/07/04	VOA / water soil	VBLKLR		methylene chloride	5 ug/kg
–	↓	↓	↓	↓	Carbon disulfide	1 ug/kg

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
–	04/02/04	VOA / water	AH-TB01	MS12 / RTX624	2-Butanone	3 ug/kg
–	↓	↓	↓	↓	Acetone	8 ug/kg
–	04/06/04	VOA / water	TB16-03	↓	Acetone	116 ug/kg
–	↓	↓	↓		2-Butanone	4 ug/kg
–	04/07/04	↓	TB16-04		Acetone	160 ug/kg
–	↓	↓	↓	↓	2-Butanone	5 ug/kg
–	04/06/04	VOA / water	RINS 01 (SED16B)	MS12 / RTX624	carbon disulfide	3 ug/kg

Validator: Christine Gorney Date: 05/26/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-A

V. BLANK ANALYSIS

Concentration Level: Low

List the blank contamination below.

Sampler: _____ Company: EA Engineers

Contacted: Yes No Date: _____

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
04/01/04	04/22/04	Pest/water	Rins 01 (SFD16B1)	gc 6 / DB35 DB35	None	ND
04/01/04	04/24/04	PCB/water	↓	gc 7 / DB35 DB35 701	None	ND

Validator: Christine Gerus

Date: 06/02/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-B

3. **Blank Actions** - List the maximum concentrations of blank compounds.

Compound	Type of Blank	Date Blank Sampled/Originated	Max. Conc. (units)	Action Level (units)	Sample QL	Samples Affected	Action
methylene chloride	VBLKLN	041021104	4 ug/kg	40 ug/kg	5	AH-08, AH-11, AH-DUP01	4
↓	↓	↓	↓	↓	↓	AH-TB01, AH-06, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1	↓
							all 2 OK blk
acetone	VBLKLQ	041061104	2 ug/kg	20 ug/kg	10	None	
methylene chloride	↓	↓	0.9 ug/kg	9 ug/kg	5	AH-49, REF2-5, AH-23, B16-03	4
methylene chloride	VBLKLR	041071104	5 ug/kg	50 ug/kg	5	AH-28, TB16-04	4
carbon disulfide	↓	↓	1 ug/kg	5 ug/kg	5	AH-28	4
2-Butanone	AH-TB01	031221104	3 ug/kg	15 ug/kg		AH-08, AH-11, AH-DUP01	4
—	—	—	—	—	—	—	—
Acetone	AH-TB01	031221104	8 ug/kg	80	10	AH-08, AH-11, AH-DUP01	4
Acetone	TB16-03	031241104	46 ug/kg	460	10	REF1-1, REF1-2, REF1-4	4
↓	↓	↓	↓	↓	↓	REF1-2, REF2-3, AH-23, REF2-5	
2-Butanone	TB16-03	031241104	4 ug/kg	20		REF1-2, REF2-3, AH-23, REF2-5	4
Acetone	TB16-04	031251104	160 ug/kg	1600 ug/kg	10	AH-28, AH-49	4
—	—	—	—	—	—	—	—
2-Butanone	TB16-04	031251104	5 ug/kg	25 ug/kg	10	AH-28, AH-49	4
carbon disulfide	RMS01	031261104	3 ug/kg	15 ug/kg	5	AH-08, AH-11, AH-DUP01, AH-06, DUP-03, AH17, AH-03, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-49	4

Comments: _____

Validator: Christine Gorney

Date: 05/26/04

all acceptance criteria met

EPA-NE - Data Validation Worksheet
VOA-VI

VI. VOA SURROGATE SPIKE RECOVERIES - List all surrogate compound recoveries that are outside method QC acceptance criteria.

Method	Volatile Method QC Acceptance Criteria				
	Toluene-d_8	BFB	DCE-d_4	Other:	
OLM03.2	Water 88-110 Soil 84-138	Water 86-115 Soil 59-113	Water 76-114 Soil 70-121	Dibromofluoromethane	
OLC02.1	NA	80-120	NA		
Other:	73-147	75-125	62-139	82-130	
Sample Number/Matrix	% Recovery	% Recovery	% Recovery	% Recovery	Action

Validator: Christine Garvey

Date: 05/25/00

9A

REGION I
Data Review Worksheets Forms 2E & 2F

☐ **All Criteria Met**

VI A. SURROGATE SPIKE RECOVERIES – PESTICIDES/~~PCBS~~

List the percent recoveries which do not meet the criteria for surrogate recovery.

	TCX		DCB		ACTION	
TR #'s	Col 1	Col 2	Col 1	Col 2	Pos.	Non
AH-08	ok	138	ok	ok	none	none
AH-17	230	705	ok	ok	J	A
AH-03	16	ok	ok	ok	none	none
REF 1-2	23	ok	ok	ok	none	none
REF 1-4	23	ok	ok	ok	none	none

Recst

QC Limits		
	30	26
	to	to
	144	102

Surrogate Actions:

	<10 %	10%–CRR	>CRR
Positive Sample Results	J	J	J
Non–detected Results	R	UJ	A

CRR = Contract Required Recovery Range

Surrogate action should be applied:

1. If at least two surrogates are out of specification, but have recoveries of >10%.
2. If any one surrogate in a fraction shows <10% recovery.

REGION I
Data Review Worksheets Forms 2E & 2F

☒ **All Criteria Met**

VI A. SURROGATE SPIKE RECOVERIES – ~~PESTICIDES~~ OP PCB

List the percent recoveries which do not meet the criteria for surrogate recovery.

	TCX TBP		DCB		ACTION	
TR #'s	Col 1	Col 2	Col 1	Col 2	Pos.	Non

QC Limits		
	26	30
	to	to
	102	144

Surrogate Actions:

	<10 %	10%–CRR	>CRR
Positive Sample Results	J	J	J
Non–detected Results	R	UJ	A

CRR = Contract Required Recovery Range

Surrogate action should be applied:

1. If at least two surrogates are out of specification, but have recoveries of >10%.
2. If any one surrogate in a fraction shows <10% recovery.

☒ All Criteria Met

Form 8D

VI B. SURROGATE RETENTION TIME

List the samples which have a retention time (RT) exceeding ± 0.05 minutes for tetrachloro-m-xylene (TCX) or ± 0.10 minutes for decachlorobiphenyl (DCB).

MEAN SUROGATE RETENTION TIME FROM INITIAL CALIBRATION

COLUMN 1 _____ TCX: _____ DCB: _____

COLUMN 2 _____ TCX: _____ DCB: _____

SAMPLE #	DATE/TIME	COLUMN	RT/SHIFT	TCX/DCB	ACTIONS

ACTION:

The reviewer must use professional judgement to determine if there is a need to qualify any of the data due to surrogates not meeting retention time acceptance criteria.

Reviewer: Christine Jones

Date: 05/27/04

all acceptance criteria were met

EPA-NE - Data Validation Worksheet
VOA/SV-VII

VII. INTERNAL STANDARD PERFORMANCE

List the internal standards that are outside the area count and retention time method QC acceptance criteria.
IS Area Count method QC acceptance criteria: -50% / +100%
IS Retention Time method QC acceptance criteria: ±0.30 RT units

Sample Number (TR#)	Date and Time Analyzed	Instrument	Parameter	IS Outside Area Count and/or RT Criteria	IS Area	RT Shift	Acceptable Range (IS area or RT shift)	Action

Validator: Christine Gorves

Date: 05/26/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-VIII

VIII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE - List all MS/MSD analytes that are outside method QC acceptance criteria.

Use a separate worksheet for each MS/MSD pair.

Sample # AH-06 Matrix Soil Concentration Level low

Parameter	Compound	MS %Rec	MSD %Rec	RPD	Method QC Limits % Rec	Method QC Limits RPD	Concentration Unspiked Sample	Concentration MS	Concentration MSD	% RSD	Action
VOA	VOA	all ok	all ok	all ok	varies	30	—	—	—	—	none
Pest	Beta BHC	0%	0%	ok	43-133	40	—	—	—	—	coelution no action
↓	heptachlor	0%	0%	ok	35-138	40	—	—	—	—	↓
Pest	gamma BHC	ok	62	ok	63-135	40	—	—	—	—	J UJ
PCB	1016	ok	ok	ok	31-94	30	—	—	—	—	none
↓	1260	22	26	ok	39-103	40	—	—	—	—	J UJ

Validator: Christine Gomez Date: 05/25/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-VIII

VIII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE - List all MS/MSD analytes that are outside method QC acceptance criteria.

Use a separate worksheet for each MS/MSD pair.

Sample # AH-11 Matrix POW Concentration Level low

Parameter	Compound	MS %Rec	MSD %Rec	RPD	Method QC Limits % Rec	Method QC Limits RPD	Concentration Unspiked Sample	Concentration MS	Concentration MSD	% RSD	Action
VOA	1,2-Dichloroethene tot	ok	ok	38	61-132	30	—			—	J/UJ
	1,1-Dichloroethene	ok	ok	42	57-136	30	—			—	J/UJ
	Benzene	ok	ok	33	60-132	30	—			—	J/UJ
	Trichloroethene	ok	ok	32	60-130	30	—			—	J/UJ
	Chlorobenzene	ok	ok	34	57-137	30	—			—	J/UJ
Pest	Dieldrin	143	ok	ok	32-142	40	—			—	none sample ND
	Endrin aldehyde	58	41	ok	65-160	40	—			—	J/UJ
	beta BHC	ok	-50	nc	65-136	40	—			—	qual due to column diff
	gamma BHC	ok	60		63-135		—			—	J/UJ
	heptachlor	ok	-41	nc	35-138		—			—	qual due to column diff
	Endosulfan I	ok	31	62	39-153		—			—	J/UJ

Validator: Christine Garvey Date: 05/25/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-VIII

VIII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE - List all MS/MSD analytes that are outside method QC acceptance criteria.

Use a separate worksheet for each MS/MSD pair.

Sample # AH-11 Matrix Soil Concentration Level low

Parameter	Compound	MS %Rec	MSD %Rec	RPD	Method QC Limits		Concentration			% RSD	Action
					% Rec	RPD	Unspiked Sample	MS	MSD		
Pest	methoxychlor	ok	61	ok	63-152	40					JUJ
PCB	1016	ok	ok	ok	31-94	30					none
↓	1260	31	36	ok	39-103	40					JUJ

Validator: Christine Garvey Date: 05/25/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-IX

IX. **FIELD DUPLICATE PRECISION** - List all field duplicate analytes that are outside criteria.

Use a separate worksheet for each field duplicate pair.

Sample Number AH-11 Duplicate Sample Number AH-DUP01 Matrix Soil

Parameter	Compound	Sample Conc.	Sample QL		Duplicate Conc.	Duplicate QL		RPD	QC Acceptance Criteria RPD or NA*	Action
			SQL	2xSQL		SQL	2xSQL			
VOA	—	ND	11	22	ND	12	24	0	NA	NOAC
Pest	gamma chlordane	1.7 ug/g	0.94	1.88	3.4	0.92	1.84	67%	50%	J *
↓	4,4 DDE	ND	1.8	3.6	2.7 ↓	1.8	3.6	NC	NA	J / UJ
PCB	Aroclor 1260	30	18	36	34	18	36	12%	50%	none

* For instances where one duplicate result is ND (or reported less than the sample QL).

Does the MS/MSD data indicate acceptable laboratory precision? (Y) N

Comments: * gamma chlordane qual (J) in AH DUP1 due to column difference

Sampler Name: — Contractor Name: QA Engineering Date Contacted: —

Reason for Contact and resolution obtained:

Validator: Christine Garvey Date: 05/27/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-IX

IX. FIELD DUPLICATE PRECISION - List all field duplicate analytes that are outside criteria.

Use a separate worksheet for each field duplicate pair.

Sample Number AH-06 Duplicate Sample Number DUP-03 Matrix Soil

Parameter	Compound	Sample Conc.	Sample QL		Duplicate Conc.	Duplicate QL		RPD	QC Acceptance Criteria RPD or NA*	Action
			SQL	2xSQL		SQL	2xSQL			
VOA	Acetone	390 ug/kg	24	48	83 ug/kg	20	40	130%	50	J
↓	2-Butanone	10 ug/kg	24	48	14 ug/kg	20	40	33	NA	none
PCB	Aroclor 1260	19 ug/kg	17	34	21 ug/kg	17	34	10%	50%	none

* For instances where one duplicate result is ND (or reported less than the sample QL).

Does the MS/MSD data indicate acceptable laboratory precision? (Y) N

Comments: —

Sampler Name: — Contractor Name: EA Engineering Date Contacted: —

Reason for Contact and resolution obtained: —

Validator: Christie Gray Date: 06/02/04

Region I

Data Review Worksheet - Pesticide

☐ All Criteria Met

5/90

X. ANALYTE IDENTIFICATION CONFIRMATION Form 10

List the samples below that contained detected compounds which have a relative percent difference (rpd) greater than 25% between the two columns.

COMPOUND	COLUMN 1 CONC	COLUMN2 CONC	%D	SAMPLES AFFECTED	ACTION
Beta BHC	220	4.2	5138	AH-03	R
heptachlor	1.2	74	6067	↓	R
gamma chlordane	6.9	0.606	946	↓	R
gamma BHC	2.3	1.1	109.1	AH-08	R
heptachlor	1.4	84	5900	↓	R
heptachlor epoxide	16	2.1	662	↓	R
4.4-DDE	3.2	1.6	100	↓	J qualified to no solids
Beta BHC	280	4.8	5733	AH-11	R
heptachlor	3.0	90	2900	↓	R
gamma BHC	2.0	5.9	195	AH-23	R
Dieldrin	27	9.6	181.3	↓	R
4.4-DDE	4.5	3.4	32.4	↓	J
Endrin aldehyde	6.7	1.9	252.6	↓	R
gamma BHC	0.64	9.2	1337	AH-28	R

ACTION:

1. If the %D for the sample results on the two columns is greater than 25% but less than 100% for pesticides or less than 500% for PCBs, estimate (J) positive results for that compound in that sample.

2. If the %D for the sample results on the two columns exceeds 100% for pesticides or 500% for PCBs, reject (R) the results for that compound in that sample - unless both results are less than the CRQL, then report as undetected (U) at the CRQL.

3. If by using professional judgement, the reviewer determines that the higher of the two results should be reported, the reviewer should substitute the higher result for the lower result and indicate in the data review narrative the reason for substituting the higher result.

Reviewer: Christine Gerwy

Date: 05/27/04

Region I

Data Review Worksheet - Pesticide

☐ All Criteria Met

5/90

X. ANALYTE IDENTIFICATION CONFIRMATION Form 10

List the samples below that contained detected compounds which have a relative percent difference (rpd) greater than 25% between the two columns.

COMPOUND	COLUMN 1 CONC	COLUMN2 CONC	%D	SAMPLES AFFECTED	ACTION
4,4-DDE	4.8	1.4	243	AH-28	R
Endrin ketone	2.0	7.2	260		R
alpha chlordane	5.7	2.4	138		R
gamma chlordane	17	2.3	639		R
4,4-DDE	4.2	1.4	200	AH-49	R
gamma chlordane	17	0.63	2598		R
gamma chlordane	4.9	3.4	44.1	AH DUP01	J
beta BHC	370	5.3	6881	AH-17	R
heptachlor epoxide	45	6.4	603.1		R
gamma chlordane	5.3	8.4	58.5		J qualified to SVR
heptachlor epoxide	60	0.67	8855	REF2-1	R
Aroclor 1260	21	14	50	AH-08	J qualified to residual

ACTION:

1. If the %D for the sample results on the two columns is greater than 25% but less than 100% for pesticides or less than 500% for PCBs, estimate (J) positive results for that compound in that sample.

2. If the %D for the sample results on the two columns exceeds 100% for pesticides or 500% for PCBs, reject (R) the results for that compound in that sample - unless both results are less than the CRQL, then report as undetected (U) at the CRQL.

3. If by using professional judgement, the reviewer determines that the higher of the two results should be reported, the reviewer should substitute the higher result for the lower result and indicate in the data review narrative the reason for substituting the higher result.

Reviewer: Christine Gowey

Date: 05/27/00

REGION 1
Data Review Worksheets Forms 7D & 7E ☒ **All Criteria Met**

X B. PESTICIDE INSTRUMENT PERFORMANCE (Section 2)

2. Retention Time Windows - Cont. Cal Stds { PEM, Ind A, Ind B }

List the compounds which are not within the established windows.

COMPOUND	DATE (TIME)	RT	RT WINDOW	SAMPLES AFFECTED

Check the sample chromatograms of the samples analyzed after the last in control standard for peaks within an expanded window. If no peaks are present, there is usually no effect on the data. Refer to Regional guidelines for information on qualifying data if peaks are present. If peaks are present, discuss actions below:

_____

_____

_____

_____

_____

REGION I
Data Review Worksheets Form 7D

☒ All Criteria Met

X C. PESTICIDE INSTRUMENT PERFORMANCE (Section 3)

3. DDT and Endrin Degradation

List the standards which have a DDT or Endrin breakdown of greater than 20%.

STANDARD ID	DDT OR ENDRIN	PERCENT BREAKDOWN	SAMPLES AFFECTED	DDD, DDE OR ENDRIN KETONE PRESENT

If the percent breakdown for DDT is greater than 20%:

1. Flag all positive results for DDT as estimated (J) for all samples following the last in control standard. If no DDT was present, but DDD and/or DDE are positive, then flag the quantitation limit for DDT as unusable (R).

2. Flag all positive results for DDD +/or DDE as estimated (J).

If the percent breakdown for Endrin is greater than 20%:

1. Flag all positive results for endrin as estimated (J) for all samples following the last in-control standard. If no endrin was detected, but endrin aldehyde and/or endrin ketone are positive, flag the quantitation limit for endrin as unusable (R

2. Flag all positive results for endrin ketone as estimated (J).

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XI

XI. ACCURACY CHECK (Performance Evaluation Results) - List all analytes that are outside criteria.

SDG No: SED16A/040222104 0233 CASE: —

Are more than one-half of the PES analytes within criteria for each parameter. (Y) N

PE Sample Number	Ampule Number	Parameter	Type of PES	Matrix	Analyte	Conc. 0/0R	Region I EPA PES Scores*	Non-EPA PES Scores**	Samples Affected	Action
VLCSLN	—	VOA	LCS	Soil	VOA	all ok	—	various	none	none
VLCSLO	—	VOA	LCS	Soil	VOA	all ok	—	various	none	none
VLCSLR	—	VOA	LCS	Soil	VOA	all ok	—	various	none	none
PLCS01	—	Pest	LCS	Soil	Pest	all ok	—	various	none	none
PLCS02	—	Pest	LCS	Soil	Endrin ketone	173	—	37-107	none	NDan Evaluated column
↓	↓	↓	↓	↓	alpha chlordane	136	—	31-135	↓	↓
PLCS03	—	Pest	LCS	Soil	Pest	all ok	—	various	none	none
PLCS04	—	Pest	LCS	Soil	Pest	all ok	—	various	none	none
PLCS01	—	PCB	LCS	Soil	1016/1260	ok/ok	—	31-94/39-103	none	none
PLCS02	—	↓	↓	↓	↓	↓	↓	↓	↓	↓
PLCS03	—	↓	↓	↓	↓	↓	↓	↓	↓	↓
PLCS04	—	↓	↓	↓	↓	↓	↓	↓	↓	↓

* For Region I PESs indicate the Region I PES Score Report Result: Action High; Action Low; TCL MISS; TCL CONTAMINANT; TIC HIT; TIC MISS; TIC CONTAMINANT

** For Non-EPA PESs indicate the Non-EPA PES Score: PES COMPOUND MISS; PES COMPOUND CONTAMINANT; PES COMPOUND HIT (% Recovery Limits)

Validator: Christine Jerug Date: 05/25/04

No info provided by lab

REGION I

Data Review Worksheets

Form 9B

☐ All Criteria Met

1/96

XI C. PESTICIDE CALIBRATION

4. Pesticide GPC Calibration

List the compounds which did not meet the recovery QC criteria (80–120%):

Calibration Date	Compound	% Recovery	Actions	
			Pos	Non
Samples Affected:				
Samples Affected:				
Samples Affected:				
Samples Affected:				
Samples Affected:				
Samples Affected:				

Actions:

	<10%	10–80%	>120%
Positive Sample Results:	J	J	J
Non–Detected Results:	R	UJ	A

Note: If all (or most) compounds show high or low recovery bias, professional judgement shall be applied to determine if all TCL results should be qualified for affected samples.

Reviewer's Initials: CG

Date: 05/27/04

XI D. PESTICIDE CALIBRATION

5. Resolution Summaries – Analyte, PEM, IND A, and IND B – Forms 6G, 6H, 6I, 6J

List the compounds which did not meet the recovery QC criteria as follows:

1. Analyte (Form 6G) – greater than or equal to 60%
2. PEM, IND A, & IND B (Forms 6H,6I,6J) – greater than or equal to 90%

Compound Pair		%	
1st Compound	2nd Compound	Resolution	Criteria
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			

Actions:
If resolution between any two compounds is less than the specified QC criteria, use professional judgement to determine if identifications and quantitations for these compounds should be qualified for affected samples.

Reviewer's Initials: CG Date: 05/27/04

XII. TARGET COMPOUND IDENTIFICATION - List the analytes that are outside the acceptance criteria.

Sample Number	Compound	MS Ions	RRT	Action
AH-8	VOA, Pest, PCB	—	—	% Solids 29% - allows to qual J/R
AH-17	PCB	—	—	% Solids 29% - qual J/R

Validator: Christine Gray

Date: 05/27/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XIII

XIII. SAMPLE QUANTITATION

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per fraction. (Note: Although Section XIII, C.1.a, requires that one calculation for each fraction in each sample be performed, the validator is only required to reproduce an example, for each fraction, of one positive detect and one sample quantitation limit calculation on this worksheet.)

Do all soil/sediment samples have % solids greater than 30%? Y N
If no, list sample numbers AH-08, AH-17

Fraction		Calculation
VOA		Acetone $\frac{113253 \times 50 \times 5}{412196 \times 0.08347 \times 5.5 \times 0.38} = 391.395$ ug/kg
Sample No.:	AH-06	
Reported Compound:	Acetone	
Reported Value:	390 ug/kg	
Not Detected Compound:	Bromoform	Bromoform $\frac{5 \times 5}{0.38 \times 5.5} = 11.96$ ug/kg
Reported Quantitation Limit:	12 ug/kg U	
~~HHA~~ Pest		gamma chlordane $\frac{7542721 \times 2 \times 1000}{135358395 \times 30.3 \times 0.36} = 10.21$ ug/kg
Sample No.:	AH-23	
Reported Compound:	gamma chlordane	
Reported Value:	10 ug/kg	
Not Detected Compound:	alpha BHC	alpha BHC $\frac{0.34 \times 30}{30.3 \times 0.36} = 0.935$ ug/kg
Reported Quantitation Limit:	0.94 U ug/kg	
~~Pesticide~~/PCB		Aroclor 1260 $\left(\frac{169962}{1520107} + \frac{195711}{1834805} + \frac{546338}{2073954} + \frac{74531}{1053791} + \frac{55430}{543419}\right) \div 5 = \frac{0.1304 \times 2 \times 1000}{51.7 \times 0.29} =$ 17.4 ug/kg
Sample No.:	AH-17	
Reported Compound:	Aroclor 1260	
Reported Value:	17 ug/kg	
Not Detected Compound:	Aroclor 1016	Aroclor 1016 $\frac{6.6 \times 30}{51.7 \times 0.29} = 13.2$ ug/kg
Reported Quantitation Limit:	13 U ug/kg	

Validator: Christine Gerwig

Date: 05/27/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XIII

XIII. SAMPLE QUANTITATION

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per fraction. (Note: Although Section XIII, C.1.a, requires that one calculation for each fraction in each sample be performed, the validator is only required to reproduce an example, for each fraction, of one positive detect and one sample quantitation limit calculation on this worksheet.)

Do all soil/sediment samples have % solids greater than 30%? Y (N)
If no, list sample numbers AH-08, AH-17

Fraction		Calculation
VOA		Trichloroethene
Sample No.:	REF 1-1	$\frac{3791 \times 50 \times 5}{444385 \times 0.29103742 \times 9.3 \times 0.81} = 0.973$ ug/kg
Reported Compound:	Trichloroethene	
Reported Value:	1 ug/kg	
Not Detected Compound:	chloromethane	chloromethane $\frac{5 \times 5}{9.3 \times 0.81} = 3.3$
Reported Quantitation Limit:	5 ug/kg U	
~~BNA~~ Pest		Dieldrin
Sample No.:	AH-28	$\frac{5135528 \times 2 \times 1000}{60323755 \times 0.69 \times 30.5} = 8.087$ ug/kg
Reported Compound:	Dieldrin	
Reported Value:	8.1 ug/kg	
Not Detected Compound:	Toxaphene	Toxaphene $\frac{34 \times 30}{0.69 \times 30.5} = 48.5$ ug/kg
Reported Quantitation Limit:	48 U ug/kg	
Pesticide/PCB		Aroclor 1260
Sample No.:	AH-23	$\left(\frac{1074968}{2532444} + \frac{1496636}{2899168} + \frac{597651}{1837327} + \frac{1526780}{4007037} + \frac{1198838}{2857463}\right) \div 5 = 0.4133$
Reported Compound:	Aroclor 1260	
Reported Value:	70 ug/kg	
Not Detected Compound:	Aroclor 1221	Aroclor 1221 $\frac{13 \times 30}{30.2 \times 0.39} = 33$ ug/kg; $\frac{0.4133 \times 2 \times 1000}{30.2 \times 0.39} = 70.2$ ug/kg
Reported Quantitation Limit:	34 U ug/kg	

Validator: Christine Gerwey

Date: 05/27/04

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-08

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-02

Sample wt/vol: 5.20(g/mL) G Lab File ID: LT642

Level: (low/med) LOW Date Received: 03/22/04

% Moisture: not dec. 71 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	17	U
75-01-4	Vinyl Chloride	17	U
74-83-9	Bromomethane	17	U
75-00-3	Chloroethane	17	U
67-64-1	Acetone	210	
75-35-4	1,1-Dichloroethene	17	U
75-09-2	Methylene Chloride	3	BJ
75-15-0	Carbon Disulfide	24	
156-60-5	trans-1,2-Dichloroethene	17	U
75-34-3	1,1-Dichloroethane	17	U
78-93-3	2-Butanone	23	J
156-59-2	cis-1,2-Dichloroethene	17	U
67-66-3	Chloroform	17	U
56-23-5	Carbon Tetrachloride	17	U
107-06-2	1,2-Dichloroethane	17	U
71-43-2	Benzene	17	U
79-01-6	Trichloroethene	17	U
78-87-5	1,2-Dichloropropane	17	U
75-27-4	Bromodichloromethane	17	U
10061-01-5	cis-1,3-Dichloropropene	17	U
108-88-3	Toluene	17	U
10061-02-6	trans-1,3-Dichloropropene	17	U
79-00-5	1,1,2-Trichloroethane	17	U
127-18-4	Tetrachloroethene	17	U
108-10-1	4-Methyl-2-Pentanone	33	U
591-78-6	2-Hexanone	33	U
124-48-1	Dibromochloromethane	17	U
108-90-7	Chlorobenzene	17	U
100-41-4	Ethylbenzene	17	U
108-38-3	m,p-Xylenes	33	U
95-47-6	o-Xylene	17	U
100-42-5	Styrene	17	U
75-25-2	Bromoform	17	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-08

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-02

Sample wt/vol: 5.20(g/mL) G Lab File ID: LT642

Level: (low/med) LOW Date Received: 03/22/04

% Moisture: not dec. 71 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	17	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-11

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-05

Sample wt/vol: 7.20(g/mL) G Lab File ID: LT640

Level: (low/med) LOW Date Received: 03/22/04

% Moisture: not dec. 67 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
75-01-4	Vinyl Chloride	11	U
74-83-9	Bromomethane	11	U
75-00-3	Chloroethane	11	U
67-64-1	Acetone	110	
75-35-4	1,1-Dichloroethene	11	~~U~~
75-09-2	Methylene Chloride	3	BJ
75-15-0	Carbon Disulfide	8	J
156-60-5	trans-1,2-Dichloroethene	11	~~U~~
75-34-3	1,1-Dichloroethane	11	U
78-93-3	2-Butanone	16	~~U~~ J
156-59-2	cis-1,2-Dichloroethene	11	~~U~~
67-66-3	Chloroform	11	U
56-23-5	Carbon Tetrachloride	11	U
107-06-2	1,2-Dichloroethane	11	U
71-43-2	Benzene	11	~~U~~
79-01-6	Trichloroethene	11	~~U~~
78-87-5	1,2-Dichloropropane	11	U
75-27-4	Bromodichloromethane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
108-88-3	Toluene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
79-00-5	1,1,2-Trichloroethane	11	U
127-18-4	Tetrachloroethene	11	U
108-10-1	4-Methyl-2-Pentanone	21	U
591-78-6	2-Hexanone	21	U
124-48-1	Dibromochloromethane	11	U
108-90-7	Chlorobenzene	11	~~U~~
100-41-4	Ethylbenzene	11	U
108-38-3	m,p-Xylenes	21	U
95-47-6	o-Xylene	11	U
100-42-5	Styrene	11	U
75-25-2	Bromoform	11	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-11

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-05

Sample wt/vol: 7.20(g/mL) G Lab File ID: LT640

Level: (low/med) LOW Date Received: 03/22/04

% Moisture: not dec. 67 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	11	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-DUP01

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-06

Sample wt/vol: 6.20(g/mL) G Lab File ID: LT643

Level: (low/med) LOW Date Received: 03/22/04

% Moisture: not dec. 65 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
75-01-4	Vinyl Chloride	12	U
74-83-9	Bromomethane	12	U
75-00-3	Chloroethane	12	U
67-64-1	Acetone	150	
75-35-4	1,1-Dichloroethene	12	U
75-09-2	Methylene Chloride	3	BJ
75-15-0	Carbon Disulfide	11	J
156-60-5	trans-1,2-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
78-93-3	2-Butanone	21	J
156-59-2	cis-1,2-Dichloroethene	12	U
67-66-3	Chloroform	12	U
56-23-5	Carbon Tetrachloride	12	U
107-06-2	1,2-Dichloroethane	12	U
71-43-2	Benzene	12	U
79-01-6	Trichloroethene	12	U
78-87-5	1,2-Dichloropropane	12	U
75-27-4	Bromodichloromethane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
108-88-3	Toluene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
79-00-5	1,1,2-Trichloroethane	12	U
127-18-4	Tetrachloroethene	12	U
108-10-1	4-Methyl-2-Pentanone	23	U
591-78-6	2-Hexanone	23	U
124-48-1	Dibromochloromethane	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
108-38-3	m,p-Xylenes	23	U
95-47-6	o-Xylene	12	U
100-42-5	Styrene	12	U
75-25-2	Bromoform	12	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-DUP01

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-06

Sample wt/vol: 6.20(g/mL) G Lab File ID: LT643

Level: (low/med) LOW Date Received: 03/22/04

% Moisture: not dec. 65 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	12	U

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EA SAMPLE NO.

AH-TB01

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-08

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT639

Level: (low/med) LOW Date Received: 03/22/04

% Moisture: not dec. _____ Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	8	J
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	1	JB
75-15-0	Carbon Disulfide	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	3	J
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-TB01

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-08

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT639

Level: (low/med) LOW Date Received: 03/22/04

% Moisture: not dec. _____ Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

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EA SAMPLE NO.

AH-06

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-10

Sample wt/vol: 5.50(g/mL) G Lab File ID: LT641

Level: (low/med) LOW Date Received: 03/23/04

% Moisture: not dec. 62 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
75-01-4	Vinyl Chloride	12	U
74-83-9	Bromomethane	12	U
75-00-3	Chloroethane	12	U
67-64-1	Acetone	390	J
75-35-4	1,1-Dichloroethene	12	U
75-09-2	Methylene Chloride	89	B
75-15-0	Carbon Disulfide	10	J
156-60-5	trans-1,2-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
78-93-3	2-Butanone	10	J
156-59-2	cis-1,2-Dichloroethene	12	U
67-66-3	Chloroform	12	U
56-23-5	Carbon Tetrachloride	12	U
107-06-2	1,2-Dichloroethane	12	U
71-43-2	Benzene	12	U
79-01-6	Trichloroethene	12	U
78-87-5	1,2-Dichloropropane	12	U
75-27-4	Bromodichloromethane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
108-88-3	Toluene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
79-00-5	1,1,2-Trichloroethane	12	U
127-18-4	Tetrachloroethene	12	U
108-10-1	4-Methyl-2-Pentanone	24	U
591-78-6	2-Hexanone	24	U
124-48-1	Dibromochloromethane	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
108-38-3	m,p-Xylenes	24	U
95-47-6	o-Xylene	12	U
100-42-5	Styrene	12	U
75-25-2	Bromoform	12	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-06

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-10

Sample wt/vol: 5.50(g/mL) G Lab File ID: LT641

Level: (low/med) LOW Date Received: 03/23/04

% Moisture: not dec. 62 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	12	U

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EA SAMPLE NO.

DUP-03

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-11

Sample wt/vol: 6.30(g/mL) G Lab File ID: LT648

Level: (low/med) LOW Date Received: 03/23/04

% Moisture: not dec. 60 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
67-64-1	Acetone	83	J
75-35-4	1,1-Dichloroethene	10	U
75-09-2	Methylene Chloride	10	~~U~~
75-15-0	Carbon Disulfide	11	
156-60-5	trans-1,2-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
78-93-3	2-Butanone	14	J
156-59-2	cis-1,2-Dichloroethene	10	U
67-66-3	Chloroform	10	U
56-23-5	Carbon Tetrachloride	10	U
107-06-2	1,2-Dichloroethane	10	U
71-43-2	Benzene	10	U
79-01-6	Trichloroethene	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-10-1	4-Methyl-2-Pentanone	20	U
591-78-6	2-Hexanone	20	U
124-48-1	Dibromochloromethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
108-38-3	m,p-Xylenes	20	U
95-47-6	o-Xylene	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

DUP-03

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-11

Sample wt/vol: 6.30(g/mL) G Lab File ID: LT648

Level: (low/med) LOW Date Received: 03/23/04

% Moisture: not dec. 60 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	10	U

FORM I VOA

FORM 1
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EA SAMPLE NO.

AH17

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-13

Sample wt/vol: 5.40(g/mL) G Lab File ID: LT649

Level: (low/med) LOW Date Received: 03/23/04

% Moisture: not dec. 69 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	15	U
75-01-4	Vinyl Chloride	15	U
74-83-9	Bromomethane	15	U
75-00-3	Chloroethane	15	U
67-64-1	Acetone	200	
75-35-4	1,1-Dichloroethene	15	U
75-09-2	Methylene Chloride	3	JB
75-15-0	Carbon Disulfide	24	
156-60-5	trans-1,2-Dichloroethene	15	U
75-34-3	1,1-Dichloroethane	15	U
78-93-3	2-Butanone	20	J
156-59-2	cis-1,2-Dichloroethene	15	U
67-66-3	Chloroform	15	U
56-23-5	Carbon Tetrachloride	15	U
107-06-2	1,2-Dichloroethane	15	U
71-43-2	Benzene	15	U
79-01-6	Trichloroethene	15	U
78-87-5	1,2-Dichloropropane	15	U
75-27-4	Bromodichloromethane	15	U
10061-01-5	cis-1,3-Dichloropropene	15	U
108-88-3	Toluene	15	U
10061-02-6	trans-1,3-Dichloropropene	15	U
79-00-5	1,1,2-Trichloroethane	15	U
127-18-4	Tetrachloroethene	15	U
108-10-1	4-Methyl-2-Pentanone	30	U
591-78-6	2-Hexanone	30	U
124-48-1	Dibromochloromethane	15	U
108-90-7	Chlorobenzene	15	U
100-41-4	Ethylbenzene	15	U
108-38-3	m,p-Xylenes	30	U
95-47-6	o-Xylene	15	U
100-42-5	Styrene	15	U
75-25-2	Bromoform	15	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH17

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-13

Sample wt/vol: 5.40(g/mL) G Lab File ID: LT649

Level: (low/med) LOW Date Received: 03/23/04

% Moisture: not dec. 69 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	15	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-03

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-17

Sample wt/vol: 6.80(g/mL) G Lab File ID: LT650

Level: (low/med) LOW Date Received: 03/23/04

% Moisture: not dec. 49 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	7	U
75-01-4	Vinyl Chloride	7	U
74-83-9	Bromomethane	7	U
75-00-3	Chloroethane	7	U
67-64-1	Acetone	220	
75-35-4	1,1-Dichloroethene	7	U
75-09-2	Methylene Chloride	37	B
75-15-0	Carbon Disulfide	11	
156-60-5	trans-1,2-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
78-93-3	2-Butanone	7	J
156-59-2	cis-1,2-Dichloroethene	7	U
67-66-3	Chloroform	7	U
56-23-5	Carbon Tetrachloride	7	U
107-06-2	1,2-Dichloroethane	7	U
71-43-2	Benzene	7	U
79-01-6	Trichloroethene	7	U
78-87-5	1,2-Dichloropropane	7	U
75-27-4	Bromodichloromethane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
108-88-3	Toluene	7	U
10061-02-6	trans-1,3-Dichloropropene	7	U
79-00-5	1,1,2-Trichloroethane	7	U
127-18-4	Tetrachloroethene	7	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
124-48-1	Dibromochloromethane	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
108-38-3	m,p-Xylenes	14	U
95-47-6	o-Xylene	7	U
100-42-5	Styrene	7	U
75-25-2	Bromoform	7	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-03

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-17

Sample wt/vol: 6.80(g/mL) G Lab File ID: LT650

Level: (low/med) LOW Date Received: 03/23/04

% Moisture: not dec. 49 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	7	U

FORM I VOA

05/27/04

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 1-1

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-01

Sample wt/vol: 9.30(g/mL) G Lab File ID: LT651

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 19 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	70	
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	1	BJ
75-15-0	Carbon Disulfide	46	
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	1	J
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 1-1

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-01

Sample wt/vol: 9.30(g/mL) G Lab File ID: LT651

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 19 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

05/12/04

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 1-2

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-02

Sample wt/vol: 10.60(g/mL) G Lab File ID: LT652

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 23 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	52	
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	0.9	BJ
75-15-0	Carbon Disulfide	12	
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 1-2

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-02

Sample wt/vol: 10.60(g/mL) G Lab File ID: LT652

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 23 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 1-4

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-04

Sample wt/vol: 6.00(g/mL) G Lab File ID: LT653

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 42 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	7	U
75-01-4	Vinyl Chloride	7	U
74-83-9	Bromomethane	7	U
75-00-3	Chloroethane	7	U
67-64-1	Acetone	200	
75-35-4	1,1-Dichloroethene	7	U
75-09-2	Methylene Chloride	2	JB
75-15-0	Carbon Disulfide	16	
156-60-5	trans-1,2-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
78-93-3	2-Butanone	38	
156-59-2	cis-1,2-Dichloroethene	7	U
67-66-3	Chloroform	7	U
56-23-5	Carbon Tetrachloride	7	U
107-06-2	1,2-Dichloroethane	7	U
71-43-2	Benzene	7	U
79-01-6	Trichloroethene	7	U
78-87-5	1,2-Dichloropropane	7	U
75-27-4	Bromodichloromethane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
108-88-3	Toluene	7	U
10061-02-6	trans-1,3-Dichloropropene	7	U
79-00-5	1,1,2-Trichloroethane	7	U
127-18-4	Tetrachloroethene	7	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
124-48-1	Dibromochloromethane	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
108-38-3	m,p-Xylenes	14	U
95-47-6	o-Xylene	7	U
100-42-5	Styrene	7	U
75-25-2	Bromoform	7	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 1-4

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-04

Sample wt/vol: 6.00(g/mL) G Lab File ID: LT653

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 42 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	7	U

FORM I VOA

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 2-1

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-06

Sample wt/vol: 6.30(g/mL) G Lab File ID: LT654

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 49 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	8	U
75-00-3	Chloroethane	8	U
67-64-1	Acetone	140	
75-35-4	1,1-Dichloroethene	8	U
75-09-2	Methylene Chloride	2	JB
75-15-0	Carbon Disulfide	14	
156-60-5	trans-1,2-Dichloroethene	8	U
75-34-3	1,1-Dichloroethane	8	U
78-93-3	2-Butanone	11	J
156-59-2	cis-1,2-Dichloroethene	8	U
67-66-3	Chloroform	8	U
56-23-5	Carbon Tetrachloride	8	U
107-06-2	1,2-Dichloroethane	8	U
71-43-2	Benzene	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-88-3	Toluene	8	U
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	8	U
108-10-1	4-Methyl-2-Pentanone	16	U
591-78-6	2-Hexanone	16	U
124-48-1	Dibromochloromethane	8	U
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
108-38-3	m,p-Xylenes	16	U
95-47-6	o-Xylene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	8	U

FORM I VOA

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 2-1

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-06

Sample wt/vol: 6.30(g/mL) G Lab File ID: LT654

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 49 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	8	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 2-3

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-08

Sample wt/vol: 7.40(g/mL) G Lab File ID: LT655

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 42 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
67-64-1	Acetone	74	
75-35-4	1,1-Dichloroethene	6	U
75-09-2	Methylene Chloride	6	U
75-15-0	Carbon Disulfide	8	
156-60-5	trans-1,2-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
78-93-3	2-Butanone	8	J
156-59-2	cis-1,2-Dichloroethene	6	U
67-66-3	Chloroform	6	U
56-23-5	Carbon Tetrachloride	6	U
107-06-2	1,2-Dichloroethane	6	U
71-43-2	Benzene	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
124-48-1	Dibromochloromethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
108-38-3	m,p-Xylenes	12	U
95-47-6	o-Xylene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 2-3

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-08

Sample wt/vol: 7.40(g/mL) G Lab File ID: LT655

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 42 Date Analyzed: 04/02/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	6	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 2-5

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-10

Sample wt/vol: 10.60(g/mL) G Lab File ID: LT681

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 23 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	65	B
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	0.9	JB
75-15-0	Carbon Disulfide	3	J
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	5	J
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 2-5

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-10

Sample wt/vol: 10.60(g/mL) G Lab File ID: LT681

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 23 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-23

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-11

Sample wt/vol: 6.70(g/mL) G Lab File ID: LT682

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 64 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
67-64-1	Acetone	210	B
75-35-4	1,1-Dichloroethene	10	U
75-09-2	Methylene Chloride	3	JB
75-15-0	Carbon Disulfide	4	J
156-60-5	trans-1,2-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
78-93-3	2-Butanone	12	J
156-59-2	cis-1,2-Dichloroethene	10	U
67-66-3	Chloroform	10	U
56-23-5	Carbon Tetrachloride	10	U
107-06-2	1,2-Dichloroethane	10	U
71-43-2	Benzene	10	U
79-01-6	Trichloroethene	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-10-1	4-Methyl-2-Pentanone	21	U
591-78-6	2-Hexanone	21	U
124-48-1	Dibromochloromethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
108-38-3	m,p-Xylenes	21	U
95-47-6	o-Xylene	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-23

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-11

Sample wt/vol: 6.70(g/mL) G Lab File ID: LT682

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. 64 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	10	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

TB16-03

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-14

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT680

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. _____ Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	46	B
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	2	JB
75-15-0	Carbon Disulfide	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	4	J
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

032704

FORM 1

VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

TB16-03

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-14

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT680

Level: (low/med) LOW Date Received: 03/24/04

% Moisture: not dec. _____ Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-28

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-17

Sample wt/vol: 8.80(g/mL) G Lab File ID: LT707

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. 27 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	84	
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	1	JB
75-15-0	Carbon Disulfide	3	JB
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	5	J
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-28

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-17

Sample wt/vol: 8.80(g/mL) G Lab File ID: LT707

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. 27 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-49

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-20

Sample wt/vol: 7.50(g/mL) G Lab File ID: LT683

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. 27 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	79	B
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	1	JB
75-15-0	Carbon Disulfide	3	J
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	5	J
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-49

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-20

Sample wt/vol: 7.50(g/mL) G Lab File ID: LT683

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. 27 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

TB16-04

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-22

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT705

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. _____ Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	160	
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	3	JB
75-15-0	Carbon Disulfide	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	5	J
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

TB16-04

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032204 SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-22

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT705

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. _____ Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

05/27/04
CC

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-08

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-02

Sample wt/vol: 50.0(g/mL) G Lab File ID: _____

% Moisture: 70 Decanted: (Y/N) N Date Received: 03/22/04

Extraction: (Type) SOXHLET Date Extracted: 04/05/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.68	U
319-85-7	beta-BHC	0.68	U
319-86-8	delta-BHC	0.68	U
58-89-9	gamma-BHC (Lindane)	1.1	P
76-44-8	Heptachlor	1.4	P
309-00-2	Aldrin	0.68	U
1024-57-3	Heptachlor epoxide	2.1	P
959-98-8	Endosulfan I	0.68	U
60-57-1	Dieldrin	1.3	U
72-55-9	4,4'-DDE	1.6	P
72-20-8	Endrin	1.3	U
33213-65-9	Endosulfan II	1.3	U
72-54-8	4,4'-DDD	1.3	U
1031-07-8	Endosulfan sulfate	1.3	U
50-29-3	4,4'-DDT	1.3	U
72-43-5	Methoxychlor	6.8	U
53494-70-5	Endrin ketone	1.3	U
7421-93-4	Endrin aldehyde	1.3	U
5103-71-9	alpha-Chlordane	0.68	U
5103-74-2	gamma-Chlordane	0.68	U
8001-35-2	Toxaphene	68	U

05/27/04

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-11

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-05

Sample wt/vol: 30.2(g/mL) G Lab File ID: _____

% Moisture: 64 Decanted: (Y/N) N Date Received: 03/22/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.94	U
319-85-7	beta-BHC	4.8	~~P~~ R
319-86-8	delta-BHC	0.94	U
58-89-9	gamma-BHC (Lindane)	0.94	~~U~~ UJ
76-44-8	Heptachlor	3.0	P R
309-00-2	Aldrin	0.94	U
1024-57-3	Heptachlor epoxide	0.94	U
959-98-8	Endosulfan I	0.94	~~U~~ UJ
60-57-1	Dieldrin	1.8	U
72-55-9	4,4'-DDE	1.8	~~U~~ UJ
72-20-8	Endrin	1.8	U
33213-65-9	Endosulfan II	1.8	U
72-54-8	4,4'-DDD	1.8	U
1031-07-8	Endosulfan sulfate	1.8	U
50-29-3	4,4'-DDT	1.8	U
72-43-5	Methoxychlor	9.4	~~U~~ UJ
53494-70-5	Endrin ketone	1.8	~~U~~ UJ
7421-93-4	Endrin aldehyde	1.8	U
5103-71-9	alpha-Chlordane	0.94	U
5103-74-2	gamma-Chlordane	1.7	J
8001-35-2	Toxaphene	94	U

5/27/04
TC

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-DUP01

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-06

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 63 Decanted: (Y/N) N Date Received: 03/22/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.92	U
319-85-7	beta-BHC	0.92	U
319-86-8	delta-BHC	0.92	U
58-89-9	gamma-BHC (Lindane)	0.92	U
76-44-8	Heptachlor	0.92	U
309-00-2	Aldrin	0.92	U
1024-57-3	Heptachlor epoxide	0.92	U
959-98-8	Endosulfan I	0.92	U
60-57-1	Dieldrin	1.8	U
72-55-9	4,4'-DDE	2.7	J
72-20-8	Endrin	1.8	U
33213-65-9	Endosulfan II	1.8	U
72-54-8	4,4'-DDD	1.8	U
1031-07-8	Endosulfan sulfate	1.8	U
50-29-3	4,4'-DDT	1.8	U
72-43-5	Methoxychlor	9.2	U
53494-70-5	Endrin ketone	1.8	U
7421-93-4	Endrin aldehyde	1.8	U
5103-71-9	alpha-Chlordane	0.92	U
5103-74-2	gamma-Chlordane	3.4	P J
8001-35-2	Toxaphene	92	U

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FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-06

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-10

Sample wt/vol: 30.3(g/mL) G Lab File ID: _____

% Moisture: 61 Decanted: (Y/N) N Date Received: 03/23/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.86	U
319-85-7	beta-BHC	0.86	U
319-86-8	delta-BHC	0.86	U
58-89-9	gamma-BHC (Lindane)	0.86	~~U~~ UJ
76-44-8	Heptachlor	0.86	U
309-00-2	Aldrin	0.86	U
1024-57-3	Heptachlor epoxide	0.86	U
959-98-8	Endosulfan I	0.86	U
60-57-1	Dieldrin	1.7	U
72-55-9	4,4'-DDE	1.7	U
72-20-8	Endrin	1.7	U
33213-65-9	Endosulfan II	1.7	U
72-54-8	4,4'-DDD	1.7	U
1031-07-8	Endosulfan sulfate	1.7	U
50-29-3	4,4'-DDT	1.7	U
72-43-5	Methoxychlor	8.6	U
53494-70-5	Endrin ketone	1.7	U
7421-93-4	Endrin aldehyde	1.7	U
5103-71-9	alpha-Chlordane	0.86	U
5103-74-2	gamma-Chlordane	0.86	U
8001-35-2	Toxaphene	86	U

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FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH17

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-13

Sample wt/vol: 51.7(g/mL) G Lab File ID: _____

% Moisture: 74 Decanted: (Y/N) N Date Received: 03/23/04

Extraction: (Type) SOXHLET Date Extracted: 04/05/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.76	U
319-85-7	beta-BHC	5.3	~~P~~ R
319-86-8	delta-BHC	0.76	U
58-89-9	gamma-BHC (Lindane)	0.76	U
76-44-8	Heptachlor	0.76	U
309-00-2	Aldrin	0.76	U
1024-57-3	Heptachlor epoxide	6.4	~~P~~ R
959-98-8	Endosulfan I	0.76	U
60-57-1	Dieldrin	1.5	U
72-55-9	4,4'-DDE	1.5	U
72-20-8	Endrin	1.5	U
33213-65-9	Endosulfan II	1.5	U
72-54-8	4,4'-DDD	1.5	U
1031-07-8	Endosulfan sulfate	1.5	U
50-29-3	4,4'-DDT	1.5	U
72-43-5	Methoxychlor	7.6	U
53494-70-5	Endrin ketone	1.5	U
7421-93-4	Endrin aldehyde	1.5	U
5103-71-9	alpha-Chlordane	0.76	U
5103-74-2	gamma-Chlordane	5.3	~~P~~ R
8001-35-2	Toxaphene	76	U

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FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-03

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-17

Sample wt/vol: 30.4(g/mL) G Lab File ID: _____

% Moisture: 48 Decanted: (Y/N) N Date Received: 03/23/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.65	U
319-85-7	beta-BHC	4.2	~~P~~ R
319-86-8	delta-BHC	0.65	U
58-89-9	gamma-BHC (Lindane)	0.65	U
76-44-8	Heptachlor	1.2	~~P~~ R
309-00-2	Aldrin	0.65	U
1024-57-3	Heptachlor epoxide	0.65	U
959-98-8	Endosulfan I	0.65	U
60-57-1	Dieldrin	1.3	U
72-55-9	4,4'-DDE	1.6	
72-20-8	Endrin	1.3	U
33213-65-9	Endosulfan II	1.3	U
72-54-8	4,4'-DDD	1.3	U
1031-07-8	Endosulfan sulfate	1.3	U
50-29-3	4,4'-DDT	1.3	U
72-43-5	Methoxychlor	6.5	U
53494-70-5	Endrin ketone	1.3	U
7421-93-4	Endrin aldehyde	1.3	U
5103-71-9	alpha-Chlordane	0.65	U
5103-74-2	gamma-Chlordane	0.66	~~P~~ R
8001-35-2	Toxaphene	65	U

e 5/12/04

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF1-1

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-01

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 21 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/15/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.43	U
319-85-7	beta-BHC	0.43	U
319-86-8	delta-BHC	0.43	U
58-89-9	gamma-BHC (Lindane)	0.43	U
76-44-8	Heptachlor	0.43	U
309-00-2	Aldrin	0.43	U
1024-57-3	Heptachlor epoxide	0.43	U
959-98-8	Endosulfan I	0.43	U
60-57-1	Dieldrin	0.83	U
72-55-9	4,4'-DDE	0.83	U
72-20-8	Endrin	0.83	U
33213-65-9	Endosulfan II	0.83	U
72-54-8	4,4'-DDD	0.83	U
1031-07-8	Endosulfan sulfate	0.83	U
50-29-3	4,4'-DDT	0.83	U
72-43-5	Methoxychlor	4.3	U
53494-70-5	Endrin ketone	0.83	U
7421-93-4	Endrin aldehyde	0.83	U
5103-71-9	alpha-Chlordane	0.43	U
5103-74-2	gamma-Chlordane	0.43	U
8001-35-2	Toxaphene	43	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF1-2

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-02

Sample wt/vol: 30.4(g/mL) G Lab File ID: _____

% Moisture: 20 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/15/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.42	U
319-85-7	beta-BHC	0.42	U
319-86-8	delta-BHC	0.42	U
58-89-9	gamma-BHC (Lindane)	0.42	U
76-44-8	Heptachlor	0.42	U
309-00-2	Aldrin	0.42	U
1024-57-3	Heptachlor epoxide	0.42	U
959-98-8	Endosulfan I	0.42	U
60-57-1	Dieldrin	0.81	U
72-55-9	4,4'-DDE	0.81	U
72-20-8	Endrin	0.81	U
33213-65-9	Endosulfan II	0.81	U
72-54-8	4,4'-DDD	0.81	U
1031-07-8	Endosulfan sulfate	0.81	U
50-29-3	4,4'-DDT	0.81	U
72-43-5	Methoxychlor	4.2	U
53494-70-5	Endrin ketone	0.81	U
7421-93-4	Endrin aldehyde	0.81	U
5103-71-9	alpha-Chlordane	0.42	U
5103-74-2	gamma-Chlordane	0.42	U
8001-35-2	Toxaphene	42	U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF1-4

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-04

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 41 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/15/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.57	U
319-85-7	beta-BHC	0.57	U
319-86-8	delta-BHC	0.57	U
58-89-9	gamma-BHC (Lindane)	0.57	U
76-44-8	Heptachlor	0.57	U
309-00-2	Aldrin	0.57	U
1024-57-3	Heptachlor epoxide	0.57	U
959-98-8	Endosulfan I	0.57	U
60-57-1	Dieldrin	1.1	U
72-55-9	4,4'-DDE	1.1	U
72-20-8	Endrin	1.1	U
33213-65-9	Endosulfan II	1.1	U
72-54-8	4,4'-DDD	1.1	U
1031-07-8	Endosulfan sulfate	1.1	U
50-29-3	4,4'-DDT	1.1	U
72-43-5	Methoxychlor	5.7	U
53494-70-5	Endrin ketone	1.1	U
7421-93-4	Endrin aldehyde	1.1	U
5103-71-9	alpha-Chlordane	0.57	U
5103-74-2	gamma-Chlordane	0.57	U
8001-35-2	Toxaphene	57	U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF2-1

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-06

Sample wt/vol: 30.5(g/mL) G Lab File ID: _____

% Moisture: 51 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/15/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.68	U
319-85-7	beta-BHC	0.68	U
319-86-8	delta-BHC	0.68	U
58-89-9	gamma-BHC (Lindane)	0.68	U
76-44-8	Heptachlor	0.68	U
309-00-2	Aldrin	0.68	U
1024-57-3	Heptachlor epoxide	0.67	JP R
959-98-8	Endosulfan I	0.68	U
60-57-1	Dieldrin	1.3	U
72-55-9	4,4'-DDE	1.3	U
72-20-8	Endrin	1.3	U
33213-65-9	Endosulfan II	1.3	U
72-54-8	4,4'-DDD	1.3	U
1031-07-8	Endosulfan sulfate	1.3	U
50-29-3	4,4'-DDT	1.3	U
72-43-5	Methoxychlor	6.8	U
53494-70-5	Endrin ketone	1.3	U
7421-93-4	Endrin aldehyde	1.3	U
5103-71-9	alpha-Chlordane	0.68	U
5103-74-2	gamma-Chlordane	0.68	U
8001-35-2	Toxaphene	68	U

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FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF2-3

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-08

Sample wt/vol: 30.3(g/mL) G Lab File ID: _____

% Moisture: 44 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/16/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.60	U
319-85-7	beta-BHC	0.60	U
319-86-8	delta-BHC	0.60	U
58-89-9	gamma-BHC (Lindane)	0.60	U
76-44-8	Heptachlor	0.60	U
309-00-2	Aldrin	0.60	U
1024-57-3	Heptachlor epoxide	0.60	U
959-98-8	Endosulfan I	0.60	U
60-57-1	Dieldrin	1.2	U
72-55-9	4,4'-DDE	1.2	U
72-20-8	Endrin	1.2	U
33213-65-9	Endosulfan II	1.2	U
72-54-8	4,4'-DDD	1.2	U
1031-07-8	Endosulfan sulfate	1.2	U
50-29-3	4,4'-DDT	1.2	U
72-43-5	Methoxychlor	6.0	U
53494-70-5	Endrin ketone	1.2	U
7421-93-4	Endrin aldehyde	1.2	U
5103-71-9	alpha-Chlordane	0.60	U
5103-74-2	gamma-Chlordane	0.60	U
8001-35-2	Toxaphene	60	U

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FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF2-5

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-10

Sample wt/vol: 30.4(g/mL) G Lab File ID: _____

% Moisture: 20 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/15/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.42	U
319-85-7	beta-BHC	0.42	U
319-86-8	delta-BHC	0.42	U
58-89-9	gamma-BHC (Lindane)	0.42	U
76-44-8	Heptachlor	0.42	U
309-00-2	Aldrin	0.42	U
1024-57-3	Heptachlor epoxide	0.42	U
959-98-8	Endosulfan I	0.42	U
60-57-1	Dieldrin	0.81	U
72-55-9	4,4'-DDE	0.81	U
72-20-8	Endrin	0.81	U
33213-65-9	Endosulfan II	0.81	U
72-54-8	4,4'-DDD	0.81	U
1031-07-8	Endosulfan sulfate	0.81	U
50-29-3	4,4'-DDT	0.81	U
72-43-5	Methoxychlor	4.2	U
53494-70-5	Endrin ketone	0.81	U
7421-93-4	Endrin aldehyde	0.81	U
5103-71-9	alpha-Chlordane	0.42	U
5103-74-2	gamma-Chlordane	0.42	U
8001-35-2	Toxaphene	42	U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-23

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-11

Sample wt/vol: 30.3(g/mL) G Lab File ID: _____

% Moisture: 64 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/16/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.94	U
319-85-7	beta-BHC	0.94	U
319-86-8	delta-BHC	0.94	U
58-89-9	gamma-BHC (Lindane)	2.0	~~P~~ R
76-44-8	Heptachlor	0.94	U
309-00-2	Aldrin	0.94	U
1024-57-3	Heptachlor epoxide	0.94	U
959-98-8	Endosulfan I	0.94	U
60-57-1	Dieldrin	9.6	P R
72-55-9	4,4'-DDE	3.4	~~P~~ J
72-20-8	Endrin	1.8	U
33213-65-9	Endosulfan II	1.8	U
72-54-8	4,4'-DDD	1.8	U
1031-07-8	Endosulfan sulfate	1.8	U
50-29-3	4,4'-DDT	1.8	U
72-43-5	Methoxychlor	9.4	U
53494-70-5	Endrin ketone	1.8	U
7421-93-4	Endrin aldehyde	1.9	~~P~~ R
5103-71-9	alpha-Chlordane	0.94	U
5103-74-2	gamma-Chlordane	10	
8001-35-2	Toxaphene	94	U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-28

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-17

Sample wt/vol: 30.5(g/mL) G Lab File ID: _____

% Moisture: 31 Decanted: (Y/N) N Date Received: 03/25/04

Extraction: (Type) SONC Date Extracted: 04/08/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/16/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.48	U
319-85-7	beta-BHC	0.48	U
319-86-8	delta-BHC	0.48	U
58-89-9	gamma-BHC (Lindane)	0.64	~~P~~ R
76-44-8	Heptachlor	0.48	U
309-00-2	Aldrin	0.48	U
1024-57-3	Heptachlor epoxide	0.48	U
959-98-8	Endosulfan I	0.48	U
60-57-1	Dieldrin	8.1	
72-55-9	4,4'-DDE	1.4	~~P~~ R
72-20-8	Endrin	0.94	U
33213-65-9	Endosulfan II	0.94	U
72-54-8	4,4'-DDD	1.6	
1031-07-8	Endosulfan sulfate	0.94	U
50-29-3	4,4'-DDT	0.94	U
72-43-5	Methoxychlor	4.8	U
53494-70-5	Endrin ketone	2.0	~~P~~ R
7421-93-4	Endrin aldehyde	0.94	U
5103-71-9	alpha-Chlordane	2.4	~~P~~ R
5103-74-2	gamma-Chlordane	2.3	~~P~~ R
8001-35-2	Toxaphene	48	U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-49

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-20

Sample wt/vol: 30.3(g/mL) G Lab File ID: _____

% Moisture: 26 Decanted: (Y/N) N Date Received: 03/25/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/16/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.45	U
319-85-7	beta-BHC	0.45	U
319-86-8	delta-BHC	0.45	U
58-89-9	gamma-BHC (Lindane)	0.45	U
76-44-8	Heptachlor	0.45	U
309-00-2	Aldrin	0.45	U
1024-57-3	Heptachlor epoxide	0.45	U
959-98-8	Endosulfan I	0.45	U
60-57-1	Dieldrin	0.88	U
72-55-9	4,4'-DDE	1.4	~~P~~ R
72-20-8	Endrin	0.88	U
33213-65-9	Endosulfan II	0.88	U
72-54-8	4,4'-DDD	0.88	U
1031-07-8	Endosulfan sulfate	0.88	U
50-29-3	4,4'-DDT	0.88	U
72-43-5	Methoxychlor	4.5	U
53494-70-5	Endrin ketone	0.88	U
7421-93-4	Endrin aldehyde	0.88	U
5103-71-9	alpha-Chlordane	0.45	U
5103-74-2	gamma-Chlordane	0.63	~~P~~ R
8001-35-2	Toxaphene	45	U

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FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-08

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-02

Sample wt/vol: 50.0(g/mL) G Lab File ID: _____

% Moisture: 70 Decanted: (Y/N) N Date Received: 03/22/04

Extraction: (Type) SOXHLET Date Extracted: 04/05/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/12/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	13	U R
11104-28-2	Aroclor-1221	27	U
11141-16-5	Aroclor-1232	13	U
53469-21-9	Aroclor-1242	13	U
12672-29-6	Aroclor-1248	13	U
11097-69-1	Aroclor-1254	13	U
11096-82-5	Aroclor-1260	21	~~P~~ J

05/27/04

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-11

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-05

Sample wt/vol: 30.3(g/mL) G Lab File ID: _____

% Moisture: 64 Decanted: (Y/N) N Date Received: 03/22/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/12/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	18	U
11104-28-2	Aroclor-1221	37	U
11141-16-5	Aroclor-1232	18	U
53469-21-9	Aroclor-1242	18	U
12672-29-6	Aroclor-1248	18	U
11097-69-1	Aroclor-1254	18	U
11096-82-5	Aroclor-1260	30	J

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-DUP01

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-06

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 63 Decanted: (Y/N) N Date Received: 03/22/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	18	U
11104-28-2	Aroclor-1221	36	U
11141-16-5	Aroclor-1232	18	U
53469-21-9	Aroclor-1242	18	U
12672-29-6	Aroclor-1248	18	U
11097-69-1	Aroclor-1254	18	U
11096-82-5	Aroclor-1260	34	

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-06

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-10

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 61 Decanted: (Y/N) N Date Received: 03/23/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	17	U
11104-28-2	Aroclor-1221	34	U
11141-16-5	Aroclor-1232	17	U
53469-21-9	Aroclor-1242	17	U
12672-29-6	Aroclor-1248	17	U
11097-69-1	Aroclor-1254	17	U
11096-82-5	Aroclor-1260	19	U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP-03

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-11

Sample wt/vol: 30.2(g/mL) G Lab File ID: _____

% Moisture: 61 Decanted: (Y/N) N Date Received: 03/23/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	17	U
11104-28-2	Aroclor-1221	34	U
11141-16-5	Aroclor-1232	17	U
53469-21-9	Aroclor-1242	17	U
12672-29-6	Aroclor-1248	17	U
11097-69-1	Aroclor-1254	17	U
11096-82-5	Aroclor-1260	21	

05/12/04

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-17

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-13

Sample wt/vol: 51.7(g/mL) G Lab File ID: _____

% Moisture: 71 Decanted: (Y/N) N Date Received: 03/23/04

Extraction: (Type) SOXHLET Date Extracted: 04/05/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	13	U
11104-28-2	Aroclor-1221	27	U
11141-16-5	Aroclor-1232	13	U
53469-21-9	Aroclor-1242	13	U
12672-29-6	Aroclor-1248	13	U
11097-69-1	Aroclor-1254	13	U
11096-82-5	Aroclor-1260	17	J

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-03

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040222-17

Sample wt/vol: 30.4(g/mL) G Lab File ID: _____

% Moisture: 48 Decanted: (Y/N) N Date Received: 03/23/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	13	U
11104-28-2	Aroclor-1221	25	U
11141-16-5	Aroclor-1232	13	U
53469-21-9	Aroclor-1242	13	U
12672-29-6	Aroclor-1248	13	U
11097-69-1	Aroclor-1254	13	U
11096-82-5	Aroclor-1260	13	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF1-1

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-01

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 21 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	8.4	U
11104-28-2	Aroclor-1221	17	U
11141-16-5	Aroclor-1232	8.4	U
53469-21-9	Aroclor-1242	8.4	U
12672-29-6	Aroclor-1248	8.4	U
11097-69-1	Aroclor-1254	8.4	U
11096-82-5	Aroclor-1260	8.4	U

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FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF1-2

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-02

Sample wt/vol: 30.3(g/mL) G Lab File ID: _____

% Moisture: 20 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	8.2	U
11104-28-2	Aroclor-1221	17	U
11141-16-5	Aroclor-1232	8.2	U
53469-21-9	Aroclor-1242	8.2	U
12672-29-6	Aroclor-1248	8.2	U
11097-69-1	Aroclor-1254	8.2	U
11096-82-5	Aroclor-1260	8.2	U

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FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF1-4

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-04

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 41 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	11	U
11104-28-2	Aroclor-1221	23	U
11141-16-5	Aroclor-1232	11	U
53469-21-9	Aroclor-1242	11	U
12672-29-6	Aroclor-1248	11	U
11097-69-1	Aroclor-1254	11	U
11096-82-5	Aroclor-1260	11	U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF2-1

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-06

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 51 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	13	U
11104-28-2	Aroclor-1221	27	U
11141-16-5	Aroclor-1232	13	U
53469-21-9	Aroclor-1242	13	U
12672-29-6	Aroclor-1248	13	U
11097-69-1	Aroclor-1254	13	U
11096-82-5	Aroclor-1260	11	J

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FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF2-3

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-08

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 44 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	12	U
11104-28-2	Aroclor-1221	24	U
11141-16-5	Aroclor-1232	12	U
53469-21-9	Aroclor-1242	12	U
12672-29-6	Aroclor-1248	12	U
11097-69-1	Aroclor-1254	12	U
11096-82-5	Aroclor-1260	12	U

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FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF2-5

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-10

Sample wt/vol: 30.5(g/mL) G Lab File ID: _____

% Moisture: 20 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	8.1	U
11104-28-2	Aroclor-1221	16	U
11141-16-5	Aroclor-1232	8.1	U
53469-21-9	Aroclor-1242	8.1	U
12672-29-6	Aroclor-1248	8.1	U
11097-69-1	Aroclor-1254	8.1	U
11096-82-5	Aroclor-1260	8.1	U

05/17/04

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-23

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-11

Sample wt/vol: 30.2(g/mL) G Lab File ID: _____

% Moisture: 61 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	17	U
11104-28-2	Aroclor-1221	34	U
11141-16-5	Aroclor-1232	17	U
53469-21-9	Aroclor-1242	17	U
12672-29-6	Aroclor-1248	17	U
11097-69-1	Aroclor-1254	17	U
11096-82-5	Aroclor-1260	70	

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-28

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-17

Sample wt/vol: 30.5(g/mL) G Lab File ID: _____

% Moisture: 31 Decanted: (Y/N) N Date Received: 03/24/04

Extraction: (Type) SONC Date Extracted: 04/08/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	9.4	U
11104-28-2	Aroclor-1221	19	U
11141-16-5	Aroclor-1232	9.4	U
53469-21-9	Aroclor-1242	9.4	U
12672-29-6	Aroclor-1248	9.4	U
11097-69-1	Aroclor-1254	9.4	U
11096-82-5	Aroclor-1260	23	

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-49

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix: (soil/water) SOIL Lab Sample ID: 040233-20

Sample wt/vol: 30.3(g/mL) G Lab File ID: _____

% Moisture: 26 Decanted: (Y/N) N Date Received: 03/25/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/13/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	8.8	U
11104-28-2	Aroclor-1221	18	U
11141-16-5	Aroclor-1232	8.8	U
53469-21-9	Aroclor-1242	8.8	U
12672-29-6	Aroclor-1248	8.8	U
11097-69-1	Aroclor-1254	8.8	U
11096-82-5	Aroclor-1260	8.8	U

FORM I PEST

ENVIRONMENTAL
Data Services, Inc.

INORGANIC DATA VALIDATION REPORT
USEPA REGION I - TIER III

SDG No.:	SED16A/040222, 040233
Laboratory:	Ceimic Corporation, Narragansett, Rhode Island
Site:	NCBC Davisville, Allen Harbor, Site 16
Date:	June 3, 2004
Samples:	
Metals:	16/Soil/AH-08, AH-11, AH-DUP01, AH-06, DUP-03, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-28, AH-49
Cyanide:	16/Soil/AH-08, AH-11, AH-DUP01, AH-06, DUP-03, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-28, AH-49
AVS/SEM:	16/Soil/AH-08, AH-11, AH-DUP01, AH-06, DUP-03, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-28, AH-49

A Tier III validation was performed on the inorganic analytical data for sixteen soil samples collected by EA Engineering, Science, & Technology, Inc. at Allen Harbor, Site 16, NCBC Davisville. The samples were analyzed under USEPA SW-846 Methods 6010B/7000, 9010B and USEPA 1991 Draft Method for metals/mercury, cyanide and AVS/SEM, respectively. The data were evaluated as a Tier III level in accordance with the "Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses" dated June 13, 1988, modified February 1989 and were based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues.
- * Data Completeness.
- * Preservation and Technical Holding Times.
- * Initial and Continuing Calibration Verifications.
- Blanks.
- ICP Interference Check Results.
- Matrix Spike Recoveries.
- * Laboratory Duplicates.
- Field Duplicates.
- * Laboratory Control Sample.
- * Furnace AA Results.
- ICP Serial Dilution Results.
- Detection Limit Results.
- * Sample Quantitation.

* = All criteria were met for this parameter.
NA = Not Applicable.

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Overall Evaluation of Data and Potential Usability Issues

Metals:

Metal sample results were qualified for the following:

- Arsenic has been qualified as undetected (U) in samples REF1-1, REF1-2 and AH-49 due to method blank contamination.
- Cadmium has been qualified as undetected (U) in samples REF2-1 and REF2-3 due to method blank contamination.
- Silver has been qualified as undetected (U) in sample AH-28 due to method blank contamination.
- Barium has been qualified as undetected (U) in samples REF1-1 and REF1-2 due to equipment blank contamination.
- Calcium has been qualified as undetected (U) in samples AH-08, AH-11, AH-DUP01, AH-06, DUP03, AH-17, REF1-1, REF1-2, AH-23, AH-28 and AH-49 due to equipment blank contamination.
- Copper has been qualified as undetected (U) in samples REF1-1, REF1-2, REF1-4 and REF2-5 due to equipment blank contamination.
- Magnesium has been qualified as undetected (U) in samples REF1-1, REF1-2 and AH-49 due to equipment blank contamination.
- Sodium has been qualified as undetected (U) in samples AH-08, AH-11, AH-DUP01, AH-06, DUP03, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-28 and AH-49 due to equipment blank contamination.
- Zinc has been qualified as undetected (U) in samples REF1-1 and REF1-2 due to equipment blank contamination.
- Potassium has been qualified (J) in all samples except AH-28 due to high ICS recovery.
- Antimony has been rejected (R) in all samples due to severely low matrix spike recoveries.
- Lead has been qualified (J) in all samples except AH-28 due to a high LCS recovery.
- Potassium has been qualified (J) in sample AH-28 due to a high ICP serial dilution recovery.
- Positive results <2X the MDL and <CRDL have been qualified as estimated (J). Results >2X the MDL and <CRDL were not qualified and the laboratory (B) flag has been removed.

Cyanide:

Cyanide sample results were qualified for the following:

- Cyanide has been rejected (R) in all samples due to severely low matrix spike recoveries.

AVS/SEM:

AVS/SEM sample results were qualified for the following.

- Copper has been qualified (J) in field duplicate samples AH-11 and AH-DUP01 due to poor field duplicate precision.

Blanks

The contamination detected in the blanks which resulted in qualifications are summarized in the following section:

Metals:

Blank	Compound	Concentration ug/L	Action Level mg/kg	Affected Samples
CCB5	Arsenic	4.1	2.05	REF1-1, REF1-2, AH-49
CCB5	Cadmium	0.2	0.1	REF2-1, REF2-3
PBS	Silver	0.48 mg/kg	2.405	AH-28
RINS01	Barium	6.9	3.45	REF1-1, REF1-2
	Calcium	6170	3085	AH-08, AH-11, AH-DUP01, AH-06, DUP03, AH-17, REF1-1, REF1-2, AH-23, AH-28, AH-49
	Copper	20.1	10.05	REF1-1, REF1-2, REF1-4, REF2-5
	Magnesium	2510	1255	REF1-1, REF1-2, AH-49
	Potassium	1670	835	REF1-1, REF1-2, REF1-4, REF2-5, AH-28, AH-49
	Sodium	28200	14100	AH-08, AH-11, AH-DUP01, AH-06, DUP03, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-28, AH-49
	Zinc	39.2	19.6	REF1-1, REF1-2

- Arsenic has been qualified as undetected (U) in samples REF1-1, REF1-2 and AH-49.
- Cadmium has been qualified as undetected (U) in samples REF2-1 and REF2-3.
- Silver has been qualified as undetected (U) in sample AH-28.
- Barium has been qualified as undetected (U) in samples REF1-1 and REF1-2.
- Calcium has been qualified as undetected (U) in samples AH-08, AH-11, AH-DUP01, AH-06, DUP03, AH-17, REF1-1, REF1-2, AH-23, AH-28 and AH-49.
- Copper has been qualified as undetected (U) in samples REF1-1, REF1-2, REF1-4 and REF2-5.
- Magnesium has been qualified as undetected (U) in samples REF1-1, REF1-2 and AH-49.
- Sodium has been qualified as undetected (U) in samples AH-08, AH-11, AH-DUP01, AH-06, DUP03, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, AH-28 and AH-49.
- Zinc has been qualified as undetected (U) in samples REF1-1 and REF1-2.

ICP Interference Check Results

Metals:

Date	Compound	%R	Action	Affected Samples
04/07/04	Potassium	122%/124%/124%	J	All Samples except AH-28

- Potassium has been qualified (J) in all samples except AH-28.

Matrix Spike

Metals:

MS Sample ID: AH-06

Compound	MS %R	Action
Antimony	16%	J/R
Cyanide	19%	J/R

MS Sample ID: AH-11

Compound	MS %R	Action
Antimony	15%	J/R
Cyanide	0%	J/R

- Antimony has been rejected (R) in all samples.
- Cyanide has been rejected (R) in all samples.

Field Duplicates

AVS/SEM:

Compound	AH-11 umole/g	AH-DUP01 umole/g	RPD	Action
Copper	0.04	0.18	127%	J

- Copper has been qualified (J) in field duplicate samples AH-11 and AH-DUP01.

Laboratory Control Sample

The following compounds did not meet control criteria:

Metals:

LCS Sample ID	Compound	LCS Conc.	Action	Affected Samples
LCS	Lead	91 mg/kg	J	All Samples except AH-28

- Lead has been qualified (J) in all samples except AH-28.

ICP Serial Dilution

Metals:

ICP Serial Dilution Sample ID: AH-11

Compound	Sample Result	Serial Dilution	%D	Action
Potassium	13040.57	15027.49	15%	J

- Potassium has been qualified (J) in sample AH-28.

Detection Limit Results

Metals:

- Positive results <2X the MDL and <CRDL have been qualified as estimated (J). Results >2X the MDL and <CRDL were not qualified and the laboratory (B) flag has been removed.

Attachments: Data Validation Worksheets
Annotated Form Is

DATA SUMMARY KEY
INORGANIC DATA VALIDATION

J = The associated numerical value is an estimated quantity.

R = The data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification. The R replaces the numerical value or sample quantitation limit.

U = The compound was analyzed for, but not detected. The associated numerical value is the sample quantitation limit or the adjusted sample quantitation limit.

UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit.

FIGURE 9

Region I

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. —

SITE NCBC Davisville Site 16

LABORATORY Chemic Corp. Narragansett RI

NO. OF SAMPLES/ MATRIX 16 / Soils

SDG# SED16A / 1040222 / 1040233

REVIEWER (IF NOT ESD) Env Data Services Inc

SOW# SOW846

REVIEWER'S NAME Christine Gerney

DPO: ACTION _____ FYI _____

COMPLETION DATE 06/03/04

DATA ASSESSMENT SUMMARY

		ICP	AUS ~~AA~~	Hg	CYANIDE	SEM
1.	HOLDING TIMES	O	O	O	O	O
2.	CALIBRATIONS	O	O	O	O	O
3.	BLANKS	O[1]	O	O	O	O
4.	ICS	O[2]	NA	NA	NA	O
5.	LCS	O[3]	O	O	O	O
6.	DUPLICATE ANALYSIS	O[4]	O	O	O	O
7.	MATRIX SPIKE	Z[1]	O	O	Z[1]	O
8.	MSA	NA	NA	NA	NA	NA
9.	SERIAL DILUTION	O[5]	NA	NA	NA	NA
10.	SAMPLE VERIFICATION	O	O	O	O	O
11.	OTHER QC	O[6]	O	O	O	O
12.	OVERALL ASSESSMENT	O	O	O	O	O

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS: Z[1] One ICP analyte + Cyanide were qual (R) in all samples due to matrix spike results

AREAS OF CONCERN:

NOTABLE PERFORMANCE: O[1] - several ICP analytes qualified (U) due to blank contam in associated samples
O[2] - one analyte qualified (J) in associated samples due to high ICSAB recovery O[3] - one ICP analyte qualified (J) in associated samples due to LCS results O[4] - one ICP analyte qualified (J) in field dup pair due to field dup
O[5] - one ICP analyte qualified (J) in associated samples due to serial dil results
O[6] positive results < 2 x MDL + < CRDL were qualified (J) by the reviewer

REGION I
Data Review Worksheets

Site Name NCBC Davisville S.4E16
Reference Number —

REGION I REVIEW OF INORGANIC CONTRACT LABORATORY DATA PACKAGE

The hardcopied (laboratory name) Quanic Corp data package received at Region I has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No. —
SDG. No. SED16A/040224/040233
No. of Samples 16/SM6
SAS No. —
Matrix Soil
Sampling Date(s) 03/22-03/25/04
Shipping Date(s) ↓ ↓
Date Rec'd by Lab ↓ ↓

Traffic Report Nos: AH-08, AH 11, AH DUP01, AH-06, DUP-03, AH 17, AH-03, REF 1-1, REF 1-2, REF 1-4, REF 2-1, REF 2-3, REF 2-5, AH-23, AH-28, AH-49
Trip Blank No.: —
Equipment Blank No.: —
Field Dup Nos: AH-11/AH DUP01, AH-06/DUP-03

SOW No. 300846 requires that specific analytical work be done and that associated reports be provided by the laboratory to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Holding Times
- Calibrations
- Blanks
- ICP Interference Check Results
- Matrix Spike Recoveries
- Laboratory Duplicates
- Field Duplicates
- Lab Control Sample Results
- Furnace AA Results
- ICP Serial Dilution Results
- Detection Limit Results
- Sample Quantitation

Overall Comments:

Definitions and Qualifiers:

A - Acceptable data.
J - Approximate data due to quality control criteria.
R - Reject data due to quality control criteria.
U - Analyte not detected.

Reviewer: Christine Gorney Date: 05/27/04

REGION I
Data Review Worksheets

I. DATA COMPLETENESS

MISSING INFORMATION	DATE LAB CONTACTED	DATE REC'D
QC associated w/ SEM	05/28/04	06/02/04

REGION I
Data Review Worksheets

II. HOLDING TIMES Complete table for all samples and circle the analysis date for samples not within criteria.

SAMPLE ID	DATE SAMPLED	HG DATE ANALYSIS	CYANIDE DATE ANALYSIS	OTHERS DATE ANALYSIS ICP	~~pH~~ AVS	ACTION	SEM
AH-08	03/22/04	04/07/04	04/02/04	04/07/04	04/02/04	None	04/07/04
AH-11	↓	↓	↓	04/07/04	04/02/04	↓	↓
AH-DUP01	↓	↓	↓	04/07/04	04/02/04	↓	↓
AH-06	03/23/04	↓	↓	04/07/04	04/02/04	↓	↓
DUP-03	↓	↓	↓	04/07/04	04/02/04	↓	↓
AH 17	↓	↓	↓	04/07/04	04/02/04	↓	↓
AH-03	↓	↓	04/05/04	04/07/04	04/05/04	↓	↓
REF 1-1	03/24/04	↓	↓	04/07/04	↓	↓	↓
REF 1-2	↓	↓	↓	04/07/04	↓	↓	↓
REF 1-4	↓	↓	↓	04/07/04	↓	↓	↓
REF 2-1	↓	↓	↓	04/07/04	↓	↓	↓
REF 2-3	↓	↓	↓	04/07/04	↓	↓	↓
REF 2-5	↓	↓	↓	04/07/04	↓	↓	↓
AH-23	↓	↓	↓	04/07/04	↓	↓	04/07/04
AH-28	↓	04/09/04	04/07/04	04/13/04	04/07/04	↓	04/08/04

METALS - 180 DAYS FROM SAMPLE COLLECTION
MERCURY - 28 DAYS FROM SAMPLE COLLECTION
CYANIDE - 14 DAYS FROM SAMPLE COLLECTION

ACTION:

1. If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

2. If holding times are grossly exceeded, the reviewer may determine that non-detects are unusable (R).

REGION I
Data Review Worksheets

II. HOLDING TIMES

Complete table for all samples and circle the analysis date for samples not within criteria.

SAMPLE ID	DATE SAMPLED	HG DATE ANALYSIS	CYANIDE DATE ANALYSIS	OTHERS DATE ANALYSIS ICP	~~pH~~ AVS	ACTION
AH-49	03/25/04	04/07/04	04/05/04	04/07/04	04/05/04	None

Sem 04/08/04

METALS - 180 DAYS FROM SAMPLE COLLECTION
MERCURY - 28 DAYS FROM SAMPLE COLLECTION
CYANIDE - 14 DAYS FROM SAMPLE COLLECTION

ACTION:

1. If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

2. If holding times are grossly exceeded, the reviewer may determine that non-detects are unusable (R).

REGION I
Data Review worksheets

III A. INSTRUMENT CALIBRATION (Section 1)

1. Recovery Criteria

List the analytes which did not meet the percent recovery (%R) criteria for Initial or Continuing Calibration.

DATE	ICV/CCV#	ANALYTE	%R	ACTION	SAMPLES AFFECTED
		all acceptance criteria were met			

ACTIONS:

If any analyte does not meet the %R criteria follow the actions stated below:

For Positive Results:

	Accept	Estimate (J)	Reject (R)
Metals	90-110%R	75-89%R, 111-125%R	<75%R, >125%R
Mercury	80-120%R	65-79%R, 121-135%R	<65%R, >135%R
Cyanide	85-115%R	70-84%R, 116-130%R	<70%R, >130%R

For Non-detected Results:

	Accept	Estimate (UJ)	Reject (R)
Metals	90-125%R	75-89%R	<75%R, >125%R
Mercury	80-135%R	65-79%R	<65%R, >135%R
Cyanide	85-130%R	70-84%R	<70%R, >130%R

REGION I
Data Review Worksheets

III B. INSTRUMENT CALIBRATION (Section 2)

2. Analytical Sequence

A. Did the laboratory use the proper number of standards for calibration as described in the SOW? Yes or No

B. Were calibrations performed at the beginning of each analysis? Yes or No

C. Were calibration standards analyzed at the beginning of sample analysis and at a minimum frequency of ten percent or every two hours during analysis, whichever is more frequent? Yes or No

D. Were the correlation coefficients for the calibration curves for AA, Hg, and CN $\geq$ 0.995? Yes or No

E. Was a standard at 2xCRDL analyzed for all ICP analyses? Yes or No

If No,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below and list the samples affected.

_____

_____

_____

_____

REGION I
Data Review Worksheet

IV A. BLANK ANALYSIS RESULTS (Sections 1-3)

List the blank contamination in Sections 1 & 2 below. A separate worksheet should be used for soil and water blanks.

1. Laboratory Blanks

MATRIX: Soil

DATE	ICB/CCB#	PREP BL	ANALYTE	CONC./UNITS
04/07/04	CCB5		As	4.1 ug/L
	CCB5		Ba	1.0 ug/L
	CCB5		Be	0.2 ug/L
	CCB5		Cd	0.2 ug/L
		PB5	Ca	11.051 mg/kg

2. Equipment/Trip Blanks

DATE	EQUIP BL#	ANALYTE	CONC./UNITS
04/13/04	RINS 01 (SEDIGB)	Ba	6.9 ug/L
		Ca	6170 ug/L
		Cr	1.8 ug/L
		Co	20.1 ug/L
		Fe	384 ug/L

3. Frequency Requirements

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes or No

B. Was a calibration blank run every 10 samples or every 2 hours whichever is more frequent? Yes or No

If No,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below, and list the samples affected.

REGION I
Data Review Worksheet

IV A. BLANK ANALYSIS RESULTS (Sections 1-3)

List the blank contamination in Sections 1 & 2 below. A separate worksheet should be used for soil and water blanks.

1. Laboratory Blanks

MATRIX: Soil

DATE	ICB/CCB#	PREP BL	ANALYTE	CONC./UNITS
04/07/04		PBS	Cr	0.275 mg/kg
	CCB1		Co	0.6 ug/l
		PBS	Fe	6.528 mg/kg
	CCB5		Mn	0.5 ug/l
	CCB3		Se	6.5 ug/l

2. Equipment/Trip Blanks

DATE	EQUIP BL#	ANALYTE	CONC./UNITS
04/03/04	Rinse 01 (SEDIMB)	Pb	4.9 ug/l
		Mg	2510 ug/l
		Mn	12.4 ug/l
		K	1670 ug/l
		Na	28200 ug/l

3. Frequency Requirements

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes or No

B. Was a calibration blank run every 10 samples or every 2 hours whichever is more frequent? Yes or No

If No,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below, and list the samples affected.

REGION I
Data Review Worksheet

IV A. BLANK ANALYSIS RESULTS (Sections 1-3)

List the blank contamination in Sections 1 & 2 below. A separate worksheet should be used for soil and water blanks.

1. Laboratory Blanks

MATRIX: Soil

DATE	ICB/CCB#	PREP BL	ANALYTE	CONC./UNITS
04/07/04	CCB5		Na	56.8 ug/l
↓	CCB5		Tl	4.6 ug/l
04/13/04	CCB2		Al	43.2 ug/l
	CCB2		Sb	5.1 ug/l
	CCB3		As	3.4 ug/l

2. Equipment/Trip Blanks

DATE	EQUIP BL#	ANALYTE	CONC./UNITS
04/13/04	Rinsate (SED/GB)	Zn	39.2 ug/l

3. Frequency Requirements

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes or No

B. Was a calibration blank run every 10 samples or every 2 hours whichever is more frequent? Yes or No

If No,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below, and list the samples affected.

REGION I
Data Review Worksheet

IV A. BLANK ANALYSIS RESULTS (Sections 1-3)

List the blank contamination in Sections 1 & 2 below. A separate worksheet should be used for soil and water blanks.

1. Laboratory Blanks

MATRIX: Soil

DATE	ICB/CCB#	PREP BL	ANALYTE	CONC./UNITS
04/03/04	CCB2		Be	0.4 ug/l
		PBS	Cr	0.183 mg/kg
	CCB2		Co	0.4 ug/l
	CCB2		Cu	2.1 ug/l
		PBS	Fe	6.928 mg/kg

2. Equipment/Trip Blanks

DATE	EQUIP BL#	ANALYTE	CONC./UNITS

3. Frequency Requirements

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes or No

B. Was a calibration blank run every 10 samples or every 2 hours whichever is more frequent? Yes or No

If No,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below, and list the samples affected.

REGION I
Data Review Worksheet

IV A. BLANK ANALYSIS RESULTS (Sections 1-3)

List the blank contamination in Sections 1 & 2 below. A separate worksheet should be used for soil and water blanks.

1. Laboratory Blanks

MATRIX: Soil

DATE	ICB/CCB#	PREP BL	ANALYTE	CONC./UNITS
04/13/04	CCB2		Ni	1.1ug/l
	CCB1		Se	9.8ug/l
		PBS	Ag	0.48mg/kg
	CCB1		Zn	0.7ug/l
04/02/04	CCB1		CN	1.9ug/l

2. Equipment/Trip Blanks

DATE	EQUIP BL#	ANALYTE	CONC./UNITS

3. Frequency Requirements

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes or No

B. Was a calibration blank run every 10 samples or every 2 hours whichever is more frequent? Yes or No

If No,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below, and list the samples affected.

REGION I
Data Review Worksheet

IV A. BLANK ANALYSIS RESULTS (Sections 1-3)

List the blank contamination in Sections 1 & 2 below. A separate worksheet should be used for soil and water blanks.

1. Laboratory Blanks

MATRIX: Soil

DATE	ICB/CCB#	PREP BL	ANALYTE	CONC./UNITS
04/02/04	ICB		CN	1.3 ug/l
04/05/04	ICB		CN	1.6 ug/l
04/07/04	ICB		CN	0.6 ug/l
4/2/04		PBS 412	AVS	0.11 umol/g
04/02/04		PBS 412	Zn	0.01 umol/g
04/07/04		PBS 417	Zn	0.01 umol/g

2. Equipment/Trip Blanks

DATE	EQUIP BL#	ANALYTE	CONC./UNITS

3. Frequency Requirements

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes or No

B. Was a calibration blank run every 10 samples or every 2 hours whichever is more frequent? Yes or No

If No,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below, and list the samples affected.

REGION I
Data Review Worksheets

IV B. BLANK ANALYSIS RESULTS (Section 4)

4. Blank Actions

The Action Levels for any analyte is equal to five times the highest concentration of that element's contamination in any blank. The action level for samples which have been concentrated or diluted should be multiplied by the concentration/dilution factor. No positive sample result should be reported unless the concentration of the analyte in the sample exceeds the Action Level (AL). Specific actions are as follows:

1. When the concentration is greater than the IDL, but less than the Action Level, report the sample concentration detected with a U.
2. When the sample concentration is greater than the Action Level, report the sample concentration unqualified.

MATRIX: Soil

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS	
CBS As	4.1 ug/l	2.05 mg/kg	
U = REF 1-1, REF 1-2, AH-49			
Ba	1.0 ug/l	0.5 mg/kg	all > 5x blk no action
Be	0.2 ug/l	0.1 mg/kg	all > 5x blk no action
CBS Cd	0.2 ug/l	0.1 mg/kg	
U = REF 2-1, REF 2-3			
Ca	11.051 mg/kg	55.255 mg/kg	
all > 5x blk no action			

MATRIX: Soil

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS	
Cr	0.275 mg/kg	1.375 mg/kg	all > 5x blk no action
Co	0.6 ug/l	0.3 mg/kg	all > 5x blk no action
Fe	6.528 mg/kg	32.64 mg/kg	all > 5x blk no action
Mn	0.5 ug/l	0.25 mg/kg	all > 5x blk no action
Se	6.5 ug/l	3.25 mg/kg	all ND no action
Na	56.8 ug/l	28.4 mg/kg	all > 5x blk no action
Tl	4.6 ug/l	2.3 mg/kg	all ND no action

NOTE: Blanks analyzed during a soil case must be converted to mg/kg in order to compare them with the sample results.

$$\text{Conc. in ug/L} \times \frac{\text{Volume diluted to (200ml)}}{\text{Weight digested (1gram)}} \times \frac{1\text{L}}{1000\text{ml}} \times \frac{1000\text{gm}}{1\text{kg}} \times \frac{1\text{mg}}{1000\text{ug}} = \text{mg/kg}$$

Multiplying this result by 5 to arrive at the action level gives a final result in mg/kg which can then be compared to sample results.

REGION I
Data Review Worksheets

IV B. BLANK ANALYSIS RESULTS (Section 4)

4. Blank Actions

The Action Levels for any analyte is equal to five times the highest concentration of that element's contamination in any blank. The action level for samples which have been concentrated or diluted should be multiplied by the concentration/dilution factor. No positive sample result should be reported unless the concentration of the analyte in the sample exceeds the Action Level (AL). Specific actions are as follows:

1. When the concentration is greater than the IDL, but less than the Action Level, report the sample concentration detected with a U.
2. When the sample concentration is greater than the Action Level, report the sample concentration unqualified.

MATRIX: Soil

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS	
Al	43.2ug/l	21.6mg/kg	>5xblk noact
Sb	5.1ug/l	2.55mg/kg	ND noact
As	3.4ug/l	1.7mg/kg	>5xblk noact
Be	0.4ug/l	0.2mg/kg	>5xblk noact
Cr	0.183mg/kg	0.915mg/kg	>5xblk noact
Co	0.4ug/l	0.2mg/kg	>5xblk noact
Cu	2.1ug/l	1.05mg/kg	>5xblk noact

MATRIX: Soil

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS	
Fe	6.928mg/kg	34.64mg/kg	>5xblk noact
Ni	1.1ug/l	0.55mg/kg	>5xblk noact
pos Ag	0.481mg/kg	2.405mg/kg	U = AH-28 all >5xblk noact
Zn	0.7ug/l	0.35mg/kg	all ND noact
CN	1.9ug/l	0.475mg/kg	
CN	1.3ug/l	0.325mg/kg	
CN	1.6ug/l	0.4mg/kg	
CN	0.6ug/l	0.15mg/kg	

NOTE: Blanks analyzed during a soil case must be converted to mg/kg in order to compare them with the sample results.

$$\text{Conc. in ug/L} \times \frac{\text{Volume diluted to (200ml)}}{\text{Weight digested (1gram)}} \times \frac{1\text{L}}{1000\text{ml}} \times \frac{1000\text{gm}}{1\text{kg}} \times \frac{1\text{mg}}{1000\text{ug}} = \text{mg/kg}$$

Multiplying this result by 5 to arrive at the action level gives a final result in mg/kg which can then be compared to sample results.

REGION I
Data Review Worksheets

IV B. BLANK ANALYSIS RESULTS (Section 4)

4. Blank Actions

The Action Levels for any analyte is equal to five times the highest concentration of that element's contamination in any blank. The action level for samples which have been concentrated or diluted should be multiplied by the concentration/dilution factor. No positive sample result should be reported unless the concentration of the analyte in the sample exceeds the Action Level (AL). Specific actions are as follows:

1. When the concentration is greater than the IDL, but less than the Action Level, report the sample concentration detected with a U.
2. When the sample concentration is greater than the Action Level, report the sample concentration unqualified.

MATRIX: Soil

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS	
AVS	0.11 umol/g	0.55 umol/g	
	all > 5xblk no act		
Zn	0.01 umol/g	0.05 umol/g	all > 5xblk no act
Cl	0.01 umol/g	0.05	
Ba	6.9 ug/L	3.45 mg/kg	U = REF 1-1, REF 1-2
Ca	6170 ug/L	3085 mg/kg	U - AH-08, AH-11, AH-DUP01, AH-06, DUP03, AH-17, REF 1-1, REF 1-2, AH-23, AH-28, AH-49

MATRIX: Soil

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS mg/kg	
Cr	1.8 ug/L	0.9	all > 5xblk no act
Cu	20.1 ug/L	10.05	U = REF 1-1, REF 1-2, REF 1-4, REF 2-5
Fe	384 ug/L	192	all > 5xblk no act
Pb	4.9 ug/L	2.45	all > 5xblk no act
Mg	2510 ug/L	1255	U - REF 1-1, REF 1-2, AH-49
Mg	12.4 ug/L	6.2	all > 5xblk no act
K	1670 ug/L	835	U - REF 1-1, REF 1-2, REF 1-4, REF 2-5, AH-28, AH-49

NOTE: Blanks analyzed during a soil case must be converted to mg/kg in order to compare them with the sample results.

$$\text{Conc. in ug/L} \times \frac{\text{Volume diluted to (200ml)}}{\text{Weight digested (1gram)}} \times \frac{1\text{L}}{1000\text{ml}} \times \frac{1000\text{gm}}{1\text{kg}} \times \frac{1\text{mg}}{1000\text{ug}} = \text{mg/kg}$$

Multiplying this result by 5 to arrive at the action level gives a final result in mg/kg which can then be compared to sample results.

REGION I
Data Review Worksheets

IV B. BLANK ANALYSIS RESULTS (Section 4)

4. Blank Actions

The Action Levels for any analyte is equal to five times the highest concentration of that element's contamination in any blank. . The action level for samples which have been concentrated or diluted should be multiplied by the concentration/dilution factor. No positive sample result should be reported unless the concentration of the analyte in the sample exceeds the Action Level (AL). Specific actions are as follows:

1. When the concentration is greater than the IDL, but less than the Action Level, report the sample concentration detected with a U.

2. When the sample concentration is greater than the Action Level, report the sample concentration unqualified.

MATRIX: Soil

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS mg/kg
Rinsed Na	28200 ug/L	141100
U = AH-08, AH-11, AH-DUP01, AH-06, DUP03, AH-17, AH-03, REF 1-1, REF 1-2, REF 1-4, REF 2-1, REF 2-3, REF 2-5, AH-23, AH-28, AH-09		
Rinsed Zn	39.2 ug/L	19.6
U - REF 1-1, REF 1-2		

MATRIX: _____

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS

NOTE: Blanks analyzed during a soil case must be converted to mg/kg in order to compare them with the sample results.

$$\text{Conc. in ug/L} \times \frac{\text{Volume diluted to (200ml)}}{\text{Weight digested (1gram)}} \times \frac{1\text{L}}{1000\text{ml}} \times \frac{1000\text{gm}}{1\text{kg}} \times \frac{1\text{mg}}{1000\text{ug}} = \text{mg/kg}$$

Multiplying this result by 5 to arrive at the action level gives a final result in mg/kg which can then be compared to sample results.

REGION I
Data Review Worksheets

V A. ICP INTERFERENCE CHECK SAMPLE (Sections 1 & 2)

1. Recovery Criteria

List any elements in the ICS AB solution which did not meet the criteria for %R.

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED
01/07/04	K	122/124/124	J/A	all except AH-28 unless already qual
↓	NA	0c/0c/122	J/A	all qual due to field blk

ACTIONS:

If an element does not meet the %R criteria , follow the actions stated below:

	PERCENT RECOVERY		
	<50%	50-79%	>120%
Positive Sample Results	R	J	J
Non-detected Sample Results	R	UJ	A

2. Frequency Requirements

Were Interference QC samples run at the beginning and end of each sample analysis run or a minimum of twice per 8 hour working shift, whichever is more frequent? Yes or No

If no,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below and list the samples affected.

REGION I
Data Review Worksheets

All acceptance criteria were met

V B. ICP INTERFERENCE CHECK SAMPLE (Section 3)

3. Report the concentration of any elements detected in the ICS A solution > 2xIDL that should not be present.

ELEMENT	CONC. DETECTED IN THE ICS	CONC. OF INTERFERENTS IN THE ICS			
		AL	CA	FE	MG
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Estimate the concentration produced by the interfering element in all affected samples. See guidelines for examples. List the samples affected by interferences below:

SAMPLE AFFECTED	ELEMENT AFFECTED	SAMPLE CONC. (ug/L)	SAMPLE INTERFERENT CONC.				ESTIMATED INTERF. (ug/L)
			AL	CA	FE	MG	
_____	_____	_____	___	___	___	___	_____
_____	_____	_____	___	___	___	___	_____
_____	_____	_____	___	___	___	___	_____
_____	_____	_____	___	___	___	___	_____

ACTIONS:

1. In general, the sample data can be accepted without qualification if the sample concentrations of Al, Ca, Fe, and Mg are less than 50% of their respective levels in the ICS solution.

2. Estimate (J) positive results for affected elements for samples with levels of interferents 50% or more of that in the ICS solution.

3. Reject (R) positive results if the reported concentration is due entirely to the interfering element.

4. Estimate (UJ) non-detected results for which false negatives are suspect.

Give explanations for any actions taken below:

_____

_____

_____

REGION I
Data Review Worksheets

VI. MATRIX SPIKE

TR # AH-06 MATRIX: Soil

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added
SSR - spikes sample result
SR - sample result

Analyte	SSR	SR	S	%R	Action
Sb	3.0943	ND	19.52	16	JR
CN	2.4649	ND	12.69	19	JR

Matrix Spike Actions apply to all samples of the same matrix.

ACTIONS:

1. If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.

2. If any analyte does not meet the %R criteria follow the actions stated below:

	PERCENT RECOVERY		
	<30%	30%-74%	>125%
Positive Sample Results	J	J	J
Non-detected Results	R	UJ	A

2. Frequency Criteria

A. Was a matrix spike prepared at the required frequency? Yes or No

B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? Yes or No

A separate worksheet should be used for each matrix spike pair.

REGION I
Data Review Worksheets

VI. MATRIX SPIKE

TR # AH-11 MATRIX: Sol

1. Recovery Criteria

List the percent recoveries for analytes which did not meet the required criteria.

S - amount of spike added
SSR - spikes sample result
SR - sample result

Analyte	SSR	SR	S	%R	Action
Sb	3.4831	ND	23.31	15	JIR
CN	ND	ND	13.4	0	JIR

Matrix Spike Actions apply to all samples of the same matrix.

ACTIONS:

1. If the sample concentration exceeds the spike concentration by a factor of 4 or more, no action is taken.

2. If any analyte does not meet the %R criteria follow the actions stated below:

	PERCENT RECOVERY		
	<30%	30%-74%	>125%
Positive Sample Results	J	J	J
Non-detected Results	R	UJ	A

2. Frequency Criteria

A. Was a matrix spike prepared at the required frequency? Yes or No

B. Was a post digestion spike analyzed for elements that did not meet required criteria for matrix spike recovery? Yes or No

A separate worksheet should be used for each matrix spike pair.

REGION I
Data Review Worksheets

all acceptance criteria were met

VII. LABORATORY DUPLICATES

List the concentrations of any analyte not meeting the criteria for duplicate precision. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evaluate precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	Sample # AH06	Duplicate # dup	RPD	Action
Aluminum	200					
Antimony	60					
Arsenic	10					
Barium	200					
Beryllium	5					
Cadmium	5					
Calcium	5000					
Chromium	10					
Cobalt	50					
Copper	25					
Iron	100					
Lead	5					
Magnesium	5000					
Manganese	15					
Mercury	0.2					
Nickel	40					
Potassium	5000					
Selenium	5					
Silver	10					
Sodium	5000					
Thallium	10					
Vanadium	50					
Zinc	20					
Cyanide	10					

Laboratory Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >20% for waters and >35% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >CRDL, (2xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

VII. LABORATORY DUPLICATES

all acceptance criteria were met

List the concentrations of any analyte not meeting the criteria for duplicate precision. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evaluate precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	Sample # AH-11	Duplicate# dup	RPD	Action
Aluminum	200					
Antimony	60					
Arsenic	10					
Barium	200					
Beryllium	5					
Cadmium	5					
Calcium	5000					
Chromium	10					
Cobalt	50					
Copper	25					
Iron	100					
Lead	5					
Magnesium	5000					
Manganese	15					
Mercury	0.2					
Nickel	40					
Potassium	5000					
Selenium	5					
Silver	10					
Sodium	5000					
Thallium	10					
Vanadium	50					
Zinc	20					
Cyanide	10					

Laboratory Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >20% for waters and >35% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >CRDL, (2xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

VIII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evalute the precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	mg/kg Sample # AH-11	mg/kg Duplicate# AH-DUP01	RPD or diff	Action
Aluminum	200	47	11200	12000	7%	None
Antimony	60	14	ND	ND	0	None
Arsenic	10	2.3	9.5	10.3	0.80	None
Barium	200	47	52.8	102	49.2	None
Beryllium	5	2.3	1.3	1.4	0.1	
Cadmium	5	2.3	0.38	0.57	0.19	-
Calcium	5000	1166	ND	ND	0	
Chromium	10	2.3	41.8	52.6	23%	
Cobalt	50	12	7.5	7.8	0.3	
Copper	25	7	83.5	126	41%	
Iron	100	2.3	27100	28000	3%	
Lead	5	2.3	59.9	64.4	7%	
Magnesium	5000	1166	6260	7170	14%	
Manganese	15	4.7	200	217	8%	
Mercury	0.2	0.23	0.23	0.29	0.03	
Nickel	40	9.3	19.4	23.8	4.4	
Potassium	5000	1166	3040	3400	360	
Selenium	5	9.3	ND	ND	0	
Silver	10	2.3	0.43	0.41	0.02	
Sodium	5000	1166	ND	ND	0	
Thallium	10	8	ND	ND	0	
Vanadium	50	12	37.4	46.7	9.3	
Zinc	20	14	149	193	26%	
Cyanide	10		ND	ND	0	

Field Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >30% for waters and >50% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results and (UJ) nondetected results for elements whose absolute difference is >2xCRDL, (4xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

VIII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evalute the precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	Sample # AH-11 (mg/kg)	Duplicate # AH-DUP01 (mg/kg)	RPD	Action
Aluminum	200					
Antimony	60					
Arsenic	10					
Barium	200					
Beryllium	5					
Cadmium	5	0.003	0.006	0.005	0.001	none
Calcium	5000					
Chromium	10					
Cobalt	50					
Copper	25	0.02	0.04	0.18	12720	J
Iron	100					
Lead	5	0.001	0.202	0.18	1270	none
Magnesium	5000					
Manganese	15					
Mercury	0.2		ND	ND	0	none
Nickel	40		ND	ND	0	none
Potassium	5000					
Selenium	5					
Silver	10					
Sodium	5000					
Thallium	10					
Vanadium	50					
Zinc	20	0.02	1.79	1.74	370	none
AVS ~~Cyanide~~	10	5.22	40.14	36.74	970	none
ratio			0.05	0.06	1870	none

field dup pairs only

Field Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >30% for waters and >50% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results and (UJ) nondetected results for elements whose absolute difference is >2xCRDL, (4xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

VIII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evalute the precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	Sample # AH-06 (mg/kg)	Duplicate# DUP03 (mg/kg)	RPD (calc)	Action
Aluminum	200	39	10900	10600	3%	NMP
Antimony	60	12	ND	ND	0	None
Arsenic	10	1.95	7.8	7.7	0.1	
Barium	200	39	62.7	64.7	2	
Beryllium	5	1.95	1.3	1.3	0	
Cadmium	5	1.95	0.53	0.58	0.05	-
Calcium	5000	976	ND	ND	0	
Chromium	10	1.95	46.2	45.8	1%	
Cobalt	50	9.8	7.4	7.2	0.2	
Copper	25	5.9	87	90.8	4%	
Iron	100	19.5	25200	25700	2%	
Lead	5	1.95	48.9	50.1	2%	
Magnesium	5000	976	6680	6800	2%	
Manganese	15	3.9	197	196	1%	
Mercury	0.2	0.195	0.23	0.25	0.02	
Nickel	40	7.8	20.2	20.3	0.1	
Potassium	5000	976	2980	3040	60	
Selenium	5	7.8	ND	ND	0	
Silver	10	1.95	ND	0.41	NC	
Sodium	5000	976	ND	ND	0	
Thallium	10	5.9	ND	ND	0	
Vanadium	50	9.8	34.3	33.7	0.6	
Zinc	20	11.7	154	159	3%	
Cyanide	10		ND	ND	0	

Field Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >30% for waters and >50% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results and (UJ) nondetected results for elements whose absolute difference is >2xCRDL, (4xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

VIII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evalute the precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	umolls Sample # AH-06	umolls Duplicate# DUP03	RPD	Action
Aluminum	200					
Antimony	60					
Arsenic	10					
Barium	200					
Beryllium	5					
Cadmium	5	0.002	0.005	0.006	0.001	None
Calcium	5000					
Chromium	10					
Cobalt	50					
Copper	25	0.02	0.14	0.09	44%	None
Iron	100					
Lead	5	0.001	0.139	0.148	6%	None
Magnesium	5000					
Manganese	15					
Mercury	0.2		ND	ND	0	None
Nickel	40		ND	ND	0	None
Potassium	5000					
Selenium	5					
Silver	10					
Sodium	5000					
Thallium	10					
Vanadium	50					
Zinc	20	0.02	1.34	1.42	6%	None
~~Cyanide~~ AUS	10	4.95	51.6	69.24	29%	None
ratio			0.03	0.02	40%	None

Field Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >30% for waters and >50% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results and (UJ) nondetected results for elements whose absolute difference is >2xCRDL, (4xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

IX. LABORATORY CONTROL SAMPLE

1. Aqueous LCS

List any LCS recoveries not within the 80-120% criteria and the samples affected.

DATE	ELEMENT	%R	ACTION	SAMPLES AFFECTED

2. Solid LCS

List any analytes that were not within the control windows set by the EPA for the solid LCS sample. The 80-120% criteria is not used to evaluate solid LCS results.

ELEMENT	LCS CONC.	CONTROL WINDOWS	ACTION	SAMPLES AFFECTED
Pb	91 mg/kg	59.8-88.6	J	all except AH-28 qual (J) ICP met

ACTIONS:

AQUEOUS LCS	Percent Recovery <50%	51-79%	>120%
Positive Results	R	J	J
Non-detected Results	R	UJ	A

SOLID LCS	<EPA Control Windows	>EPA Control Windows
Positive Results	J	J
Non-detected Results	UJ	A

3. Frequency Criteria

A. Was an LCS analyzed for every matrix, every digestion batch, and every 20 samples? Yes or No

REGION I
Data Review Worksheets

XI. INDUCTIVELY COUPLED PLASMA (ICP) SERIAL DILUTION ANALYSIS

✓ Serial Dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

_____ Serial Dilutions were not performed for the following:

_____

_____ Serial Dilutions were performed, but analytical results did not agree within 10% for analyte concentrations greater than 50x the IDL before dilution.

Report all results below that do not meet the required laboratory criteria for ICP serial dilution analysis.

MATRIX: Soil AH-06

ELEMENT	IDL	50xIDL	SAMPLE RESULT	SERIAL DILUTION	%D	ACTION
Aluminum						
Barium						
Beryllium						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Nickel						
Potassium						
Silver						
Sodium						
Vanadium						
Zinc						

Actions apply to all samples of the same matrix.

ACTIONS:

1. Estimate (J) positive results if %D >15.

REGION I
Data Review Worksheets

XI. INDUCTIVELY COUPLED PLASMA (ICP) SERIAL DILUTION ANALYSIS

_____ Serial Dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

_____ Serial Dilutions were not performed for the following:

_____

✓ Serial Dilutions were performed, but analytical results did not agree within 10% for analyte concentrations greater than 50x the IDL before dilution.

Report all results below that do not meet the required laboratory criteria for ICP serial dilution analysis.

MATRIX: Soil AH-11

ELEMENT	~~IDL~~ MDL	50x~~IDL~~ MDL	SAMPLE RESULT	SERIAL DILUTION	%D	ACTION
Aluminum	29.6	1480	48178.47	53378.85	11	none
Barium						
Beryllium						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium	39	1950	26832.12	29894.26	11	none
Manganese						
Nickel						
Potassium	47.3	2365	13040.57	15027.49	15	J
Silver						
Sodium						
Vanadium						
Zinc						

AH-28 only rest qualified to ICS AB or field blk

Actions apply to all samples of the same matrix.

ACTIONS:

1. Estimate (J) positive results if %D >15.

REGION I
Data Review Worksheets

XII. DETECTION LIMIT RESULTS

1. ~~Instrument~~ Method Detection Limits

_____ ~~Instrument~~ Method Detection Limit results were present and found to be less than the Contract Required Detection Limits.

_____ IDLs were not included in the data package on Form XI.

_____ IDLs were present, but the criteria was not met for the following elements:_____

2. Reporting Requirements

_____ Were sample results on Form I reported down to the IDL not the CRDL for all analytes? Yes or No

_____ Were sample results that were analyzed by ICP for Se, Tl, As, or Pb at least 5x IDL. Yes or No

_____ Were sample weights, volumes, and dilutions taken into account when reporting detection limits on Form I. Yes or No

If No,

The reported results may be inaccurate. Make the necessary changes on the data summary tables and request that the laboratory resubmit the corrected data.

Positive results < 2xMDL + < CRDL + qualified (B) by the lab were further qualified (J)

Positive results > 2xMDL + < CRDL + qualified (B) by the lab were reported unqualified

REGION I
Data Review Worksheets

XIII. SAMPLE QUANTITATION

✓ Sample results fall within the linear range for ICP and within the calibrated range for all other parameters.

_____ Sample results were beyond the linear range/ calibration range of the instrument for the following samples/elements:

_____

In the space below, please show a minimum of one sample calculation per method:

ICP AH-08

As $\frac{27.515 \times 100}{1.21 \times 0.289 \times 1000} = 10.73$ mg/kg

~~FURNACE~~ AVS AH-08 $\frac{0.455 + 0.0022}{0.8538} = 0.5355$ mg/L $\frac{(0.5355 \times 200) \times 125}{32.066 \times 0.289 \times 10} = 144.46$ umol/g

MERCURY AH-08 $\frac{0.1605 \times 100}{0.19 \times 0.289 \times 1000} = 0.292$ mg/kg

$\frac{SEM}{AVS} = \frac{3.023}{144.46} = 0.0209$

CYANIDE all ND

SEM AH-08

Pb $\frac{694.01 \times 0.22 \times 1000}{1000 \times 10 \times 207.2 \times 0.289} = 0.25498$ mmol/g

For soil samples, the following equation may be necessary to convert raw data values (usually reported in ug/L) to actual sample concentrations (mg/kg):

The lab is required to use 1 gram sample (wet weight) to 200 ml.

Wet weight concentration =

digest conc. in $\frac{ug}{L} \times \frac{200ml}{1\ gm} \times \frac{1L}{1000\ ml} \times \frac{1000gm}{1kg} \times \frac{1mg}{1000ug} = \frac{mg}{kg}$

In addition the sample results are converted to dry weight using the percent solids calculations:

$\frac{\text{Wet weight conc.}}{\%\text{solids}} \times 100$ = final concentration, dry weight (mg/kg)

REGION I
Data Review Worksheets

XIII. SAMPLE QUANTITATION

✓ Sample results fall within the linear range for ICP and within the calibrated range for all other parameters.

_____ Sample results were beyond the linear range/ calibration range of the instrument for the following samples/elements:

_____

In the space below, please show a minimum of one sample calculation per method:

ICP REF 1-2

Cr $\frac{88.897 \times 100}{1.23 \times 0.801 \times 1000} = 9.02$ mg/kg

~~FURNACE~~
AVS REF 1-4

$\frac{0.459}{0.8737} \times 100 = 52.54$

$\frac{52.54 \times 125}{32.066 \times 0.721 \times 10} = 28.40$ umol/g

SEM/AVS $= \frac{0.66}{28.33} = 0.023$

MERCURY
REF 1-2

$\frac{0.0619 \times 100}{0.20 \times 0.801 \times 1000} = 0.0386$ mg/kg

CYANIDE
all ND

SEM
REF 1-4

Zn

$\frac{979.20 \times 0.22 \times 1000}{1000 \times 10 \times 0.721 \times 65.38} = 0.4157$ umol/g

For soil samples, the following equation may be necessary to convert raw data values (usually reported in ug/L) to actual sample concentrations (mg/kg):

The lab is required to use 1 gram sample (wet weight) to 200 ml.

Wet weight concentration =

digest conc. in $\frac{ug}{L} \times \frac{200ml}{1\ gm} \times \frac{1L}{1000\ ml} \times \frac{1000gm}{1kg} \times \frac{1mg}{1000ug} = \frac{mg}{kg}$

In addition the sample results are converted to dry weight using the percent solids calculations:

$\frac{\text{Wet weight conc.}}{\%\text{solids}} \times 100$ = final concentration, dry weight (mg/kg)

TOTAL METALS - 6010B/7471A

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AH-08

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040222-02

Level (low/med): LOW Date Received: 3/22/2004

% Solids: 28.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12000		E	P
7440-36-0	Antimony	1.9	U	N	P
7440-38-2	Arsenic	10.7	B		P
7440-39-3	Barium	60.8	B		P
7440-41-7	Beryllium	1.5	B		P
7440-43-9	Cadmium	0.81	B		P
7440-70-2	Calcium	3860	B		P
7440-47-3	Chromium	50.3	B		P
7440-48-4	Cobalt	8.5	B		P
7440-50-8	Copper	148			P
7439-89-6	Iron	31100	B		P
7439-92-1	Lead	70.1		J	P
7439-95-4	Magnesium	7190		E	P
7439-96-5	Manganese	210	B		P
7439-97-6	Mercury	0.29			CV
7440-02-0	Nickel	23.6			P
7440-09-7	Potassium	3400		E J	P
7782-49-2	Selenium	2.1	U		P
7440-22-4	Silver	0.62	B		P
7440-23-5	Sodium	19800	B		P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	49.7			P
7440-66-6	Zinc	256			P
57-12-5	Cyanide	0.52	U	N R	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts:

Comments:

TOTAL METALS - 6010B/7471A

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AH-11

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040222-05

Level (low/med): LOW Date Received: 3/22/2004

% Solids: 37.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11200		E	P
7440-36-0	Antimony	1.6	U	N	P
7440-38-2	Arsenic	9.5	B		P
7440-39-3	Barium	52.8	B		P
7440-41-7	Beryllium	1.3	B		P
7440-43-9	Cadmium	0.38	B		P
7440-70-2	Calcium	2170	B		P
7440-47-3	Chromium	41.8	B		P
7440-48-4	Cobalt	7.5	B		P
7440-50-8	Copper	83.5			P
7439-89-6	Iron	27100	B		P
7439-92-1	Lead	59.9			P
7439-95-4	Magnesium	6260		E	P
7439-96-5	Manganese	200	B		P
7439-97-6	Mercury	0.23			CV
7440-02-0	Nickel	19.4			P
7440-09-7	Potassium	3040		E	P
7782-49-2	Selenium	1.7	U		P
7440-22-4	Silver	0.43	B		P
7440-23-5	Sodium	15600	B		P
7440-28-0	Thallium	2.8	U		P
7440-62-2	Vanadium	37.4			P
7440-66-6	Zinc	149			P
57-12-5	Cyanide	0.40	U	N	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AH-DUP01

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040222-06

Level (low/med): LOW Date Received: 3/22/2004

% Solids: 33.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12000		E	P
7440-36-0	Antimony	1.5	U	N, 2	P
7440-38-2	Arsenic	10.3	B		P
7440-39-3	Barium	102	B		P
7440-41-7	Beryllium	1.4	B		P
7440-43-9	Cadmium	0.57	B		P
7440-70-2	Calcium	2450	B		P
7440-47-3	Chromium	52.6	B		P
7440-48-4	Cobalt	7.8	B		P
7440-50-8	Copper	126			P
7439-89-6	Iron	28000	B		P
7439-92-1	Lead	64.4			P
7439-95-4	Magnesium	7170		E	P
7439-96-5	Manganese	217	B		P
7439-97-6	Mercury	0.29			CV
7440-02-0	Nickel	23.8			P
7440-09-7	Potassium	3400		E, J	P
7782-49-2	Selenium	1.6	U		P
7440-22-4	Silver	0.41	B		P
7440-23-5	Sodium	18800	B		P
7440-28-0	Thallium	2.6	U		P
7440-62-2	Vanadium	46.7			P
7440-66-6	Zinc	193			P
57-12-5	Cyanide	0.45	U	N, 2	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AH-06

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040222-10

Level (low/med): LOW Date Received: 3/23/2004

% Solids: 39.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10900		E	P
7440-36-0	Antimony	1.3	U	N	P
7440-38-2	Arsenic	7.8	B		P
7440-39-3	Barium	62.7	B		P
7440-41-7	Beryllium	1.3	B		P
7440-43-9	Cadmium	0.53	B		P
7440-70-2	Calcium	2670	B		P
7440-47-3	Chromium	46.2	B		P
7440-48-4	Cobalt	7.4	B		P
7440-50-8	Copper	87.0			P
7439-89-6	Iron	25200	B		P
7439-92-1	Lead	48.9			P
7439-95-4	Magnesium	6680		E	P
7439-96-5	Manganese	197	B		P
7439-97-6	Mercury	0.23			CV
7440-02-0	Nickel	20.2			P
7440-09-7	Potassium	2980		E	P
7782-49-2	Selenium	1.4	U		P
7440-22-4	Silver	0.27	U		P
7440-23-5	Sodium	16200	B		P
7440-28-0	Thallium	2.3	U		P
7440-62-2	Vanadium	34.3			P
7440-66-6	Zinc	154			P
57-12-5	Cyanide	0.38	U	N	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
DUP-03

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040222-11

Level (low/med): LOW Date Received: 3/23/2004

% Solids: 35.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10600		E	P
7440-36-0	Antimony	1.4	U	N-2	P
7440-38-2	Arsenic	7.7	B		P
7440-39-3	Barium	64.7	B		P
7440-41-7	Beryllium	1.3	B		P
7440-43-9	Cadmium	0.58	B		P
7440-70-2	Calcium	2490	B		P
7440-47-3	Chromium	45.8	B		P
7440-48-4	Cobalt	7.2	B		P
7440-50-8	Copper	90.8			P
7439-89-6	Iron	25700	B		P
7439-92-1	Lead	50.1			P
7439-95-4	Magnesium	6800		B	P
7439-96-5	Manganese	196	B		P
7439-97-6	Mercury	0.25			CV
7440-02-0	Nickel	20.3			P
7440-09-7	Potassium	3040		E	P
7782-49-2	Selenium	1.6	U		P
7440-22-4	Silver	0.41	B		P
7440-23-5	Sodium	18100	B		P
7440-28-0	Thallium	2.5	U		P
7440-62-2	Vanadium	33.7			P
7440-66-6	Zinc	159			P
57-12-5	Cyanide	0.43	U	N-2	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AH17

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040222-13

Level (low/med): LOW Date Received: 3/23/2004

% Solids: 27.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15400		E	P
7440-36-0	Antimony	1.8	U	N	P
7440-38-2	Arsenic	17.0	B		P
7440-39-3	Barium	85.1	B		P
7440-41-7	Beryllium	1.9	B		P
7440-43-9	Cadmium	2.4	B		P
7440-70-2	Calcium	4510	B		P
7440-47-3	Chromium	65.7	B		P
7440-48-4	Cobalt	10.1	B		P
7440-50-8	Copper	212			P
7439-89-6	Iron	38800	B		P
7439-92-1	Lead	96.9			P
7439-95-4	Magnesium	7890		E	P
7439-96-5	Manganese	260	B		P
7439-97-6	Mercury	0.38			CV
7440-02-0	Nickel	30.1			P
7440-09-7	Potassium	4310		E	P
7782-49-2	Selenium	2.0	U		P
7440-22-4	Silver	0.38	U		P
7440-23-5	Sodium	18200	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	71.0			P
7440-66-6	Zinc	449			P
57-12-5	Cyanide	0.54	U	N	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AH-03

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040222-17

Level (low/med): LOW Date Received: 3/23/2004

% Solids: 48.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6540		E	P
7440-36-0	Antimony	1.1	U	N R	P
7440-38-2	Arsenic	7.4	B		P
7440-39-3	Barium	35.5	B		P
7440-41-7	Beryllium	0.85	B		P
7440-43-9	Cadmium	0.22	B		P
7440-70-2	Calcium	22600	B		P
7440-47-3	Chromium	26.7	B		P
7440-48-4	Cobalt	5.3	B		P
7440-50-8	Copper	79.6			P
7439-89-6	Iron	18400	B		P
7439-92-1	Lead	60.6			P
7439-95-4	Magnesium	4230		E	P
7439-96-5	Manganese	134	B		P
7439-97-6	Mercury	0.15			CV
7440-02-0	Nickel	16.6			P
7440-09-7	Potassium	1760		E	P
7782-49-2	Selenium	1.2	U		P
7440-22-4	Silver	0.23	U		P
7440-23-5	Sodium	11500	B		P
7440-28-0	Thallium	2.0	U		P
7440-62-2	Vanadium	24.2			P
7440-66-6	Zinc	217			P
57-12-5	Cyanide	0.31	U	N R	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

REF 1-1

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040233-01

Level (low/med): LOW Date Received: 3/24/2004

% Solids: 75.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1920		E	P
7440-36-0	Antimony	0.73	U	N R	P
7440-38-2	Arsenic	1.3	B	U	P
7440-39-3	Barium	2.8	B		P
7440-41-7	Beryllium	0.14	B		P
7440-43-9	Cadmium	0.044	B		P
7440-70-2	Calcium	290	B		P
7440-47-3	Chromium	4.4	B		P
7440-48-4	Cobalt	1.3	B		P
7440-50-8	Copper	3.6			P
7439-89-6	Iron	3650	B		P
7439-92-1	Lead	3.9			P
7439-95-4	Magnesium	1120		E	P
7439-96-5	Manganese	45.6	B		P
7439-97-6	Mercury	0.024	U		CV
7440-02-0	Nickel	3.3			P
7440-09-7	Potassium	341		E U	P
7782-49-2	Selenium	0.80	U		P
7440-22-4	Silver	0.15	U		P
7440-23-5	Sodium	2970	B	U	P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	3.6			P
7440-66-6	Zinc	13.7			P
57-12-5	Cyanide	0.20	U	N R	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

REF 1-2

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040233-02

Level (low/med): LOW Date Received: 3/24/2004

% Solids: 80.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3200		E	P
7440-36-0	Antimony	0.68	U	N	P
7440-38-2	Arsenic	1.5	B		P
7440-39-3	Barium	4.3	B		P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	0.035	U		P
7440-70-2	Calcium	1220	B		P
7440-47-3	Chromium	9.0	B		P
7440-48-4	Cobalt	1.9	B		P
7440-50-8	Copper	7.0			P
7439-89-6	Iron	5430	B		P
7439-92-1	Lead	7.9			P
7439-95-4	Magnesium	1690		E	P
7439-96-5	Manganese	71.0	B		P
7439-97-6	Mercury	0.039			CV
7440-02-0	Nickel	4.7			P
7440-09-7	Potassium	539		E	P
7782-49-2	Selenium	0.75	U		P
7440-22-4	Silver	0.14	U		P
7440-23-5	Sodium	2890	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	6.1			P
7440-66-6	Zinc	20.7			P
57-12-5	Cyanide	0.19	U	N	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

REF 1-4

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040233-04

Level (low/med): LOW Date Received: 3/24/2004

% Solids: 72.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4060		E	P
7440-36-0	Antimony	0.82	U	N R	P
7440-38-2	Arsenic	2.8	B		P
7440-39-3	Barium	7.2	B		P
7440-41-7	Beryllium	0.23	B		P
7440-43-9	Cadmium	0.042	U		P
7440-70-2	Calcium	66800	B		P
7440-47-3	Chromium	13.7	B		P
7440-48-4	Cobalt	2.4	B		P
7440-50-8	Copper	11.9			P
7439-89-6	Iron	8150	B		P
7439-92-1	Lead	13.5			P
7439-95-4	Magnesium	3420		E	P
7439-96-5	Manganese	112	B		P
7439-97-6	Mercury	0.079			CV
7440-02-0	Nickel	6.5			P
7440-09-7	Potassium	857		E U	P
7782-49-2	Selenium	0.91	U		P
7440-22-4	Silver	0.26	B		P
7440-23-5	Sodium	5330	B	U	P
7440-28-0	Thallium	1.5	U		P
7440-62-2	Vanadium	9.6			P
7440-66-6	Zinc	36.1			P
57-12-5	Cyanide	0.21	U	N R	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

REF 2-1

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040233-06

Level (low/med): LOW Date Received: 3/24/2004

% Solids: 41.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10900		~~E~~	P
7440-36-0	Antimony	1.4	~~U~~	~~N~~ L	P
7440-38-2	Arsenic	5.4	~~B~~		P
7440-39-3	Barium	26.4	~~B~~		P
7440-41-7	Beryllium	1.0	~~B~~		P
7440-43-9	Cadmium	0.16	~~B~~	U	P
7440-70-2	Calcium	8170	~~B~~		P
7440-47-3	Chromium	40.0	~~B~~		P
7440-48-4	Cobalt	7.2	~~B~~		P
7440-50-8	Copper	33.2			P
7439-89-6	Iron	22400	~~B~~		P
7439-92-1	Lead	45.5		J	P
7439-95-4	Magnesium	6820		~~E~~	P
7439-96-5	Manganese	204	~~B~~		P
7439-97-6	Mercury	0.18			CV
7440-02-0	Nickel	17.9			P
7440-09-7	Potassium	3190		~~E~~ J	P
7782-49-2	Selenium	1.6	~~U~~		P
7440-22-4	Silver	0.30	~~U~~		P
7440-23-5	Sodium	15700	~~B~~	U	P
7440-28-0	Thallium	2.5	~~U~~		P
7440-62-2	Vanadium	36.4			P
7440-66-6	Zinc	108			P
57-12-5	Cyanide	0.36	~~U~~	~~N~~ L	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

REF 2-3

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040233-08

Level (low/med): LOW Date Received: 3/24/2004

% Solids: 57.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9800		~~E~~	P
7440-36-0	Antimony	0.91	~~U~~	~~N~~ R	P
7440-38-2	Arsenic	4.4	B		P
7440-39-3	Barium	16.9	B		P
7440-41-7	Beryllium	0.70	B		P
7440-43-9	Cadmium	0.068	~~B~~	U	P
7440-70-2	Calcium	7900	B		P
7440-47-3	Chromium	29.7	B		P
7440-48-4	Cobalt	6.4	B		P
7440-50-8	Copper	21.8			P
7439-89-6	Iron	19700	B		P
7439-92-1	Lead	30.7			P
7439-95-4	Magnesium	5570		~~E~~	P
7439-96-5	Manganese	170	B		P
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel	15.3			P
7440-09-7	Potassium	2160		~~E~~ J	P
7782-49-2	Selenium	1.0	U		P
7440-22-4	Silver	0.19	U		P
7440-23-5	Sodium	8940	~~B~~	U	P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	25.9			P
7440-66-6	Zinc	81.1			P
57-12-5	Cyanide	0.26	~~U~~	~~N~~ R	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

REF 2-5

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040233-10

Level (low/med): LOW Date Received: 3/24/2004

% Solids: 78.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6790		E	P
7440-36-0	Antimony	0.70	U	N R	P
7440-38-2	Arsenic	3.9	B		P
7440-39-3	Barium	8.1	B		P
7440-41-7	Beryllium	0.47	B		P
7440-43-9	Cadmium	0.036	U		P
7440-70-2	Calcium	5700	B		P
7440-47-3	Chromium	15.1	B		P
7440-48-4	Cobalt	4.8	B		P
7440-50-8	Copper	8.2			P
7439-89-6	Iron	13100	B		P
7439-92-1	Lead	11.7			P
7439-95-4	Magnesium	3380		E	P
7439-96-5	Manganese	105	B		P
7439-97-6	Mercury	0.060			CV
7440-02-0	Nickel	9.6			P
7440-09-7	Potassium	876		E	P
7782-49-2	Selenium	0.78	U		P
7440-22-4	Silver	0.15	U		P
7440-23-5	Sodium	2770	B		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	12.9			P
7440-66-6	Zinc	41.6			P
57-12-5	Cyanide	0.19	U	N R	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AH-23

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040233-11

Level (low/med): LOW Date Received: 3/24/2004

% Solids: 34.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13700		E	P
7440-36-0	Antimony	1.5	U	N	P
7440-38-2	Arsenic	15.4	B		P
7440-39-3	Barium	60.5	B		P
7440-41-7	Beryllium	1.6	B		P
7440-43-9	Cadmium	0.95	B		P
7440-70-2	Calcium	2050	B		P
7440-47-3	Chromium	58.4	B		P
7440-48-4	Cobalt	8.8	B		P
7440-50-8	Copper	164			P
7439-89-6	Iron	35700	B		P
7439-92-1	Lead	92.9			P
7439-95-4	Magnesium	6050		E	P
7439-96-5	Manganese	215	B		P
7439-97-6	Mercury	0.34			CV
7440-02-0	Nickel	27.8			P
7440-09-7	Potassium	3270		E	P
7782-49-2	Selenium	1.7	U		P
7440-22-4	Silver	0.32	U		P
7440-23-5	Sodium	6960	B		P
7440-28-0	Thallium	2.8	U		P
7440-62-2	Vanadium	57.0			P
7440-66-6	Zinc	246			P
57-12-5	Cyanide	0.43	U	N	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AH-28

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040233-17

Level (low/med): LOW Date Received: 3/24/2004

% Solids: 73.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3760	B	E	P
7440-36-0	Antimony	0.87	U	N	P
7440-38-2	Arsenic	3.9	B		P
7440-39-3	Barium	48.3			P
7440-41-7	Beryllium	1.0	B		P
7440-43-9	Cadmium	0.32			P
7440-70-2	Calcium	1930			P
7440-47-3	Chromium	32.1	B		P
7440-48-4	Cobalt	5.6	B		P
7440-50-8	Copper	118	B		P
7439-89-6	Iron	11300	B		P
7439-92-1	Lead	96.4			P
7439-95-4	Magnesium	2100		E	P
7439-96-5	Manganese	97.4			P
7439-97-6	Mercury	0.066			CV
7440-02-0	Nickel	33.1	B		P
7440-09-7	Potassium	924		E	P
7782-49-2	Selenium	0.96	U		P
7440-22-4	Silver	0.33	B		P
7440-23-5	Sodium	4670			P
7440-28-0	Thallium	1.6	U		P
7440-62-2	Vanadium	14.8			P
7440-66-6	Zinc	427	B		P
57-12-5	Cyanide	0.20	U	N	AS

Color Before: black Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

TOTAL METALS - 6010B/7471A

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

AH-49

Lab Name: Ceimic Corporation Contract: NCBC Davisville

Lab Code: CEIMIC Case No.: 032204 SAS No.: _____ SDG No.: SED16A

Matrix (soil/water): SOIL Lab Sample ID: 040233-20

Level (low/med): LOW Date Received: 3/25/2004

% Solids: 78.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2410		E	P
7440-36-0	Antimony	0.60	U	N	P
7440-38-2	Arsenic	2.2	B		P
7440-39-3	Barium	19.3	B		P
7440-41-7	Beryllium	0.29	B		P
7440-43-9	Cadmium	0.031	U		P
7440-70-2	Calcium	453	B		P
7440-47-3	Chromium	11.0	B		P
7440-48-4	Cobalt	2.1	B		P
7440-50-8	Copper	23.0			P
7439-89-6	Iron	5820	B		P
7439-92-1	Lead	53.1			P
7439-95-4	Magnesium	1240		E	P
7439-96-5	Manganese	46.2	B		P
7439-97-6	Mercury	0.023	U		CV
7440-02-0	Nickel	6.3			P
7440-09-7	Potassium	416		E	P
7782-49-2	Selenium	0.67	U		P
7440-22-4	Silver	0.13	U		P
7440-23-5	Sodium	1780	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	8.6			P
7440-66-6	Zinc	66.9			P
57-12-5	Cyanide	0.19	U	N	AS

Color Before: brown Clarity Before: n/a Texture: medium

Color After: yellow Clarity After: n/a Artifacts: _____

Comments: _____

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: AH-08

Laboratory ID: 040222-02

Date Sample Received: 03/22/04

Date Analysis Completed: 4/2/04

Date Sampled: 3/22/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	144.49		13.49
Cadmium	0.008		0.003
Copper	0.04		0.03
Lead	0.255		0.002
Mercury	0.00008	U	0.00008
Nickel	0.08		0.05
Zinc	2.64		0.02
Summation of SEM	3.03		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.02 *		

+ Reported on a dry weight basis, % Solids = 28.9

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: _____

Approved by: _____

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: AH-11

Laboratory ID: 040222-05

Date Sample Received: 03/22/04

Date Analysis Completed: 4/2/04

Date Sampled: 3/22/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	40.14		5.22
Cadmium	0.006		0.003
Copper	0.04		0.02
Lead	0.202		0.001
Mercury	0.00006	U	0.00006
Nickel	0.04	U	0.04
Zinc	1.79		0.02
Summation of SEM	2.07		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.05 *		

+ Reported on a dry weight basis, % Solids = 37.3

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: kj

Approved by: RCa

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: AH-DUP01

Laboratory ID: 040222-06

Date Sample Received: 03/22/04

Date Analysis Completed: 4/2/04

Date Sampled: 3/22/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	36.74		5.78
Cadmium	0.005		0.003
Copper	0.18		0.03
Lead	0.180		0.002
Mercury	0.00007	U	0.00007
Nickel	0.04	U	0.04
Zinc	1.74		0.02
Summation of SEM	2.15		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.06 *		

+ Reported on a dry weight basis, % Solids = 33.7

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: kf

Approved by: RCa

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: AH-06

Laboratory ID: 040222-10

Date Sample Received: 03/23/04

Date Analysis Completed: 4/2/04

Date Sampled: 3/23/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	51.60		4.95
Cadmium	0.005		0.002
Copper	0.14		0.02
Lead	0.139		0.001
Mercury	0.00006	U	0.00006
Nickel	0.04	U	0.04
Zinc	1.34		0.02
Summation of SEM	1.66		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.03 *		

+ Reported on a dry weight basis, % Solids = 39.4

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: _____

Approved by: _____

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: DUP-03

Laboratory ID: 040222-11

Date Sample Received: 03/23/04

Date Analysis Completed: 4/2/04

Date Sampled: 3/23/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	69.24		5.53
Cadmium	0.006		0.003
Copper	0.09		0.02
Lead	0.148		0.002
Mercury	0.00006	U	0.00006
Nickel	0.04	U	0.04
Zinc	1.42		0.02
Summation of SEM	1.71		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.02 *		

+ Reported on a dry weight basis, % Solids = 35.2

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: AJ

Approved by: RL

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: AH17

Laboratory ID: 040222-13

Date Sample Received: 03/23/04

Date Analysis Completed: 4/2/04

Date Sampled: 3/23/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	156.59		14.13
Cadmium	0.008		0.004
Copper	0.20		0.03
Lead	0.284		0.002
Mercury	0.00008	U	0.00008
Nickel	0.08		0.05
Zinc	2.90		0.02
Summation of SEM	3.46		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.02 *		

+ Reported on a dry weight basis, % Solids = 27.6

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: KJ

Approved by: RCS

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: AH-03

Laboratory ID: 040222-17

Date Sample Received: 03/23/04

Date Analysis Completed: 4/5/04

Date Sampled: 3/23/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	71.55		7.97
Cadmium	0.004		0.002
Copper	0.14		0.02
Lead	0.179		0.001
Mercury	0.00004	U	0.00004
Nickel	0.12		0.03
Zinc	2.14		0.01
Summation of SEM	2.59		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.04 *		

+ Reported on a dry weight basis, % Solids = 48.8

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: KJ

Approved by: RL

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: REF 1-1

Laboratory ID: 040233-01

Date Sample Received: 03/24/04

Date Analysis Completed: 4/5/04

Date Sampled: 3/24/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	0.07		0.03
Cadmium	0.001	U	0.001
Copper	0.02		0.01
Lead	0.013		0.001
Mercury	0.00003	U	0.00003
Nickel	0.02	U	0.02
Zinc	0.11		0.01
Summation of SEM	0.15		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	2.19 *		

+ Reported on a dry weight basis, % Solids = 75.6

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: AJ

Approved by: RCm

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: REF 1-2

Laboratory ID: 040233-02

Date Sample Received: 03/24/04

Date Analysis Completed: 4/5/04

Date Sampled: 3/24/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	0.02	U	0.02
Cadmium	0.001	U	0.001
Copper	0.08		0.01
Lead	0.036		0.001
Mercury	0.00003	U	0.00003
Nickel	0.02	U	0.02
Zinc	0.17		0.01
Summation of SEM	0.30		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	12.47 *		

+ Reported on a dry weight basis, % Solids = 80.1

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: _____

Approved by: _____

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: REF 1-4

Laboratory ID: 040233-04

Date Sample Received: 03/24/04

Date Analysis Completed: 4/5/04

Date Sampled: 3/24/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	28.33		2.70
Cadmium	0.001	U	0.001
Copper	0.07		0.01
Lead	0.087		0.001
Mercury	0.00003	U	0.00003
Nickel	0.05		0.02
Zinc	0.46		0.01
Summation of SEM	0.66		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.02 *		

+ Reported on a dry weight basis, % Solids = 72.1

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: _____

Approved by: _____

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: REF 2-1

Laboratory ID: 040233-06

Date Sample Received: 03/24/04

Date Analysis Completed: 4/5/04

Date Sampled: 3/24/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	84.22		9.29
Cadmium	0.002	U	0.002
Copper	0.25		0.02
Lead	0.216		0.001
Mercury	0.00005	U	0.00005
Nickel	0.09		0.04
Zinc	1.24		0.02
Summation of SEM	1.79		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.02 *		

+ Reported on a dry weight basis, % Solids = 41.8

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: NJ

Approved by: RCa

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: REF 2-3

Laboratory ID: 040233-08

Date Sample Received: 03/24/04

Date Analysis Completed: 4/5/04

Date Sampled: 3/24/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	40.55		3.39
Cadmium	0.002		0.002
Copper	0.16		0.02
Lead	0.141		0.001
Mercury	0.00004	U	0.00004
Nickel	0.05		0.03
Zinc	0.76		0.01
Summation of SEM	1.11		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.03 *		

+ Reported on a dry weight basis, % Solids = 57.4

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: AJ

Approved by: RS

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: REF 2-5

Laboratory ID: 040233-10

Date Sample Received: 03/24/04

Date Analysis Completed: 4/5/04

Date Sampled: 3/24/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	1.85		0.62
Cadmium	0.001	U	0.001
Copper	0.05		0.01
Lead	0.044		0.001
Mercury	0.00003	U	0.00003
Nickel	0.02		0.02
Zinc	0.32		0.01
Summation of SEM	0.44		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.24 *		

+ Reported on a dry weight basis, % Solids = 78.7

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: _____

Approved by: _____

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: AH-23

Laboratory ID: 040233-11

Date Sample Received: 03/24/04

Date Analysis Completed: 4/5/04

Date Sampled: 3/24/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	16.30		2.78
Cadmium	0.009		0.003
Copper	0.57		0.02
Lead	0.357		0.002
Mercury	0.00006	U	0.00006
Nickel	0.05		0.04
Zinc	2.56		0.02
Summation of SEM	3.54		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.22 *		

+ Reported on a dry weight basis, % Solids = 34.9

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: _____ Approved by: _____

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: AH-28

Laboratory ID: 040233-17

Date Sample Received: 03/24/04

Date Analysis Completed: 4/7/04

Date Sampled: 3/25/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	18.73		1.32
Cadmium	0.002		0.001
Copper	0.07		0.01
Lead	0.315		0.001
Mercury	0.00003	U	0.00003
Nickel	0.21		0.02
Zinc	4.79		0.01
Summation of SEM	5.38		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.29 *		

+ Reported on a dry weight basis, % Solids = 73.7

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: _____ Approved by: _____

CEIMIC
CORPORATION

"Analytical Chemistry for Environmental Management"

ACID VOLATILE SULFIDES AND SIMULTANEOUSLY EXTRACTED METALS

Client: EA Engineering, Sci, & Tech, Inc

Matrix: Sediment

Client Sample ID: AH-49

Laboratory ID: 040233-20

Date Sample Received: 03/25/04

Date Analysis Completed: 4/5/04

Date Sampled: 3/25/04

Concentration in : µmol/g+

Target Analyte	Sample Concentration		Method Reporting Limit
Acid Volatile Sulfides (AVS)	2.27		0.62
Cadmium	0.001	U	0.001
Copper	0.09		0.01
Lead	0.092		0.001
Mercury	0.00003	U	0.00003
Nickel	0.03		0.02
Zinc	0.71		0.01
Summation of SEM	0.93		
Ratio = $\frac{\text{Summation of SEM}}{\text{AVS}}$	0.41 *		

+ Reported on a dry weight basis, % Solids = 78.8

U : Undetected at the Method Reporting Limit

* Unitless

Reported by: KJ

Approved by: RCm

ENVIRONMENTAL
Data Services, Inc.

ORGANIC DATA VALIDATION REPORT
USEPA REGION I - TIER III

SDG No.:	SED16B/040235, 040242
Laboratory:	Ceimic Corporation, Narragansett, Rhode Island
Site:	NCBC Davisville, Allen Harbor, Site 16
Date:	June 2, 2004
Samples:	
VOC:	16/Soil/REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, AH-32, AH-29, AH-47, AH-51, AH-26, AH-42, AH-40, CORE1-TOP, CORE1-BOT 1/Soil Reanalysis/AH-47RE 4/Aqueous/RINS01, TB16-06, TB16-05RINSE, TB16-10RINB
Pesticide:	16/Soil/REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, AH-32, AH-29, AH-47, AH-51, AH-26, AH-42, AH-40, CORE1-TOP, CORE1-BOT 1/Soil Dilution/AH-45DL 1/Aqueous/RINS01
PCB:	16/Soil/REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, AH-32, AH-29, AH-47, AH-51, AH-26, AH-42, AH-40, CORE1-TOP, CORE1-BOT 1/Aqueous/RINS01

A Tier III validation was performed on the organic analytical data for sixteen soil samples and four aqueous blank samples collected by EA Engineering, Science, & Technology, Inc. at Allen Harbor, Site 16, NCBC Davisville. The samples were analyzed under USEPA SW-846 Methods 8260B, 8081 and 8082 for volatile organic compounds (VOC), pesticide compounds and PCB compounds, respectively. The data were evaluated as Tier III in accordance with the "Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses" dated December 1996 and were based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues.
- * Data Completeness.
- * Preservation and Technical Holding Times.
- * Gas Chromatograph/Mass Spectrometry (GC/MS) and GC/Electron Capture Detector (GC/ECD) Instrument Performance Checks.
- Initial and Continuing Calibration.
- Blanks.
- Surrogate Compounds.
- * Internal Standards.
- * Matrix Spike (MS)/Matrix Spike Duplicates (MSD).
- * Field Duplicates.
- NA Sensitivity Check (Method Detection Limit Study or Laboratory Fortified Blank).
- Laboratory Control Sample.
- Target Compound Identification.

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*	•	Sample Quantitation and Reported Quantitation Limits.
NA	•	Tentatively Identified Compounds (TICs).
NA	•	SVOC and P/PCB Cleanup.
*	•	System Performance.

*	=	All criteria were met for this parameter.
NA	=	Not Applicable.

Overall Evaluation of Data and Potential Usability Issues

VOC:

VOC sample results were qualified for the following:

- Methylene chloride has been qualified (UJ) in all samples except AH-47RE due to a high initial calibration %RSD value.
- Acetone has been qualified (J/UJ) in samples TB16-10RINB, AH-29, AH-47, AH-51, AH-26, AH-42 and CORE1-BOT due to a high continuing calibration %D value.
- Carbon disulfide, 2-butanone, 4-methyl-2-pentanone and 2-hexanone have been qualified (UJ) in sample AH-47RE due to high continuing calibration %D values.
- Acetone has been qualified as undetected (U) in samples RINS01, REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, AH-32, AH-29, AH-47, AH-47RE, AH-51, AH-26, AH-42, AH-40 and CORE1-TOP due to method and field blank contamination.
- Methylene chloride has been qualified as undetected (U) in samples REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, RINS01, TB16-06, TB16-05RINSE, AH-32, AH-29, AH-47, AH-51, AH-26, AH-42, CORE1-BOT, TB16-10RINB, AH-40 and CORE1-TOP due to method blank contamination.
- Carbon disulfide has been qualified as undetected (U) in samples AH-29, AH-47, AH-51, AH-42, CORE1-BOT, AH-47RE, REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, AH-32, AH-26, AH-40, CORE1-TOP and CORE1-BOT due to method and field blank contamination.

Pesticides:

Pesticide sample results were qualified for the following:

- All positive results have been qualified (J) in sample AH-35 due to high surrogate recoveries.
- All results have been qualified (J/UJ) in sample CORE1-TOP due to low surrogate recoveries.
- All results have been qualified (J/R) in samples AH-32 and AH-26 due to severely low surrogate recoveries.
- Many compounds in almost all samples exhibited high %D values between columns. These results have been qualified (J/R) based on the severity of the %D. Please refer to the worksheets for specific qualifications.

- alpha-BHC, delta-BHC and gamma-BHC have been qualified (J/UJ) in samples CORE1-BOT and AH-40 due to low LCS recoveries.

PCBs:

PCB sample results were qualified for the following:

- Aroclor-1260 has been qualified (J/U) in samples AH-33, AH-40, AH-51, CORE1-BOT, CORE1-TOP and REF3-1 due to high %D values between columns.

Initial and Continuing Calibrations

Compounds that did not meet criteria in the calibrations are summarized in the following tables:

VOC:

Compound	ICAL 04/05/04	Action	Affected Samples
Methylene Chloride	%RSD=45.1	J/UJ	All Samples except AH-47RE

- Methylene chloride has been qualified (UJ) in all samples except AH-47RE.

Compound	CCAL 04/07/04	Action	Affected Samples
Acetone	%D=37.5	J/UJ	TB16-10RINB, AH-29, AH-47, AH-51, AH-26, AH-42, CORE1-BOT

- Acetone has been qualified (J/UJ) in samples TB16-10RINB, AH-29, AH-47, AH-51, AH-26, AH-42 and CORE1-BOT.

Compound	CCAL 04/09/04	Action	Affected Samples
Carbon Disulfide	%D=37.7	J/UJ	AH-47RE
2-Butanone	%D=31.2		
4-Methyl-2-pentanone	%D=51.4		
2-Hexanone	%D=45.6		

- Carbon disulfide, 2-butanone, 4-methyl-2-pentanone and 2-hexanone have been qualified (UJ) in sample AH-47RE.

Blanks

The contamination detected in the blanks that resulted in qualifications are summarized in the following section(s):

VOC:

Blank	Compound	Concentration ug/kg	Action Level ug/kg	Affected Samples
VBLKLG	Acetone	2	20	RINS01
	Methylene Chloride	4	40	REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, RINS01, TB16-06, TB16-05RINSE, AH-32
VBLKLR	Methylene Chloride	5	50	AH-29, AH-47, AH-51, AH-26, AH-42, CORE1-BOT, TB16-10RINB
	Carbon Disulfide	1	5	AH-29, AH-47, AH-51, AH-42, CORE1-BOT
VBLKLS	Methylene Chloride	5	50	AH-40, CORE1-TOP
VBLKLU	Carbon Disulfide	200	1000	AH-47RE
RINSE01	Carbon Disulfide	3	15	REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, AH-32, AH-26, AH-40, CORE1-TOP, CORE1-BOT
TB16-06	Acetone	41	410	REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, AH-32, AH-29, AH-47, AH-47RE
TB16-10RINB	Acetone	58	580	AH-51, AH-26, AH-42, AH-40, CORE1-TOP

- Acetone has been qualified as undetected (U) in samples RINS01, REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, AH-32, AH-29, AH-47, AH-47RE, AH-51, AH-26, AH-42, AH-40 and CORE1-TOP.
- Methylene chloride has been qualified as undetected (U) in samples REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, RINS01, TB16-06, TB16-05RINSE, AH-32, AH-29, AH-47, AH-51, AH-26, AH-42, CORE1-BOT, TB16-10RINB, AH-40 and CORE1-TOP.
- Carbon disulfide has been qualified as undetected (U) in samples AH-29, AH-47, AH-51, AH-42, CORE1-BOT, AH-47RE, REF3-4, REF3-2, REF3-1, DUP07, AH-45, AH-33, AH-35, AH-32, AH-26, AH-40, CORE1-TOP and CORE1-BOT.

Surrogate Compounds

The following surrogate spike recoveries did not meet acceptance criteria:

Pesticides:

Sample	TCX %R	DCB %R	Action
AH-35	211%/427%	Ok	J
CORE1-TOP	16%/30%	Ok	J/UJ
AH-32	9%/ok	Ok	J/R
AH-26	9%/ok	Ok	J/R

- All positive results have been qualified (J) in sample AH-35.
- All results have been qualified (J/UJ) in sample CORE1-TOP.
- All results have been qualified (J/R) in samples AH-32 and AH-26.

Analyte Identification Confirmation

Pesticides:

- Many compounds in almost all samples exhibited high %D values between columns. These results have been qualified (J/R) based on the severity of the %D. Please refer to the worksheets for specific qualifications.

PCBs:

Sample	Compound(s)	%D	Action
AH-33	Aroclor-1260	60.9%	J
AH-40	Aroclor-1260	128.6%	J
AH-51	Aroclor-1260	34.1%	J
CORE1-BOT	Aroclor-1260	35.7%	J
CORE1-TOP	Aroclor-1260	31.6%	J
REF3-1	Aroclor-1260	33.3%	U

- Aroclor-1260 has been qualified (J/U) in samples AH-33, AH-40, AH-51, CORE1-BOT, CORE1-TOP and REF3-1.

Laboratory Control Sample

The following compounds did not meet recovery criteria and resulted in qualification:

Pesticides:

LCS Sample ID	Compound	LCS %R	Action	Affected Samples
PLCS03	Alpha-BHC Delta-BHC Gamma-BHC	64% 61% 61%	J/UJ	CORE1-BOT, AH-40

- alpha-BHC, delta-BHC and gamma-BHC have been qualified (J/UJ) in samples CORE1-BOT and AH-40.

Additional Comments

VOC:

- Sample AH-47 exhibited cis-1,2-dichloroethene over the linear range of the instrument and was flagged (E) by the laboratory. The sample was diluted and reanalyzed and the dilution result for this compound should be used for reporting purposes.

Pesticides:

- Sample AH-45 exhibited heptachlor epoxide over the linear range of the instrument and was flagged (E) by the laboratory. The sample was diluted and reanalyzed and the dilution result for this compound should be used for reporting purposes.

Attachments: Data Validation Worksheets
Annotated Form Is

DATA SUMMARY KEY
ORGANIC DATA VALIDATION

J = The associated numerical value is an estimated quantity.

R = The data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification. The R replaces the numerical value or sample quantitation limit.

U = The compound was analyzed for, but not detected. The associated numerical value is the sample quantitation limit or the adjusted sample quantitation limit.

UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit.

TB = The compound was analyzed for and detected in the associated trip blank as well as the sample.

REGION I, EPA-NE ORGANIC REGIONAL DATA ASSESSMENT (ORDA)*

CASE # —

LAB NAME: Cerme Corp

SDG # SEDMeB / 040235 / 2412

SOW #/CONTRACT #: Sc8616

EPA-NE DV TIER LEVEL: III

TPO/PO: **ACTION ____ FYI ____

SITE NAME: NCBC Davisville

OF SAMPLES/MATRIX: 16 soils / 4 waters

VALIDATION CONTRACTOR: Env. Data Services

VALIDATOR'S NAME: Christine Gorney

DATE DP REC'D BY EPA-NE: —

DV COMPLETION DATE: 06/02/04

ANALYTICAL DATA QUALITY SUMMARY

	8260B VOA	SV	8081A Pest	8082 PCB
1. Preservation and Contractual Holding Times	O		O	O
2. GC/MS / GC/ECD Instrument Performance Check	O		O	NA
3. Initial Calibration	O1		O	O
4. Continuing Calibration	O2		O	O
5. Blanks	O3		O	O
6. Surrogate Compounds	O		O	O
7. Internal Standards	O		NA	NA
8. Matrix Spike/Matrix Spike Duplicate	O		NA	NA
9. Sensitivity Check	NA		NA	NA
10. PE Samples-Accuracy Check	O		O4	O
11. Target Compound Identification	O		Z2	O5
12. Compound Quantitation and Reported QLs	O		O	O
13. Tentatively Identified Compounds	NA		NA	NA
14. Semivolatile Cleanup/Pesticide/PCB Cleanup	NA		NA	NA
15. Data Completeness	O		O	O
16. Overall Evaluation of Data	O		O	O

o = Data had no problems or were qualified due to minor contractual problems.
m = Data were qualified due to major contractual problems.
z = Data were rejected as unusable due major contractual problems.

ACTION ITEMS: (z items) Z1 - 2 samples qualified (J/R) + one sample qual (J/A), one sample qual (J/UJ) for associated pesticides due to surrogates results
Z2 several pest analytes qualified (R) or (J) in associated samples due to column difference results

AREAS OF CONCERN: (m items)

COMMENTS: O1 - one VOA analyte qualified (UJ), in associated samples due to cal O2 several VOA analytes qualified (J/UJ) in associated samples due to cal results O3 - several VOA analytes qualified (U) in associated samples due to blank contamination O4 - associated pest samples qualified (J/UJ) for 3 analytes due to LCS results O5 - one PCB aroclor qualified (J) or (U) in associated samples due to column difference results

*This form assesses the analytical data quality in terms of contractual compliance only. It does not assess sampling errors and/or non-contractual analytical issues that affect data quality.

**Check "ACTION" only if contractual defects resulted in reduced payment/data rejection recommendations

Validator: Christine Gorney

Date: 06/02/04

INSTRUCTIONS ON REVERSE SIDE

EPA-NE
Data Validation Worksheet Cover Page - Page 1

Site Name NCBC Davisville
Reference No. _____

REGION I ORGANIC DATA VALIDATION

The following data package has been validated:

Lab Name Celtic Corp. Norwood MA
Case/Project No. —
SDG No. SED16B / 040235 / 242
No. of Samples/Matrix 16 Soils / 4 Waters

SOW/Method No. SW846 8260B, 8081A - 8082
Sampling Date(s) 3/25, 3/26, 3/27/04
Shipping Date(s) 3/25, 3/26, 3/27/04
Date Rec'd by lab 3/25, 3/26, 3/27/04

Traffic Report Sample Nos. REF 3-4, REF 3-2, REF 3-1, DUP07, AH-45, AH-33, AH-35, RINS01, TB16-06, TB16-05 RINS, AH 32, AH-29, AH-47, AH 51, AH-26, AH-42, AH-46, Core-1TOP, Core 1-BOT, TB16-10RNB
Trip Blank No. TB16-06, TB16-05 RINS, TB16-10RNB
Equipment Blank No. RINS01
Bottle Blank No. —
Field Duplicate Nos. AH-33 / DUP07
PES Nos. —

The Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, revision 12/96 was used to evaluate the data and/or approved modifications to the EPA-NE Functional Guidelines were used to evaluate the data and are attached to this cover page: (attach modified criteria from EPA approved QAPjP or amendment to QAPjP).

A Tier II or Tier III evaluation was used to validate the data (circle one). If a Tier II validation with a partial Tier III was used, then identify samples, parameters, etc. that received partial Tier III validation

_____

The data were evaluated based upon the following parameters:

- Overall Evaluation of Data
- Data Completeness (CSF Audit - Tier I)
- Preservation & Technical Holding Times
- GC/MS & GC/ECD Instrument Performance Check
- Initial & Continuing Calibrations
- Blanks
- Surrogate Compounds
- Internal Standards
- Matrix Spike/Matrix Spike Duplicate
- Field Duplicates
- Sensitivity Check
- PE Samples/Accuracy Check
- Target Compound Identification
- Compound Quantitation and Reported Quantitation Limits
- TICs
- Semivolatile and Pesticide/PCB Cleanup
- System Performance

Region I Definitions and Qualifiers:

A - Acceptable Data
J - Numerical value associated with compound is an estimated quantity.
R - The data are rejected as unusable. The R replaces the numerical value or sample quantitation limit.
U - Compound not detected at that numerical sample quantitation limit.
UJ - The sample quantitation limit is an estimated quantity.
TB, BB, EB - Compound detected in aqueous trip blank, aqueous bottle blank, or aqueous equipment blank associated with soil/sediment samples.

Validator's Name Christine Gorney Company Name Env Data Svc Phone Number 603-226-0118

Date Validation Started 06/02/04 Date Validation Completed 06/02/04

Check if all criteria are met and no hard copy worksheet provided. Indicate NA if worksheet is not applicable to analytical method. Note: there is no standard worksheet for System Performance, however, the validator must document all system performance issues in the Data Validation Memorandum.

VOA/SV worksheets:

VOA/SV-Pest/PCB	COMPLETE SDG FILE (CSF) AUDIT	✓
VOA/SV-Pest/PCB-I	PRESERVATION AND HOLDING TIMES	
VOA/SV-II	GC/MS INSTRUMENT PERFORMANCE CHECK (TUNING)	
VOA/SV-III	INITIAL CALIBRATION	
VOA/SV-IV	CONTINUING CALIBRATION	
VOA/SV-Pest/PCB-V-A	BLANK ANALYSIS	
VOA/SV-Pest/PCB-V-B	BLANK ANALYSIS	
VOA-VI	VOA SURROGATE SPIKE RECOVERIES	
SV-VI	SV SURROGATE SPIKE RECOVERIES	NA
VOA/SV-VII	INTERNAL STANDARD PERFORMANCE	
VOA/SV-Pest/PCB-VIII	MATRIX SPIKE/MATRIX SPIKE DUPLICATE	
VOA/SV-Pest/PCB-IX	FIELD DUPLICATE PRECISION	
VOA/SV-Pest/PCB-X	SENSITIVITY CHECK	NA
VOA/SV-Pest/PCB-XI	ACCURACY CHECK	
VOA/SV-Pest/PCB-XII	TARGET COMPOUND IDENTIFICATION	
VOA/SV-Pest/PCB-XIII	SAMPLE QUANTITATION	
VOA/SV-XIV	TENTATIVELY IDENTIFIED COMPOUNDS	NA
VOA/SV-XV	SEMIVOLATILE CLEANUP	NA
TABLE II-WORKSHEET	OVERALL EVALUATION OF DATA	

Pest/PCB worksheets:

VOA/SV-Pest/PCB	COMPLETE SDG FILE (CSF) AUDIT	✓
VOA/SV-Pest/PCB-I	PRESERVATION AND HOLDING TIMES	
Pest/PCB-IIA	GC/ECD INSTRUMENT PERFORMANCE CHECK-RESOLUTION	
Pest/PCB-IIB	GC/ECD INSTRUMENT PERFORMANCE CHECK-RETENTION TIMES	
Pest/PCB-IIC	GC/ECD INSTRUMENT PERFORMANCE CHECK-ACCURACY CHECK OF INITIAL CALIBRATION	
Pest/PCB-IID	GC/ECD INSTRUMENT PERFORMANCE CHECK-PESTICIDE DEGRADATION	
Pest/PCB-III	INITIAL CALIBRATION	
Pest/PCB-IV	CONTINUING CALIBRATION	
VOA/SV-Pest/PCB-V-A	BLANK ANALYSIS	
VOA/SV-Pest/PCB-V-B	BLANK ANALYSIS	
Pest/PCB-VI	SURROGATE COMPOUNDS: SPIKE RECOVERIES AND RETENTION TIME SHIFT	
Pest/PCB-VII	PESTICIDE CLEANUP	NA
VOA/SV-Pest/PCB-VIII	MATRIX SPIKE/MATRIX SPIKE DUPLICATE	
VOA/SV-Pest/PCB-IX	FIELD DUPLICATE PRECISION	
VOA/SV-Pest/PCB-X	SENSITIVITY CHECK	NA
VOA/SV-Pest/PCB-XI	ACCURACY CHECK	
Pest/PCB-XII	COMPOUND IDENTIFICATION	
VOA/SV-Pest/PCB-XIII	SAMPLE QUANTITATION	
TABLE II-WORKSHEET	OVERALL EVALUATION OF DATA	

I certify that all criteria were met for the worksheets checked above.

Signature: [signature] Name: Christine Jones

Date: 06/02/04

EPA-NE - Data Validation
VOA/SV - Pest/PCB-I

Sampler: - Company: EA Engineering Contacted: Yes (No) Date: _____

I. PRESERVATION AND HOLDING TIMES - Circle sample numbers with exceeded technical holding times or omitted preservation.
List all required preservation codes and circle omitted preservation codes.
Circle all exceeded technical holding times.
Identify extraction technique after "# of Days"/(*Extraction Code).

Sample No (TR No)	Matrix	Pres. Code	Date Sampled	VOA Date Analyzed	VOA # of Days from Samp. to Anal.	VOA Action	Pest Date Extracted	Pest # of Days from Samp. to Extr./(*)	Pest Date Analyzed	Pest # of Days from Extr. to Anal.	Pest Action	PCB Date Extracted	PCB # of Days from Samp. to Extr./(*)	PCB Date Analyzed	PCB # of Days from Extr. to Anal.	PCB Action
REF 3-4	Soil	1	03/25/04	04/06/04	12	none	04/02/04	8/Son	04/22/04	20	none	04/02/04	8/Son	04/14/04	12	none
REF 3-2	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
REF 3-1	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
DUP 07	↓	↓	03/26/04	↓	11	↓	04/06/04	11/Son	04/23/04	17	none	04/06/04	11/Son	04/14/04	8	none
AH-45	↓	↓	↓	↓	↓	↓	04/07/04	12/SOX	04/23/04	16	none	04/08/04	13/SOX	04/14/04	6	none
AH-33	↓	↓	↓	↓	↓	↓	04/06/04	11/Son	04/23/04	17	none	04/06/04	11/Son	04/14/04	8	none
AH-35	↓	↓	↓	↓	↓	↓	04/07/04	12/SOX	04/22/04	15	none	04/08/04	13/SOX	04/14/04	6	none
RINS01	water	1/2	↓	↓	↓	↓	04/01/04	6/Sep	04/22/04	21	none	04/01/04	6/Sep	04/14/04	13	none
TB16-06	water	1/2	↓	↓	↓	↓	—	—	—	—	—	—	—	—	—	—
TB16-05 Rinse	water	1/2	↓	↓	↓	↓	—	—	—	—	—	—	—	—	—	—
AH-32	Soil	1	↓	↓	↓	↓	04/06/04	11/Son	04/23/04	17	none	04/06/04	11/Son	04/14/03	8	none
AH-29	↓	↓	↓	04/07/04	12	none	04/07/04	12/SOX	04/23/04	16	none	04/08/04	13/SOX	04/14/04	6	none
AH-47	↓	↓	↓	↓	↓	↓	04/06/04	11/Son	04/23/04	17	none	04/06/04	11/Son	04/14/04	8	none
AH-47RE	↓	↓	↓	04/09/04	14	none	—	—	—	—	—	—	—	—	—	—
AH-51	↓	↓	03/27/04	04/07/04	11	none	04/06/04	10/Son	04/23/04	17	none	04/06/04	10/Son	04/14/04	8	none
AH-26	↓	↓	↓	↓	↓	↓	04/06/04	10/Son	04/23/04	17	none	04/06/04	10/Son	04/14/04	8	none
AH-42	↓	↓	↓	↓	↓	↓	04/06/04	10/Son	04/23/04	17	none	↓	↓	↓	↓	↓
AH-40	↓	↓	↓	04/08/04	12	none	04/02/04	6/Son	04/23/04	11	none	04/02/04	6/Son	04/14/04	12	none
Core 1-Top	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Core 1 Bot	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓

Preservation Code:
1. Cool @ 4°C (± 2°)
2. Preserve with HCl to at least pH 2
3. Protect from light
4. Freeze
5. Room Temperature (Avoid excessive heat)

(*Extraction Code:)
L/L - Liquid/Liquid
SON - Sonication
SEP - Separatory Funnel
SOX - Soxhlet
SPE - Solid Phase Extraction

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

Validator: Christine Jones Date: 06/02/04

EPA-NE - Data Validation
~~OP Pest~~/Herbicides

Sampler: ✓ Company: EA Engineering Contacted: Yes (No) Date: _____

I. PRESERVATION AND HOLDING TIMES - Circle sample numbers with exceeded technical holding times or omitted preservation.
List all required preservation codes and circle omitted preservation codes.
Circle all exceeded technical holding times.
Identify extraction technique after "# of Days"/(*Extraction Code).

Sample No (TR No.)	Matrix	Pres. Code	Date Sampled	~~VOA~~			~~OP~~ Pesticides					Herbicides				
				Date Analyzed	# of Days from Samp. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action
TB60-WEMB	water	1	03/27/04	04/07/04	11	none	—	—	—	—	—	—	—	—	—	—
AH-45PL	soil	1	03/26/04	—	—	—	04/07/04	12/SOX	04/24/04	27	none	—	—	—	—	—

Preservation Code:
1. Cool @ 4°C (± 2°)
2. Preserve with HCl to at least pH 2
3. Protect from light
4. Freeze
5. Room Temperature (Avoid excessive heat)

(*Extraction Code:)
L/L - Liquid/Liquid
SON - Sonication
SEP - Separatory Funnel
SOX - Soxhlet
SPE - Solid Phase Extraction

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

Validator: Christine Gomez Date: 06/02/04

II. GC/MS INSTRUMENT PERFORMANCE CHECK (TUNING)

List all Instrument Performance Checks that are outside method QC tuning acceptance criteria.

Volatile Instrument Performance Check (Compound Name)	Analysis Date and Time	Instrument	Ion(s) Affected	Percent Relative Abundance	QC Limits	Samples Affected	Action

Comments: All acceptance criteria were met

Semivolatile Instrument Performance Check (Compound Name)	Analysis Date and Time	Instrument	Ion(s) Affected	Percent Relative Abundance	QC Limits	Samples Affected	Action

Comments:

If tuning compounds and criteria are different from those specified in CLP SOW OLM03.1, then the validator should include a copy of the method-specific tuning criteria with this worksheet.

Validator: Christie Gerry

Date: 06/02/04

EPA-NE - Data Validation Worksheet
VOA/SV-III

III. INITIAL CALIBRATION - List all analytes that are outside calibration criteria.

Date of ICAL	Instrument	Parameter	Matrix	Compound	% RSD	RRF	Samples Affected	Action
03/03/04	MS12	VOA	soil	VOA	all ok	all ok	None	None
04/05/04	MS12	VOA	water soil	Methylene chloride	45.138	ok	all except AH-47 RE	J/UJ

Comments:

Validator: Christine Gomez

Date: 06/02/04

REGION I
Data Review worksheets Form 6E

☒ All Criteria Met

XI A. PESTICIDE CALIBRATION (Sections 1 and 2)

1. Initial Calibration

List the compounds which did not meet the Relative Standard Deviation (RSD) criteria of less than 20% for the initial calibration on either ~~quantitation~~ column.

DATE	COMPOUND	%RSD	COLUMN	SAMPLES AFFECTED
04/21/04	Pest	all	DB5 DB 3.5	none
02/23-02/24/04	PCB	↓	DB5 DB 1701	none

Flag all associated positive results as estimated (J) for samples which did not meet the %RSD criteria.

Analytical Sequence Form 8D

Did the laboratory follow the correct 72 hour sequence described in the SOW? Yes or No

If no,

The data may be affected. The data reviewer must use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below:

EPA-NE - Data Validation Worksheet
VOA/SV-IV

IV. CONTINUING CALIBRATION - List all analytes that are outside calibration criteria.

Date of ICAL	Date of CCAL	Instrument	Parameter	Matrix	Compound	%D	RRF	Samples Affected	Action
04/05/04	04/06/04	MS12	VOA	Water SOIL	VOA	all ok	all ok	None	None
↓	04/07/04	↓	↓	↓	Acetone	37.58	OK	TB16-10, TB16-13, AH-29, AH-47, AH-51, AH-26, AH-42, AH-1, BOT	J/UJ
↓	04/08/04	↓	↓	↓	VOA	all ok	all ok	None	None
03/03/04	04/09/04	MS12	VOA	SOIL	Carbondisulfide	37.68	OK	AH-27 RE	J/UJ
↓	↓	↓	↓	↓	2-Butanone	31.78	OK	↓	J/UJ
					4-methyl-2-Pentanone	51.37	OK		J/UJ
					2-Hexanone	45.62	OK		J/UJ

Comments:

Validator: Christine Gorney

Date: 04/12/04

REGION I
Data Review Worksheets Forms 7D & 7E ☒ **All Criteria Met**

XI B. PESTICIDE CALIBRATION (Section 3)

2. Continuing Calibration - Ind A+B and PEM

List the compounds which did not meet the percent difference (%D) criteria of < 25% (CLP) on either column.

DATE	COMPOUND	%D	COLUMN	SAMPLES AFFECTED
04/22/04-04/24/04	Reot	all on	DB5 DB35	None
04/13/04-04/15/04	PCB	all on	DB5 DB1701	"

If the %D criteria is not met, flag all associated positive results as estimated (J).

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-A

V. BLANK ANALYSIS

Concentration Level: low/med

List the blank contamination below.

Sampler: — Company: PA Engineering Contacted: Yes (No) Date: _____

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
—	04/06/04	VOA / water	VBLKLQ	MS12 / RTX624	Acetone	2 ug/kg
—	↓	↓	↓		methylene chloride	4 ug/kg
—	04/07/04	VOA / soil water	VBLK LR		methylene chloride	5 ug/kg
—	↓	↓	↓		carbondisulfide	1 ug/kg
—	04/08/04	VOA / soil	VBLKLS		methylene chloride	5 ug/kg
—	04/09/04	VOA / soil	VBLKLU		methylene chloride	130 ug/kg
—	↓	↓	↓	↓	carbon disulfide	200 ug/kg

same ND reach

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
—	04/06/04	VOA / water	RINS01	MS12 / RTX624	carbon disulfide	3 ug/kg
—	↓	↓	TB16-06	↓	Acetone	41 ug/kg
—			↓		carbondisulfide	2 ug/kg
—			TB16-05 Rinse		carbondisulfide	1 ug/kg
—	↓	↓	TB16 10RINB	↓	Acetone	58 ug/kg
04/01/04	04/22/04	Pest / water	RINS01	9061 / DB5 DB35	none	ND
04/01/04	04/14/04	PCB / water	RINS01	9071 / DB5 DB1701	none	ND

see Rinse blk ↓

Validator: Christine Gonzy Date: 06/02/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-A

V. BLANK ANALYSIS

Concentration Level: (w)

List the blank contamination below.

Contacted: Yes (No) Date: _____

Sampler: _____ Company: EA Engineering

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
04/01/04	04/22/04	Pest/water	PBLK01	GC6 / DB35	none	ND
04/02/04	04/22/04	Pest/Soil	PBLK02	↓	none	ND
04/02/04	04/22/04	↓	PBLK03	↓	none	ND
04/06/04	04/22/04	↓	PBLK04	↓	none	ND
04/07/04	04/22/04	↓	PBLK05	↓	none	ND
04/01/04	04/13/04	PCB/water	PBLK01	GC7 / DB1701	none	ND
04/02/04	04/12/04	PCB/Soil	PBLK02	↓	none	ND

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)

Validator: Christine Garry

Date: 06/02/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-A

V. BLANK ANALYSIS

Concentration Level: (a)

List the blank contamination below.

Contacted: Yes (No) Date: _____

Sampler: _____ Company: Ct Engineers

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
04/02/04	04/14/04	PCB/Soil	PBLK 03	GC7 / DB5 DB1701	None	ND
04/06/04	04/13/04	↓	PBLK04	↓	None	ND
04/08/04	04/13/04	↓	PBLK05	↓	None	ND

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)

Date: 06/02/04

Validator: Christine Garvey

3. **Blank Actions** - List the maximum concentrations of blank compounds.

Compound	Type of Blank	Date Blank Sampled/Originated	Max. Conc. (units)	Action Level (units)	Sample QL	Samples Affected	Action
Acetone	VBLKLG	04/04/04	2ug/kg	20ug/kg	10	Rinse01	U
methylene chloride	↓	↓	4ug/kg	40ug/kg	5	REF3-4, REF3-2, REF3-1	U
↓	↓	↓	↓	↓	↓	DUP-07, AH-45, AH-33, AH-35, Rinse01, TB16-06, TB16-05-Rinse, AH-32	—
methylene chloride	VBLKLR	04/07/04	5ug/kg	50ug/kg	5	AH29, AH-47, AH-51	U
↓	↓	↓	↓	↓	↓	AH-26, AH-42, core1BOT, TB16-0RWB	
carbondisulfide	↓	↓	1ug/kg	5ug/kg	5	AH-29, AH-47, AH51	U
↓	↓	↓	↓	↓	↓	AH-42, core1BOT	
methylene chloride	VBLKLS	04/08/04	5ug/kg	50ug/kg	5	AH-40, core1TOP	U
carbondisulfide	VBLKLU	04/09/04	200ug/kg	1000ug/kg	1300	AH-47RE	U
carbondisulfide	Rinse01	03/26/04	3ug/kg	15ug/kg	5	REF3-4, REF3-2, REF3-1	U
↓	↓	↓	↓	↓	↓	DUP-07, AH-45, AH-33, AH-35, AH-32, AH-26, AH-40, core1TOP, core1BOT	
Acetone	TB16-06	03/26/04	41ug/kg	410ug/kg	10	REF3-4, REF3-2, REF3-1, DUP-07, AH-45, AH-33, AH-35, AH-32, AH29, AH-47, AH-47RE	U
↓	↓	↓	↓	↓	↓		↓
Acetone	TB16-0RWB	03/27/04	58ug/kg	580ug/kg	10	AH-51, AH-26, AH42, AH-40, core1TOP	U

Comments: _____

Validator: Christine Garvey

Date: 06/02/04

EPA-NE - Data Validation Worksheet
VOA-VI

all acceptance criteria were met

VI. VOA SURROGATE SPIKE RECOVERIES - List all surrogate compound recoveries that are outside method QC acceptance criteria.

Method	Volatile Method QC Acceptance Criteria				
	Toluene-d_8	BFB	DCE-d_4	Other:	
OLM03.2	Water 88-110 Soil 84-138	Water 86-115 Soil 59-113	Water 76-114 Soil 70-121		
OLC02.1	NA	80-120	NA		
Other:					
Sample Number/Matrix	% Recovery	% Recovery	% Recovery	% Recovery	Action

Validator: Christine Gorney

Date: 06/02/04

9A

REGION I
Data Review Worksheets Forms 2E & 2F

☐ **All Criteria Met**

VI A. SURROGATE SPIKE RECOVERIES – PESTICIDES/~~PCBS~~

List the percent recoveries which do not meet the criteria for surrogate recovery.

	TCX		DCB		ACTION	
TR #'s	Col 1	Col 2	Col 1	Col 2	Pos.	Non
REF 3-2	17	ok	ok	ok	none	none
REF 3-1	16	ok	ok	ok	none	none
AH-35	211	427	ok	ok	J	A
AH-45	493	578	ok	ok	J	A
AH-33	14	ok	ok	ok	none	none
PUP 07	22	ok	ok	ok	none	none
Core 1 BOT	18	ok	ok	ok	none	none
Core 1-TOP	16	30	ok	ok	J	UJ
AH-40	12	ok	ok	ok	none	none
AH-29	ok	175	ok	ok	none	none
AH-32	9	ok	ok	ok	J	R
AH-47	22	ok	ok	ok	none	none
AH-42	22	ok	ok	ok	none	none
AH-51	18	ok	ok	ok	none	none
AH-26	9	ok	ok	ok	J	R

qualifier recommended

QC Limits	30	26
	to	to
	144	102

Surrogate Actions:

	<10 %	10%–CRR	>CRR
Positive Sample Results	J	J	J
Non–detected Results	R	UJ	A

CRR = Contract Required Recovery Range

Surrogate action should be applied:

1. If at least two surrogates are out of specification, but have recoveries of >10%.
2. If any one surrogate in a fraction shows <10% recovery.

9A

REGION I
Data Review Worksheets Forms 2E & 2F

☒ All Criteria Met

VI A. SURROGATE SPIKE RECOVERIES – ~~PESTICIDES~~ OP PCB

List the percent recoveries which do not meet the criteria for surrogate recovery.

	TBP				ACTION	
TR #'s	Col 1	Col 2	Col 1	Col 2	Pos.	Non

QC Limits		
	26	30
	to	to
	102	144

Surrogate Actions:

	<10 %	10%–CRR	>CRR
Positive Sample Results	J	J	J
Non–detected Results	R	UJ	A

CRR = Contract Required Recovery Range

Surrogate action should be applied:

1. If at least two surrogates are out of specification, but have recoveries of >10%.
2. If any one surrogate in a fraction shows <10% recovery.

[X] All Criteria Met

VI B. SURROGATE RETENTION TIME

List the samples which have a retention time (RT) exceeding ± 0.05 minutes for tetrachloro-m-xylene (TCX) or ± 0.10 minutes for decachlorobiphenyl (DCB).

MEAN SUROGATE RETENTION TIME FROM INITIAL CALIBRATION

COLUMN 1 _____ TCX: _____ DCB: _____

COLUMN 2 _____ TCX: _____ DCB: _____

SAMPLE #	DATE/TIME	COLUMN	RT/SHIFT	TCX/DCB	ACTIONS

ACTION:

The reviewer must use professional judgement to determine if there is a need to qualify any of the data due to surrogates not meeting retention time acceptance criteria.

Reviewer: Christine Gonus

Date: 06/02/04

EPA-NE - Data Validation Worksheet
VOA/SV-VII

all criteria were met

VII. INTERNAL STANDARD PERFORMANCE

List the internal standards that are outside the area count and retention time method QC acceptance criteria.
IS Area Count method QC acceptance criteria: -50% / +100%
IS Retention Time method QC acceptance criteria: ±0.50 RT

Sample Number (TR#)	Date and Time Analyzed	Instrument	Parameter	IS Outside Area Count and/or RT Criteria	IS Area	RT Shift	Acceptable Range (IS area or RT shift)	Action

Validator: Christine Jones

Date: 06/02/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-VIII

VIII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE - List all MS/MSD analytes that are outside method QC acceptance criteria.

Use a separate worksheet for each MS/MSD pair.

Sample # AH-47RE Matrix Soil Concentration Level Med

Parameter	Compound	MS %Rec	MSD %Rec	RPD	Method QC Limits		Concentration			% RSD	Action
					% Rec	RPD	Unspiked Sample	MS	MSD		
VOA	DOA	all ok	all ok	all ok	various	30	—	—	—	—	None

Validator: Christine Gomez Date: 06/02/00

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-IX

IX. **FIELD DUPLICATE PRECISION** - List all field duplicate analytes that are outside criteria.

Use a separate worksheet for each field duplicate pair.

Sample Number AH-33 Duplicate Sample Number DUP-07 Matrix Soil

Parameter	Compound	Sample Conc.	Sample QL		Duplicate Conc.	Duplicate QL		RPD	QC Acceptance Criteria RPD or NA*	Action
			SQL	2xSQL		SQL	2xSQL			
VOA	2-Butanone	17 ug/kg	20	40	23 ug/kg	20	40	30%	50%	none
↓	cis-1,2-Dichloroethane	6 ug/kg	10	20	ND	10	20	NC	NA	none
Pest	4,4 DDE	2.28 ug/kg	1.8	3.6	2.0 ug/kg	1.7	3.4	NC	NA	None
↓	gamma chlordane	7.1 ug/kg	0.91	1.82	6.5 ug/kg	0.89	1.78	9%	50%	None
PCB	Aroclor 1260	37 ug/kg	18	36	49 ug/kg	17	34	28%	50%	none

* For instances where one duplicate result is ND (or reported less than the sample QL).

Does the MS/MSD data indicate acceptable laboratory precision? (Y) N

Comments: _____

Sampler Name: — Contractor Name: EA Engineering Date Contacted: —

Reason for Contact and resolution obtained: _____

Validator: Christine Gerwy Date: 06/02/04

Region I

Data Review Worksheet - Pesticide

☐ All Criteria Met

5/90

X. ANALYTE IDENTIFICATION CONFIRMATION Form 10

List the samples below that contained detected compounds which have a relative percent difference (rpd) greater than 25% between the two columns.

COMPOUND	COLUMN 1 CONC	COLUMN2 CONC	%D	SAMPLES AFFECTED	ACTION
Beta BHC	290	5.7	4988	AH-26	R
heptachlor	0.97	100	10209	↓	R
beta BHC	270	2.4	11150	AH-29	R
heptachlor epoxide	20	8.8	127.3		R
Dieldrin	20	4.2	376.2		R
gamma chlordane	5.4	25	363	↓	R
Beta BHC	320	7.5	4167	AH-32	R
heptachlor	2.1	120	5614		R
gamma chlordane	7.9	6.1	29.5	↓	quantitatesurr
Beta BHC	260	3.9	6567	AH-33	R
heptachlor	1.4	98	6900		R
4,4-DDE	6.7	2.2	204.5	↓	R
Beta BHC	300	2.9	10245	AH-35	R
heptachlor	9.0	100	1011	↓	R

ACTION:

1. If the %D for the sample results on the two columns is greater than 25% but less than 100% for pesticides or less than 500% for PCBs, estimate (J) positive results for that compound in that sample.

2. If the %D for the sample results on the two columns exceeds 100% for pesticides or 500% for PCBs, reject (R) the results for that compound in that sample - unless both results are less than the CRQL, then report as undetected (U) at the CRQL.

3. If by using professional judgement, the reviewer determines that the higher of the two results should be reported, the reviewer should substitute the higher result for the lower result and indicate in the data review narrative the reason for substituting the higher result.

Reviewer: Christine Grove

Date: 06/02/04

Region I

Data Review Worksheet - Pesticide

☐ All Criteria Met

5/90

X. ANALYTE IDENTIFICATION CONFIRMATION Form 10

List the samples below that contained detected compounds which have a relative percent difference (rpd) greater than 25% between the two columns.

COMPOUND	COLUMN 1 CONC	COLUMN2 CONC	%D	SAMPLES AFFECTED	ACTION
Beta BHC	150	1.4	10614	AH-42	R
gamma chlordane	12	1.8	566.7	↓	R
delta BHC	7.6	2.2	245.5	AH-45	R
heptachlor	0.83	120	14358	↓	R
heptachlor epoxide	75	20	275	AH-45DL	R
Endosulfan I	1.4	14	900	AH-45	R
dieldrin	3.2	7.0	118.8	↓	R
gamma chlordane	2.2	6.0	172.7	↓	R
beta BHC	130	1.4	9186	AH-47	R
heptachlor	1.1	47	4173	↓	R
gamma chlordane	10	2.8	257.1	↓	R
beta BHC	360	14	2471	AH-51	R
heptachlor	1.41	140	9900	↓	R
heptachlor epoxide	46	4.5	922.2	↓	R

ACTION:

1. If the %D for the sample results on the two columns is greater than 25% but less than 100% for pesticides or less than 500% for PCBs, estimate (J) positive results for that compound in that sample.

2. If the %D for the sample results on the two columns exceeds 100% for pesticides or 500% for PCBs, reject (R) the results for that compound in that sample - unless both results are less than the CRQL, then report as undetected (U) at the CRQL.

3. If by using professional judgement, the reviewer determines that the higher of the two results should be reported, the reviewer should substitute the higher result for the lower result and indicate in the data review narrative the reason for substituting the higher result.

Reviewer: Christine Gomez

Date: 06/02/04

Region I

Data Review Worksheet - Pesticide

☐ All Criteria Met

5/90

X. ANALYTE IDENTIFICATION CONFIRMATION

Form 10

List the samples below that contained detected compounds which have a relative percent difference (rpd) greater than 25% between the two columns.

COMPOUND	COLUMN 1 CONC	COLUMN2 CONC	%D	SAMPLES AFFECTED	ACTION
Dieldrin	2.6	31	1192	AH-51	R
4-4-DDE	4.2	2.3	82.6	↓	J
4-4-DDD	3.7	2.2	68.2	↓	J
Beta BHC	86	1.1	7718	Core 1-Bot	R
delta BHC	1.0	0.53	88.7	↓	J
4-4-DDD	1.7	1.3	30.8		J
beta BHC	110	1.9	5689	Core 1-TOP	R
delta BHC	2.8	2.0	40		qualchecktosum
4-4-DDD	1.7	1.3	30.8	↓	↓
gamma chlordane	1.7	0.88	93.2		
beta BHC	260	4.9	5206	DUP-07	R
heptachlor	2.5	96	3740	↓	R
Dieldrin	3.0	17	466.7	↓	R
4-4-DDE	2.9	2.0	45	↓	J
gamma chlordane	6.5	8.8	35.4	↓	J

ACTION:

1. If the %D for the sample results on the two columns is greater than 25% but less than 100% for pesticides or less than 500% for PCBs, estimate (J) positive results for that compound in that sample.

2. If the %D for the sample results on the two columns exceeds 100% for pesticides or 500% for PCBs, reject (R) the results for that compound in that sample - unless both results are less than the CRQL, then report as undetected (U) at the CRQL.

3. If by using professional judgement, the reviewer determines that the higher of the two results should be reported, the reviewer should substitute the higher result for the lower result and indicate in the data review narrative the reason for substituting the higher result.

Reviewer: Christine Gorny

Date: 06/02/04

Region I

Data Review Worksheet - Pesticide

☐ All Criteria Met

5/90

X. ANALYTE IDENTIFICATION CONFIRMATION

Form 10

List the samples below that contained detected compounds which have a relative percent difference (rpd) greater than 25% between the two columns.

COMPOUND	COLUMN 1 CONC	COLUMN2 CONC	%D	SAMPLES AFFECTED	ACTION
Aroclor 1260	23	37	60.9	AH-33	J
Aroclor 1260	14	32	128.6	AH-40	J
Aroclor 1260	44	59	34.1	AH-51	J
Aroclor 1260	28	38	35.7	Core 1-BOT	J
Aroclor 1260	19	25	31.6	CORE 1 TOP	J
Aroclor 1260	6.0	8.0	33.3	Ref 3-1	U

ACTION:

1. If the %D for the sample results on the two columns is greater than 25% but less than 100% for pesticides or less than 500% for PCBs, estimate (J) positive results for that compound in that sample.

2. If the %D for the sample results on the two columns exceeds 100% for pesticides or 500% for PCBs, reject (R) the results for that compound in that sample - unless both results are less than the CRQL, then report as undetected (U) at the CRQL.

3. If by using professional judgement, the reviewer determines that the higher of the two results should be reported, the reviewer should substitute the higher result for the lower result and indicate in the data review narrative the reason for substituting the higher result.

Reviewer: Christine Garvey

Date: 06/02/04

REGION 1
Data Review Worksheets Forms 7D & 7E ☒ **All Criteria Met**

X B. PESTICIDE INSTRUMENT PERFORMANCE (Section 2)

2. Retention Time Windows - Cont. Cal Stds { PEM, Ind A, Ind B }

List the compounds which are not within the established windows.

COMPOUND	DATE (TIME)	RT	RT WINDOW	SAMPLES AFFECTED

Check the sample chromatograms of the samples analyzed after the last in control standard for peaks within an expanded window. If no peaks are present, there is usually no effect on the data. Refer to Regional guidelines for information on qualifying data if peaks are present. If peaks are present, discuss actions below:

REGION I
Data Review Worksheets Form 7D

☒ All Criteria Met

X C. PESTICIDE INSTRUMENT PERFORMANCE (Section 3)

3. DDT and Endrin Degradation

List the standards which have a DDT or Endrin breakdown of greater than 20%.

STANDARD ID	DDT OR ENDRIN	PERCENT BREAKDOWN	SAMPLES AFFECTED	DDD, DDE OR ENDRIN KETONE PRESENT

If the percent breakdown for DDT is greater than 20%:

1. Flag all positive results for DDT as estimated (J) for all samples following the last in control standard. If no DDT was present, but DDD and/or DDE are positive, then flag the quantitation limit for DDT as unusable (R).

2. Flag all positive results for DDD +/or DDE as estimated (J).

If the percent breakdown for Endrin is greater than 20%:

1. Flag all positive results for endrin as estimated (J) for all samples following the last in-control standard. If no endrin was detected, but endrin aldehyde and/or endrin ketone are positive, flag the quantitation limit for endrin as unusable (R

2. Flag all positive results for endrin ketone as estimated (J).

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XI

XI. ACCURACY CHECK (Performance Evaluation Results) - List all analytes that are outside criteria.

SDG No: SED 163 CASE: —

Are more than one-half of the PES analytes within criteria for each parameter. Y N

PE Sample Number	Ampule Number	Parameter	Type of PES	Matrix	Analyte	Conc. ug/L	Region I EPA PES Scores*	Non-EPA PES Scores**	Samples Affected	Action
VLCSLQ	—	VOA	LCS	Soil	VOA	all a	—	varies	None	None
VLCSLR	—	VOA	LCS	Soil	VOA	all a	—	varies	None	None
VLCSLS	—	VOA	LCS	Soil	VOA	all a	—	varies	None	None
VLCSLT	—	VOA	LCS	Soil	VOA	all a	—	varies	None	None
PLCS01	—	Pest	LCS	water	Pest	all a	—	varies	None	None
PLCS02	—	Pest	LCS	Soil	Pest	all a	—	varies	None	None
PLCS03	—	Pest	LCS	Soil	alpha BHC	64	—	65-135	core1-BOT, AH-40	TI UJ
	—				delta BHC	61	—	65-136		JI UJ
	—				gamma BHC	61	—	63-135		JI UJ
PLCS04	—	Pest	LCS	Soil	Pest	all a	—	varies	None	None
PLCS05	—	Pest	LCS	Soil	Pest	all a	—	varies	None	None
PLCS01	—	PCB	LCS	water	1016/1260	all a	—	varies	None	None

* For Region I PESs indicate the Region I PES Score Report Result: Action High; Action Low; TCL MISS; TCL CONTAMINANT; TIC HIT; TIC MISS; TIC CONTAMINANT

** For Non-EPA PESs indicate the Non-EPA PES Score: PES COMPOUND MISS; PES COMPOUND CONTAMINANT; PES COMPOUND HIT (% Recovery Limits)

Validator: Christine Jones Date: 06/02/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XI

XI. ACCURACY CHECK (Performance Evaluation Results) - List all analytes that are outside criteria.

SDG No: SED163 CASE: —

Are more than one-half of the PES analytes within criteria for each parameter. (Y) N

PE Sample Number	Ampule Number	Parameter	Type of PES	Matrix	Analyte	Conc. 0 or R	Region I EPA PES Scores*	Non-EPA PES Scores**	Samples Affected	Action
PLCS02	—	PCB	LCS	Soil	1016/1260	all ok	—	various	none	none
PLCS03	—	PCB	LCS	Soil	1016/1260	all ok	—	various	none	none
PLCS04	—	PCB	LCS	Soil	1016/1260	all ok	—	various	none	none
PLCS05	—	PCB	LCS	Soil	1016/1260	all ok	—	various	none	none

* For Region I PESs indicate the Region I PES Score Report Result: Action High; Action Low; TCL MISS; TCL CONTAMINANT; TIC HIT; TIC MISS; TIC CONTAMINANT

** For Non-EPA PESs indicate the Non-EPA PES Score: PES COMPOUND MISS; PES COMPOUND CONTAMINANT; PES COMPOUND HIT (% Recovery Limits)

Validator: Christine Garvey

Date: 06/02/04

info not included in data pks

1/96

REGION I
Data Review Worksheets

Form 9B

☐ All Criteria Met

XI C. PESTICIDE CALIBRATION

4. Pesticide GPC Calibration

List the compounds which did not meet the recovery QC criteria (80–120%):

Calibration Date	Compound	% Recovery	Actions	
			Pos	Non
Samples Affected:				
Samples Affected:				
Samples Affected:				
Samples Affected:				
Samples Affected:				
Samples Affected:				

Actions:

	<10%	10–80%	>120%
Positive Sample Results:	J	J	J
Non–Detected Results:	R	UJ	A

Note: If all (or most) compounds show high or low recovery bias, professional judgement shall be applied to determine if all TCL results should be qualified for affected samples.

Reviewer's Initials: CO

Date: 06/02/04

XI D. PESTICIDE CALIBRATION

5. Resolution Summaries – Analyte, PEM, IND A, and IND B – Forms 6G, 6H, 6I, 6J

List the compounds which did not meet the recovery QC criteria as follows:

1. Analyte (Form 6G) – greater than or equal to 60%
2. PEM, IND A, & IND B (Forms 6H,6I,6J) – greater than or equal to 90%

Compound Pair		%	
1st Compound	2nd Compound	Resolution	Criteria
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			
Samples Affected:			

Actions:
If resolution between any two compounds is less than the specified QC criteria, use professional judgement to determine if identifications and quantitations for these compounds should be qualified for affected samples.

Reviewer's Initials: CG Date: 06/06/00

XII. TARGET COMPOUND IDENTIFICATION - List the analytes that are outside the acceptance criteria.

Sample Number	Compound	MS Ions	RRT	Action
AH-47	Cis-1,2-Dichloroethene	—	—	conc exceeded linear range of curve
↓	↓	—	—	reanalyzed at mid level. Reanalysis
		—	—	result transferred to original form I
AH-45	heptachlor epoxide	—	—	result conc exceeded linear
↓	↓	—	—	range of curve - reanalyzed at 10x dil
		—	—	diluted result transferred to original
		—	—	Form I

Validator: Christie Garvey

Date: 06/02/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XIII

XIII. SAMPLE QUANTITATION

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per fraction. (Note: Although Section XIII, C.1.a, requires that one calculation for each fraction in each sample be performed, the validator is only required to reproduce an example, for each fraction, of one positive detect and one sample quantitation limit calculation on this worksheet.)

Do all soil/sediment samples have % solids greater than 30%? (Y) N
If no, list sample numbers _____

Fraction		Calculation
VOA		2-Butanone $\frac{7824 \times 50 \times 5}{367236 \times 0.1394 \times 6.5 \times 0.34} = 17.22$ ug/kg
Sample No.:	AH-32	
Reported Compound:	2-Butanone	
Reported Value:	17 ug/kg	
Not Detected Compound:	tetrachloroethene	Tetrachloroethene $\frac{5 \times 5}{0.34 \times 6.5} = 11.3$
Reported Quantitation Limit:	11 ug/kg U	
~~BNA~~ Pest		gamma chlordane $\frac{5509332 \times 1000 \times 2}{30.5 \times 0.32 \times 129.98640} = 8.738$ ug/kg
Sample No.:	AH-51	
Reported Compound:	gamma chlordane	
Reported Value:	8.7 ug/kg	
Not Detected Compound:	alpha BHC	alpha BHC $\frac{0.34 \times 30}{30.5 \times 0.32} = 1.045$ ug/kg
Reported Quantitation Limit:	1 ug/kg U	
~~Pesticide/~~PCB		aroclor 1260 $\left(\frac{698105}{2532444} + \frac{986530}{2899168} + \frac{361587}{1837327} + \frac{809371}{4067037} + \frac{652055}{2857463}\right) \div \frac{5 \times 2000}{30.1 \times 0.40} =$ 41.30 ug/kg
Sample No.:	AH-26	
Reported Compound:	Aroclor 1260	
Reported Value:	41 ug/kg	
Not Detected Compound:	aroclor 1016	aroclor 1016 $\frac{6.6 \times 30}{30.1 \times 0.40} = 16.45$ ug/kg
Reported Quantitation Limit:	16 ug/kg U	

Validator: Christine Gomez

Date: 06/02/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XIII

XIII. SAMPLE QUANTITATION

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per fraction. (Note: Although Section XIII, C.1.a, requires that one calculation for each fraction in each sample be performed, the validator is only required to reproduce an example, for each fraction, of one positive detect and one sample quantitation limit calculation on this worksheet.)

Do all soil/sediment samples have % solids greater than 30%? (Y) N
If no, list sample numbers _____

Fraction		Calculation
VOA		Trichloroethene
Sample No.:	AH-47	$\frac{4816 \times 50 \times 5}{374713 \times 0.2899 \times 9.1 \times 0.66} = 1.845$ ug/kg
Reported Compound:	Trichloroethene	
Reported Value:	2 ug/kg	
Not Detected Compound:	Bromoform	Bromoform $\frac{5 \times 5}{0.66 \times 9.1} = 4.16$ ug/kg $< 5 \rightarrow 5$ ug/kg
Reported Quantitation Limit:	5 ug/kg u	
~~IIIA~~ Pest		4,4-DDE
Sample No.:	DUP07	$\frac{1336733 \times 2 \times 1000}{1140654 68 \times 30.3 \times 0.38} = 2.0356$ ug/kg
Reported Compound:	4,4-DDE	
Reported Value:	2.0 ug/kg	
Not Detected Compound:	Endrin	Endrin $\frac{30 \times 0.66}{30.3 \times 0.38} = 1.719$ ug/kg
Reported Quantitation Limit:	1.7 ug/kg u	
~~Pestleide~~/PCB		Aroclor 1260
Sample No.:	DUP07	$\left(\frac{779235}{2532444} + \frac{1056626}{2899168} + \frac{411289}{1837327} + \frac{955283}{4007037} + \frac{724551}{2857463}\right) \div \frac{5 \times 2000}{0.38 \times 30} =$
Reported Compound:	Aroclor 1260	
Reported Value:	49 ug/kg	48.70 ug/kg
Not Detected Compound:	Aroclor 1221	Aroclor 1221 $\frac{13 \times 30}{0.38 \times 30} = 34.21$ ug/kg
Reported Quantitation Limit:	35 ug/kg u	

Validator: Christine Garvey

Date: 06/02/04

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 3-4

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-07

Sample wt/vol: 7.20(g/mL) G Lab File ID: LT684

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. 45 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	6	U
75-01-4	Vinyl Chloride	6	U
74-83-9	Bromomethane	6	U
75-00-3	Chloroethane	6	U
67-64-1	Acetone	440	B
75-35-4	1,1-Dichloroethene	6	U
75-09-2	Methylene Chloride	13	B
75-15-0	Carbon Disulfide	2	J
156-60-5	trans-1,2-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
78-93-3	2-Butanone	13	
156-59-2	cis-1,2-Dichloroethene	6	U
67-66-3	Chloroform	6	U
56-23-5	Carbon Tetrachloride	6	U
107-06-2	1,2-Dichloroethane	6	U
71-43-2	Benzene	6	U
79-01-6	Trichloroethene	6	U
78-87-5	1,2-Dichloropropane	6	U
75-27-4	Bromodichloromethane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
108-88-3	Toluene	6	U
10061-02-6	trans-1,3-Dichloropropene	6	U
79-00-5	1,1,2-Trichloroethane	6	U
127-18-4	Tetrachloroethene	6	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
124-48-1	Dibromochloromethane	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
108-38-3	m,p-Xylenes	13	U
95-47-6	o-Xylene	6	U
100-42-5	Styrene	6	U
75-25-2	Bromoform	6	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 3-4

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-07

Sample wt/vol: 7.20(g/mL) G Lab File ID: LT684

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. 45 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	6	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 3-2

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-09

Sample wt/vol: 8.40(g/mL) G Lab File ID: LT685

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. 57 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	7	U
75-01-4	Vinyl Chloride	7	U
74-83-9	Bromomethane	7	U
75-00-3	Chloroethane	7	U
67-64-1	Acetone	150	B
75-35-4	1,1-Dichloroethene	7	U
75-09-2	Methylene Chloride	2	JB
75-15-0	Carbon Disulfide	4	J
156-60-5	trans-1,2-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
78-93-3	2-Butanone	13	J
156-59-2	cis-1,2-Dichloroethene	7	U
67-66-3	Chloroform	7	U
56-23-5	Carbon Tetrachloride	7	U
107-06-2	1,2-Dichloroethane	7	U
71-43-2	Benzene	7	U
79-01-6	Trichloroethene	7	U
78-87-5	1,2-Dichloropropane	7	U
75-27-4	Bromodichloromethane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
108-88-3	Toluene	7	U
10061-02-6	trans-1,3-Dichloropropene	7	U
79-00-5	1,1,2-Trichloroethane	7	U
127-18-4	Tetrachloroethene	7	U
108-10-1	4-Methyl-2-Pentanone	14	U
591-78-6	2-Hexanone	14	U
124-48-1	Dibromochloromethane	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
108-38-3	m,p-Xylenes	14	U
95-47-6	o-Xylene	7	U
100-42-5	Styrene	7	U
75-25-2	Bromoform	7	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 3-2

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-09

Sample wt/vol: 8.40(g/mL) G Lab File ID: LT685

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. 57 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	7	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 3-1

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-10

Sample wt/vol: 7.30(g/mL) G Lab File ID: LT686

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. 57 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	8	U
75-00-3	Chloroethane	8	U
67-64-1	Acetone	150	B
75-35-4	1,1-Dichloroethene	8	U
75-09-2	Methylene Chloride	2	BJ
75-15-0	Carbon Disulfide	8	
156-60-5	trans-1,2-Dichloroethene	8	U
75-34-3	1,1-Dichloroethane	8	U
78-93-3	2-Butanone	13	J
156-59-2	cis-1,2-Dichloroethene	8	U
67-66-3	Chloroform	8	U
56-23-5	Carbon Tetrachloride	8	U
107-06-2	1,2-Dichloroethane	8	U
71-43-2	Benzene	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-88-3	Toluene	8	U
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	8	U
108-10-1	4-Methyl-2-Pentanone	16	U
591-78-6	2-Hexanone	16	U
124-48-1	Dibromochloromethane	8	U
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
108-38-3	m,p-Xylenes	16	U
95-47-6	o-Xylene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	8	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

REF 3-1

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-10

Sample wt/vol: 7.30(g/mL) G Lab File ID: LT686

Level: (low/med) LOW Date Received: 03/25/04

% Moisture: not dec. 57 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	8	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

DUP07

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-11

Sample wt/vol: 6.60(g/mL) G Lab File ID: LT687

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 63 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
67-64-1	Acetone	85	B
75-35-4	1,1-Dichloroethene	10	U
75-09-2	Methylene Chloride	2	JB
75-15-0	Carbon Disulfide	5	J
156-60-5	trans-1,2-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
78-93-3	2-Butanone	23	
156-59-2	cis-1,2-Dichloroethene	10	U
67-66-3	Chloroform	10	U
56-23-5	Carbon Tetrachloride	10	U
107-06-2	1,2-Dichloroethane	10	U
71-43-2	Benzene	10	U
79-01-6	Trichloroethene	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-10-1	4-Methyl-2-Pentanone	20	U
591-78-6	2-Hexanone	20	U
124-48-1	Dibromochloromethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
108-38-3	m,p-Xylenes	20	U
95-47-6	o-Xylene	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

DUP07

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-11

Sample wt/vol: 6.60(g/mL) G Lab File ID: LT687

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 63 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	10	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-45

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-12

Sample wt/vol: 7.00(g/mL) G Lab File ID: LT688

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 70 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
75-01-4	Vinyl Chloride	12	U
74-83-9	Bromomethane	12	U
75-00-3	Chloroethane	12	U
67-64-1	Acetone	190	B
75-35-4	1,1-Dichloroethene	12	U
75-09-2	Methylene Chloride	63	B
75-15-0	Carbon Disulfide	10	J
156-60-5	trans-1,2-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
78-93-3	2-Butanone	15	J
156-59-2	cis-1,2-Dichloroethene	12	U
67-66-3	Chloroform	12	U
56-23-5	Carbon Tetrachloride	12	U
107-06-2	1,2-Dichloroethane	12	U
71-43-2	Benzene	12	U
79-01-6	Trichloroethene	12	U
78-87-5	1,2-Dichloropropane	12	U
75-27-4	Bromodichloromethane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
108-88-3	Toluene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
79-00-5	1,1,2-Trichloroethane	12	U
127-18-4	Tetrachloroethene	12	U
108-10-1	4-Methyl-2-Pentanone	24	U
591-78-6	2-Hexanone	24	U
124-48-1	Dibromochloromethane	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
108-38-3	m,p-Xylenes	24	U
95-47-6	o-Xylene	12	U
100-42-5	Styrene	12	U
75-25-2	Bromoform	12	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-45

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-12

Sample wt/vol: 7.00(g/mL) G Lab File ID: LT688

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 70 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	12	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-33

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-14

Sample wt/vol: 7.30(g/mL) G Lab File ID: LT689

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 65 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
75-01-4	Vinyl Chloride	10	U
74-83-9	Bromomethane	10	U
75-00-3	Chloroethane	10	U
67-64-1	Acetone	120	B
75-35-4	1,1-Dichloroethene	10	U
75-09-2	Methylene Chloride	3	JB
75-15-0	Carbon Disulfide	5	J
156-60-5	trans-1,2-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
78-93-3	2-Butanone	17	J
156-59-2	cis-1,2-Dichloroethene	6	J
67-66-3	Chloroform	10	U
56-23-5	Carbon Tetrachloride	10	U
107-06-2	1,2-Dichloroethane	10	U
71-43-2	Benzene	10	U
79-01-6	Trichloroethene	10	U
78-87-5	1,2-Dichloropropane	10	U
75-27-4	Bromodichloromethane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
108-88-3	Toluene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
79-00-5	1,1,2-Trichloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-10-1	4-Methyl-2-Pentanone	20	U
591-78-6	2-Hexanone	20	U
124-48-1	Dibromochloromethane	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
108-38-3	m,p-Xylenes	20	U
95-47-6	o-Xylene	10	U
100-42-5	Styrene	10	U
75-25-2	Bromoform	10	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-33

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-14

Sample wt/vol: 7.30(g/mL) G Lab File ID: LT689

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 65 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	10	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-35

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-17

Sample wt/vol: 6.70(g/mL) G Lab File ID: LT690

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 70 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
75-01-4	Vinyl Chloride	12	U
74-83-9	Bromomethane	12	U
75-00-3	Chloroethane	12	U
67-64-1	Acetone	91	B
75-35-4	1,1-Dichloroethene	12	U
75-09-2	Methylene Chloride	3	JB
75-15-0	Carbon Disulfide	10	J
156-60-5	trans-1,2-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
78-93-3	2-Butanone	20	J
156-59-2	cis-1,2-Dichloroethene	12	U
67-66-3	Chloroform	12	U
56-23-5	Carbon Tetrachloride	12	U
107-06-2	1,2-Dichloroethane	12	U
71-43-2	Benzene	12	U
79-01-6	Trichloroethene	12	U
78-87-5	1,2-Dichloropropane	12	U
75-27-4	Bromodichloromethane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
108-88-3	Toluene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
79-00-5	1,1,2-Trichloroethane	12	U
127-18-4	Tetrachloroethene	12	U
108-10-1	4-Methyl-2-Pentanone	25	U
591-78-6	2-Hexanone	25	U
124-48-1	Dibromochloromethane	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
108-38-3	m,p-Xylenes	25	U
95-47-6	o-Xylene	12	U
100-42-5	Styrene	12	U
75-25-2	Bromoform	12	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-35

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-17

Sample wt/vol: 6.70(g/mL) G Lab File ID: LT690

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 70 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	12	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

RINS01

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-19

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT691

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. _____ Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	4	JB
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	11	B
75-15-0	Carbon Disulfide	3	J
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

RINS01

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-19

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT691

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. _____ Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

TB16-06

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-20

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT692

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. _____ Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	41	B
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	3	JB
75-15-0	Carbon Disulfide	2	J
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

TB16-06

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-20

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT692

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. _____ Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

TB16-05RINS

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-01

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT693

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. _____ Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	10	U
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	6	B
75-15-0	Carbon Disulfide	1	J
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

TB16-05RINS

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-01

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT693

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. _____ Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-32

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-02

Sample wt/vol: 6.50(g/mL) G Lab File ID: LT694

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 66 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
75-01-4	Vinyl Chloride	11	U
74-83-9	Bromomethane	11	U
75-00-3	Chloroethane	11	U
67-64-1	Acetone	130	B
75-35-4	1,1-Dichloroethene	11	U
75-09-2	Methylene Chloride	3	JB
75-15-0	Carbon Disulfide	5	J
156-60-5	trans-1,2-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
78-93-3	2-Butanone	17	J
156-59-2	cis-1,2-Dichloroethene	5	J
67-66-3	Chloroform	11	U
56-23-5	Carbon Tetrachloride	11	U
107-06-2	1,2-Dichloroethane	11	U
71-43-2	Benzene	11	U
79-01-6	Trichloroethene	11	U
78-87-5	1,2-Dichloropropane	11	U
75-27-4	Bromodichloromethane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
108-88-3	Toluene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
79-00-5	1,1,2-Trichloroethane	11	U
127-18-4	Tetrachloroethene	11	U
108-10-1	4-Methyl-2-Pentanone	23	U
591-78-6	2-Hexanone	23	U
124-48-1	Dibromochloromethane	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
108-38-3	m,p-Xylenes	23	U
95-47-6	o-Xylene	11	U
100-42-5	Styrene	11	U
75-25-2	Bromoform	11	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-32

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-02

Sample wt/vol: 6.50(g/mL) G Lab File ID: LT694

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 66 Date Analyzed: 04/06/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	11	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-29

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-03

Sample wt/vol: 6.20(g/mL) G Lab File ID: LT708

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 70 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
75-01-4	Vinyl Chloride	13	U
74-83-9	Bromomethane	13	U
75-00-3	Chloroethane	13	U
67-64-1	Acetone	93	
75-35-4	1,1-Dichloroethene	13	U
75-09-2	Methylene Chloride	3	JB
75-15-0	Carbon Disulfide	9	JB
156-60-5	trans-1,2-Dichloroethene	13	U
75-34-3	1,1-Dichloroethane	13	U
78-93-3	2-Butanone	27	U
156-59-2	cis-1,2-Dichloroethene	13	U
67-66-3	Chloroform	13	U
56-23-5	Carbon Tetrachloride	13	U
107-06-2	1,2-Dichloroethane	13	U
71-43-2	Benzene	13	U
79-01-6	Trichloroethene	13	U
78-87-5	1,2-Dichloropropane	13	U
75-27-4	Bromodichloromethane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
108-88-3	Toluene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
79-00-5	1,1,2-Trichloroethane	13	U
127-18-4	Tetrachloroethene	13	U
108-10-1	4-Methyl-2-Pentanone	27	U
591-78-6	2-Hexanone	27	U
124-48-1	Dibromochloromethane	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
108-38-3	m,p-Xylenes	27	U
95-47-6	o-Xylene	13	U
100-42-5	Styrene	13	U
75-25-2	Bromoform	13	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-29

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-03

Sample wt/vol: 6.20(g/mL) G Lab File ID: LT708

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 70 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	13	U

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EA SAMPLE NO.

AH-47

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-06

Sample wt/vol: 9.10(g/mL) G Lab File ID: LT709

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 34 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	72	
75-35-4	1,1-Dichloroethene	0.9	J
75-09-2	Methylene Chloride	1	JB
75-15-0	Carbon Disulfide	3	JB
156-60-5	trans-1,2-Dichloroethene	3	J
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	8	J
156-59-2	cis-1,2-Dichloroethene	280	E
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	2	J
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-47

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-06

Sample wt/vol: 9.10(g/mL) G Lab File ID: LT709

Level: (low/med) LOW Date Received: 03/26/04

% Moisture: not dec. 34 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

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EA SAMPLE NO.

AH-47RE

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-06RE

Sample wt/vol: 10.30(g/mL) G Lab File ID: LT741

Level: (low/med) MED Date Received: 03/26/04

% Moisture: not dec. 34 Date Analyzed: 04/09/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: 100.00(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	1300	U
75-01-4	Vinyl Chloride	1300	U
74-83-9	Bromomethane	1300	U
75-00-3	Chloroethane	1300	U
67-64-1	Acetone	90	J
75-35-4	1,1-Dichloroethene	1300	U
75-09-2	Methylene Chloride	1300	U
75-15-0	Carbon Disulfide	95	JB
156-60-5	trans-1,2-Dichloroethene	1300	U
75-34-3	1,1-Dichloroethane	1300	U
78-93-3	2-Butanone	1300	U
156-59-2	cis-1,2-Dichloroethene	880	
67-66-3	Chloroform	1300	U
56-23-5	Carbon Tetrachloride	1300	U
107-06-2	1,2-Dichloroethane	1300	U
71-43-2	Benzene	1300	U
79-01-6	Trichloroethene	1300	U
78-87-5	1,2-Dichloropropane	1300	U
75-27-4	Bromodichloromethane	1300	U
10061-01-5	cis-1,3-Dichloropropene	1300	U
108-88-3	Toluene	1300	U
10061-02-6	trans-1,3-Dichloropropene	1300	U
79-00-5	1,1,2-Trichloroethane	1300	U
127-18-4	Tetrachloroethene	1300	U
108-10-1	4-Methyl-2-Pentanone	1300	U
591-78-6	2-Hexanone	1300	U
124-48-1	Dibromochloromethane	1300	U
108-90-7	Chlorobenzene	1300	U
100-41-4	Ethylbenzene	1300	U
108-38-3	m,p-Xylenes	1300	U
95-47-6	o-Xylene	1300	U
100-42-5	Styrene	1300	U
75-25-2	Bromoform	1300	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-47RE

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-06RE

Sample wt/vol: 10.30(g/mL) G Lab File ID: LT741

Level: (low/med) MED Date Received: 03/26/04

% Moisture: not dec. 34 Date Analyzed: 04/09/04

GC Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume:_____(uL) Soil Aliquot Volume: 100.00(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	1300	U

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EA SAMPLE NO.

AH-51

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-11

Sample wt/vol: 7.70(g/mL) G Lab File ID: LT710

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 70 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11	U
75-01-4	Vinyl Chloride	11	U
74-83-9	Bromomethane	11	U
75-00-3	Chloroethane	11	U
67-64-1	Acetone	210	
75-35-4	1,1-Dichloroethene	11	U
75-09-2	Methylene Chloride	3	BJ
75-15-0	Carbon Disulfide	7	BJ
156-60-5	trans-1,2-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
78-93-3	2-Butanone	16	J
156-59-2	cis-1,2-Dichloroethene	11	U
67-66-3	Chloroform	11	U
56-23-5	Carbon Tetrachloride	11	U
107-06-2	1,2-Dichloroethane	11	U
71-43-2	Benzene	11	U
79-01-6	Trichloroethene	11	U
78-87-5	1,2-Dichloropropane	11	U
75-27-4	Bromodichloromethane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
108-88-3	Toluene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
79-00-5	1,1,2-Trichloroethane	11	U
127-18-4	Tetrachloroethene	11	U
108-10-1	4-Methyl-2-Pentanone	22	U
591-78-6	2-Hexanone	22	U
124-48-1	Dibromochloromethane	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
108-38-3	m,p-Xylenes	22	U
95-47-6	o-Xylene	11	U
100-42-5	Styrene	11	U
75-25-2	Bromoform	11	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-51

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-11

Sample wt/vol: 7.70(g/mL) G Lab File ID: LT710

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 70 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	11	U

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EA SAMPLE NO.

AH-26

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-14

Sample wt/vol: 7.30(g/mL) G Lab File ID: LT711

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 59 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	8	U
75-01-4	Vinyl Chloride	8	U
74-83-9	Bromomethane	8	U
75-00-3	Chloroethane	8	U
67-64-1	Acetone	67	
75-35-4	1,1-Dichloroethene	8	U
75-09-2	Methylene Chloride	2	JB
75-15-0	Carbon Disulfide	9	B
156-60-5	trans-1,2-Dichloroethene	8	U
75-34-3	1,1-Dichloroethane	8	U
78-93-3	2-Butanone	17	U
156-59-2	cis-1,2-Dichloroethene	8	U
67-66-3	Chloroform	8	U
56-23-5	Carbon Tetrachloride	8	U
107-06-2	1,2-Dichloroethane	8	U
71-43-2	Benzene	8	U
79-01-6	Trichloroethene	8	U
78-87-5	1,2-Dichloropropane	8	U
75-27-4	Bromodichloromethane	8	U
10061-01-5	cis-1,3-Dichloropropene	8	U
108-88-3	Toluene	8	U
10061-02-6	trans-1,3-Dichloropropene	8	U
79-00-5	1,1,2-Trichloroethane	8	U
127-18-4	Tetrachloroethene	8	U
108-10-1	4-Methyl-2-Pentanone	17	U
591-78-6	2-Hexanone	17	U
124-48-1	Dibromochloromethane	8	U
108-90-7	Chlorobenzene	8	U
100-41-4	Ethylbenzene	8	U
108-38-3	m,p-Xylenes	17	U
95-47-6	o-Xylene	8	U
100-42-5	Styrene	8	U
75-25-2	Bromoform	8	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-26

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-14

Sample wt/vol: 7.30(g/mL) G Lab File ID: LT711

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 59 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	8	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-42

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-16

Sample wt/vol: 8.70(g/mL) G Lab File ID: LT712

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 35 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	52	
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	1	JB
75-15-0	Carbon Disulfide	4	JB
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	8	J
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-42

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-16

Sample wt/vol: 8.70(g/mL) G Lab File ID: LT712

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 35 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

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FORM 1
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EA SAMPLE NO.

AH-40

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-18

Sample wt/vol: 9.70(g/mL) G Lab File ID: LT727

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 26 Date Analyzed: 04/08/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	45	
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	1	JB
75-15-0	Carbon Disulfide	10	
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	8	
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

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FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

AH-40

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-18

Sample wt/vol: 9.70(g/mL) G Lab File ID: LT727

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 26 Date Analyzed: 04/08/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

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EA SAMPLE NO.

CORE1-TOP

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-19

Sample wt/vol: 8.40(g/mL) G Lab File ID: LT728

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 26 Date Analyzed: 04/08/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	20	
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	1	JB
75-15-0	Carbon Disulfide	4	J
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	5	J
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

CORE1-TOP

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-19

Sample wt/vol: 8.40(g/mL) G Lab File ID: LT728

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 26 Date Analyzed: 04/08/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

CORE1-BOT

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-20

Sample wt/vol: 8.20(g/mL) G Lab File ID: LT715

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 23 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	65	
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	1	JB
75-15-0	Carbon Disulfide	3	JB
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	5	J
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

CORE1-BOT

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-20

Sample wt/vol: 8.20(g/mL) G Lab File ID: LT715

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. 23 Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

TB16-10RINB

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-21

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT706

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. _____ Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	5	U
75-01-4	Vinyl Chloride	5	U
74-83-9	Bromomethane	5	U
75-00-3	Chloroethane	5	U
67-64-1	Acetone	58	
75-35-4	1,1-Dichloroethene	5	U
75-09-2	Methylene Chloride	3	JB
75-15-0	Carbon Disulfide	5	U
156-60-5	trans-1,2-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
156-59-2	cis-1,2-Dichloroethene	5	U
67-66-3	Chloroform	5	U
56-23-5	Carbon Tetrachloride	5	U
107-06-2	1,2-Dichloroethane	5	U
71-43-2	Benzene	5	U
79-01-6	Trichloroethene	5	U
78-87-5	1,2-Dichloropropane	5	U
75-27-4	Bromodichloromethane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
108-88-3	Toluene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
79-00-5	1,1,2-Trichloroethane	5	U
127-18-4	Tetrachloroethene	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
124-48-1	Dibromochloromethane	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
108-38-3	m,p-Xylenes	10	U
95-47-6	o-Xylene	5	U
100-42-5	Styrene	5	U
75-25-2	Bromoform	5	U

FORM I VOA

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA SAMPLE NO.

TB16-10RINB

Lab Name: CEIMIC CORP Project: SITE 16

Lab Code: CEIMIC Case No.: 032504 SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-21

Sample wt/vol: 5.00(g/mL) G Lab File ID: LT706

Level: (low/med) LOW Date Received: 03/27/04

% Moisture: not dec. _____ Date Analyzed: 04/07/04

GC Column: RTX-624 ID: 0.25 (mm) Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	U

FORM I VOA

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF3-4

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-07

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 39 Decanted: (Y/N) N Date Received: 03/25/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/22/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.56	U
319-85-7	beta-BHC	0.56	U
319-86-8	delta-BHC	0.56	U
58-89-9	gamma-BHC (Lindane)	0.56	U
76-44-8	Heptachlor	0.56	U
309-00-2	Aldrin	0.56	U
1024-57-3	Heptachlor epoxide	0.56	U
959-98-8	Endosulfan I	0.56	U
60-57-1	Dieldrin	1.1	U
72-55-9	4,4'-DDE	1.1	U
72-20-8	Endrin	1.1	U
33213-65-9	Endosulfan II	1.1	U
72-54-8	4,4'-DDD	1.1	U
1031-07-8	Endosulfan sulfate	1.1	U
50-29-3	4,4'-DDT	1.1	U
72-43-5	Methoxychlor	5.6	U
53494-70-5	Endrin ketone	1.1	U
7421-93-4	Endrin aldehyde	1.1	U
5103-71-9	alpha-Chlordane	0.56	U
5103-74-2	gamma-Chlordane	0.56	U
8001-35-2	Toxaphene	56	U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF3-2

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-09

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 57 Decanted: (Y/N) N Date Received: 03/25/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/22/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.79	U
319-85-7	beta-BHC	0.79	U
319-86-8	delta-BHC	0.79	U
58-89-9	gamma-BHC (Lindane)	0.79	U
76-44-8	Heptachlor	0.79	U
309-00-2	Aldrin	0.79	U
1024-57-3	Heptachlor epoxide	0.79	U
959-98-8	Endosulfan I	0.79	U
60-57-1	Dieldrin	1.5	U
72-55-9	4,4'-DDE	1.5	U
72-20-8	Endrin	1.5	U
33213-65-9	Endosulfan II	1.5	U
72-54-8	4,4'-DDD	1.5	U
1031-07-8	Endosulfan sulfate	1.5	U
50-29-3	4,4'-DDT	1.5	U
72-43-5	Methoxychlor	7.9	U
53494-70-5	Endrin ketone	1.5	U
7421-93-4	Endrin aldehyde	1.5	U
5103-71-9	alpha-Chlordane	0.79	U
5103-74-2	gamma-Chlordane	0.79	U
8001-35-2	Toxaphene	79	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF3-1

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-10

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 55 Decanted: (Y/N) N Date Received: 03/25/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/22/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND	Q
319-84-6	alpha-BHC	0.76 U
319-85-7	beta-BHC	0.76 U
319-86-8	delta-BHC	0.76 U
58-89-9	gamma-BHC (Lindane)	0.76 U
76-44-8	Heptachlor	0.76 U
309-00-2	Aldrin	0.76 U
1024-57-3	Heptachlor epoxide	0.76 U
959-98-8	Endosulfan I	0.76 U
60-57-1	Dieldrin	1.5 U
72-55-9	4,4'-DDE	1.5 U
72-20-8	Endrin	1.5 U
33213-65-9	Endosulfan II	1.5 U
72-54-8	4,4'-DDD	1.5 U
1031-07-8	Endosulfan sulfate	1.5 U
50-29-3	4,4'-DDT	1.5 U
72-43-5	Methoxychlor	7.6 U
53494-70-5	Endrin ketone	1.5 U
7421-93-4	Endrin aldehyde	1.5 U
5103-71-9	alpha-Chlordane	0.76 U
5103-74-2	gamma-Chlordane	0.76 U
8001-35-2	Toxaphene	76 U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP07

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-11

Sample wt/vol: 30.3(g/mL) G Lab File ID: _____

% Moisture: 62 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.89	U
319-85-7	beta-BHC	4.9	P
319-86-8	delta-BHC	0.89	U
58-89-9	gamma-BHC (Lindane)	0.89	U
76-44-8	Heptachlor	2.5	P
309-00-2	Aldrin	0.89	U
1024-57-3	Heptachlor epoxide	0.89	U
959-98-8	Endosulfan I	0.89	U
60-57-1	Dieldrin	3.0	P
72-55-9	4,4'-DDE	2.0	P
72-20-8	Endrin	1.7	U
33213-65-9	Endosulfan II	1.7	U
72-54-8	4,4'-DDD	1.7	U
1031-07-8	Endosulfan sulfate	1.7	U
50-29-3	4,4'-DDT	1.7	U
72-43-5	Methoxychlor	8.9	U
53494-70-5	Endrin ketone	1.7	U
7421-93-4	Endrin aldehyde	1.7	U
5103-71-9	alpha-Chlordane	0.89	U
5103-74-2	gamma-Chlordane	6.5	P
8001-35-2	Toxaphene	89	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-45

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-12

Sample wt/vol: 55.6(g/mL) G Lab File ID: _____

% Moisture: 73 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SOXHLET Date Extracted: 04/07/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.68	U
319-85-7	beta-BHC	0.68	U
319-86-8	delta-BHC	2.2	P
58-89-9	gamma-BHC (Lindane)	0.68	U
76-44-8	Heptachlor	0.83	P
309-00-2	Aldrin	0.68	U
1024-57-3	Heptachlor epoxide	11	EP
959-98-8	Endosulfan I	1.4	P
60-57-1	Dieldrin	3.2	P
72-55-9	4,4'-DDE	1.3	U
72-20-8	Endrin	1.3	U
33213-65-9	Endosulfan II	1.3	U
72-54-8	4,4'-DDD	1.3	U
1031-07-8	Endosulfan sulfate	1.3	U
50-29-3	4,4'-DDT	1.3	U
72-43-5	Methoxychlor	6.8	U
53494-70-5	Endrin ketone	1.3	U
7421-93-4	Endrin aldehyde	1.3	U
5103-71-9	alpha-Chlordane	0.68	U
5103-74-2	gamma-Chlordane	2.2	P
8001-35-2	Toxaphene	68	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-45DL

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-12DL

Sample wt/vol: 55.6(g/mL) G Lab File ID: _____

% Moisture: 73 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SOXHLET Date Extracted: 04/07/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/24/04

Injection Volume: 1.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	6.8	U
319-85-7	beta-BHC	6.8	U
319-86-8	delta-BHC	6.8	U
58-89-9	gamma-BHC (Lindane)	6.8	U
76-44-8	Heptachlor	6.8	U
309-00-2	Aldrin	6.8	U
1024-57-3	Heptachlor epoxide	20	DP
959-98-8	Endosulfan I	6.8	U
60-57-1	Dieldrin	13	U
72-55-9	4,4'-DDE	13	U
72-20-8	Endrin	13	U
33213-65-9	Endosulfan II	13	U
72-54-8	4,4'-DDD	13	U
1031-07-8	Endosulfan sulfate	13	U
50-29-3	4,4'-DDT	13	U
72-43-5	Methoxychlor	68	U
53494-70-5	Endrin ketone	13	U
7421-93-4	Endrin aldehyde	13	U
5103-71-9	alpha-Chlordane	6.8	U
5103-74-2	gamma-Chlordane	6.8	U
8001-35-2	Toxaphene	680	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-33

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-14

Sample wt/vol: 30.3(g/mL) G Lab File ID: _____

% Moisture: 63 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.91	U
319-85-7	beta-BHC	3.9	P
319-86-8	delta-BHC	0.91	U
58-89-9	gamma-BHC (Lindane)	0.91	U
76-44-8	Heptachlor	1.4	P
309-00-2	Aldrin	0.91	U
1024-57-3	Heptachlor epoxide	0.91	U
959-98-8	Endosulfan I	0.91	U
60-57-1	Dieldrin	1.8	U
72-55-9	4,4'-DDE	2.2	P
72-20-8	Endrin	1.8	U
33213-65-9	Endosulfan II	1.8	U
72-54-8	4,4'-DDD	1.8	U
1031-07-8	Endosulfan sulfate	1.8	U
50-29-3	4,4'-DDT	1.8	U
72-43-5	Methoxychlor	9.1	U
53494-70-5	Endrin ketone	1.8	U
7421-93-4	Endrin aldehyde	1.8	U
5103-71-9	alpha-Chlordane	0.91	U
5103-74-2	gamma-Chlordane	7.1	
8001-35-2	Toxaphene	91	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-35

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-17

Sample wt/vol: 51.7(g/mL) G Lab File ID: _____

% Moisture: 71 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SOXHLET Date Extracted: 04/07/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/22/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND	Q
319-84-6	alpha-BHC	0.68 U
319-85-7	beta-BHC	2.9 P
319-86-8	delta-BHC	0.68 U
58-89-9	gamma-BHC (Lindane)	0.68 U
76-44-8	Heptachlor	9.0 P
309-00-2	Aldrin	0.68 U
1024-57-3	Heptachlor epoxide	0.68 U
959-98-8	Endosulfan I	0.68 U
60-57-1	Dieldrin	1.3 U
72-55-9	4,4'-DDE	1.3 U
72-20-8	Endrin	1.3 U
33213-65-9	Endosulfan II	1.3 U
72-54-8	4,4'-DDD	1.3 U
1031-07-8	Endosulfan sulfate	1.3 U
50-29-3	4,4'-DDT	1.3 U
72-43-5	Methoxychlor	6.8 U
53494-70-5	Endrin ketone	1.3 U
7421-93-4	Endrin aldehyde	1.3 U
5103-71-9	alpha-Chlordane	0.68 U
5103-74-2	gamma-Chlordane	5.1
8001-35-2	Toxaphene	68 U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

RINS01

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) WATER Lab Sample ID: 040235-19

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ Decanted: (Y/N) ___ Date Received: 03/26/04

Extraction: (Type) SEPF Date Extracted: 04/01/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/22/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.010	U
319-85-7	beta-BHC	0.010	U
319-86-8	delta-BHC	0.010	U
58-89-9	gamma-BHC (Lindane)	0.010	U
76-44-8	Heptachlor	0.010	U
309-00-2	Aldrin	0.010	U
1024-57-3	Heptachlor epoxide	0.010	U
959-98-8	Endosulfan I	0.010	U
60-57-1	Dieldrin	0.020	U
72-55-9	4,4'-DDE	0.020	U
72-20-8	Endrin	0.020	U
33213-65-9	Endosulfan II	0.020	U
72-54-8	4,4'-DDD	0.020	U
1031-07-8	Endosulfan sulfate	0.020	U
50-29-3	4,4'-DDT	0.020	U
72-43-5	Methoxychlor	0.10	U
53494-70-5	Endrin ketone	0.020	U
7421-93-4	Endrin aldehyde	0.020	U
5103-71-9	alpha-Chlordane	0.010	U
5103-74-2	gamma-Chlordane	0.010	U
8001-35-2	Toxaphene	1.0	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-32

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-02

Sample wt/vol: 30.2(g/mL) G Lab File ID: _____

% Moisture: 66 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.99	U
319-85-7	beta-BHC	7.5	P
319-86-8	delta-BHC	0.99	U
58-89-9	gamma-BHC (Lindane)	0.99	U
76-44-8	Heptachlor	2.1	P
309-00-2	Aldrin	0.99	U
1024-57-3	Heptachlor epoxide	0.99	U
959-98-8	Endosulfan I	0.99	U
60-57-1	Dieldrin	1.9	U
72-55-9	4,4'-DDE	1.9	U
72-20-8	Endrin	1.9	U
33213-65-9	Endosulfan II	1.9	U
72-54-8	4,4'-DDD	1.9	U
1031-07-8	Endosulfan sulfate	1.9	U
50-29-3	4,4'-DDT	1.9	U
72-43-5	Methoxychlor	9.9	U
53494-70-5	Endrin ketone	1.9	U
7421-93-4	Endrin aldehyde	1.9	U
5103-71-9	alpha-Chlordane	0.99	U
5103-74-2	gamma-Chlordane	6.1	P
8001-35-2	Toxaphene	99	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-29

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-03

Sample wt/vol: 51.7(g/mL) G Lab File ID: _____

% Moisture: 71 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SOXHLET Date Extracted: 04/07/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.68	U
319-85-7	beta-BHC	2.4	P
319-86-8	delta-BHC	0.68	U
58-89-9	gamma-BHC (Lindane)	0.68	U
76-44-8	Heptachlor	0.68	U
309-00-2	Aldrin	0.68	U
1024-57-3	Heptachlor epoxide	8.8	P
959-98-8	Endosulfan I	0.68	U
60-57-1	Dieldrin	4.2	P
72-55-9	4,4'-DDE	1.3	U
72-20-8	Endrin	1.3	U
33213-65-9	Endosulfan II	1.3	U
72-54-8	4,4'-DDD	3.3	
1031-07-8	Endosulfan sulfate	1.3	U
50-29-3	4,4'-DDT	1.3	U
72-43-5	Methoxychlor	6.8	U
53494-70-5	Endrin ketone	1.3	U
7421-93-4	Endrin aldehyde	1.3	U
5103-71-9	alpha-Chlordane	0.68	U
5103-74-2	gamma-Chlordane	5.4	P
8001-35-2	Toxaphene	68	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-47

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-06

Sample wt/vol: 30.4(g/mL) G Lab File ID: _____

% Moisture: 31 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.49	U
319-85-7	beta-BHC	1.4	P
319-86-8	delta-BHC	0.49	U
58-89-9	gamma-BHC (Lindane)	0.49	U
76-44-8	Heptachlor	1.1	P
309-00-2	Aldrin	0.49	U
1024-57-3	Heptachlor epoxide	0.49	U
959-98-8	Endosulfan I	0.49	U
60-57-1	Dieldrin	0.94	U
72-55-9	4,4'-DDE	0.94	U
72-20-8	Endrin	0.94	U
33213-65-9	Endosulfan II	0.94	U
72-54-8	4,4'-DDD	0.94	U
1031-07-8	Endosulfan sulfate	0.94	U
50-29-3	4,4'-DDT	0.94	U
72-43-5	Methoxychlor	4.9	U
53494-70-5	Endrin ketone	0.94	U
7421-93-4	Endrin aldehyde	0.94	U
5103-71-9	alpha-Chlordane	2.0	
5103-74-2	gamma-Chlordane	2.8	P
8001-35-2	Toxaphene	49	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-51

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-11

Sample wt/vol: 30.5(g/mL) G Lab File ID: _____

% Moisture: 68 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND	Q
319-84-6	alpha-BHC	1.0 U
319-85-7	beta-BHC	14 P
319-86-8	delta-BHC	1.0 U
58-89-9	gamma-BHC (Lindane)	1.0 U
76-44-8	Heptachlor	1.4 P
309-00-2	Aldrin	1.0 U
1024-57-3	Heptachlor epoxide	4.5 P
959-98-8	Endosulfan I	1.0 U
60-57-1	Dieldrin	2.4 P
72-55-9	4,4'-DDE	2.3 P
72-20-8	Endrin	2.0 U
33213-65-9	Endosulfan II	2.0 U
72-54-8	4,4'-DDD	2.2 P
1031-07-8	Endosulfan sulfate	2.0 U
50-29-3	4,4'-DDT	2.0 U
72-43-5	Methoxychlor	10 U
53494-70-5	Endrin ketone	2.0 U
7421-93-4	Endrin aldehyde	2.0 U
5103-71-9	alpha-Chlordane	1.0 U
5103-74-2	gamma-Chlordane	8.7
8001-35-2	Toxaphene	100 U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-26

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-14

Sample wt/vol: 30.3(g/mL) G Lab File ID: _____

% Moisture: 60 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.84	U
319-85-7	beta-BHC	5.7	P
319-86-8	delta-BHC	0.84	U
58-89-9	gamma-BHC (Lindane)	0.84	U
76-44-8	Heptachlor	0.97	P
309-00-2	Aldrin	0.84	U
1024-57-3	Heptachlor epoxide	0.84	U
959-98-8	Endosulfan I	0.84	U
60-57-1	Dieldrin	1.6	U
72-55-9	4,4'-DDE	1.6	U
72-20-8	Endrin	1.6	U
33213-65-9	Endosulfan II	1.6	U
72-54-8	4,4'-DDD	1.6	U
1031-07-8	Endosulfan sulfate	1.6	U
50-29-3	4,4'-DDT	1.6	U
72-43-5	Methoxychlor	8.4	U
53494-70-5	Endrin ketone	1.6	U
7421-93-4	Endrin aldehyde	1.6	U
5103-71-9	alpha-Chlordane	0.84	U
5103-74-2	gamma-Chlordane	5.4	
8001-35-2	Toxaphene	84	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-42

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-16

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 45 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.62	U
319-85-7	beta-BHC	1.4	P
319-86-8	delta-BHC	0.62	U
58-89-9	gamma-BHC (Lindane)	0.62	U
76-44-8	Heptachlor	0.62	U
309-00-2	Aldrin	0.62	U
1024-57-3	Heptachlor epoxide	0.62	U
959-98-8	Endosulfan I	0.62	U
60-57-1	Dieldrin	1.2	U
72-55-9	4,4'-DDE	1.2	U
72-20-8	Endrin	1.2	U
33213-65-9	Endosulfan II	1.2	U
72-54-8	4,4'-DDD	1.2	U
1031-07-8	Endosulfan sulfate	1.2	U
50-29-3	4,4'-DDT	1.2	U
72-43-5	Methoxychlor	6.2	U
53494-70-5	Endrin ketone	1.2	U
7421-93-4	Endrin aldehyde	1.2	U
5103-71-9	alpha-Chlordane	0.62	U
5103-74-2	gamma-Chlordane	1.8	P
8001-35-2	Toxaphene	62	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-40

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-18

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 24 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	0.45	U
319-85-7	beta-BHC	0.45	U
319-86-8	delta-BHC	0.92	
58-89-9	gamma-BHC (Lindane)	0.45	U
76-44-8	Heptachlor	0.45	U
309-00-2	Aldrin	0.45	U
1024-57-3	Heptachlor epoxide	0.45	U
959-98-8	Endosulfan I	0.45	U
60-57-1	Dieldrin	3.7	
72-55-9	4,4'-DDE	0.87	U
72-20-8	Endrin	0.87	U
33213-65-9	Endosulfan II	0.87	U
72-54-8	4,4'-DDD	1.7	
1031-07-8	Endosulfan sulfate	0.87	U
50-29-3	4,4'-DDT	0.87	U
72-43-5	Methoxychlor	4.5	U
53494-70-5	Endrin ketone	0.87	U
7421-93-4	Endrin aldehyde	0.87	U
5103-71-9	alpha-Chlordane	0.45	U
5103-74-2	gamma-Chlordane	0.45	U
8001-35-2	Toxaphene	45	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CORE1-TOP

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-19

Sample wt/vol: 30.2(g/mL) G Lab File ID: _____

% Moisture: 22 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.43	U
319-85-7	beta-BHC	1.9	P
319-86-8	delta-BHC	2.0	P
58-89-9	gamma-BHC (Lindane)	0.43	U
76-44-8	Heptachlor	0.43	U
309-00-2	Aldrin	0.43	U
1024-57-3	Heptachlor epoxide	0.43	U
959-98-8	Endosulfan I	0.43	U
60-57-1	Dieldrin	0.84	U
72-55-9	4,4'-DDE	0.84	U
72-20-8	Endrin	0.84	U
33213-65-9	Endosulfan II	0.84	U
72-54-8	4,4'-DDD	1.7	P
1031-07-8	Endosulfan sulfate	0.84	U
50-29-3	4,4'-DDT	0.84	U
72-43-5	Methoxychlor	4.3	U
53494-70-5	Endrin ketone	0.84	U
7421-93-4	Endrin aldehyde	0.84	U
5103-71-9	alpha-Chlordane	0.43	U
5103-74-2	gamma-Chlordane	0.88	P
8001-35-2	Toxaphene	43	U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CORE1-BOT

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-20

Sample wt/vol: 30.2(g/mL) G Lab File ID: _____

% Moisture: 17 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/23/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
319-84-6	alpha-BHC	0.41	U
319-85-7	beta-BHC	1.1	P
319-86-8	delta-BHC	0.53	P
58-89-9	gamma-BHC (Lindane)	0.41	U
76-44-8	Heptachlor	0.41	U
309-00-2	Aldrin	0.41	U
1024-57-3	Heptachlor epoxide	0.41	U
959-98-8	Endosulfan I	0.41	U
60-57-1	Dieldrin	0.79	U
72-55-9	4,4'-DDE	0.79	U
72-20-8	Endrin	0.79	U
33213-65-9	Endosulfan II	0.79	U
72-54-8	4,4'-DDD	1.7	P
1031-07-8	Endosulfan sulfate	0.79	U
50-29-3	4,4'-DDT	0.79	U
72-43-5	Methoxychlor	4.1	U
53494-70-5	Endrin ketone	0.79	U
7421-93-4	Endrin aldehyde	0.79	U
5103-71-9	alpha-Chlordane	0.41	U
5103-74-2	gamma-Chlordane	0.41	U
8001-35-2	Toxaphene	41	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF3-4

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-07

Sample wt/vol: 30.5(g/mL) G Lab File ID: _____

% Moisture: 39 Decanted: (Y/N) N Date Received: 03/25/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	11	U
11104-28-2	Aroclor-1221	22	U
11141-16-5	Aroclor-1232	11	U
53469-21-9	Aroclor-1242	11	U
12672-29-6	Aroclor-1248	11	U
11097-69-1	Aroclor-1254	11	U
11096-82-5	Aroclor-1260	11	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF3-2

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-09

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 57 Decanted: (Y/N) N Date Received: 03/25/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	15	U
11104-28-2	Aroclor-1221	31	U
11141-16-5	Aroclor-1232	15	U
53469-21-9	Aroclor-1242	15	U
12672-29-6	Aroclor-1248	15	U
11097-69-1	Aroclor-1254	15	U
11096-82-5	Aroclor-1260	15	U

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

REF3-1

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-10

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 55 Decanted: (Y/N) N Date Received: 03/25/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	15	U
11104-28-2	Aroclor-1221	30	U
11141-16-5	Aroclor-1232	15	U
53469-21-9	Aroclor-1242	15	U
12672-29-6	Aroclor-1248	15	U
11097-69-1	Aroclor-1254	15	U
11096-82-5	Aroclor-1260	8.0	JP

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

DUP07

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-11

Sample wt/vol: 30.0(g/mL) G Lab File ID: _____

% Moisture: 62 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	17	U
11104-28-2	Aroclor-1221	35	U
11141-16-5	Aroclor-1232	17	U
53469-21-9	Aroclor-1242	17	U
12672-29-6	Aroclor-1248	17	U
11097-69-1	Aroclor-1254	17	U
11096-82-5	Aroclor-1260	49	

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-45

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-12

Sample wt/vol: 55.6(g/mL) G Lab File ID: _____

% Moisture: 73 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SOXHLET Date Extracted: 04/08/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	13	U
11104-28-2	Aroclor-1221	27	U
11141-16-5	Aroclor-1232	13	U
53469-21-9	Aroclor-1242	13	U
12672-29-6	Aroclor-1248	13	U
11097-69-1	Aroclor-1254	13	U
11096-82-5	Aroclor-1260	16	

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-33

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-14

Sample wt/vol: 30.5(g/mL) G Lab File ID: _____

% Moisture: 63 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	18	U
11104-28-2	Aroclor-1221	36	U
11141-16-5	Aroclor-1232	18	U
53469-21-9	Aroclor-1242	18	U
12672-29-6	Aroclor-1248	18	U
11097-69-1	Aroclor-1254	18	U
11096-82-5	Aroclor-1260	37	P

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-35

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040235-17

Sample wt/vol: 51.7(g/mL) G Lab File ID: _____

% Moisture: 71 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SOXHLET Date Extracted: 04/08/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND		Q
12674-11-2	Aroclor-1016	13	U
11104-28-2	Aroclor-1221	27	U
11141-16-5	Aroclor-1232	13	U
53469-21-9	Aroclor-1242	13	U
12672-29-6	Aroclor-1248	13	U
11097-69-1	Aroclor-1254	13	U
11096-82-5	Aroclor-1260	22	

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

RINS01

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) WATER Lab Sample ID: 040235-19

Sample wt/vol: 500.0 (g/mL) ML Lab File ID: _____

% Moisture: _____ Decanted: (Y/N) ___ Date Received: 03/26/04

Extraction: (Type) SEPF Date Extracted: 04/01/04

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.20	U
11104-28-2	Aroclor-1221	0.40	U
11141-16-5	Aroclor-1232	0.20	U
53469-21-9	Aroclor-1242	0.20	U
12672-29-6	Aroclor-1248	0.20	U
11097-69-1	Aroclor-1254	0.20	U
11096-82-5	Aroclor-1260	0.20	U

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-32

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-02

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 66 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	19	U
11104-28-2	Aroclor-1221	39	U
11141-16-5	Aroclor-1232	19	U
53469-21-9	Aroclor-1242	19	U
12672-29-6	Aroclor-1248	19	U
11097-69-1	Aroclor-1254	19	U
11096-82-5	Aroclor-1260	55	

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-29

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-03

Sample wt/vol: 51.7(g/mL) G Lab File ID: _____

% Moisture: 71 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SOXHLET Date Extracted: 04/08/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	13	U
11104-28-2	Aroclor-1221	27	U
11141-16-5	Aroclor-1232	13	U
53469-21-9	Aroclor-1242	13	U
12672-29-6	Aroclor-1248	13	U
11097-69-1	Aroclor-1254	13	U
11096-82-5	Aroclor-1260	22	

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-47

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-06

Sample wt/vol: 30.4(g/mL) G Lab File ID: _____

% Moisture: 31 Decanted: (Y/N) N Date Received: 03/26/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	9.4	U
11104-28-2	Aroclor-1221	19	U
11141-16-5	Aroclor-1232	9.4	U
53469-21-9	Aroclor-1242	9.4	U
12672-29-6	Aroclor-1248	9.4	U
11097-69-1	Aroclor-1254	9.4	U
11096-82-5	Aroclor-1260	21	

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-51

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-11

Sample wt/vol: 30.2(g/mL) G Lab File ID: _____

% Moisture: 68 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	20	U
11104-28-2	Aroclor-1221	42	U
11141-16-5	Aroclor-1232	20	U
53469-21-9	Aroclor-1242	20	U
12672-29-6	Aroclor-1248	20	U
11097-69-1	Aroclor-1254	20	U
11096-82-5	Aroclor-1260	59	P

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-26

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-14

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 60 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	16	U
11104-28-2	Aroclor-1221	33	U
11141-16-5	Aroclor-1232	16	U
53469-21-9	Aroclor-1242	16	U
12672-29-6	Aroclor-1248	16	U
11097-69-1	Aroclor-1254	16	U
11096-82-5	Aroclor-1260	41	

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-42

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-16

Sample wt/vol: 30.4 (g/mL) G Lab File ID: _____

% Moisture: 45 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/06/04

Concentrated Extract Volume: 2000 (uL) Date Analyzed: 04/14/04

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

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

CAS NO.	COMPOUND	UG/KG	Q
12674-11-2	Aroclor-1016	12	U
11104-28-2	Aroclor-1221	24	U
11141-16-5	Aroclor-1232	12	U
53469-21-9	Aroclor-1242	12	U
12672-29-6	Aroclor-1248	12	U
11097-69-1	Aroclor-1254	12	U
11096-82-5	Aroclor-1260	37	

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

AH-40

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-18

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 24 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	8.7	U
11104-28-2	Aroclor-1221	18	U
11141-16-5	Aroclor-1232	8.7	U
53469-21-9	Aroclor-1242	8.7	U
12672-29-6	Aroclor-1248	8.7	U
11097-69-1	Aroclor-1254	8.7	U
11096-82-5	Aroclor-1260	32	P

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CORE1-TOP

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-19

Sample wt/vol: 30.1(g/mL) G Lab File ID: _____

% Moisture: 22 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	8.4	U
11104-28-2	Aroclor-1221	17	U
11141-16-5	Aroclor-1232	8.4	U
53469-21-9	Aroclor-1242	8.4	U
12672-29-6	Aroclor-1248	8.4	U
11097-69-1	Aroclor-1254	8.4	U
11096-82-5	Aroclor-1260	25	P

FORM I PEST

FORM 1
PESTICIDE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

CORE1-BOT

Lab Name: CEIMIC CORP Contract: NCBC

Lab Code: CEIMIC Case No.: 032504 SAS No.: SDG No.: SED16B

Matrix: (soil/water) SOIL Lab Sample ID: 040242-20

Sample wt/vol: 30.4(g/mL) G Lab File ID: _____

% Moisture: 17 Decanted: (Y/N) N Date Received: 03/27/04

Extraction: (Type) SONC Date Extracted: 04/02/04

Concentrated Extract Volume: 2000(uL) Date Analyzed: 04/14/04

Injection Volume: 1.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	7.8	U
11104-28-2	Aroclor-1221	16	U
11141-16-5	Aroclor-1232	7.8	U
53469-21-9	Aroclor-1242	7.8	U
12672-29-6	Aroclor-1248	7.8	U
11097-69-1	Aroclor-1254	7.8	U
11096-82-5	Aroclor-1260	38	P

ENVIRONMENTAL
Data Services, Inc.

ORGANIC DATA VALIDATION REPORT
USEPA REGION I - TIER III

SDG No.:	04-0117
Laboratory:	Battelle, Duxbury, Massachusetts
Site:	NCBC Davisville, Allen Harbor, Site 16
Date:	June 1, 2004
Samples:	
PAH:	20/Soil/DUP03, AH-06, AH-17, AH-03, REF1-4, REF2-1, SID SOURCE 4-1, REF3-2, AH-28, AH-49, AH-45, SOURCE 3-1, SOURCE 3-2, SOURCE 1-1, SOURCE 2-1, SOURCE 1-2, SOURCE 2-2, AH-29, AH-26, AH-40

A Tier III validation was performed on the organic analytical data for twenty soil samples collected by EA Engineering, Science, & Technology, Inc. at Allen Harbor, Site 16, NCBC Davisville. The samples were analyzed under USEPA SW-846 Methods 8270C for polynuclear aromatic hydrocarbons (PAH). The data were evaluated as Tier III in accordance with the "Region I EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses" dated December 1996 and were based on the following parameters:

	• Overall Evaluation of Data and Potential Usability Issues.
*	• Data Completeness.
*	• Preservation and Technical Holding Times.
NA	• Gas Chromatograph/Mass Spectrometry (GC/MS) and GC/Electron Capture Detector (GC/ECD) Instrument Performance Checks.
*	• Initial and Continuing Calibration.
*	• Blanks.
	• Surrogate Compounds.
NA	• Internal Standards.
NA	• Matrix Spike (MS)/Matrix Spike Duplicates (MSD).
*	• Field Duplicates.
NA	• Sensitivity Check (Method Detection Limit Study or Laboratory Fortified Blank).
	• Laboratory Control Sample.
	• Target Compound Identification.
*	• Sample Quantitation and Reported Quantitation Limits.
NA	• Tentatively Identified Compounds (TICs).
NA	• SVOC and P/PCB Cleanup.
*	• System Performance.

*	=	All criteria were met for this parameter.
NA	=	Not Applicable.

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Overall Evaluation of Data and Potential Usability Issues

PAH:

PAH sample results were qualified for the following:

- All positive results have been qualified (J) in sample SOURCE 1-2 due to high surrogate recoveries.
- Naphthalene and 2-methylnaphthalane have been qualified (J/R) in all samples except AH-28, SOURCE 1-2, AH-17 and AH-45 due to severely low LCS recoveries.
- Acenaphthylene has been qualified (J/UJ) in all samples except AH-28, SOURCE 1-2, AH-17 and AH-45 due to a low LCS recovery.
- Samples AH-17 and AH-45 were 29% solid which did not meet the 30% criteria. All results have been qualified (J) in these samples.

Surrogate Compounds

The following surrogate spike recoveries did not meet acceptance criteria:

PAH:

Sample	Naphthalene-d8 %R	Phenanthrene-d10 %R	Chrysene-d12 %R	Action
SOURCE 1-2	156%	180%	208%	J

- All positive results have been qualified (J) in sample SOURCE 1-2.

Laboratory Control Sample

The following compounds did not meet recovery criteria and resulted in qualification:

PAH:

LCS Sample ID	Compound	LCS %R	Action	Affected Samples
BE162LCS	Naphthalene Acenaphthylene 2-Methylnaphthalene	5% 36% 8%	J/R J/UJ J/R	All Samples except AH-28, SOURCE 1-2, AH-17, AH-45

- Naphthalene and 2-methylnaphthalane have been qualified (J/R) in all samples except AH-28, SOURCE 1-2, AH-17 and AH-45.
- Acenaphthylene has been qualified (J/UJ) in all samples except AH-28, SOURCE 1-2, AH-17 and AH-45.

Target Compound Identification

The following samples did not meet % solid criteria:

PAH:

- Samples AH-17 and AH-45 were 29% solid which did not meet the 30% criteria. All results have been qualified (J) in these samples.

Additional Comments

PAH:

- Several samples were analyzed at dilutions due to high analyte concentrations in the samples.

Attachments: Data Validation Worksheets
Annotated Form Is

DATA SUMMARY KEY
ORGANIC DATA VALIDATION

J = The associated numerical value is an estimated quantity.

R = The data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification. The R replaces the numerical value or sample quantitation limit.

U = The compound was analyzed for, but not detected. The associated numerical value is the sample quantitation limit or the adjusted sample quantitation limit.

UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit.

TB = The compound was analyzed for and detected in the associated trip blank as well as the sample.

REGION I, EPA-NE ORGANIC REGIONAL DATA ASSESSMENT (ORDA)*

CASE # —

LAB NAME Battelle, Duxbury MA

SDG # '04-0117

SOW #/CONTRACT # SW846

EPA-NE DV TIER LEVEL: III

TPO/PO: **ACTION ____ FYI ____

SITE NAME: NCBC Davisville site 16

OF SAMPLES/MATRIX 20 / Soil

VALIDATION CONTRACTOR: Env Data Services Inc

VALIDATOR'S NAME: Christine Gorney

DATE DP REC'D BY EPA-NE: —

DV COMPLETION DATE: 06/01/04

ANALYTICAL DATA QUALITY SUMMARY

	VOA	SV (PAH 8270 SIM rec'd)	Pest/PCB
1. Preservation and Contractual Holding Times		O	
2. GC/MS / GC/ECD Instrument Performance Check		NA	
3. Initial Calibration		O	
4. Continuing Calibration		O	
5. Blanks		O	
6. Surrogate Compounds		O	
7. Internal Standards		O	
8. Matrix Spike/Matrix Spike Duplicate		NA	
9. Sensitivity Check		O	
10. PE Samples-Accuracy Check		NA	
11. Target Compound Identification		Z1	
12. Compound Quantitation and Reported QLs		Z2	
13. Tentatively Identified Compounds		O	
14. Semivolatile Cleanup/Pesticide/PCB Cleanup		NA	
15. Data Completeness		NA	
16. Overall Evaluation of Data		O	
		O	

o = Data had no problems or were qualified due to minor contractual problems.
m = Data were qualified due to major contractual problems.
z = Data were rejected as unusable due major contractual problems.

ACTION ITEMS: (z items) Z1 2 PAH analytes qualified (JR) + one qualified (JLV) due to surrogate results
Z2 - 2 PAH samples qualified (JR) due to low % solid results

AREAS OF CONCERN: (m items)

COMMENTS: O1 one PAH sample qualified (J) due to high surrogate results

*This form assesses the analytical data quality in terms of contractual compliance only. It does not assess sampling errors and/or non-contractual analytical issues that affect data quality.

**Check "ACTION" only if contractual defects resulted in reduced payment/data rejection recommendations

Validator Christine Gorney

Date 06/01/04

INSTRUCTIONS ON REVERSE SIDE

EPA-NE
Data Validation Worksheet Cover Page - Page 1

Site Name NCBC Davisville
Reference No. —

REGION I ORGANIC DATA VALIDATION

The following data package has been validated:

Lab Name Battelle, Duxbury MA
Case/Project No. —
SDG No. 04-0117
No. of Samples/Matrix 20 / Soils

SOW/Method No. SW846 8270 Sim mod
Sampling Date(s) 03/23/04 - 03/27/04
Shipping Date(s) 03/23/04 - 03/27/04
Date Rec'd by lab 03/24/04 - 03/27/04, 03/29/04

Traffic Report Sample Nos. DUP3, AH-06, AH-17, AH-03, REF 1-4, REF 2-1, SID Source 4-1, REF 3-2, AH-28, AH-49, AH-45, Source 3-1, Source 3-2, Source 1-1, Source 2-1, Source 1-2, Source 2-2, AH-29, AH-26, AH-40

Trip Blank No. —
Equipment Blank No. —
Bottle Blank No. —
Field Duplicate Nos. AH-06 / DUP3
PES Nos. —

The Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, revision 12/96 was used to evaluate the data and/or approved modifications to the EPA-NE Functional Guidelines were used to evaluate the data and are attached to this cover page: (attach modified criteria from EPA approved QAPjP or amendment to QAPjP).

A Tier II or Tier III evaluation was used to validate the data (circle one). If a Tier II validation with a partial Tier III was used, then identify samples, parameters, etc. that received partial Tier III validation

_____

The data were evaluated based upon the following parameters:

- Overall Evaluation of Data
- Data Completeness (CSF Audit - Tier I)
- Preservation & Technical Holding Times
- GC/MS & GC/ECD Instrument Performance Check
- Initial & Continuing Calibrations
- Blanks
- Surrogate Compounds
- Internal Standards
- Matrix Spike/Matrix Spike Duplicate
- Field Duplicates
- Sensitivity Check
- PE Samples/Accuracy Check
- Target Compound Identification
- Compound Quantitation and Reported Quantitation Limits
- TICs
- Semivolatile and Pesticide/PCB Cleanup
- System Performance

Region I Definitions and Qualifiers:

A - Acceptable Data
J - Numerical value associated with compound is an estimated quantity.
R - The data are rejected as unusable. The R replaces the numerical value or sample quantitation limit.
U - Compound not detected at that numerical sample quantitation limit.
UJ - The sample quantitation limit is an estimated quantity.
TB, BB, EB - Compound detected in aqueous trip blank, aqueous bottle blank, or aqueous equipment blank associated with soil/sediment samples.

Validator's Name Christine Gerney Company Name Env. Data Serv. Phone Number 603-226-0118

Date Validation Started 06/01/04 Date Validation Completed 06/01/04

Check if all criteria are met and no hard copy worksheet provided. Indicate NA if worksheet is not applicable to analytical method. Note: there is no standard worksheet for System Performance, however, the validator must document all system performance issues in the Data Validation Memorandum.

VOA/SV worksheets:

VOA/SV-Pest/PCB	COMPLETE SDG FILE (CSF) AUDIT	✓
VOA/SV-Pest/PCB-I	PRESERVATION AND HOLDING TIMES	
VOA/SV-II	GC/MS INSTRUMENT PERFORMANCE CHECK (TUNING)	
VOA/SV-III	INITIAL CALIBRATION	
VOA/SV-IV	CONTINUING CALIBRATION	
VOA/SV-Pest/PCB-V-A	BLANK ANALYSIS	
VOA/SV-Pest/PCB-V-B	BLANK ANALYSIS	
VOA-VI	VOA SURROGATE SPIKE RECOVERIES	NA
SV-VI	SV SURROGATE SPIKE RECOVERIES	
VOA/SV-VII	INTERNAL STANDARD PERFORMANCE	
VOA/SV-Pest/PCB-VIII	MATRIX SPIKE/MATRIX SPIKE DUPLICATE	
VOA/SV-Pest/PCB-IX	FIELD DUPLICATE PRECISION	
VOA/SV-Pest/PCB-X	SENSITIVITY CHECK	NA
VOA/SV-Pest/PCB-XI	ACCURACY CHECK	
VOA/SV-Pest/PCB-XII	TARGET COMPOUND IDENTIFICATION	
VOA/SV-Pest/PCB-XIII	SAMPLE QUANTITATION	
VOA/SV-XIV	TENTATIVELY IDENTIFIED COMPOUNDS	NA
VOA/SV-XV	SEMIVOLATILE CLEANUP	NA
TABLE II-WORKSHEET	OVERALL EVALUATION OF DATA	

Pest/PCB worksheets:

VOA/SV-Pest/PCB	COMPLETE SDG FILE (CSF) AUDIT	
VOA/SV-Pest/PCB-I	PRESERVATION AND HOLDING TIMES	
Pest/PCB-IIA	GC/ECD INSTRUMENT PERFORMANCE CHECK-RESOLUTION	
Pest/PCB-IIB	GC/ECD INSTRUMENT PERFORMANCE CHECK-RETENTION TIMES	
Pest/PCB-IIC	GC/ECD INSTRUMENT PERFORMANCE CHECK-ACCURACY CHECK OF INITIAL CALIBRATION	
Pest/PCB-IID	GC/ECD INSTRUMENT PERFORMANCE CHECK-PESTICIDE DEGRADATION	
Pest/PCB-III	INITIAL CALIBRATION	
Pest/PCB-IV	CONTINUING CALIBRATION	
VOA/SV-Pest/PCB-V-A	BLANK ANALYSIS	
VOA/SV-Pest/PCB-V-B	BLANK ANALYSIS	
Pest/PCB-VI	SURROGATE COMPOUNDS: SPIKE RECOVERIES AND RETENTION TIME SHIFT	
Pest/PCB-VII	PESTICIDE CLEANUP	
VOA/SV-Pest/PCB-VIII	MATRIX SPIKE/MATRIX SPIKE DUPLICATE	
VOA/SV-Pest/PCB-IX	FIELD DUPLICATE PRECISION	
VOA/SV-Pest/PCB-X	SENSITIVITY CHECK	
VOA/SV-Pest/PCB-XI	ACCURACY CHECK	
Pest/PCB-XII	COMPOUND IDENTIFICATION	
VOA/SV-Pest/PCB-XIII	SAMPLE QUANTITATION	
TABLE II-WORKSHEET	OVERALL EVALUATION OF DATA	

I certify that all criteria were met for the worksheets checked above.

Signature: Christine Gorney Name: Christine Gorney

Date: 06/01/04

EPA-NE - Data Validation
VOA/SV - Pest/PCB-I

Sampler: — Company: PA Engineering Contacted: Yes (No) Date: _____

I. PRESERVATION AND HOLDING TIMES - Circle sample numbers with exceeded technical holding times or omitted preservation.
List all required preservation codes and circle omitted preservation codes.
Circle all exceeded technical holding times.
Identify extraction technique after "# of Days"/(*Extraction Code).

Sample No (TR No.)	Matrix	Pres. Code	Date Sampled	VOA			BNA PA 4					PEST/PCB				
				Date Analyzed	# of Days from Samp. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action
DUP 3	SOIL	1	03123104				04/06/04	14	04/20/04	14	none					
AH-06									d	d						
AH-17									04/21/04	15						
AH-03																
REF 1-4			03124104					13								
REF 2-1																
SID SOURCE 4-1																
REF 3-2			03125104					12								
AH-28							04/07/04	13		14						
AH-49							04/06/04	12		15						
AH-45			03126104					11								
SOURCE 3-1																
SOURCE 3-2																
SOURCE 1-1									4/22/04	16						
SOURCE 1-1																
SOURCE 1-2																
SOURCE 2-2																
AH-29																
AH-26			03127104					10								
AH-40			d					d								

Preservation Code:
1. Cool @ 4°C (± 2°)
2. Preserve with HCl to at least pH 2
3. Protect from light
4. Freeze
5. Room Temperature (Avoid excessive heat)

(*Extraction Code:)
L/L - Liquid/Liquid
SON - Sonication
SEP - Separatory Funnel
SOX - Soxhlet
SPE - Solid Phase Extraction

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

Validator: Christine Garvey Date: 06/01/04

EPA-NE - Data Validation Worksheet
VOA/SV-III

III. INITIAL CALIBRATION - List all analytes that are outside calibration criteria.

Date of ICAL	Instrument	Parameter	Matrix	Compound	% RSD	RRF	Samples Affected	Action
04/11/06	1 not E	PAH	Soil	PAH	all ok	all ok	none	none

Comments:

Validator: Christine Gorey

Date: 06/01/04

EPA-NE - Data Validation Worksheet
VOA/SV-IV

IV. CONTINUING CALIBRATION - List all analytes that are outside calibration criteria.

Date of ICAL	Date of CCAL	Instrument	Parameter	Matrix	Compound	%D	RRF	Samples Affected	Action
04/16/04	04/20/04 1240	1 ~~8~~ 8	PAH	Soil	PAH	all ok	all ok	None	None
	04/21/04 425 A								
	04/21/04 803P								
	04/22/04 1142 A								
	04/23/04 1218 A								
	04/24/04 748P				Fluoranthene	ok	ok		
	04/28/04 1203 A								

Comments:

Validator: Christine Gong

Date: 06/01/04

12/96

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-A

V. BLANK ANALYSIS

List the blank contamination below.

Concentration Level: Low

Sampler: —

Company: EA Engineering

Contacted: Yes No

Date: _____

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
04/06/04	04/20/04	PAH / Soil	BE161PB-P	Inst E / DB5	Naphthalene	0.20 ug/kg
↓	↓	↓	↓	↓	Acenaphthylene	0.09 ug/kg
					Fluorene	0.16 ug/kg
					Phenanthrene	0.20 ug/kg
					Fluoranthene	0.07 ug/kg
					Pyrene	0.10 ug/kg
					Benzo(a)anthracene	0.08 ug/kg

all >5x blk no action

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
03/31/04	04/17/04	PAH / wat	Rins 01 04-0113	Inst E / DB5	2-methyl naphthalene	6.03 ng/l
↓	↓	↓	↓	↓	naphthalene	15.00 ng/l
					Acenaphthylene	2.27 ng/l
					Anthracene	1.96 ng/l
					Phenanthrene	6.23 ng/l
					Benzo(a) anthracene	2.86 ng/l
					Fluoranthene	10.22 ng/l

all >5x blk no action

Validator: Christine Gerug

Date: 06/01/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-A

V. BLANK ANALYSIS

List the blank contamination below.

Concentration Level: low

Sampler: _____ Company: EA Engineering

Contacted: Yes (No) Date: _____

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
04/26/04	04/20/04	PAH/Soil	BE 1601PB-P	Inst E / DB5	Chrysene	0.11 ug/kg
					Indeno(1,2,3-cd)pyrene	0.6 ug/kg
					Dibenz(ah)anthracene	0.86 ug/kg
					Benzo(ghi)perylene	0.52 ug/kg
					2-methylnaphthalene	0.18 ug/kg

all > 5x blk no act

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
03/01/04	04/17/04	PAH/water	Rinso1 04-0113	Inst E / DB5	Pyrene	10.72 ng/l
					Chrysene	5.40 ng/l
					Benzo(b)fluoranthene	3.23 ng/l
					Benzo(j/k)fluoranthene	4.66 ng/l
					Benzo(a)pyrene	3.64 ng/l
					Indeno(1,2,3cd)pyrene	2.34 ng/l
					Dibenz(ah)anthracene	0.83 ng/l

all > 5x blk no act

Validator: Christine Gerwig

Date: 06/01/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-A

V. BLANK ANALYSIS

List the blank contamination below.

Concentration Level: low

Sampler: —

Company: EA Engineering

Contacted: Yes No

Date:

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)
03/3.04	04/17/01	PAH water	Rins 01 04-0113	Cnst 9 / DB5	Benzo(ghi)perylene	2.85 ng/l
			Rins 02 04-0113		2-methylnaphthalene	1.26 ng/l
					Naphthalene	7.42 ng/l
					Fluoranthene	0.92 ng/l
					Pyrene	1.07 ng/l

Validator: Christine Jones

Date: 06/01/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-B

no action required due to blank contam

3. **Blank Actions** - List the maximum concentrations of blank compounds.

Compound	Type of Blank	Date Blank Sampled/Originated	Max. Conc. (units)	Action Level (units)	Sample QL	Samples Affected	Action

Comments: _____

Validator: Christine Jang

Date: 06/01/04

VI. SV SURROGATE SPIKE RECOVERIES - List all surrogate compound recoveries that are outside method QC acceptance criteria.

Method	Naphthalene-d8 ~~NBZ-d5~~	Phenanthrene-d10 ~~2-FBP~~	~~TPH-d14~~ Chrysene-d12	1,2-DCB-d4*	Other:	
	Base/Neutral Method QC Acceptance Criteria					
OLM03.2	Water Soil 35-114 23-120	Water Soil 43-116 30-115	Water Soil 33-141 18-137	Water Soil 16-110 20-130		
OLC02.1	40-110	30-110	20-140	NA		
Other:	40-120	40-120	40-120			
Sample Number/Matrix	% Recovery	% Recovery	% Recovery	% Recovery	% Recovery	Action
SID-Source 4-1	137	OK	OK		~~Ac~~	None
Source 1-2	156	180	208			J/A

Method	Phenol-d5	2-FP	2,4,6-TBP	2-CP-d4*	Other:	
	Acid Method QC Acceptance Criteria					
OLM03.2	Water Soil 10-110 24-113	Water Soil 21-110 25-121	Water Soil 10-123 19-122	Water Soil 33-110 20-130		
OLC02.1	15-115	15-110	15-130	NA		
Other:						
Sample Number/Matrix	% Recovery	% Recovery	% Recovery	% Recovery	% Recovery	Action

* Advisory Surrogates - OLM03.2

Validator: Christine Jones

Date: 06/01/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-VIII

VIII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE - List all MS/MSD analytes that are outside method QC acceptance criteria.

Use a separate worksheet for each MS/MSD pair.

Sample # AH-06 Matrix Soil Concentration Level low

Parameter	Compound	MS %Rec	MSD %Rec	RPD	Method QC Limits		Concentration			% RSD	Action
					% Rec	RPD	Unspiked Sample	MS	MSD		
PAH	PAH	all ok	all ok	all ok	40-120	30	—	—	—	—	none

Validator: Christine Garvey Date: 06/01/01

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-IX

IX. **FIELD DUPLICATE PRECISION** - List all field duplicate analytes that are outside criteria.

Use a separate worksheet for each field duplicate pair.

Sample Number AH-06 Duplicate Sample Number DUP3 Matrix Soil

Parameter	Compound	Sample Conc. ug/kg	Sample QL		Duplicate Conc. ug/kg	Duplicate QL		RPD	QC Acceptance Criteria RPD or NA*	Action
			SQL	2xSQL		SQL	2xSQL			
PAH	Naphthalene	18.32	0.9	1.8	16.91	0.9	1.8	8%	50%	none
	Acenaphthylene	58.74			52.99			10%		
	Acenaphthene	8.62			7.73			11%		
	Fluorene	16.83			14.45			15%		
	Anthracene	93.37			78.59			17%		
	Phenanthrene	177.09			157.03			12%		
	Fluoranthene	376.06			335.13			12%		
	Pyrene	406.32			368.28			10%		
	Benzo(a)anthracene	167.23			154.97			8%		
	Chrysene	292.35			252.47			15%		

* For instances where one duplicate result is ND (or reported less than the sample QL).

Does the MS/MSD data indicate acceptable laboratory precision? (Y) N

Comments:

Sampler Name: — Contractor Name: EA Engineering Date Contacted: —

Reason for Contact and resolution obtained:

Validator: Christine Garry Date: 06/01/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-IX

IX. **FIELD DUPLICATE PRECISION** - List all field duplicate analytes that are outside criteria.

Use a separate worksheet for each field duplicate pair.

Sample Number AH-06 Duplicate Sample Number DUP3 Matrix Soil

Parameter	Compound	Sample Conc. ug/kg	Sample QL		Duplicate Conc. ug/kg	Duplicate QL		RPD	QC Acceptance Criteria RPD or NA*	Action
			SQL	2xSQL		SQL	2xSQL			
PAH	Benzo(b)fluoranthene	280.68	0.9	1.8	254.02	0.9	1.8	10%	50%	None
	Benzo(j/k)fluoranthene	270.95			244.606			10%		
	Benzo(a)pyrene	213.60			194.69			9%		
	Indeno(123-cd)pyrene	204.58			179.39			13%		
	Dibenz(ah)anthracene	43.37			39.27			10%		
	Benzo(ghi)perylene	173.03			152.79			12%		
	2-methylnaphthalene	9.24			8.24			11%		

* For instances where one duplicate result is ND (or reported less than the sample QL).

Does the MS/MSD data indicate acceptable laboratory precision? (Y) N

Comments: —

Sampler Name: — Contractor Name: EA Engineering Date Contacted: —

Reason for Contact and resolution obtained: —

Validator: Christine Gorny Date: 02/01/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XI

XI. ACCURACY CHECK (Performance Evaluation Results) - List all analytes that are outside criteria.

SDG No: 04-017 CASE: ____

Y N

Are more than one-half of the PES analytes within criteria for each parameter.

PE Sample Number	Ampule Number	Parameter	Type of PES	Matrix	Analyte	Conc. %R	Region I EPA PES Scores*	Non-EPA PES Scores**	Samples Affected	Action
BE162 LCSP	—	PAH	LCS	Soil	Naphthalene	5	—	40-120	all samples except AH-28 + source t-2 AH-17, AH-45	JR
	—				Acenaphthylene	36	—			JUJ
	—				2-Methylnaphthalene	870	—			JR

* For Region I PESs indicate the Region I PES Score Report Result: Action High; Action Low; TCL MISS; TCL CONTAMINANT; TIC HIT; TIC MISS; TIC CONTAMINANT

** For Non-EPA PESs indicate the Non-EPA PES Score: PES COMPOUND MISS; PES COMPOUND CONTAMINANT; PES COMPOUND HIT (% Recovery Limits)

Date: 06/01/04

Validator: Christine Jones

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XII

XII. TARGET COMPOUND IDENTIFICATION - List the analytes that are outside the acceptance criteria.

Sample Number	Compound	MS Ions	RRT	Action
AH-17	dry wt 26.67	—	—	qual (J/R) due to dawdrunts
AH 45	dry wt 29.06	—	—	qual (J/R).
AH-03	4 PAH analytes	—	—	analyzed at dil due to high conc analyte
AH-49	3 PAH analytes	—	—	
Source 1-1	4 PAH analytes	—	—	
Source 2-1	2 PAH analytes	—	—	
Source 1-2	10 PAH analytes	—	—	
AH-29	1 PAH analyte	—	—	

Validator: Christine Jones

Date: 06/01/04

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XIII

XIII. SAMPLE QUANTITATION

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per fraction. (Note: Although Section XIII, C.1.a, requires that one calculation for each fraction in each sample be performed, the validator is only required to reproduce an example, for each fraction, of one positive detect and one sample quantitation limit calculation on this worksheet.)

Do all soil/sediment samples have % solids greater than 30%? (Y) (N)
If no, list sample numbers AH-17, AH-45

Fraction		Calculation
~~VOA~~ PAH		Acenaphthylene
Sample No.:	AH-06	$\frac{103723 \times 2002 \times 2.116}{304764 \times 2.077 \times 11.82} = 58.73$ ug/kg
Reported Compound:	Acenaphthylene	
Reported Value:	58.74 ug/kg	
Not Detected Compound:	none	RL $\frac{0.01 \times 500 \times 2.116}{11.82} = 0.90$
Reported Quantitation Limit:	0.90 ug/kg	
~~BNA~~ PAH		Phenanthrene
Sample No.:	AH-45	$\frac{606384 \times 1001 \times 4.232}{258370 \times 2.131 \times 8.87} = 525.99$ ug/kg
Reported Compound:	Phenanthrene	
Reported Value:	526.00 ug/kg	
Not Detected Compound:	none	RL $\frac{0.01 \times 500 \times 4.232}{8.87} = 2.39$ ug/kg
Reported Quantitation Limit:	2.39 ug/kg	
Pesticide/PCB		
Sample No.:		
Reported Compound:		
Reported Value:		
Not Detected Compound:		
Reported Quantitation Limit:		

Validator: Christine Garvey

Date: 06/01/04

Battelle

The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Dup3	AH-06	AH-17	AH-03
Battelle ID	S1430-P	S1432-P	S1435-P	S1438-P
Sample Type	SA	SA	SA	SA
Collection Date	03/23/04	03/23/2004	03/23/2004	03/23/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/20/2004	04/20/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	59.17	61.05	73.33	48.97
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	12.43	11.82	8.12	15.46
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	16.91 J	18.32 J	45.09 J	13.64 J
C1-Naphthalenes	13.40	15.08	37.55	11.36
C2-Naphthalenes	31.08	33.08	106.15	21.73
C3-Naphthalenes	17.89	19.61	45.92	17.91
C4-Naphthalenes	12.60	13.84	33.91	14.52
Biphenyl	8.26	9.30	18.85	8.22
Acenaphthylene	52.99 J	58.74 J	171.97 J	90.09 J
Acenaphthene	7.73	8.62	22.87 J	10.69
Dibenzofuran	10.89	12.24	26.70	12.97
Fluorene	14.45	16.83	39.43 J	30.35
C1-Fluorenes	11.85	12.08	25.74	19.00
C2-Fluorenes	21.59	21.90	57.98	33.75
C3-Fluorenes	37.41	44.07	124.57	213.84
Dibenzothiophene	11.92	13.46	35.48	17.95
C1-Dibenzothiophenes	15.95	17.93	47.33	23.01
C2-Dibenzothiophenes	18.32	22.67	55.58	31.46
C3-Dibenzothiophenes	16.67	19.97	45.13	25.89
C4-Dibenzothiophenes	10.29	11.01	21.52	12.70
Anthracene	78.59	93.37	208.38 J	275.05
Phenanthrene	157.03	177.09	497.50 J	348.94
C1-Phenanthrenes/Anthracenes	112.03	126.92	348.35	280.23
C2-Phenanthrenes/Anthracenes	121.43	133.70	330.82	255.86
C3-Phenanthrenes/Anthracenes	48.03	49.58	149.17	121.53
C4-Phenanthrenes/Anthracenes	20.52	21.08	56.20	53.52
Benzo(b)fluorene	51.91	58.93	117.15	395.82
Fluoranthene	335.13	376.06	1083.67 J	1869.80 D
Pyrene	368.78	406.32	1049.11 J	1977.37 D
C1-Fluoranthenes/Pyrenes	221.75	252.12	614.31	1222.14
C2-Fluoranthenes/Pyrenes	137.15	159.08	429.24	714.24
C3-Fluoranthenes/Pyrenes	71.27	80.01	197.51	291.02
Benzo(b)naphtho(1,2-d)thiophene	8.64	9.74	23.72	46.57
Benzo(b)naphtho(2,1-d)thiophene	33.62	38.16	81.16	217.38
Benzo(b)naphtho(2,3-d)thiophene	10.35	11.73	24.84	55.43
C1-benzo(b)naphthothiophenes	37.47	41.93	101.56	136.84
C2-benzo(b)naphthothiophenes	29.61	31.79	76.20	62.13
C3-benzo(b)naphthothiophenes	24.86	27.80	63.34	39.79
C4-benzo(b)naphthothiophenes	13.57	10.70	32.50	10.85

Analyzed By Roush, James

Not Surrogate Corrected 5/7/2004 S04-0117MS-Forensics_Master:DRAFT

5/6/2004

Battelle

The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Dup3	AH-06	AH-17	AH-03
Battelle ID	S1430-P	S1432-P	S1435-P	S1438-P
Sample Type	SA	SA	SA	SA
Collection Date	03/23/04	03/23/2004	03/23/2004	03/23/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/20/2004	04/20/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	59.17	61.05	73.33	48.97
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	12.43	11.82	8.12	15.46
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Benzo(a)anthracene	154.97	167.23	380.61 J	715.48
Chrysene	252.47	292.35	626.91 J	1644.13 D
C1-Chrysenes	112.91	124.12	307.52	508.19
C2-Chrysenes	58.97	64.94	163.32	193.76
C3-Chrysenes	34.54	36.63	87.26	97.96
C4-Chrysenes	24.64	28.36	66.15	63.71
Benzo(b)fluoranthene	254.02	280.68	641.86 J	1408.11 D
Benzo(j/k)fluoranthene	244.66	270.95	617.11 J	1100.54
Benzo(a)fluoranthene	52.49	58.17	141.77	170.62
Benzo(e)pyrene	206.29	230.03	540.16	976.19
Benzo(a)pyrene	194.69	213.60	497.20 J	792.32
Perylene	64.98	71.44	137.33	195.27
Indeno(1,2,3-cd)pyrene	179.39	204.58	462.31 J	662.89
Dibenz(a,h)anthracene	39.27	43.37	100.55 J	156.39
Benzo(g,h,i)perylene	152.79	173.03	411.55 J	516.30
2-Methylnaphthalene	8.24 J	9.24 J	21.51 J	6.97 J
1-Methynaphthalene	4.56	4.98	13.13	3.62
2,6-dimethylnaphthalene	16.20	16.53	64.12	9.56
2-Ethylnaphthalene	1.16 J	1.31 J	3.04 J	0.94 J
1-Ethylnaphthalene	0.32 J	0.40 J	0.99 J	0.27 J
1,5-Dimethylnaphthalene	1.10 J	1.15 J	3.03 J	0.71 J
2-Methylfluorene	2.72	3.03	6.55	6.81
1-Methylfluorene	3.17	3.23	7.71	3.83
1-Methylphenanthrene	16.55	18.66	50.54	39.67
4-Methyldibenzothiophene	5.43	6.26	17.14	7.32
2/3-Methyldibenzothiophene	5.00	5.87	14.73	6.88
3-Methylphenanthrene	26.54	30.26	83.70	53.72
1-Methyldibenzothiophene	1.87	2.15	5.96	2.84
2/4-Methylphenanthrene	5.00	5.87	14.73	6.88
2-Methylanthracene	12.03	14.12	30.86	61.69
9-Methylphenanthrene/1-Methylanthracene	24.45	27.20	75.94	49.30
2,7-Dimethylphenanthrene	5.62	6.11	16.32	14.58
1,7-Dimethylphenanthrene	6.73	7.21	19.22	22.34
Cadalene	2.24	2.54	4.07 J	1.59
Dehydroabietin(e)	U	U	U	U
Retene	6.29	5.76	10.06	12.08
Hopane	199.68	213.13	408.43	104.61

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Dup3	AH-06	AH-17	AH-03
Battelle ID	S1430-P	S1432-P	S1435-P	S1438-P
Sample Type	SA	SA	SA	SA
Collection Date	03/23/04	03/23/2004	03/23/2004	03/23/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/20/2004	04/20/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	59.17	61.05	73.33	48.97
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	12.43	11.82	8.12	15.46
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Surrogate Recoveries (%)				
Naphthalene-d8	68	70	82	66
Phenanthrene-d10	91	94	94	83
Chrysene-d12	83	85	85	76
5b(H)-Cholane	99	100	101	103

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Battelle

The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	REF 1-4	REF 2-1	SID Source 4-1	REF 3-2
Battelle ID	S1445-P	S1447-P	S1457-P	S1466-P
Sample Type	SA	SA	SA	SA
Collection Date	03/24/2004	03/24/2004	03/24/2004	03/25/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	42.69	56.18	11.76	57.26
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	17.58	13.22	26.66	13.08
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	10.82 J	16.73 J	29.74 J	13.96 J
C1-Naphthalenes	7.88	12.69	36.98	8.65
C2-Naphthalenes	19.42	44.17	72.96	15.87
C3-Naphthalenes	8.33	13.86	79.28	17.60
C4-Naphthalenes	5.70	8.34	45.63	11.28
Biphenyl	4.73	6.42	27.84	8.30
Acenaphthylene	13.02 J	18.30 J	172.28 J	27.11 J
Acenaphthene	2.15	3.46	24.44	5.82
Dibenzofuran	4.44	7.02	30.56	9.53
Fluorene	5.97	8.62	44.35	16.22
C1-Fluorenes	4.93	7.33	44.07	13.07
C2-Fluorenes	9.33	11.84	72.35	17.56
C3-Fluorenes	11.89	16.61	185.19	31.22
Dibenzothiophene	3.52	4.96	57.81	11.81
C1-Dibenzothiophenes	5.19	8.12	85.41	13.41
C2-Dibenzothiophenes	6.66	10.14	130.85	13.76
C3-Dibenzothiophenes	5.95	8.66	148.67	9.91
C4-Dibenzothiophenes	3.36	4.44	113.78	5.11
Anthracene	18.21	24.55	211.64	52.05
Phenanthrene	34.40	43.53	916.28	164.01
C1-Phenanthrenes/Anthracenes	30.16	42.23	507.82	98.13
C2-Phenanthrenes/Anthracenes	98.66	94.80	451.29	79.62
C3-Phenanthrenes/Anthracenes	14.20	20.89	189.91	31.51
C4-Phenanthrenes/Anthracenes	6.23	9.19	84.43	12.87
Benzo(b)fluorene	8.73	11.14	35.04	40.84
Fluoranthene	90.43	115.97	1202.09	406.54
Pyrene	78.35	104.41	1089.54	345.26
C1-Fluoranthenes/Pyrenes	46.97	67.18	539.86	174.20
C2-Fluoranthenes/Pyrenes	33.00	48.56	519.86	90.15
C3-Fluoranthenes/Pyrenes	20.88	33.58	257.63	46.72
Benzo(b)naphtho(1,2-d)thiophene	1.98	2.64	26.76	6.75
Benzo(b)naphtho(2,1-d)thiophene	6.67	8.94	109.54	24.49
Benzo(b)naphtho(2,3-d)thiophene	2.38	3.02	26.55	10.25
C1-benzo(b)naphthothiophenes	11.88	17.20	248.92	26.27
C2-benzo(b)naphthothiophenes	11.67	17.20	433.26	18.23
C3-benzo(b)naphthothiophenes	9.93	15.11	550.27	13.57
C4-benzo(b)naphthothiophenes	4.76	8.45	363.24	5.05

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Battelle

The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	REF 1-4		REF 2-1		SID Source 4-1		REF 3-2	
Battelle ID	S1445-P		S1447-P		S1457-P		S1466-P	
Sample Type	SA		SA		SA		SA	
Collection Date	03/24/2004		03/24/2004		03/24/2004		03/25/2004	
Extraction Date	04/06/2004		04/06/2004		04/06/2004		04/06/2004	
Analysis Date	04/21/2004		04/21/2004		04/21/2004		04/21/2004	
Analytical Instrument	MS		MS		MS		MS	
% Moisture	42.69		56.18		11.76		57.26	
% Lipid	NA		NA		NA		NA	
Matrix	SEDIMENT		SEDIMENT		SEDIMENT		SEDIMENT	
Sample Size	17.58		13.22		26.66		13.08	
Size Unit-Basis	G_DRY		G_DRY		G_DRY		G_DRY	
Units	UG/KG_DRY		UG/KG_DRY		UG/KG_DRY		UG/KG_DRY	
Benzo(a)anthracene	36.82		48.84		321.70		175.29	
Chrysene	48.48		64.66		636.01		188.13	
C1-Chrysenes	28.06		43.61		338.06		80.72	
C2-Chrysenes	18.15		31.52		239.15		41.32	
C3-Chrysenes	13.96		21.33		213.23		22.26	
C4-Chrysenes	10.51		17.98		154.86		15.88	
Benzo(b)fluoranthene	68.74		92.88		494.83		203.99	
Benzo(j/k)fluoranthene	58.71		80.25		464.01		202.15	
Benzo(a)fluoranthene	14.47		20.03		111.71		47.91	
Benzo(e)pyrene	53.98		75.13		454.31		158.68	
Benzo(a)pyrene	54.75		74.11		369.75		206.95	
Perylene	16.52		26.66		77.96		61.01	
Indeno(1,2,3-cd)pyrene	61.45		79.62		362.83		186.49	
Dibenz(a,h)anthracene	11.73		15.10		83.98		36.27	
Benzo(g,h,i)perylene	52.46		67.10		357.35		148.83	
2-Methylnaphthalene	5.07	J	8.16	J	15.30	J	5.42	J
1-Methynaphthalene	2.25		3.70		18.61		2.99	
2,6-dimethylnaphthalene	11.68		31.57		10.82		4.60	
2-Ethylnaphthalene	0.73		1.21		2.07	J	0.87	
1-Ethylnaphthalene	0.19	J	0.35	J		U	0.29	J
1,5-Dimethylnaphthalene	0.49	J	0.85		3.11	J	0.73	J
2-Methylfluorene	0.99		1.43		8.37	J	3.50	
1-Methylfluorene	1.45		2.27		9.00	J	3.15	
1-Methylphenanthrene	4.10		6.16		79.36		14.65	
4-Methyldibenzothiophene	1.94		3.01		27.53		4.32	
2/3-Methyldibenzothiophene	1.69		2.61		23.04		4.30	
3-Methylphenanthrene	6.84		10.60		127.21		23.33	
1-Methyldibenzothiophene	0.52	J	0.80		17.31		1.65	
2/4-Methylphenanthrene	1.69		2.61		23.04		4.30	
2-Methylanthracene	3.12		4.00		31.02		9.52	
9-Methylphenanthrene/1-Methylanthracene	6.66		9.40		105.34		20.41	
2,7-Dimethylphenanthrene	1.56		2.42		24.72		4.53	
1,7-Dimethylphenanthrene	2.97		3.61		30.33		6.50	
Cadalene	0.54	J	0.75	J		U	0.98	
Dehydroabietin(e)		U		U		U		U
Retene	3.22		6.02		8.10	J	5.57	
Hopane	88.35		108.80		1048.97		97.02	

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	REF 1-4	REF 2-1	SID Source 4-1	REF 3-2
Battelle ID	S1445-P	S1447-P	S1457-P	S1466-P
Sample Type	SA	SA	SA	SA
Collection Date	03/24/2004	03/24/2004	03/24/2004	03/25/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	42.69	56.18	11.76	57.26
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	17.58	13.22	26.66	13.08
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Surrogate Recoveries (%)				
Naphthalene-d8	61	55	137 N	59
Phenanthrene-d10	83	75	101	86
Chrysene-d12	76	66	111	80
5b(H)-Cholane	94	95	102	93

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Battelle

The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-28	AH-49	AH-45	Source 3-1
Battelle ID	S1468-P	S1471-P	S1474-P	S1481-P
Sample Type	SA	SA	SA	SA
Collection Date	03/25/2004	03/25/2004	03/26/2004	03/26/2004
Extraction Date	04/07/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	30.80	22.42	70.94	8.95
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	21.08	23.62	8.87	27.28
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	67.83	78.46 J	30.46 J	13.46 J
C1-Naphthalenes	84.41	115.82	27.69	6.43
C2-Naphthalenes	162.24	225.79	75.11	10.42
C3-Naphthalenes	157.35	201.81	38.54	10.61
C4-Naphthalenes	82.25	92.61	26.51	10.76
Biphenyl	25.20	30.52	15.23	3.41
Acenaphthylene	785.17	791.31 J	143.74 J	11.28 J
Acenaphthene	56.46	70.16	36.64 J	4.93
Dibenzofuran	80.77	114.81	27.07	7.95
Fluorene	145.02	230.36	43.69 J	5.49
C1-Fluorenes	124.93	165.82	27.85	2.90
C2-Fluorenes	215.13	246.86	49.54	6.73
C3-Fluorenes	533.15	587.47	108.61	15.42
Dibenzothiophene	216.67	308.96	37.14	5.19
C1-Dibenzothiophenes	274.57	347.86	47.22	7.47
C2-Dibenzothiophenes	240.35	277.01	48.09	14.02
C3-Dibenzothiophenes	122.21	132.34	35.29	16.33
C4-Dibenzothiophenes	40.18	43.84	17.66	13.43
Anthracene	792.27	814.22	197.53 J	20.83
Phenanthrene	3316.29	4493.70 D	526.04 J	92.64
C1-Phenanthrenes/Anthracenes	2260.21	2728.34	334.03	37.05
C2-Phenanthrenes/Anthracenes	1495.10	1702.70	338.10	35.51
C3-Phenanthrenes/Anthracenes	605.31	660.03	109.85	25.55
C4-Phenanthrenes/Anthracenes	167.18	188.86	39.45	16.17
Benzo(b)fluorene	192.21	210.07	106.37	8.84
Fluoranthene	4081.99	4872.56 D	1018.60 J	136.26
Pyrene	4143.47	4721.00 D	933.27 J	106.45
C1-Fluoranthenes/Pyrenes	2572.09	2791.52	544.67	50.67
C2-Fluoranthenes/Pyrenes	1950.53	2032.57	382.74	36.88
C3-Fluoranthenes/Pyrenes	752.61	770.07	164.54	22.55
Benzo(b)naphtho(1,2-d)thiophene	88.41	98.78	21.33	2.41
Benzo(b)naphtho(2,1-d)thiophene	364.48	419.05	81.01	11.74
Benzo(b)naphtho(2,3-d)thiophene	105.26	125.27	22.74	3.19
C1-benzo(b)naphthothiophenes	373.13	418.38	86.58	13.01
C2-benzo(b)naphthothiophenes	229.74	244.75	63.28	16.58
C3-benzo(b)naphthothiophenes	144.69	153.92	48.76	20.29
C4-benzo(b)naphthothiophenes	68.68	67.25	23.46	15.14

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Battelle

The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-28	AH-49	AH-45	Source 3-1
Battelle ID	S1468-P	S1471-P	S1474-P	S1481-P
Sample Type	SA	SA	SA	SA
Collection Date	03/25/2004	03/25/2004	03/26/2004	03/26/2004
Extraction Date	04/07/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	30.80	22.42	70.94	8.95
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	21.08	23.62	8.87	27.28
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Benzo(a)anthracene	1339.47	1502.30	362.69 J	58.96
Chrysene	2227.35	2416.21	583.33 J	67.89
C1-Chrysenes	1307.45	1402.83	270.47	27.85
C2-Chrysenes	634.67	661.03	137.21	17.25
C3-Chrysenes	239.56	257.01	69.80	17.18
C4-Chrysenes	115.96	111.01	46.84	11.38
Benzo(b)fluoranthene	1745.90	1724.54	592.35 J	66.93
Benzo(j/k)fluoranthene	1725.11	1799.07	532.37 J	62.47
Benzo(a)fluoranthene	460.61	448.56	126.95	12.23
Benzo(e)pyrene	1596.66	1580.66	471.59	53.66
Benzo(a)pyrene	1623.42	1654.23	452.96 J	42.38
Perylene	334.32	340.04	122.50	13.94
Indeno(1,2,3-cd)pyrene	1361.12	1349.72	422.35 J	51.87
Dibenz(a,h)anthracene	317.72	331.17	94.77 J	13.09
Benzo(g,h,i)perylene	1243.88	1241.54	359.63 J	44.71
2-Methylnaphthalene	39.74	51.56 J	15.76 J	4.15 J
1-Methynaphthalene	42.83	61.89	10.50	2.26
2,6-dimethylnaphthalene	31.72	44.15	41.05	2.73
2-Ethylnaphthalene	5.74	6.19	2.74	0.47 J
1-Ethylnaphthalene	2.99 J	3.50 J	0.91 J	0.20 J
1,5-Dimethylnaphthalene	8.60	11.93	2.45	0.49 J
2-Methylfluorene	38.62	55.06	6.35	0.75 J
1-Methylfluorene	33.38	45.67	7.22	0.64 J
1-Methylphenanthrene	358.71	440.04	49.76	6.80
4-Methyldibenzothiophene	97.88	124.46	17.25	2.71
2/3-Methyldibenzothiophene	93.09	120.93	14.37	2.41
3-Methylphenanthrene	601.11	748.55	82.23	8.66
1-Methyldibenzothiophene	29.61	35.34	5.69	1.25
2/4-Methylphenanthrene	93.09	120.93	14.37	2.41
2-Methylanthracene	126.82	134.48	28.31	2.87
9-Methylphenanthrene/1-Methylanthracene	462.85	530.41	70.18	7.40
2,7-Dimethylphenanthrene	108.63	127.60	15.58	2.12
1,7-Dimethylphenanthrene	112.99	131.27	17.66	4.91
Cadalene	1.74 J	2.14 J	4.51	1.99
Dehydroabietin(e)	U	U	U	U
Retene	10.32	14.05	9.32	26.00
Hopane	178.63	198.44	326.91	59.73

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5/7/2004

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Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-28	AH-49	AH-45	Source 3-1
Battelle ID	S1468-P	S1471-P	S1474-P	S1481-P
Sample Type	SA	SA	SA	SA
Collection Date	03/25/2004	03/25/2004	03/26/2004	03/26/2004
Extraction Date	04/07/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/21/2004	04/21/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	30.80	22.42	70.94	8.95
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	21.08	23.62	8.87	27.28
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Surrogate Recoveries (%)				
Naphthalene-d8	99	94	60	79
Phenanthrene-d10	108	98	79	92
Chrysene-d12	101	93	73	84
5b(H)-Cholane	111	112	95	99

Calculated

Battelle

The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 3-2	Source 1-1	Source 2-1	Source 1-2
Battelle ID	S1482-P	S1483-P	S1484-P	S1485-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/2004	03/26/2004	03/26/2004	03/26/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/22/2004	04/22/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	12.54	10.53	9.36	16.63
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	26.38	26.91	18.42	25.39
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	163.29 J	18.95 J	3366.92 J	121.50 J
C1-Naphthalenes	164.09	11.13	13521.05 D	50.08
C2-Naphthalenes	143.06	18.30	27106.04 D	74.17
C3-Naphthalenes	70.53	16.09	23552.06	60.98
C4-Naphthalenes	40.17	15.01	11451.07	66.36
Biphenyl	140.29	4.61	950.42	28.79
Acenaphthylene	26.26 J	159.35 J	U R	963.01 J
Acenaphthene	64.95	12.26	440.58	47.19 J
Dibenzofuran	306.41	20.84	536.80	97.72
Fluorene	66.46	42.99	677.93	144.77 J
C1-Fluorenes	10.06	13.39	1529.79	52.62
C2-Fluorenes	23.65	30.33	2184.03	117.84
C3-Fluorenes	46.70	270.32	1592.49	696.03
Dibenzothiophene	18.56	16.27	335.90	44.19
C1-Dibenzothiophenes	25.85	21.54	769.50	62.36
C2-Dibenzothiophenes	39.66	27.39	726.10	105.15
C3-Dibenzothiophenes	45.73	21.03	449.43	114.26
C4-Dibenzothiophenes	56.66	11.39	194.89	69.13
Anthracene	66.01	529.63	222.68	1885.32 D J
Phenanthrene	235.38	363.61	1563.07	959.02 J
C1-Phenanthrenes/Anthracenes	103.02	259.41	3132.17	740.27
C2-Phenanthrenes/Anthracenes	93.89	224.69	3349.50	848.09
C3-Phenanthrenes/Anthracenes	76.67	114.16	1782.96	632.53
C4-Phenanthrenes/Anthracenes	57.00	48.39	674.20	328.53
Benzo(b)fluorene	29.36	54.22	62.90	309.99
Fluoranthene	329.37	2548.92 D	461.79	6958.00 D J
Pyrene	271.02	2131.25 D	491.82	8016.78 D J
C1-Fluoranthenes/Pyrenes	148.85	859.07	489.61	4961.26
C2-Fluoranthenes/Pyrenes	118.30	935.70	363.01	3347.51
C3-Fluoranthenes/Pyrenes	68.74	420.92	241.05	2626.94
Benzo(b)naphtho(1,2-d)thiophene	8.21	41.90	12.78	191.45
Benzo(b)naphtho(2,1-d)thiophene	38.25	170.51	59.22	729.54
Benzo(b)naphtho(2,3-d)thiophene	10.95	40.71	20.39	198.63
C1-benzo(b)naphthothiophenes	42.78	126.75	64.24	769.63
C2-benzo(b)naphthothiophenes	47.33	54.36	50.49	360.60
C3-benzo(b)naphthothiophenes	52.75	31.63	40.17	246.61
C4-benzo(b)naphthothiophenes	27.84	5.38	20.44	60.32

Analyzed By Roush, James

Not Surrogate Corrected

5/7/2004

S04-0117MS-Forensics_Master:DRAFT

Battelle

The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 3-2	Source 1-1	Source 2-1	Source 1-2
Battelle ID	S1482-P	S1483-P	S1484-P	S1485-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/2004	03/26/2004	03/26/2004	03/26/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/21/2004	04/21/2004	04/22/2004	04/22/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	12.54	10.53	9.36	16.63
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	26.38	26.91	18.42	25.39
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Benzo(a)anthracene	186.42	770.25	314.01	3812.16 ~~D~~ J
Chrysene	213.61	1297.64 ~~D~~	338.46	6548.95 ~~D~~ J
C1-Chrysenes	95.74	406.81	167.63	2606.47
C2-Chrysenes	58.00	158.53	106.32	1104.16
C3-Chrysenes	45.77	111.86	81.00	798.23
C4-Chrysenes	25.17	74.73	37.42	532.93
Benzo(b)fluoranthene	261.65	1020.86 ~~D~~	382.86	7235.67 D J
Benzo(j/k)fluoranthene	213.57	985.73	347.37	6221.25 D J
Benzo(a)fluoranthene	44.43	109.55	77.21	768.56
Benzo(e)pyrene	200.56	709.62	326.28	4431.30 D
Benzo(a)pyrene	170.42	318.34	328.14	2338.54 ~~D~~ J
Perylene	56.16	107.47	92.30	782.42
Indeno(1,2,3-cd)pyrene	180.88	435.21	307.27	2707.70 D J
Dibenz(a,h)anthracene	46.30	116.24	91.54	824.90 J
Benzo(g,h,i)perylene	154.26	300.82	295.21	1904.12 D J
2-Methylnaphthalene	99.56 J	11.17 J	9428.33 ~~D~~ J	50.00 J
1-Methynaphthalene	63.67	5.08	4005.44 D	20.91
2,6-dimethylnaphthalene	40.75	4.53	8219.92 D	19.11
2-Ethylnaphthalene	6.99	0.82	1107.97 D	4.09
1-Ethylnaphthalene	1.64	0.38 J	351.46 D	1.76
1,5-Dimethylnaphthalene	5.70	0.70 J	1030.33 D	2.40
2-Methylfluorene	2.94	3.96	343.11	12.86
1-Methylfluorene	2.94	3.54	576.95	12.95
1-Methylphenanthrene	19.12	58.32	408.68	131.91
4-Methyldibenzothiophene	10.79	7.61	324.75	19.39
2/3-Methyldibenzothiophene	7.78	5.72	266.36	18.38
3-Methylphenanthrene	23.49	35.72	893.42	75.42
1-Methyldibenzothiophene	3.78	2.27	91.52	5.53
2/4-Methylphenanthrene	7.78	5.72	266.36	18.38
2-Methylanthracene	8.87	54.90	152.17	227.69
9-Methylphenanthrene/1-Methylanthracene	20.30	57.19	601.43	172.53
2,7-Dimethylphenanthrene	4.60	19.45	276.06	77.74
1,7-Dimethylphenanthrene	17.13	23.24	225.72	92.55
Cadalene	5.41	1.97	148.76	5.05
Dehydroabietin(e)	24.04	U	102.67	U
Retene	127.52	17.84	182.82	136.38
Hopane	137.00	9.50	38.73	66.94

Analyzed By Roush, James
5/7/2004

Not Surrogate Corrected

S04-0117MS-Forensics_Master:DRAFT

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 3-2	Source 1-1	Source 2-1	Source 1-2	
Battelle ID	S1482-P	S1483-P	S1484-P	S1485-P	
Sample Type	SA	SA	SA	SA	
Collection Date	03/26/2004	03/26/2004	03/26/2004	03/26/2004	
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004	
Analysis Date	04/21/2004	04/21/2004	04/22/2004	04/22/2004	
Analytical Instrument	MS	MS	MS	MS	
% Moisture	12.54	10.53	9.36	16.63	
% Lipid	NA	NA	NA	NA	
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	
Sample Size	26.38	26.91	18.42	25.39	
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY	
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	
Surrogate Recoveries (%)					
Naphthalene-d8	70	73	112	156	N
Phenanthrene-d10	85	89	69	180	N
Chrysene-d12	78	90	107	208	N
5b(H)-Cholane	90	101	105	106	

Calculated

Analyzed By Roush, James
5/7/2004

Not Surrogate Corrected

S04-0117MS-Forensics_Master:DRAFT

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 2-2	AH-29	AH-26	AH-40
Battelle ID	S1486-P	S1491-P	S1505-P	S1509-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/2004	03/26/2004	03/27/2004	03/27/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/22/2004	04/22/2004	04/22/2004	04/22/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	10.63	65.24	55.90	19.95
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	18.21	10.51	13.52	24.30
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	3685.04 J	128.42 J	36.52 J	45.59 J
C1-Naphthalenes	16595.28	359.89	43.61	37.98
C2-Naphthalenes	39174.57 D	845.43	88.04	39.39
C3-Naphthalenes	37990.98	736.59	63.73	33.28
C4-Naphthalenes	18774.92	388.60	35.36	72.27
Biphenyl	932.39	39.55	13.14	9.83
Acenaphthylene	650.90 J	534.97 J	285.68 J	27.95 J
Acenaphthene	748.75	97.39	37.73	115.80
Dibenzofuran	566.80	83.66	37.46	57.28
Fluorene	983.53	136.72	74.23	89.67
C1-Fluorenes	2311.29	103.96	51.01	25.44
C2-Fluorenes	3466.46	169.45	82.82	52.27
C3-Fluorenes	2531.03	476.32	203.48	105.39
Dibenzothiophene	440.96	114.68	81.59	52.32
C1-Dibenzothiophenes	1124.55	141.61	96.72	49.67
C2-Dibenzothiophenes	1114.97	147.63	87.73	60.17
C3-Dibenzothiophenes	775.02	117.69	51.52	45.09
C4-Dibenzothiophenes	376.53	68.53	22.62	22.67
Anthracene	651.79	758.28	314.15	203.32
Phenanthrene	2766.64	1486.20	1193.18	763.05
C1-Phenanthrenes/Anthracenes	4585.52	986.45	755.53	249.62
C2-Phenanthrenes/Anthracenes	5164.25	816.38	521.04	160.18
C3-Phenanthrenes/Anthracenes	2934.56	408.55	212.72	71.92
C4-Phenanthrenes/Anthracenes	1158.59	140.81	61.34	26.14
Benzo(b)fluorene	362.48	695.17	120.13	78.31
Fluoranthene	1942.94	4751.11 B	1519.36	1100.26
Pyrene	1739.83	4322.01	1533.21	904.73
C1-Fluoranthenes/Pyrenes	1592.16	2382.02	966.84	396.41
C2-Fluoranthenes/Pyrenes	882.18	1249.43	688.93	264.45
C3-Fluoranthenes/Pyrenes	554.67	531.46	277.97	110.40
Benzo(b)naphtho(1,2-d)thiophene	42.12	106.29	34.20	17.70
Benzo(b)naphtho(2,1-d)thiophene	196.05	347.92	132.47	70.30
Benzo(b)naphtho(2,3-d)thiophene	70.76	120.73	37.78	23.13
C1-benzo(b)naphthothiophenes	191.58	315.05	138.18	63.61
C2-benzo(b)naphthothiophenes	158.25	200.98	91.24	44.50
C3-benzo(b)naphthothiophenes	117.38	141.53	65.94	40.41
C4-benzo(b)naphthothiophenes	65.51	52.16	27.73	25.02

Calculated

Analyzed By Roush, James

Not Surrogate Corrected

5/7/2004

S04-0117MS-Forensics_Master:DRAFT

Battelle

The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 2-2	AH-29	AH-26	AH-40
Battelle ID	S1486-P	S1491-P	S1505-P	S1509-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/2004	03/26/2004	03/27/2004	03/27/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/22/2004	04/22/2004	04/22/2004	04/22/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	10.63	65.24	55.90	19.95
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	18.21	10.51	13.52	24.30
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Benzo(a)anthracene	1059.88	1187.49	535.47	441.24
Chrysene	1207.94	1974.39	871.45	501.01
C1-Chrysenes	606.28	931.17	484.29	182.94
C2-Chrysenes	339.20	419.60	240.83	80.76
C3-Chrysenes	200.37	205.54	106.39	51.75
C4-Chrysenes	103.00	132.72	58.94	30.15
Benzo(b)fluoranthene	1128.68	2195.47	789.32	420.58
Benzo(j/k)fluoranthene	1029.39	2033.61	709.63	433.61
Benzo(a)fluoranthene	313.25	455.40	190.53	85.47
Benzo(e)pyrene	959.95	1617.90	660.69	321.82
Benzo(a)pyrene	988.67	1503.46	664.35	389.82
Perylene	311.56	385.48	150.63	103.75
Indeno(1,2,3-cd)pyrene	935.45	1294.80	572.98	306.66
Dibenz(a,h)anthracene	258.74	288.39	137.19	75.76
Benzo(g,h,i)perylene	875.34	1067.85	498.24	244.50
2-Methylnaphthalene	10012.10	213.46	21.20	22.22
1-Methynaphthalene	6484.68	142.23	21.37	14.94
2,6-dimethylnaphthalene	10893.68 D	269.12	27.87	8.77
2-Ethylnaphthalene	1480.82 D	32.18	3.34	2.94
1-Ethylnaphthalene	536.36 D	11.45	1.22 J	0.79 J
1,5-Dimethylnaphthalene	1533.91 D	31.46	3.87	1.79
2-Methylfluorene	457.78	26.17	14.73	8.40
1-Methylfluorene	838.01	30.67	12.99	6.90
1-Methylphenanthrene	591.19	139.28	115.64	38.52
4-Methyldibenzothiophene	455.42	146.41	35.68	17.30
2/3-Methyldibenzothiophene	378.30	43.21	30.87	15.30
3-Methylphenanthrene	1313.50	247.84	206.62	60.88
1-Methyldibenzothiophene	130.61	15.74	10.05	7.38
2/4-Methylphenanthrene	378.30	43.21	30.87	15.30
2-Methylanthracene	258.40	99.23	48.35	23.88
9-Methylphenanthrene/1-Methylanthracene	923.46	217.28	151.47	49.74
2,7-Dimethylphenanthrene	375.64	48.16	34.83	14.25
1,7-Dimethylphenanthrene	354.45	51.42	37.41	11.99
Cadalene	256.93	7.90	2.25	4.74
Dehydroabietin(e)	363.82	U	U	U
Retene	570.52	35.77	9.44	6.93
Hopane	887.67	617.01	205.02	249.46

Analyzed By Roush, James

Not Surrogate Corrected

5/7/2004

S04-0117MS-Forensics_Master:DRAFT

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 2-2	AH-29	AH-26	AH-40
Battelle ID	S1486-P	S1491-P	S1505-P	S1509-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/2004	03/26/2004	03/27/2004	03/27/2004
Extraction Date	04/06/2004	04/06/2004	04/06/2004	04/06/2004
Analysis Date	04/22/2004	04/22/2004	04/22/2004	04/22/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	10.63	65.24	55.90	19.95
% Lipid	NA	NA	NA	NA
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	18.21	10.51	13.52	24.30
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Surrogate Recoveries (%)				
Naphthalene-d8	101	87	60	85
Phenanthrene-d10	58	100	75	98
Chrysene-d12	96	97	69	91
5b(H)-Cholane	103	98	102	108

Calculated

Analyzed By Roush, James

Not Surrogate Corrected

5/7/2004

S04-0117MS-Forensics_Master:DRAFT

ENVIRONMENTAL
Data Services, Inc.

INORGANIC DATA VALIDATION REPORT
USEPA REGION I - TIER III

SDG No.:	2004-03-17
Laboratory:	Applied Marine Sciences, Inc., League City, Texas
Site:	NCBC Davisville, Allen Harbor, Site 16
Date:	June 3, 2004
Samples:	
TOC:	32/Soil/AH-08, AH-11, AH-DUP01, DUP03, AH-06, AH-17, AH-03, REF1-1, REF1-2, REF1-4, REF2-1, REF2-3, REF2-5, AH-23, REF3-4, REF3-1, AH-28, AH-49, DUP07, AH-45, AH-33, AH-35, SOURCE 3-1, AH-32, AH-29, AH-47, AH-51, AH-26, AH-42, AH-40, CORE1-TOP, CORE1-BOT

A Tier III validation was performed on the inorganic analytical data for thirty-two soil samples collected by EA Engineering, Science, & Technology, Inc. at Allen Harbor, Site 16, NCBC Davisville. The samples were analyzed under USEPA SW-846 Method 9060 for total organic carbon (TOC). The data were evaluated as a Tier III level in accordance with the "Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses" dated June 13, 1988, modified February 1989 and were based on the following parameters:

*	•	Overall Evaluation of Data and Potential Usability Issues.
*	•	Data Completeness.
*	•	Preservation and Technical Holding Times.
*	•	Initial and Continuing Calibration Verifications.
*	•	Blanks.
NA	•	ICP Interference Check Results.
NA	•	Matrix Spike Recoveries.
*	•	Laboratory Duplicates.
*	•	Field Duplicates.
NA	•	Laboratory Control Sample.
NA	•	Furnace AA Results.
NA	•	ICP Serial Dilution Results.
*	•	Detection Limit Results.
*	•	Sample Quantitation.

*	=	All criteria were met for this parameter.
NA	=	Not Applicable.

6B Hills Avenue · Concord, NH 03301 · Telephone: 603-226-0118 · Fax: 603-226-0128 · www.env-data.com

Overall Evaluation of Data and Potential Usability Issues

TOC:

TOC sample results were not qualified and are considered valid.

Attachments: Data Validation Worksheets
Annotated Form Is

DATA SUMMARY KEY
INORGANIC DATA VALIDATION

J = The associated numerical value is an estimated quantity.

R = The data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification. The R replaces the numerical value or sample quantitation limit.

U = The compound was analyzed for, but not detected. The associated numerical value is the sample quantitation limit or the adjusted sample quantitation limit.

UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit.

FIGURE 9

Region I

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. –

SITE NCBC Davisville Site 16

LABORATORY Applied Marine Sciences Inc League City, TX

NO. OF SAMPLES/ MATRIX 32/Soil

SDG# 2004-03-17

REVIEWER (IF NOT ESD) Env Data Services Inc

SOW# SW846

REVIEWER'S NAME Christine Gorney

DPO: ACTION _____ FYI _____

COMPLETION DATE 05/28/04

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	~~CYANIDE~~ TOC 9060
1.	HOLDING TIMES				O
2.	CALIBRATIONS				O
3.	BLANKS				O
4.	ICS				NA
5.	LCS				NA
6.	DUPLICATE ANALYSIS				O
7.	MATRIX SPIKE				NA
8.	MSA				NA
9.	SERIAL DILUTION				NA
10.	SAMPLE VERIFICATION				O
11.	OTHER QC				O
12.	OVERALL ASSESSMENT				O

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

AREAS OF CONCERN:

NOTABLE PERFORMANCE:

REGION I
Data Review Worksheets

Site Name NCBC Davisville Site 16
Reference Number —

REGION I REVIEW OF INORGANIC CONTRACT LABORATORY DATA PACKAGE

The hardcopied (laboratory name) Applied Marine Science data package received at Region I has been reviewed and the quality assurance and performance data summarized. The data review included:

Case No. —
SDG. No. 2004-03-17
No. of Samples 56

SAS No. —
Matrix Soil

Sampling Date(s) 03/22-3/27/04
Shipping Date(s) 04/05/04
Date Rec'd by Lab 04/06/04

Traffic Report Nos: AH-08, AH-11, AH-DUP01, DUP 3, AH-06, AH-17, AH-03, REF 1-4, REF 1-2, REF 1-4, REF 2-1, REF 2-3, REF 2-5, AH-23, REF 3-4, REF 3-1, AH-28, AH-49, DUP07, AH-45, AH-33, AH-35, SOURCE 3-1, AH 32, AH-29, AH-47, AH-51, AH-26, AH-42
Trip Blank No.: —
Equipment Blank No.: — AH-40, Core-1-TOP, Core-1-BOT
Field Dup Nos: AH-11/AH-DUP01, AH-06/DUP3, AH-33/DUP07

SOW No. 3080 requires that specific analytical work be done and that associated reports be provided by the laboratory to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- -Data Completeness
- -Holding Times
- -Calibrations
- -Blanks
- -ICP Interference Check Results
- -Matrix Spike Recoveries
- -Laboratory Duplicates
- -Field Duplicates
- -Lab Control Sample Results
- -Furnace AA Results
- -ICP Serial Dilution Results
- -Detection Limit Results
- -Sample Quantitation

Overall Comments: _____

Definitions and Qualifiers:

A - Acceptable data.
J - Approximate data due to quality control criteria.
R - Reject data due to quality control criteria.
U - Analyte not detected.

Reviewer: Christine Gomez Date: 05/28/04

REGION I
Data Review Worksheets

I. DATA COMPLETENESS

MISSING INFORMATION	DATE LAB CONTACTED	DATE REC'D
None		

REGION I
Data Review Worksheets

II. HOLDING TIMES

Complete table for all samples and circle the analysis date for samples not within criteria.

SAMPLE ID	DATE SAMPLED	HG DATE ANALYSIS	~~CYANIDE~~ TOC DATE ANALYSIS	OTHERS DATE ANALYSIS	pH	ACTION
AH-08	03/22/04	—	04/15/04	—	—	None
AH-11						
AH-DUP01						
DUP 3	03/23/04					
AH-06						
AH-17						
AH-03						
REF 1-1	03/24/04					
REF 1-2						
REF 1-4						
REF 2-1						
REF 2-3						
REF 2-5						
AH-23						
REF 3-4	03/25/04					

METALS - 180 DAYS FROM SAMPLE COLLECTION
MERCURY - 28 DAYS FROM SAMPLE COLLECTION
CYANIDE - 14 DAYS FROM SAMPLE COLLECTION

ACTION:

1. If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

2. If holding times are grossly exceeded, the reviewer may determine that non-detects are unusable (R).

REGION I
Data Review Worksheets

II. HOLDING TIMES

Complete table for all samples and circle the analysis date for samples not within criteria.

SAMPLE ID	DATE SAMPLED	HG DATE ANALYSIS	~~CYANIDE~~ TOC DATE ANALYSIS	OTHERS DATE ANALYSIS	pH	ACTION
REF 3-1	03/25/04	—	04/15/04	—	—	None
AH-28	↓	↓	↓	↓	↓	↓
AH-49	↓	↓	↓	↓	↓	↓
DUP07	03/26/04	↓	↓	↓	↓	↓
AH-45	↓	↓	↓	↓	↓	↓
AH-33	↓	↓	↓	↓	↓	↓
AH-35	↓	↓	↓	↓	↓	↓
SWCC 3-1	↓	↓	↓	↓	↓	↓
AH-32	↓	↓	↓	↓	↓	↓
AH-29	↓	↓	↓	↓	↓	↓
AH-47	↓	↓	↓	↓	↓	↓
AH-51	03/27/04	↓	↓	↓	↓	↓
AH-26	↓	↓	↓	↓	↓	↓
AH-42	↓	↓	↓	↓	↓	↓
AH-40	↓	↓	↓	↓	↓	↓

METALS - 180 DAYS FROM SAMPLE COLLECTION
MERCURY - 28 DAYS FROM SAMPLE COLLECTION
CYANIDE - 14 DAYS FROM SAMPLE COLLECTION

ACTION:

1. If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

2. If holding times are grossly exceeded, the reviewer may determine that non-detects are unusable (R).

REGION I
Data Review Worksheets

II. HOLDING TIMES

Complete table for all samples and circle the analysis date for samples not within criteria.

SAMPLE ID	DATE SAMPLED	HG DATE ANALYSIS	~~CYANIDE~~ TOC DATE ANALYSIS	OTHERS DATE ANALYSIS	pH	ACTION
core 1-TOP	03/27/04	—	04/15/04	—	—	none
core 1-Bot	↓	—	↓	—	—	none

METALS - 180 DAYS FROM SAMPLE COLLECTION
MERCURY - 28 DAYS FROM SAMPLE COLLECTION
CYANIDE - 14 DAYS FROM SAMPLE COLLECTION

ACTION:

1. If holding times are exceeded all positive results are estimated (J) and non-detects are estimated (UJ).

2. If holding times are grossly exceeded, the reviewer may determine that non-detects are unusable (R).

REGION I
Data Review worksheets

III A. INSTRUMENT CALIBRATION (Section 1)

1. Recovery Criteria

List the analytes which did not meet the percent recovery (%R) criteria for Initial or Continuing Calibration.

DATE	ICV/CCV#	ANALYTE	%R	ACTION	SAMPLES AFFECTED
	all acceptance criteria were met				

ACTIONS:

If any analyte does not meet the %R criteria follow the actions stated below:

For Positive Results:

	Accept	Estimate (J)	Reject (R)
Metals	90-110%R	75-89%R, 111-125%R	<75%R, >125%R
Mercury	80-120%R	65-79%R, 121-135%R	<65%R, >135%R
Cyanide	85-115%R	70-84%R, 116-130%R	<70%R, >130%R

For Non-detected Results:

	Accept	Estimate (UJ)	Reject (R)
Metals	90-125%R	75-89%R	<75%R, >125%R
Mercury	80-135%R	65-79%R	<65%R, >135%R
Cyanide	85-130%R	70-84%R	<70%R, >130%R

REGION I
Data Review Worksheets

III B. INSTRUMENT CALIBRATION (Section 2)

2. Analytical Sequence

A. Did the laboratory use the proper number of standards for calibration as described in the SOW? Yes or No

B. Were calibrations performed at the beginning of each analysis? Yes or No

C. Were calibration standards analyzed at the beginning of sample analysis and at a minimum frequency of ten percent or every two hours during analysis, whichever is more frequent? Yes or No

D. Were the correlation coefficients for the calibration curves for AA, Hg, and CN $\geq$ 0.995? Yes or No NA

E. Was a standard at 2xCRDL analyzed for all ICP analyses? Yes or No NA

If No,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below and list the samples affected.

_____

_____

_____

_____

REGION I
Data Review Worksheet

IV A. BLANK ANALYSIS RESULTS (Sections 1-3)

List the blank contamination in Sections 1 & 2 below. A separate worksheet should be used for soil and water blanks.

1. Laboratory Blanks

MATRIX: Soil

DATE	ICB/CCB#	PREP BL	ANALYTE	CONC./UNITS
	all blks	free of	contamination	

2. Equipment/Trip Blanks

DATE	EQUIP BL#	ANALYTE	CONC./UNITS

3. Frequency Requirements

A. Was a preparation blank analyzed for each matrix, for every 20 samples and for each digestion batch? Yes or No

B. Was a calibration blank run every 10 samples or every 2 hours whichever is more frequent? Yes or No

If No,

The data may be affected. Use professional judgement to determine the severity of the effect and qualify the data accordingly. Discuss any actions below, and list the samples affected.

REGION I
Data Review Worksheets

all blanks free of contam.

IV B. BLANK ANALYSIS RESULTS (Section 4)

4. Blank Actions

The Action Levels for any analyte is equal to five times the highest concentration of that element's contamination in any blank. The action level for samples which have been concentrated or diluted should be multiplied by the concentration/dilution factor. No positive sample result should be reported unless the concentration of the analyte in the sample exceeds the Action Level (AL). Specific actions are as follows:

1. When the concentration is greater than the IDL, but less than the Action Level, report the sample concentration detected with a U.

2. When the sample concentration is greater than the Action Level, report the sample concentration unqualified.

MATRIX:_____ MATRIX:_____

ELEMENT	MAX. CONC./ UNITS	AL/ UNITS	ELEMENT	MAX. CONC./ UNITS	AL/ UNITS

NOTE: Blanks analyzed during a soil case must be converted to mg/kg in order to compare them with the sample results.

$$\text{Conc. in ug/L} \times \frac{\text{Volume diluted to (200ml)}}{\text{Weight digested (1gram)}} \times \frac{1\text{L}}{1000\text{ml}} \times \frac{1000\text{gm}}{1\text{kg}} \times \frac{1\text{mg}}{1000\text{ug}} = \text{mg/kg}$$

Multiplying this result by 5 to arrive at the action level gives a final result in mg/kg which can then be compared to sample results.

REGION I
Data Review Worksheets

VII. LABORATORY DUPLICATES

List the concentrations of any analyte not meeting the criteria for duplicate precision. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evaluate precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	Sample # REF 3-4	Duplicate# dup	RPD	Action
Aluminum	200					
Antimony	60					
Arsenic	10					
Barium	200					
Beryllium	5					
Cadmium	5					
Calcium	5000					
Chromium	10					
Cobalt	50					
Copper	25					
Iron	100					
Lead	5					
Magnesium	5000					
Manganese	15					
Mercury	0.2					
Nickel	40					
Potassium	5000					
Selenium	5					
Silver	10					
Sodium	5000					
Thallium	10					
Vanadium	50					
Zinc	20					
~~Cyanide~~ TOC	10	0.01	1.89%	1.96%	3.6%	none

Laboratory Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >20% for waters and >35% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >CRDL, (2xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

VII. LABORATORY DUPLICATES

List the concentrations of any analyte not meeting the criteria for duplicate precision. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evaluate precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	Sample # AH28	Duplicate# dup	RPD	Action
Aluminum	200					
Antimony	60					
Arsenic	10					
Barium	200					
Beryllium	5					
Cadmium	5					
Calcium	5000					
Chromium	10					
Cobalt	50					
Copper	25					
Iron	100					
Lead	5					
Magnesium	5000					
Manganese	15					
Mercury	0.2					
Nickel	40					
Potassium	5000					
Selenium	5					
Silver	10					
Sodium	5000					
Thallium	10					
Vanadium	50					
Zinc	20					
~~Cyanide~~ CN	10		2.10%	1.92%	8.96	None

Laboratory Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >20% for waters and >35% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results for elements whose absolute difference is >CRDL, (2xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

VIII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evalute the precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	Sample # AH-11	Duplicate# AH-DUP01	RPD	Action
Aluminum	200					
Antimony	60					
Arsenic	10					
Barium	200					
Beryllium	5					
Cadmium	5					
Calcium	5000					
Chromium	10					
Cobalt	50					
Copper	25					
Iron	100					
Lead	5					
Magnesium	5000					
Manganese	15					
Mercury	0.2					
Nickel	40					
Potassium	5000					
Selenium	5					
Silver	10					
Sodium	5000					
Thallium	10					
Vanadium	50					
Zinc	20					
TOC ~~Cyanide~~	10	0.01	3.99%	3.80%	5%	None

Field Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >30% for waters and >50% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results and (UJ) nondetected results for elements whose absolute difference is >2xCRDL, (4xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

VIII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evalute the precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	Sample # AH-06	Duplicate# DUP3	RPD	Action
Aluminum	200					
Antimony	60					
Arsenic	10					
Barium	200					
Beryllium	5					
Cadmium	5					
Calcium	5000					
Chromium	10					
Cobalt	50					
Copper	25					
Iron	100					
Lead	5					
Magnesium	5000					
Manganese	15					
Mercury	0.2					
Nickel	40					
Potassium	5000					
Selenium	5					
Silver	10					
Sodium	5000					
Thallium	10					
Vanadium	50					
Zinc	20					
TOC ~~Cyanide~~	10	0.01	3170	3220	2%	none

Field Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >30% for waters and >50% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results and (UJ) nondetected results for elements whose absolute difference is >2xCRDL, (4xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

VIII. FIELD DUPLICATES

List the concentrations of all analytes in the field duplicate pair. For soil duplicates, calculate the CRDL in mg/kg using the sample weight, volume and percent solids data for the sample. Indicate what criteria was used to evalute the precision by circling either the RPD or CRDL for each element.

MATRIX: Soil

Element	CRDL water ug/L	CRDL soil mg/kg	Sample # AH-33	Duplicate# DUP07	RPD	Action
Aluminum	200					
Antimony	60					
Arsenic	10					
Barium	200					
Beryllium	5					
Cadmium	5					
Calcium	5000					
Chromium	10					
Cobalt	50					
Copper	25					
Iron	100					
Lead	5					
Magnesium	5000					
Manganese	15					
Mercury	0.2					
Nickel	40					
Potassium	5000					
Selenium	5					
Silver	10					
Sodium	5000					
Thallium	10					
Vanadium	50					
Zinc	20					
TOC ~~Cyanide~~	10	0.01	4.05%	3.73%	8%	None

Field Duplicate Actions should be applied to all other samples of the same matrix type.

ACTIONS:

1. Estimate (J) positive results for elements which have an RPD >30% for waters and >50% for soils.

2. If sample results are less than 5x the CRDL, estimate (J) positive results and (UJ) nondetected results for elements whose absolute difference is >2xCRDL, (4xCRDL for soils). If both samples are non-detected, the RPD is not calculated (NC).

REGION I
Data Review Worksheets

XIII. SAMPLE QUANTITATION

✓ Sample results fall within the linear range ~~for ICP~~ and within the calibrated range for all other parameters.

_____ Sample results were beyond the linear range/ calibration range of the instrument for the following samples/elements:

_____

In the space below, please show a minimum of one sample calculation per method:

~~ICP~~ TOC AH-08 $\frac{1213.96 - 2.35 \times 10}{0.0259 \times 1000 \times 100} = 4.678\ \%$

~~FURNACE~~ TOC REF 2-1 $\frac{828.89 - 2.35 \times 10}{0.029 \times 1000 \times 100} = 2.85\ \%$

~~MERCURY~~ TOC AH-35 $\frac{1289.59 - 0.83 \times 10}{0.0283 \times 1000 \times 100} = 4.55\ \%$

~~CYANIDE~~

For soil samples, the following equation may be necessary to convert raw data values (usually reported in ug/L) to actual sample concentrations (mg/kg):

The lab is required to use 1 gram sample (wet weight) to 200 ml.

Wet weight concentration =

$$\text{digest conc. in } \frac{ug}{L} \times \frac{200ml}{1\ gm} \times \frac{1L}{1000\ ml} \times \frac{1000gm}{1kg} \times \frac{1mg}{1000ug} = \frac{mg}{kg}$$

In addition the sample results are converted to dry weight using the percent solids calculations:

$$\frac{\text{Wet weight conc.}}{\%\text{solids}} \times 100 = \text{final concentration, dry weight (mg/kg)}$$

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1421
Client Sample ID: AH-08
AMS Sample ID: 19464

AMS Project Number: 2004-03-17
Date Sampled: 3/22/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.68	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSD.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1424
Client Sample ID: AH-11
AMS Sample ID: 19465

AMS Project Number: 2004-03-17
Date Sampled: 3/22/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.99	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSN

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1426
Client Sample ID: AH-DUP 01
AMS Sample ID: 19466

AMS Project Number: 2004-03-17
Date Sampled: 3/22/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.80	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1430
Client Sample ID: Dup3
AMS Sample ID: 19467

AMS Project Number: 2004-03-17
Date Sampled: N/A
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.22	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSN

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1432
Client Sample ID: AH-06
AMS Sample ID: 19468

AMS Project Number: 2004-03-17
Date Sampled: 3/23/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.17	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSR

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1435
Client Sample ID: AH-17
AMS Sample ID: 19469

AMS Project Number: 2004-03-17
Date Sampled: 3/23/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	5.25	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1438
Client Sample ID: AH-03
AMS Sample ID: 19470

AMS Project Number: 2004-03-17
Date Sampled: 3/23/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.77	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1442
Client Sample ID: REF 1-1
AMS Sample ID: 19471

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.18	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1443
Client Sample ID: REF 1-2
AMS Sample ID: 19472

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.31	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1445
Client Sample ID: REF 1-4
AMS Sample ID: 19473

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.97	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1447
Client Sample ID: REF 2-1
AMS Sample ID: 19474

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.85	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1449
Client Sample ID: REF 2-3
AMS Sample ID: 19475

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.51	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1451
Client Sample ID: REF 2-5
AMS Sample ID: 19476

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.03	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1452
Client Sample ID: AH-23
AMS Sample ID: 19477

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.73	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSL

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1464
Client Sample ID: REF 3-4
AMS Sample ID: 19478

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.89	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1467
Client Sample ID: REF 3-1
AMS Sample ID: 19479

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.86	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1468
Client Sample ID: AH-28
AMS Sample ID: 19500

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/8/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.10	%		0.01	EPA 9060	Sediment	4/15/2004
Total Organic Carbon	2	1.92	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1471
Client Sample ID: AH-49
AMS Sample ID: 19480

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.36	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSH

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1473
Client Sample ID: DUP 07
AMS Sample ID: 19481

AMS Project Number: 2004-03-17
Date Sampled: N/A
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.73	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1474
Client Sample ID: AH-45
AMS Sample ID: 19482

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.97	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSR

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1476
Client Sample ID: AH-33
AMS Sample ID: 19483

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.05	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1479
Client Sample ID: AH-35
AMS Sample ID: 19484

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.55	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1481
Client Sample ID: Source 3-1
AMS Sample ID: 19485

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.80	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1490
Client Sample ID: AH-32
AMS Sample ID: 19486

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.29	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1491
Client Sample ID: AH-29
AMS Sample ID: 19487

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	5.01	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1494
Client Sample ID: AH-47
AMS Sample ID: 19488

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.60	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSD

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1502
Client Sample ID: AH-51
AMS Sample ID: 19489

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	5.05	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1505
Client Sample ID: AH-26
AMS Sample ID: 19490

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.10	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1507
Client Sample ID: AH-42
AMS Sample ID: 19491

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.13	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSB

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1509
Client Sample ID: AH-40
AMS Sample ID: 19492

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.78	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1510
Client Sample ID: Core 1-Top
AMS Sample ID: 19493

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.27	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1511
Client Sample ID: Core 1-Bot
AMS Sample ID: 19494

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.18	%		0.01	EPA 9060	Sediment	4/15/2004
~~Total Organic Carbon~~	~~2~~	~~1.25~~	~~%~~		~~0.01~~	~~EPA 9060~~	~~Sediment~~	~~4/15/2004~~

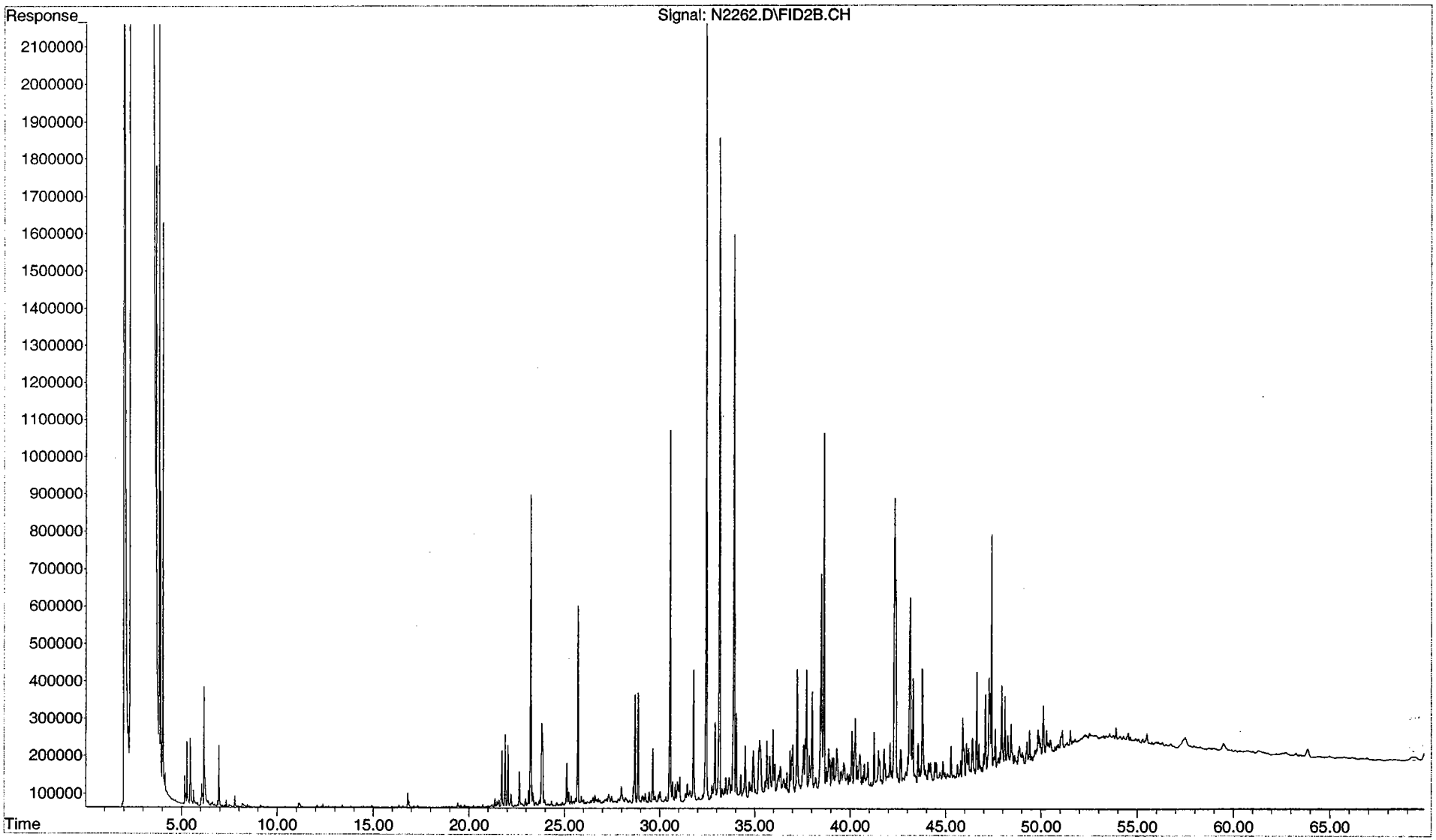
Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSM

AMS, Inc. Project Manager

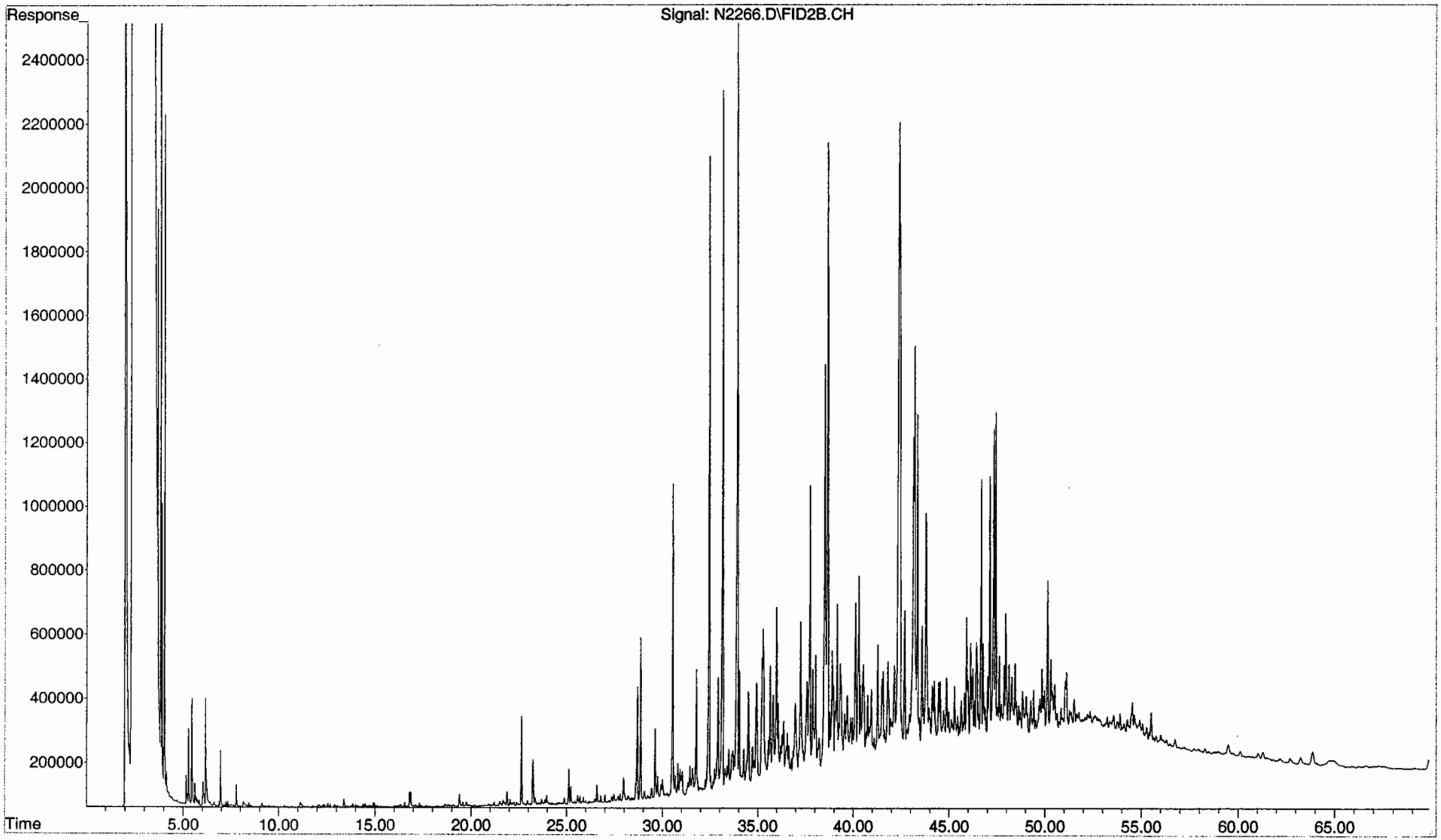
File : F:\N\DATA\SND0045.SEC\N2262.D
Operator : RR
Acquired : 4-23-2004 09:06:56 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1483-P(7)
Misc Info : Source 1-1
Vial Number: 80

Source 1-1
S1483



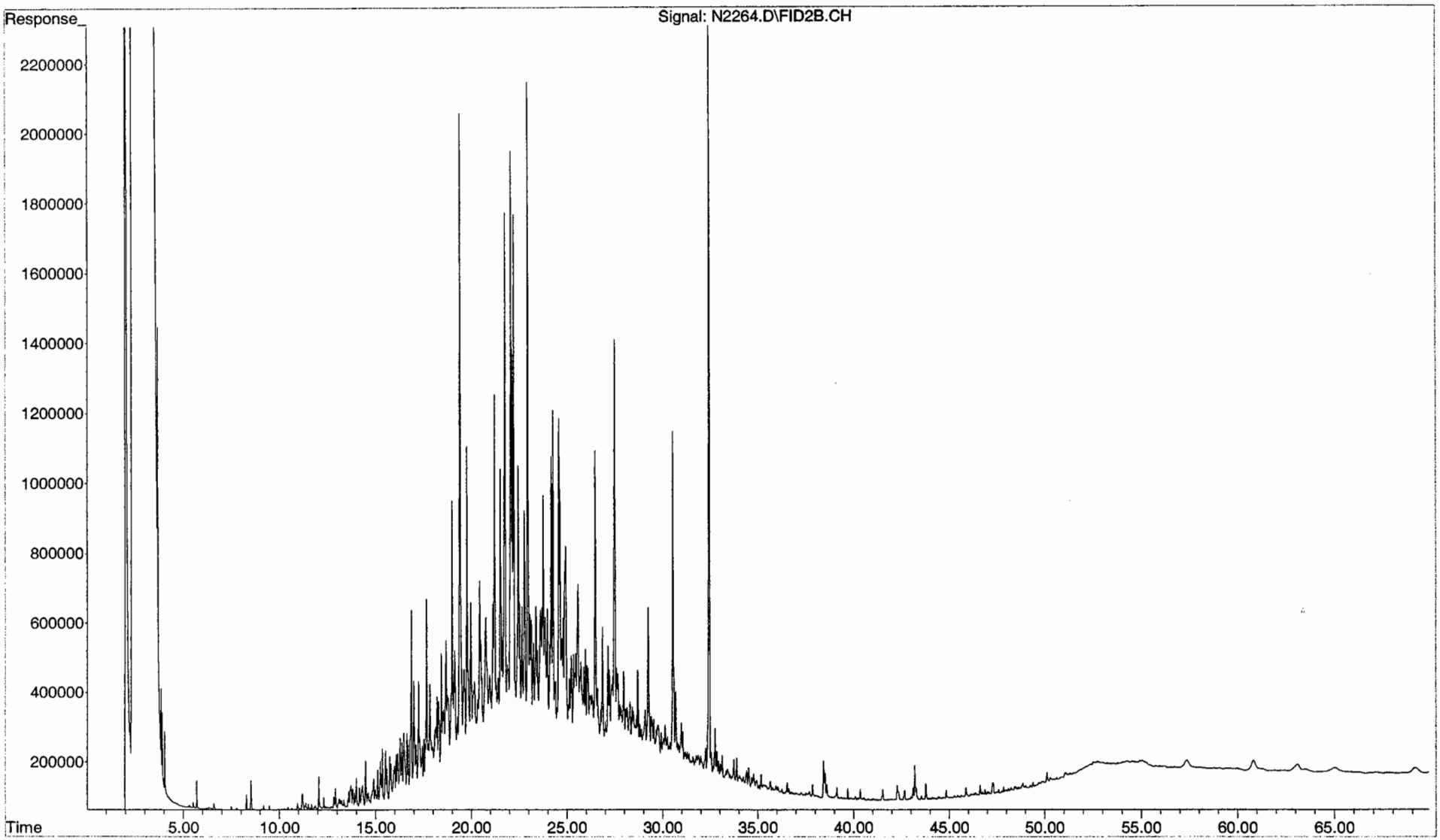
File : F:\N\DATA\SND0045.SEC\N2266.D
Operator : RR
Acquired : 23 Apr 2004 11:51 am using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1485-P(7)
Misc Info : Source 1-2
Vial Number: 82

Source 1-2
S1485



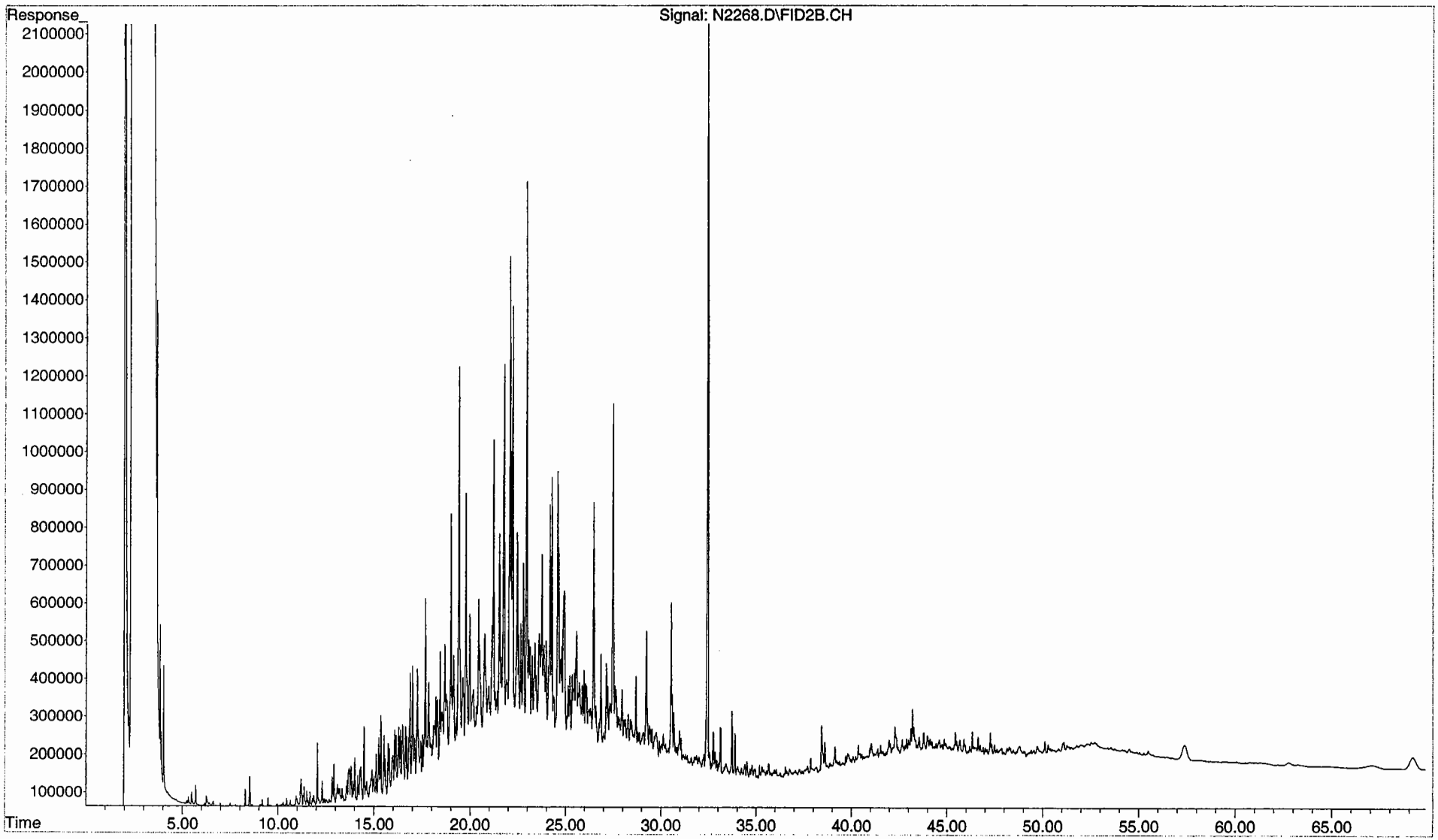
File : F:\N\DATA\SND0045.SEC\N2264.D
Operator : RR
Acquired : 23 Apr 2004 10:29 am using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1484-P(7)
Misc Info : Source 2-1
Vial Number: 81

Source 2-1
S1484



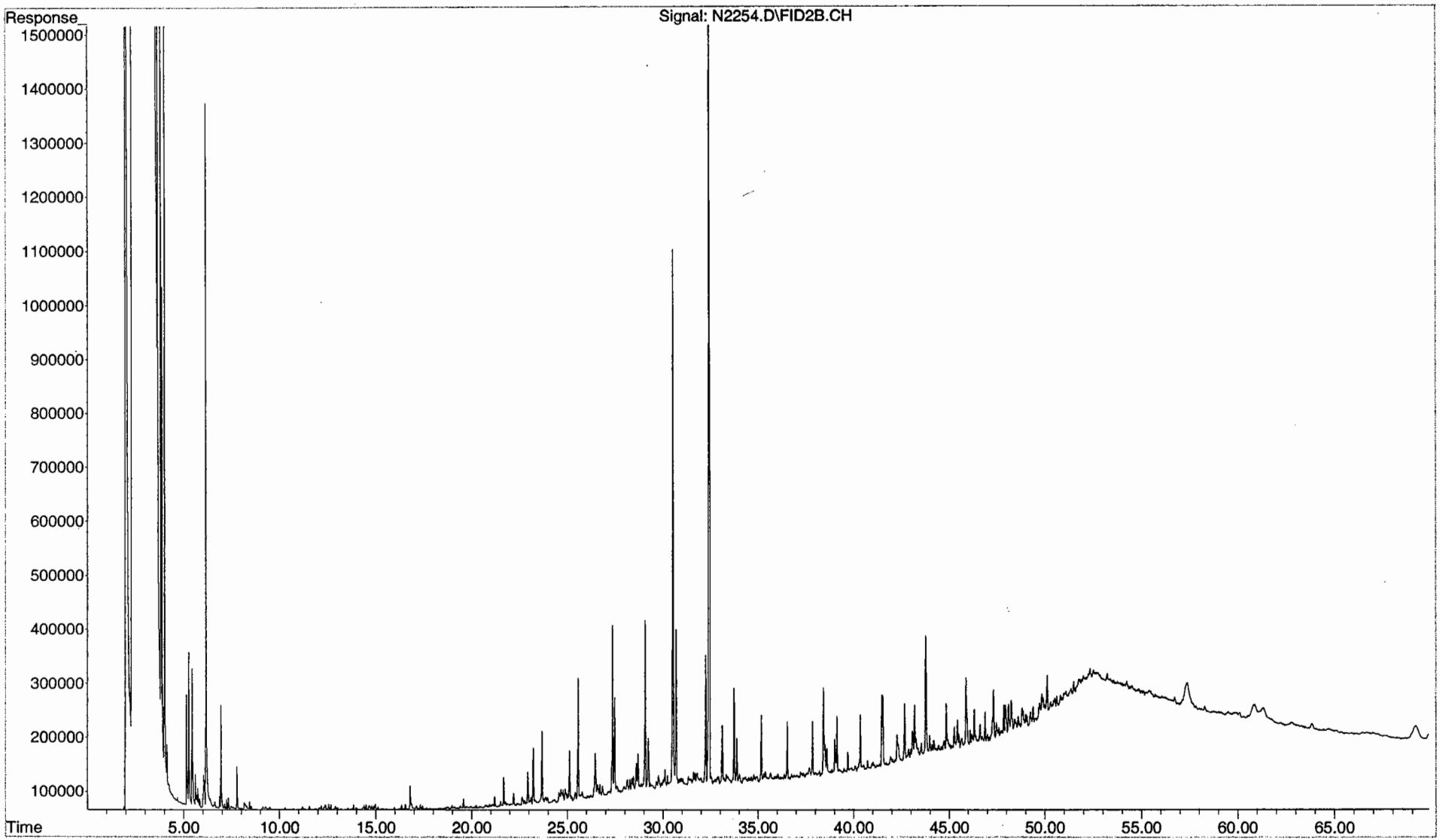
File : F:\N\DATA\SND0045.SEC\N2268.D
Operator : RR
Acquired : 4-23-2004 01:13:29 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1486-P(7)
Misc Info : Source 2-2
Vial Number: 83

Source 2-2
S1486



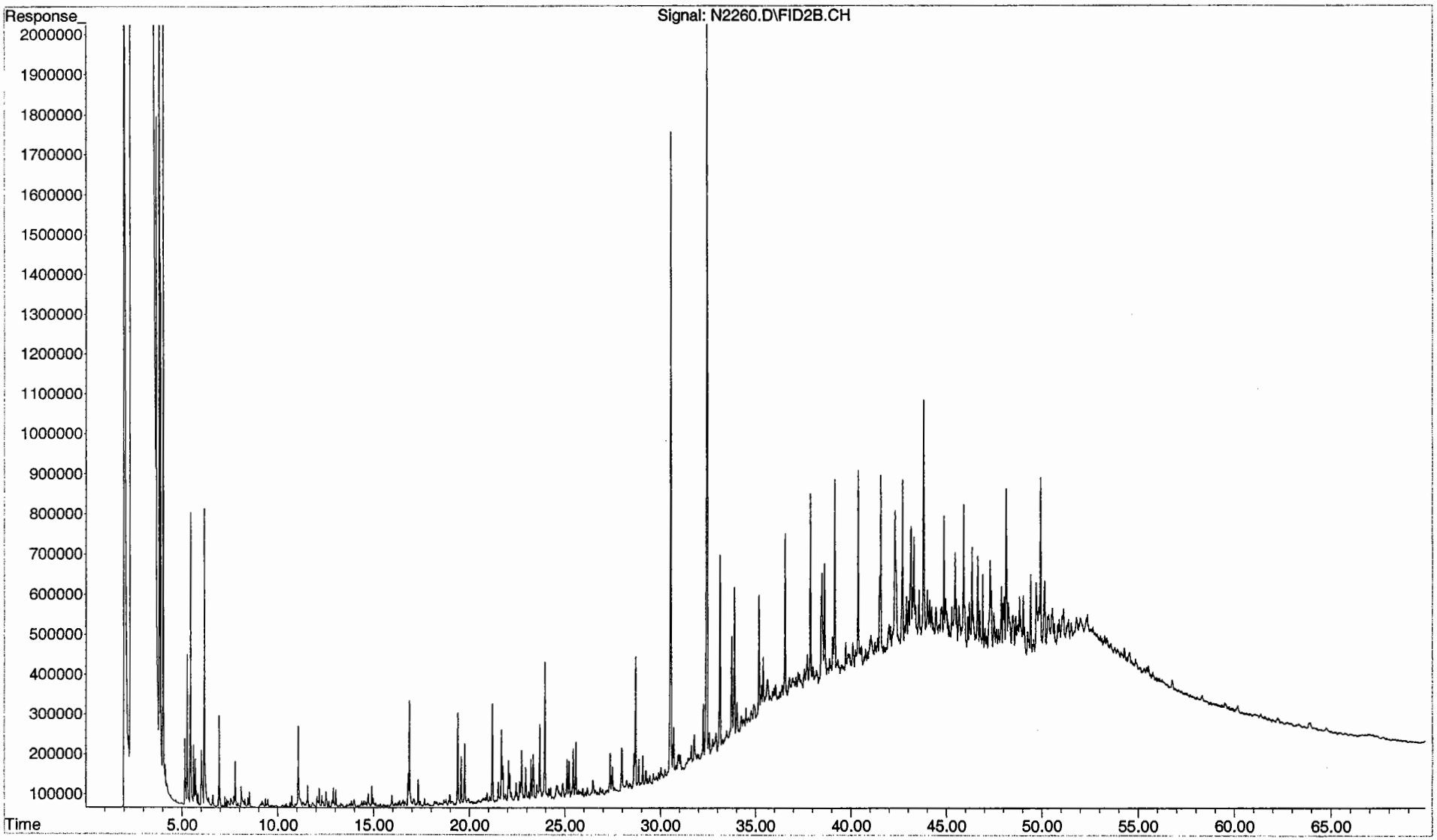
File : F:\N\DATA\SND0045.SEC\N2254.D
Operator : RR
Acquired : 4-23-2004 03:38:04 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1481-P(7)
Misc Info : Source 3-1
Vial Number: 76

Source 3-1
S1481



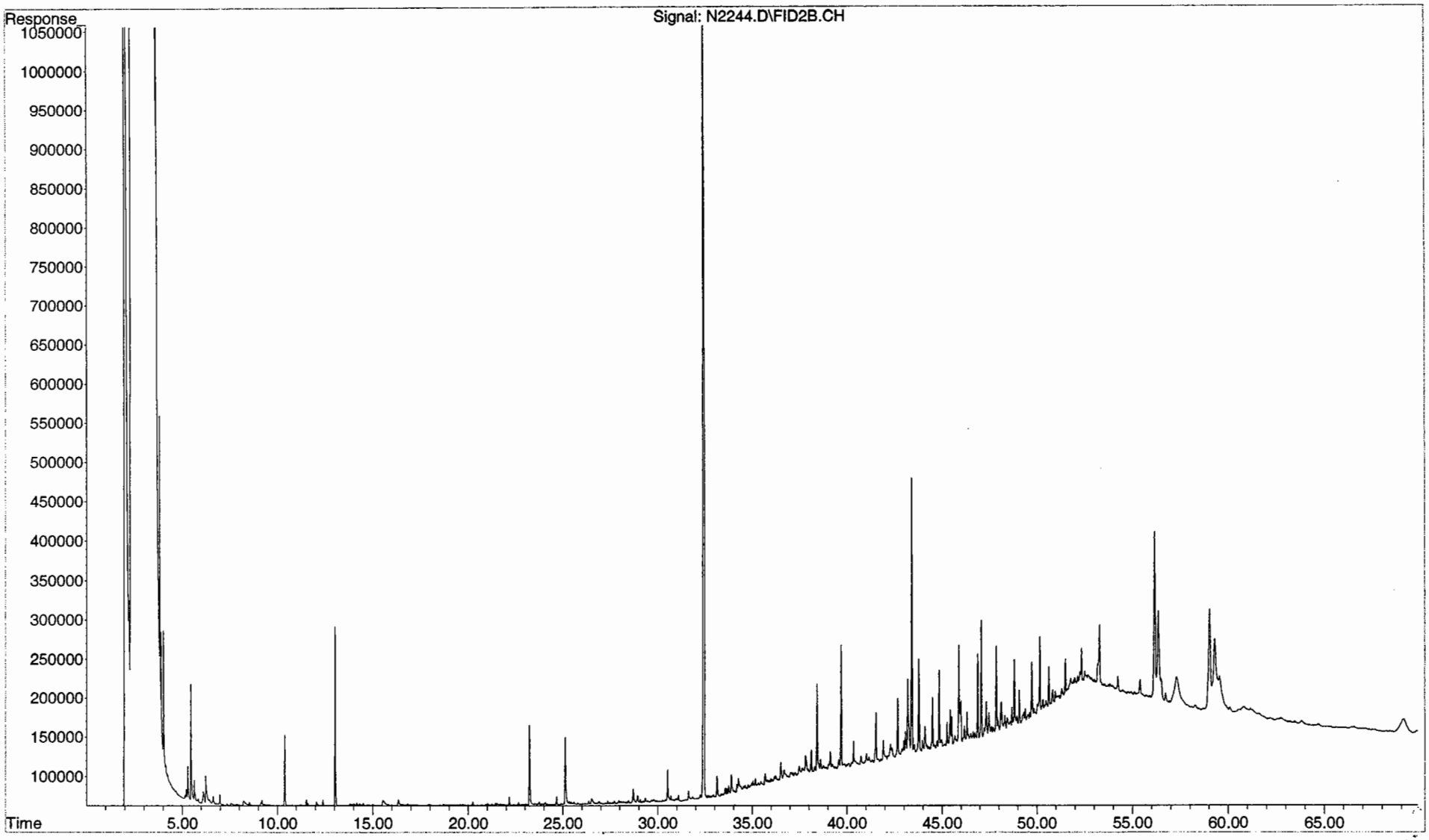
File : F:\N\DATA\SND0045.SEC\N2260.D
Operator : RR
Acquired : 4-23-2004 07:44:33 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1482-P(7)
Misc Info : Source 3-2
Vial Number: 79

Source 3-2
S1482



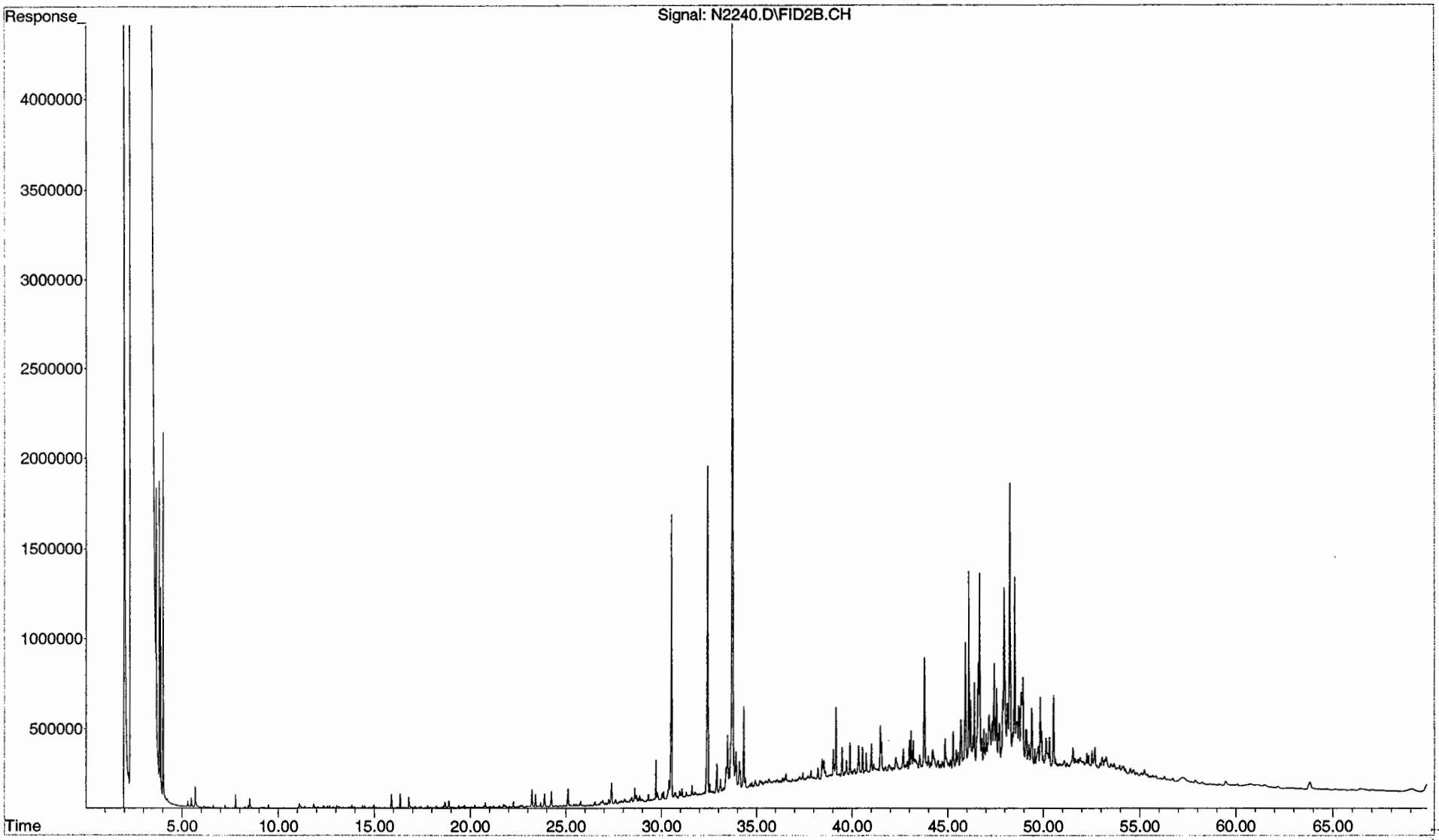
File : F:\N\DATA\SND0045.SEC\N2244.D
Operator : RR
Acquired : 4-22-2004 08:48:14 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1457-P(7)
Misc Info : SID Source 4-1
Vial Number: 71

Source 4-1
S1457



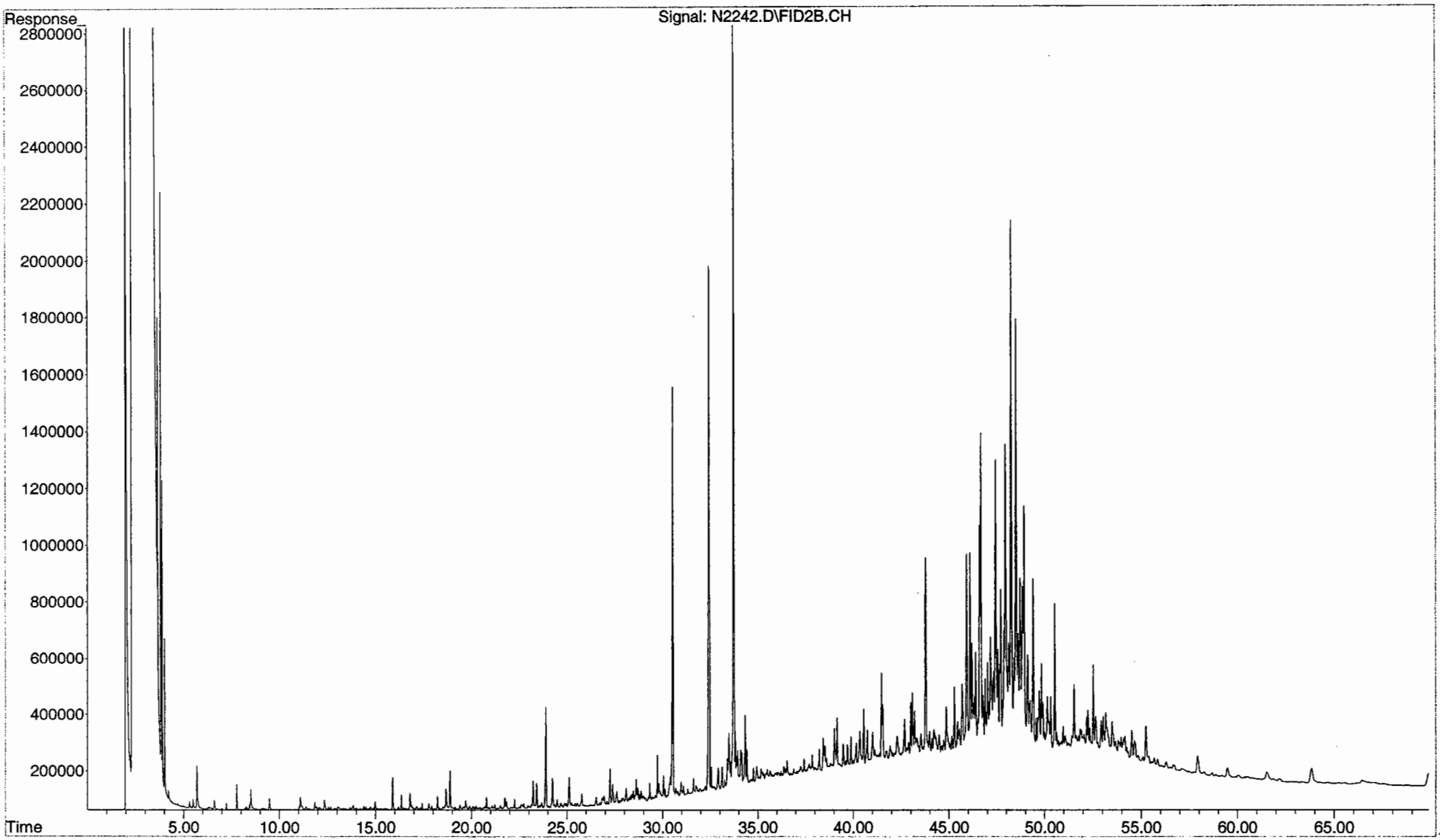
File : F:\N\DATA\SND0045.SEC\N2240.D
Operator : RR
Acquired : 4-21-2004 03:05:02 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1445-P(7)
Misc Info : REF 1-4
Vial Number: 69

REF 1-4
S1445



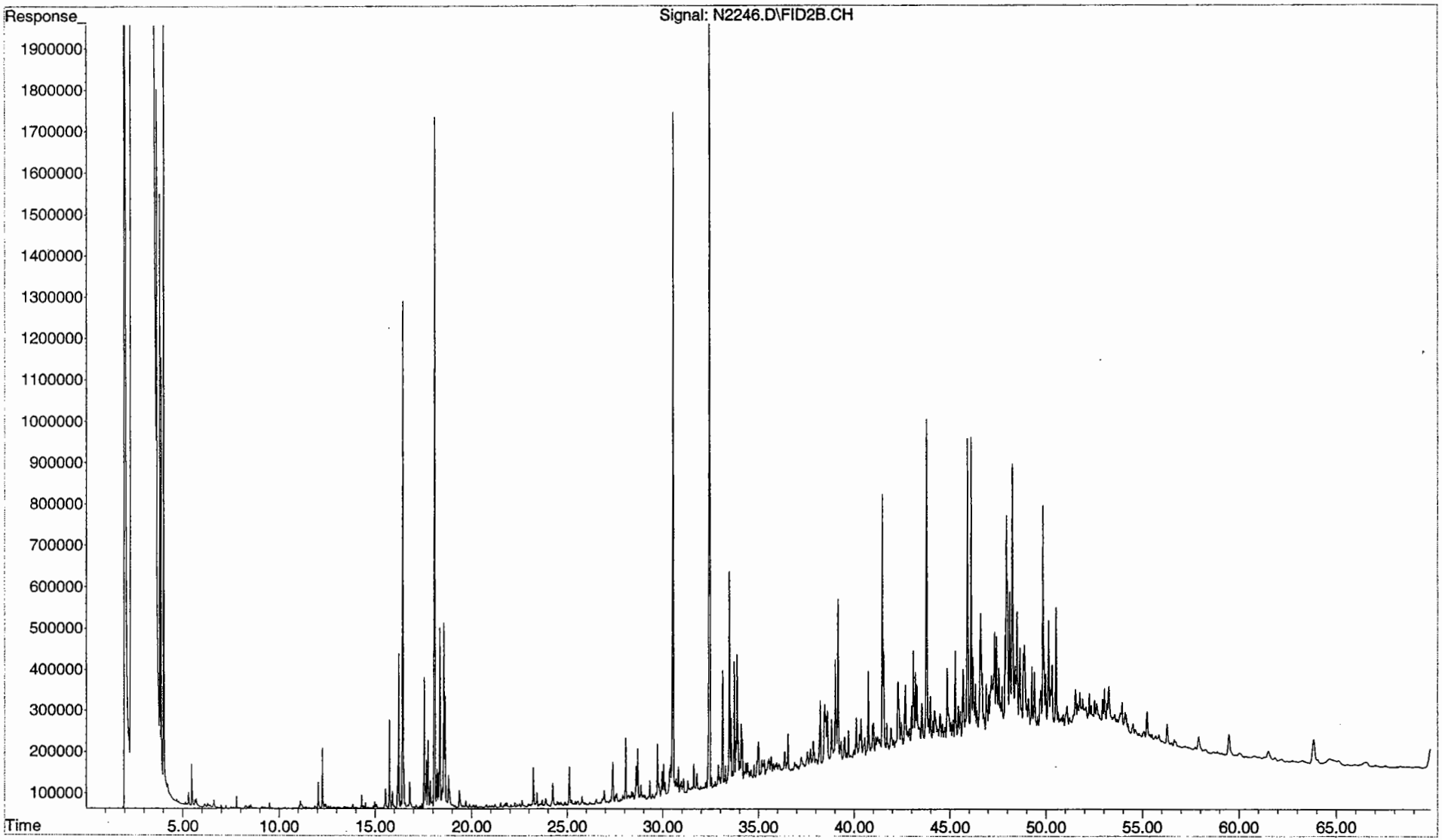
File : F:\N\DATA\SND0045.SEC\N2242.D
Operator : RR
Acquired : 4-22-2004 07:27:38 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1447-P(7)
Misc Info : REF 2-1
Vial Number: 70

REF 2-1
S1447



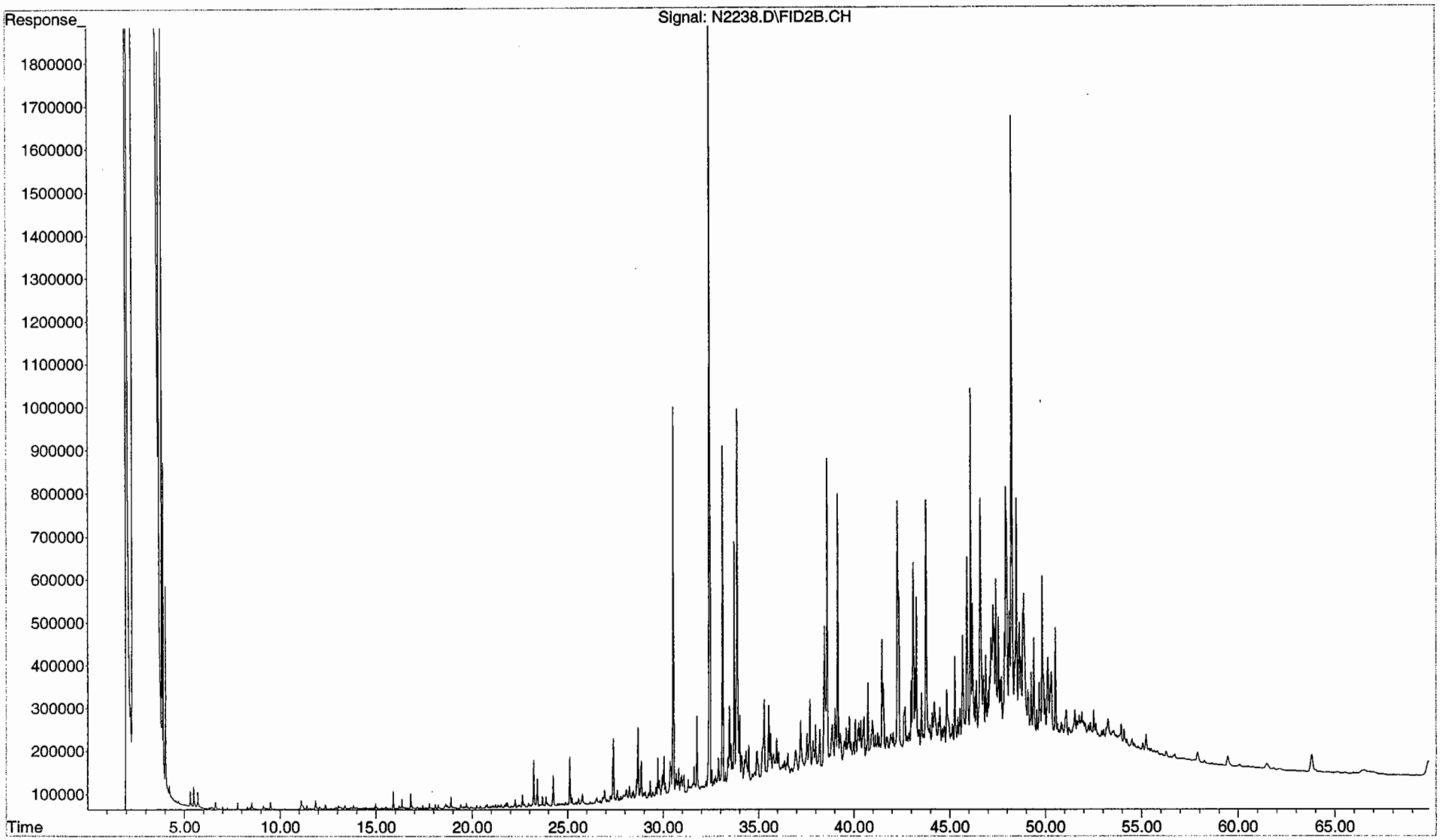
File : F:\N\DATA\SND0045.SEC\N2246.D
Operator : RR
Acquired : 22 Apr 2004 10:09 pm using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1466-P(7)
Misc Info : REF 3-2
Vial Number: 72

REF 3-2
S1466



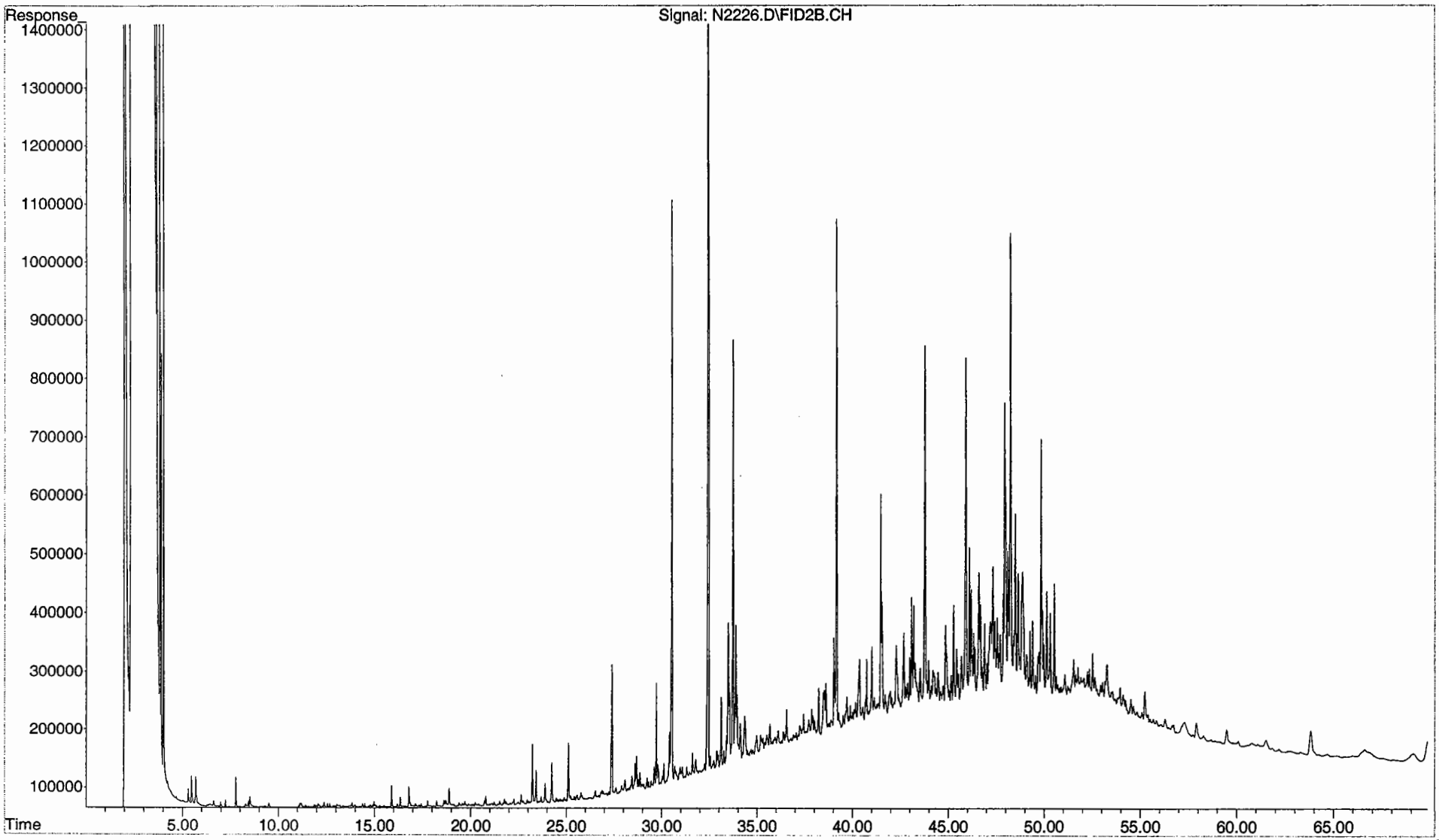
File : F:\N\DATA\SND0045.SEC\N2238.D
Operator : RR
Acquired : 4-21-2004 01:44:19 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1438-P(7)
Misc Info : AH-03
Vial Number: 68

AH-03
S1438



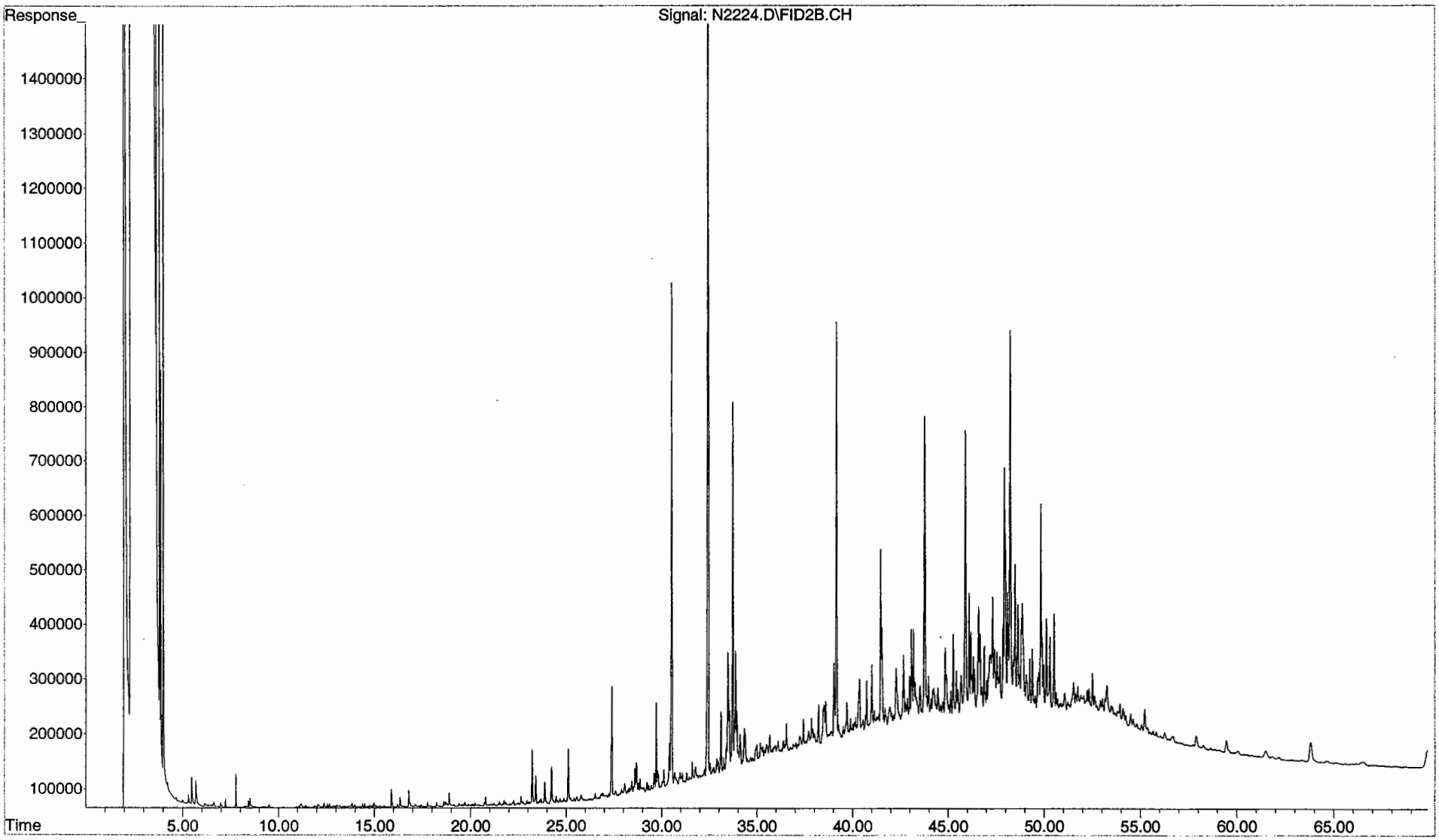
File : F:\N\DATA\SND0045.SEC\N2226.D
Operator : RR
Acquired : 4-21-2004 05:33:05 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1432-P(7)
Misc Info : AH-06
Vial Number: 62

AH-06
S1432



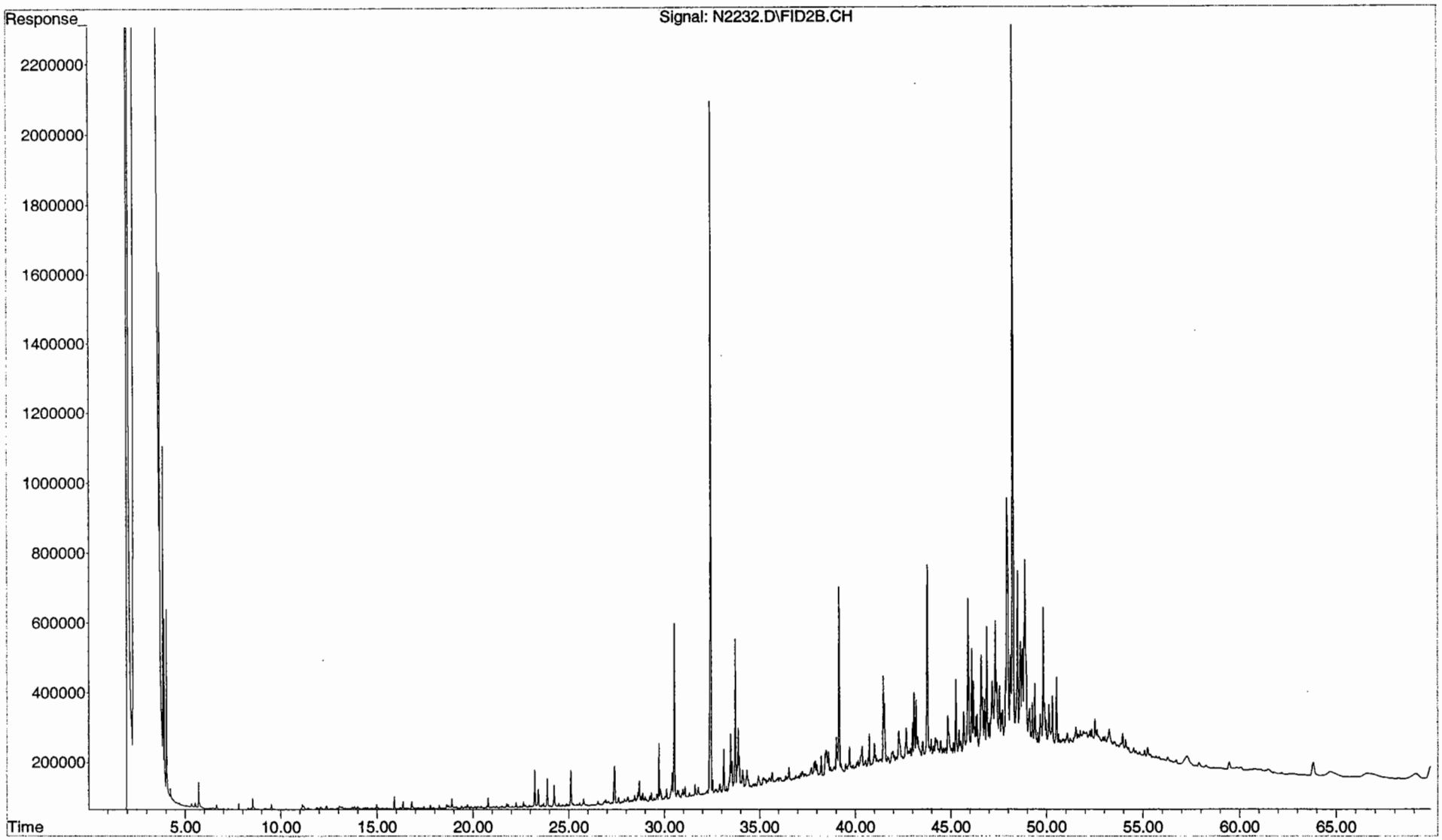
File : F:\N\DATA\SND0045.SEC\N2224.D
Operator : RR
Acquired : 4-21-2004 04:11:26 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1430-P(7)
Misc Info : Dup3
Vial Number: 61

AH-06 (DUP-03)
S1430



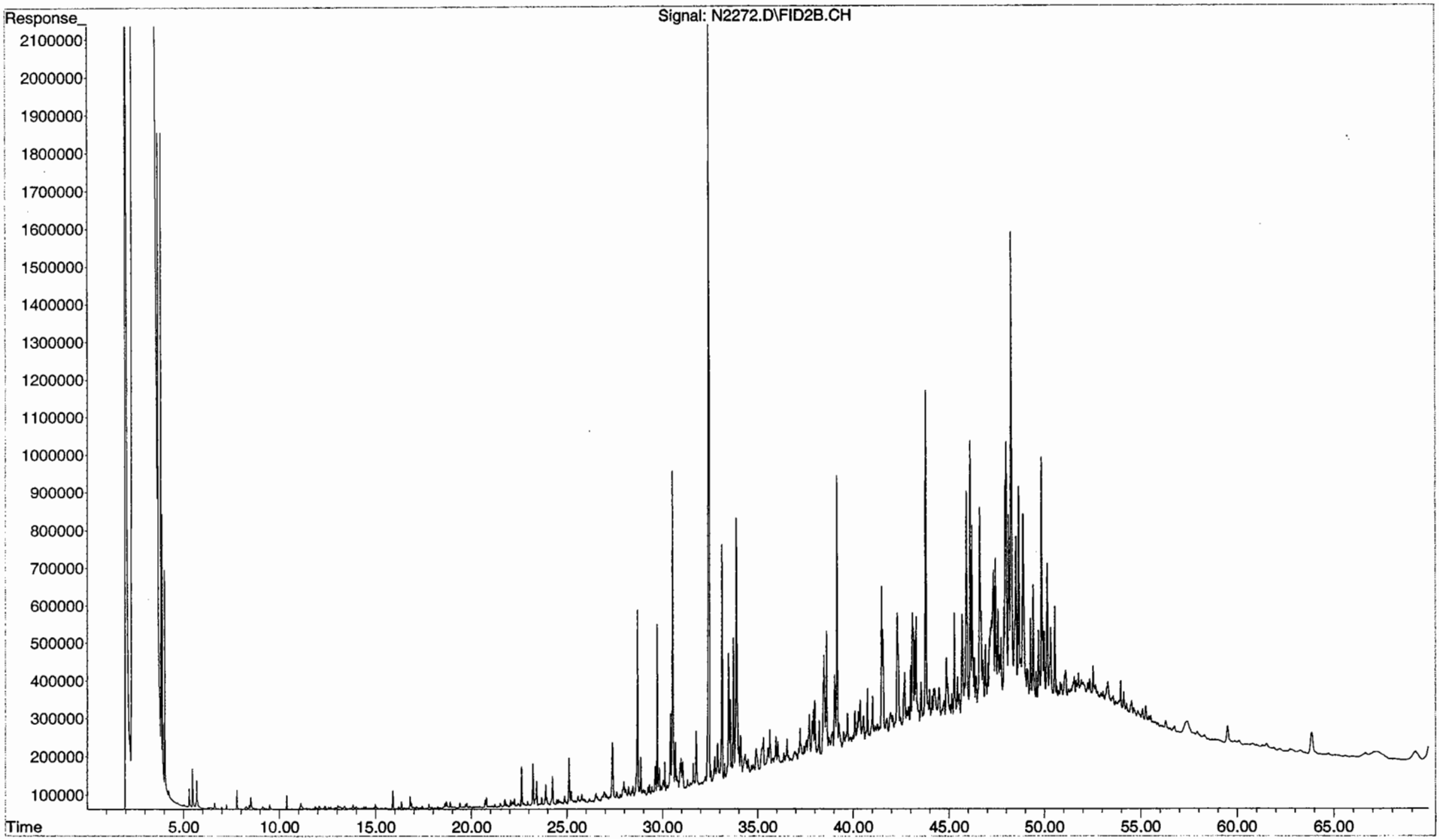
File : F:\N\DATA\SND0045.SEC\N2232.D
Operator : RR
Acquired : 4-21-2004 09:41:23 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1435-P(7)
Misc Info : AH-17
Vial Number: 65

AH-17
S1435



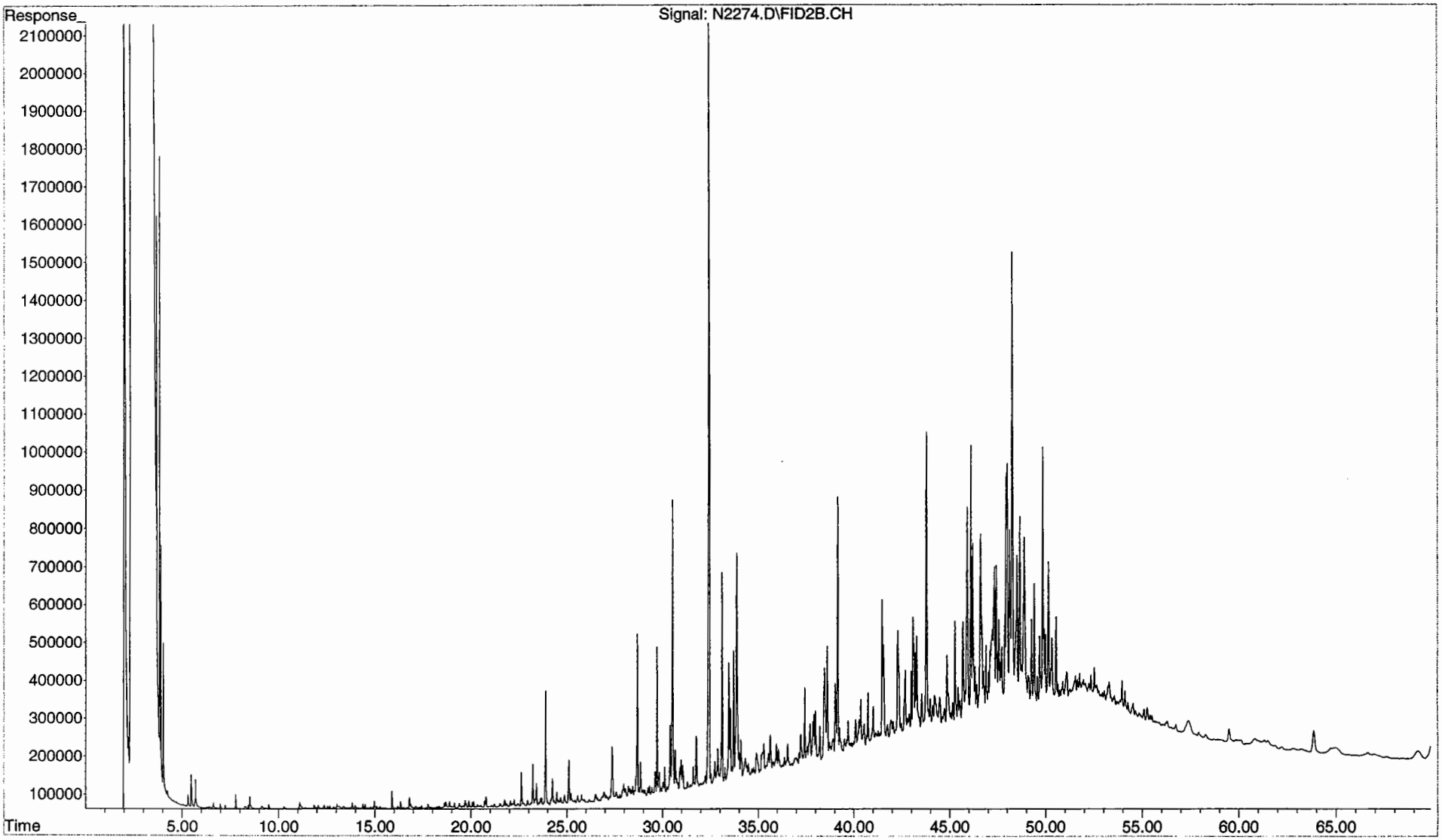
File : F:\N\DATA\SND0045.SEC\N2272.D
Operator : RR
Acquired : 4-23-2004 03:58:34 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1505-P(7)
Misc Info : AH-26
Vial Number: 85

AH-26
S1505



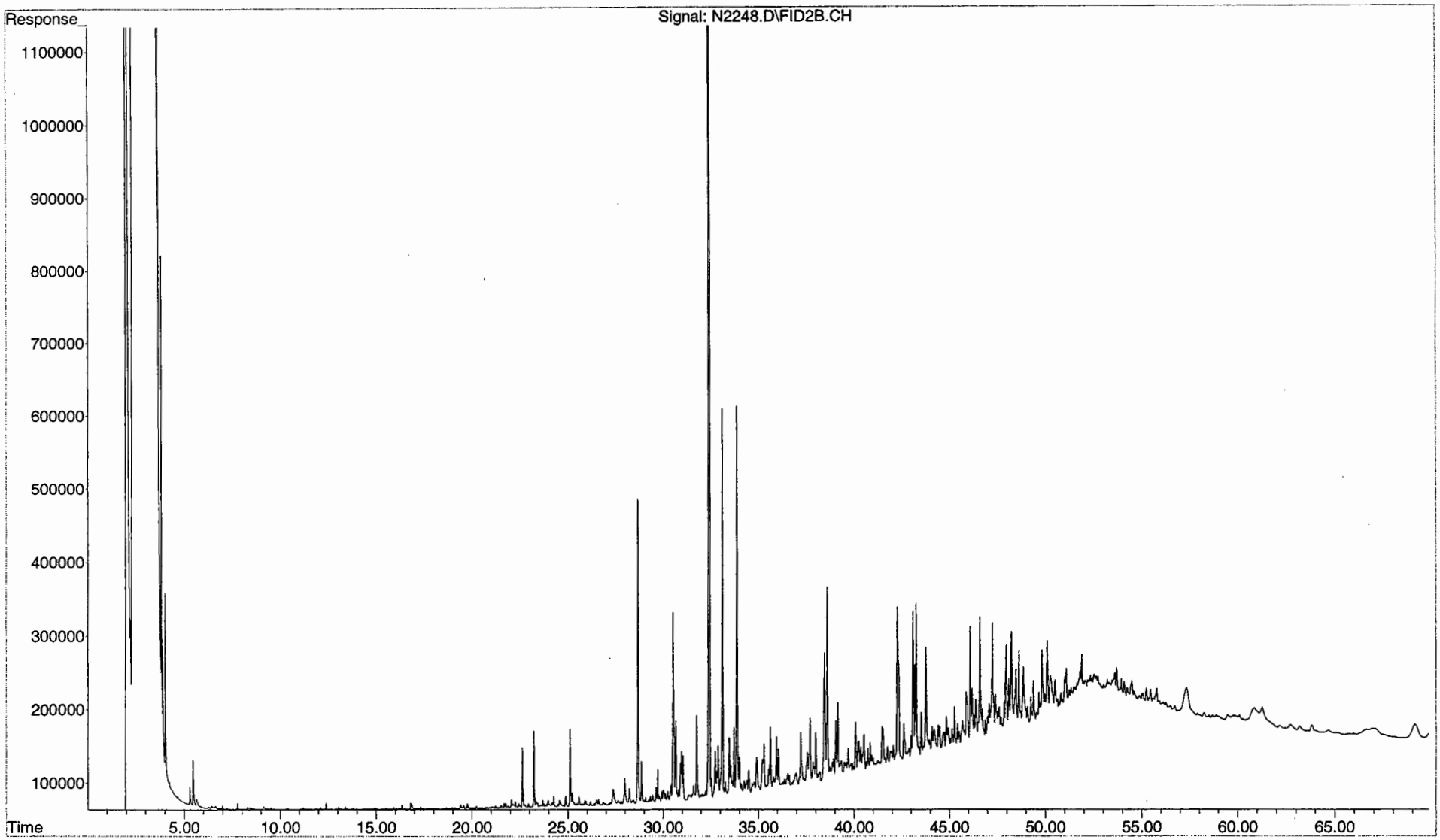
File : F:\N\DATA\SND0045.SEC\N2274.D
Operator : RR
Acquired : 4-23-2004 05:21:17 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1505DUP-P(7)
Misc Info : AH-26
Vial Number: 86

AH-26
S1505DUP



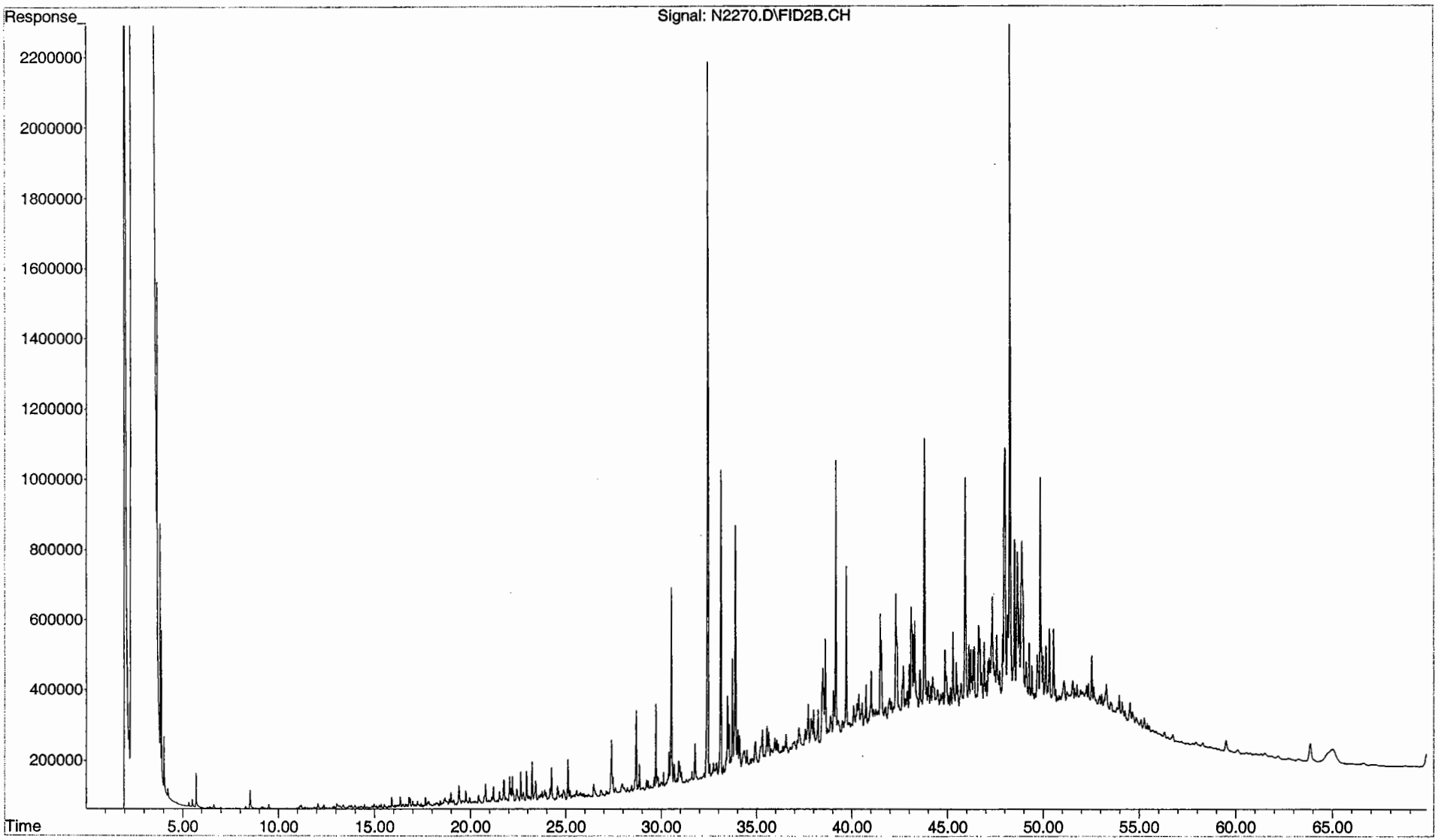
File : F:\N\DATA\SND0045.SEC\N2248.D
Operator : RR
Acquired : 22 Apr 2004 11:31 pm using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1468-P(7)
Misc Info : AH-28
Vial Number: 73

AH-28
S1468



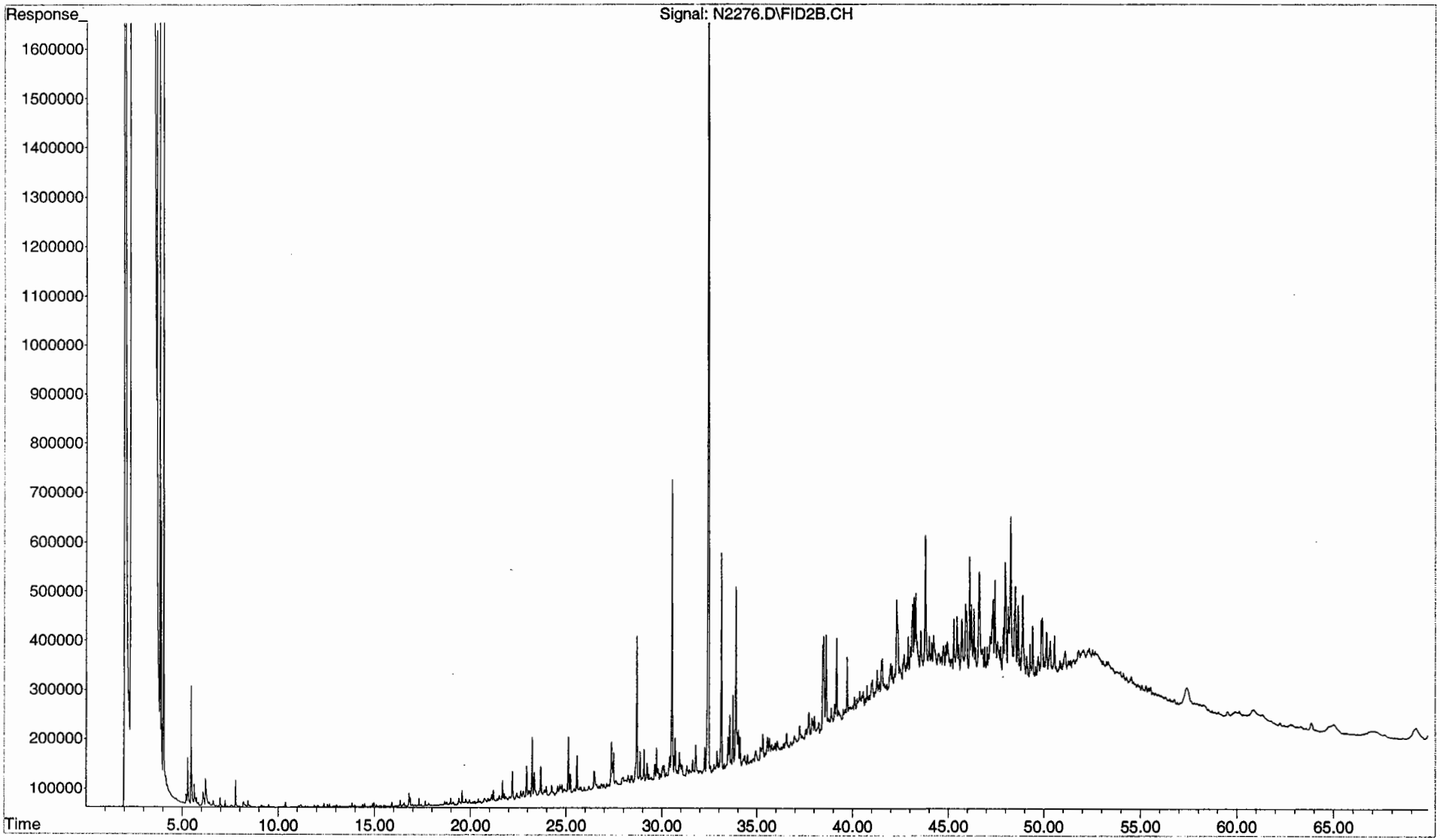
File : F:\N\DATA\SND0045.SEC\N2270.D
Operator : RR
Acquired : 4-23-2004 02:35:55 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1491-P(7)
Misc Info : AH-29
Vial Number: 84

AH-29
S1491



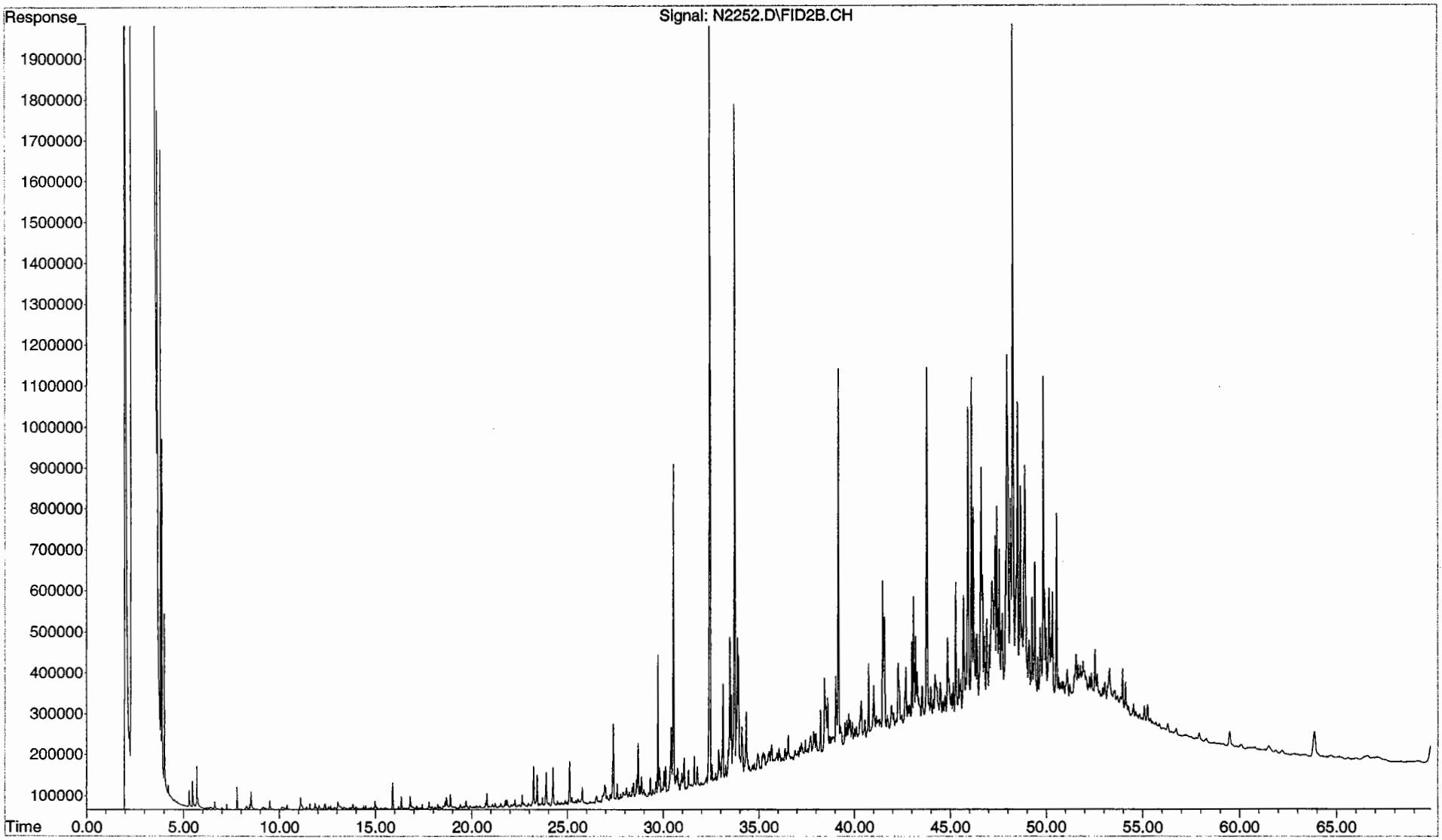
File : F:\N\DATA\SND0045.SEC\N2276.D
Operator : RR
Acquired : 4-23-2004 06:44:00 PM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1509-P(7)
Misc Info : AH-40
Vial Number: 87

AH-40
S1509



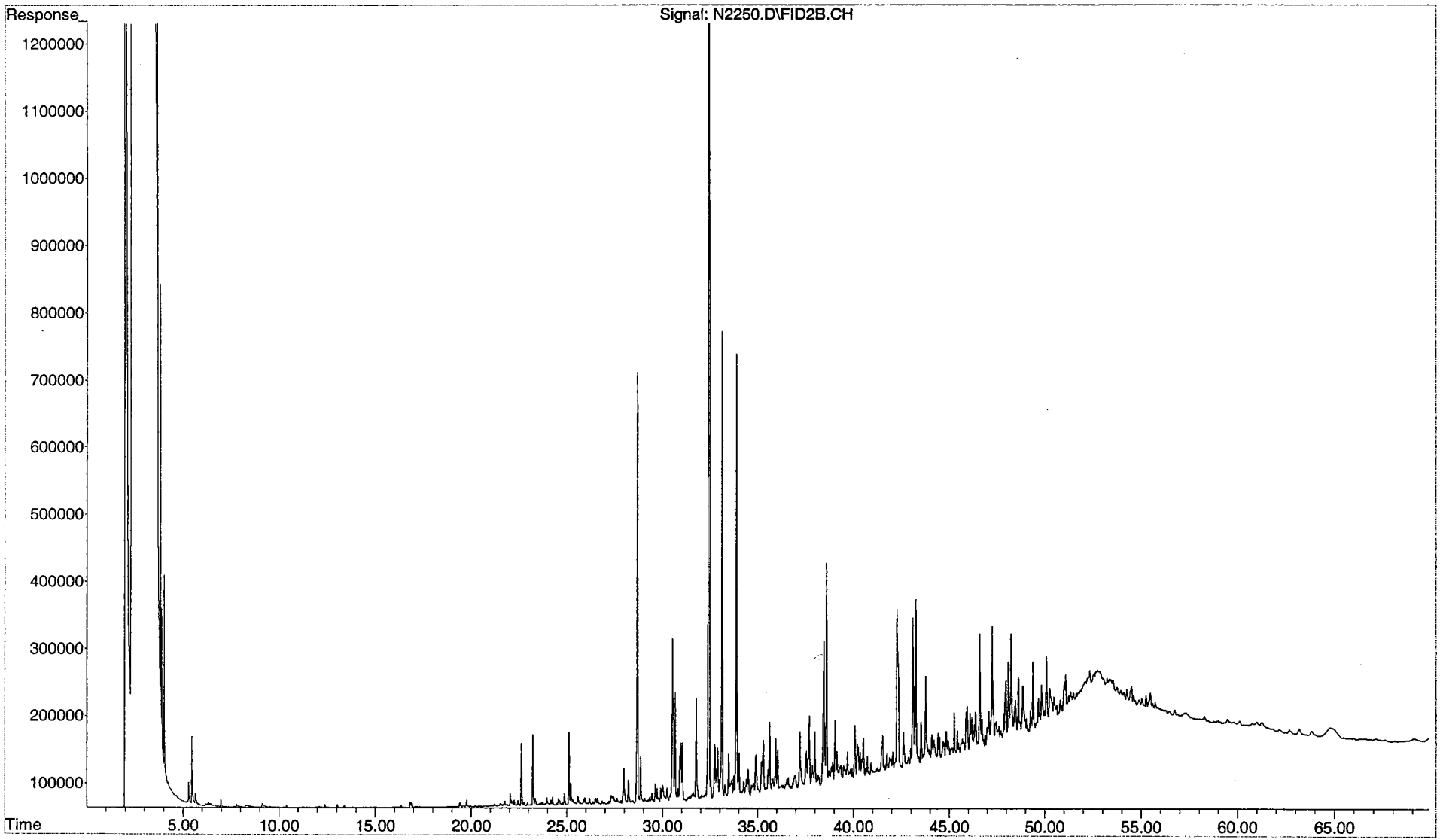
File : F:\N\DATA\SND0045.SEC\N2252.D
Operator : RR
Acquired : 4-23-2004 02:15:54 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1474-P(7)
Misc Info : AH-45
Vial Number: 75

AH-45
S1474



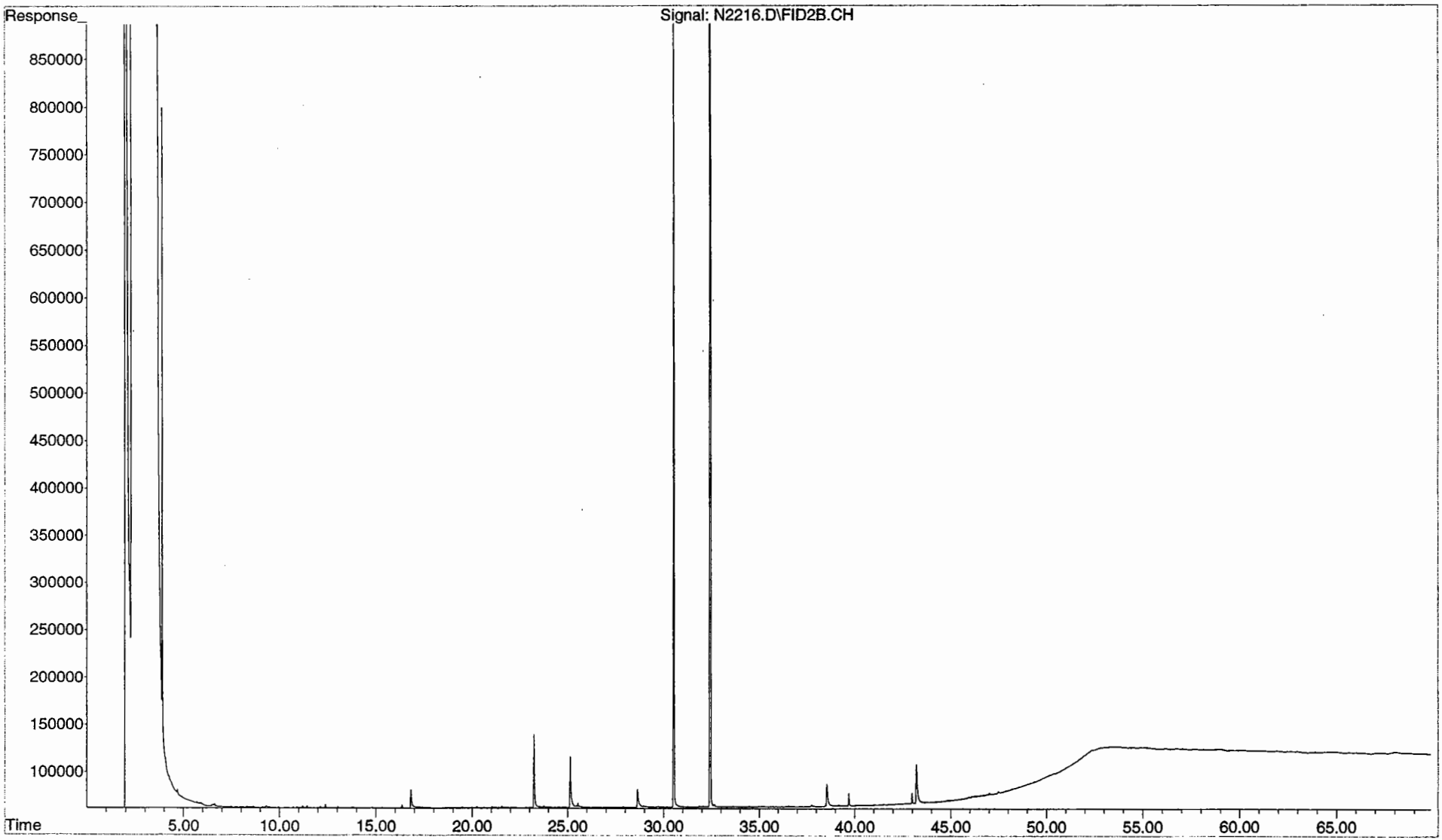
File : F:\N\DATA\SND0045.SEC\N2250.D
Operator : RR
Acquired : 23 Apr 2004 12:53 am using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1471-P(7)
Misc Info : AH-49
Vial Number: 74

AH-49
S1471



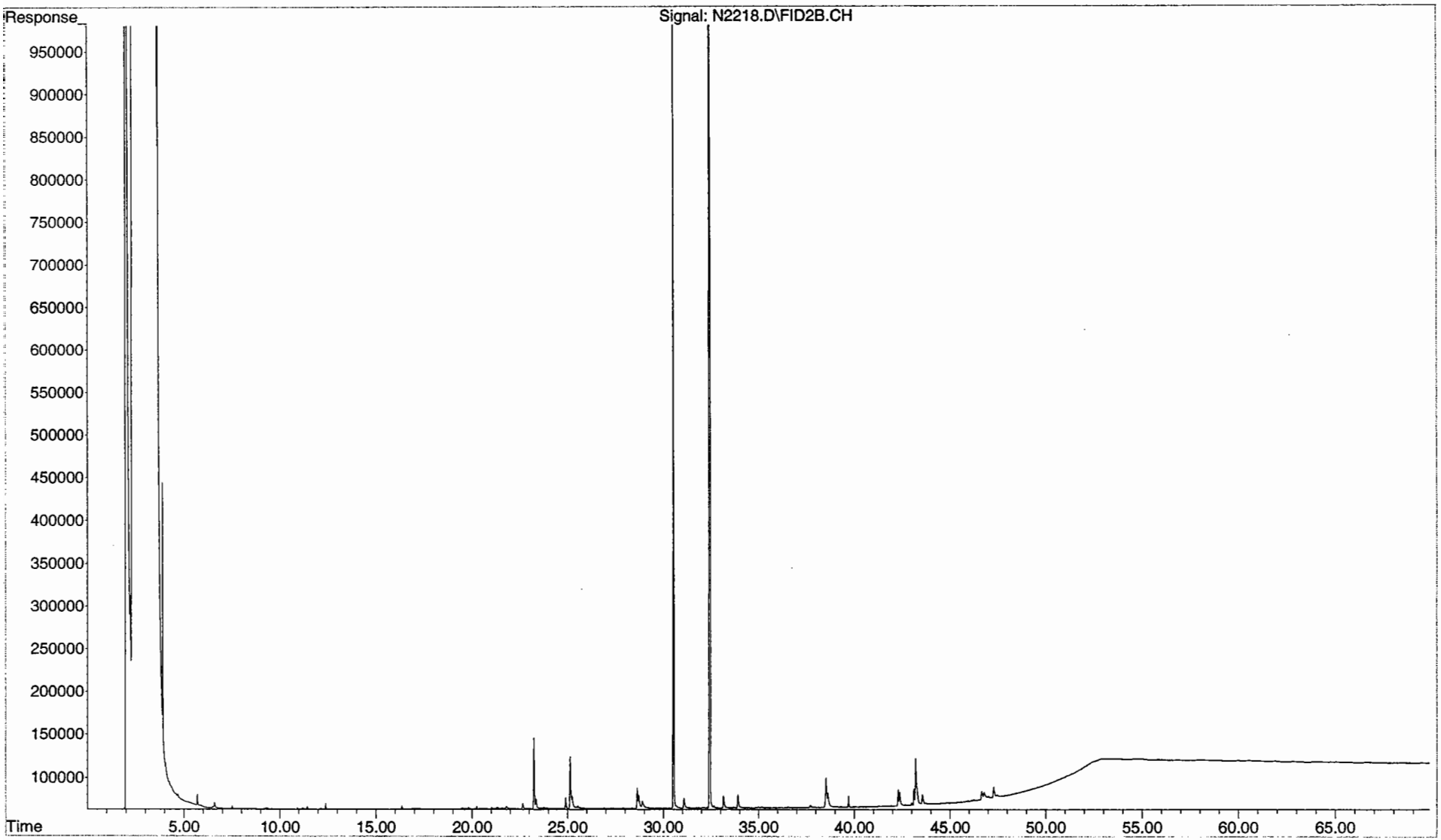
File : F:\N\DATA\SND0045.SEC\N2216.D
Operator : RR
Acquired : 20 Apr 2004 10:43 pm using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: BE161PB-P(3)
Misc Info : 04-0117 Procedural Blank
Vial Number: 57

Procedural Blank
BE161PB



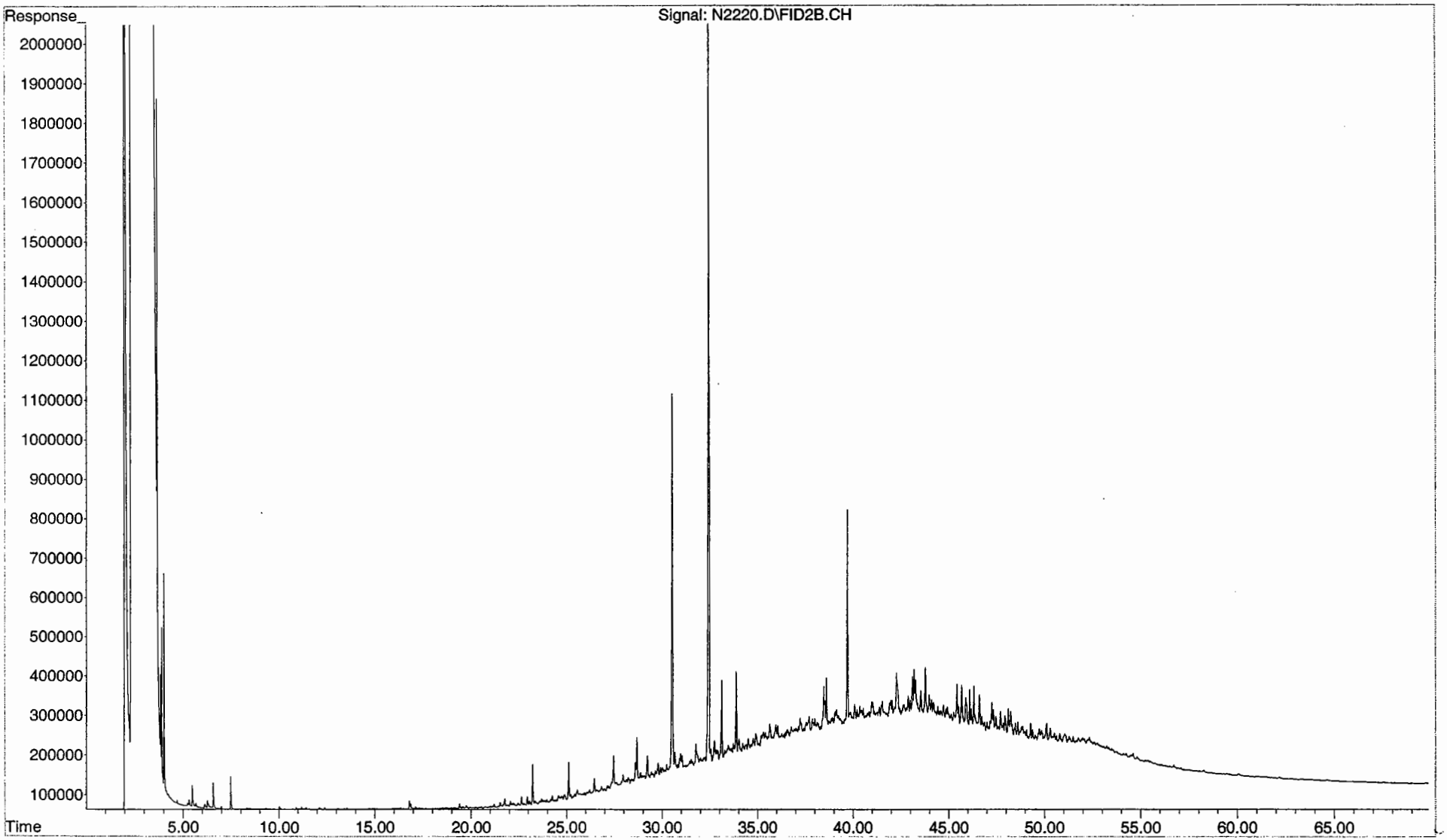
File : F:\N\DATA\SND0045.SEC\N2218.D
Operator : RR
Acquired : 21 Apr 2004 12:05 am using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: BE162LCS-P(3)
Misc Info : Laboratory Control Sample
Vial Number: 58

Lab Control Sample
BE162LCS



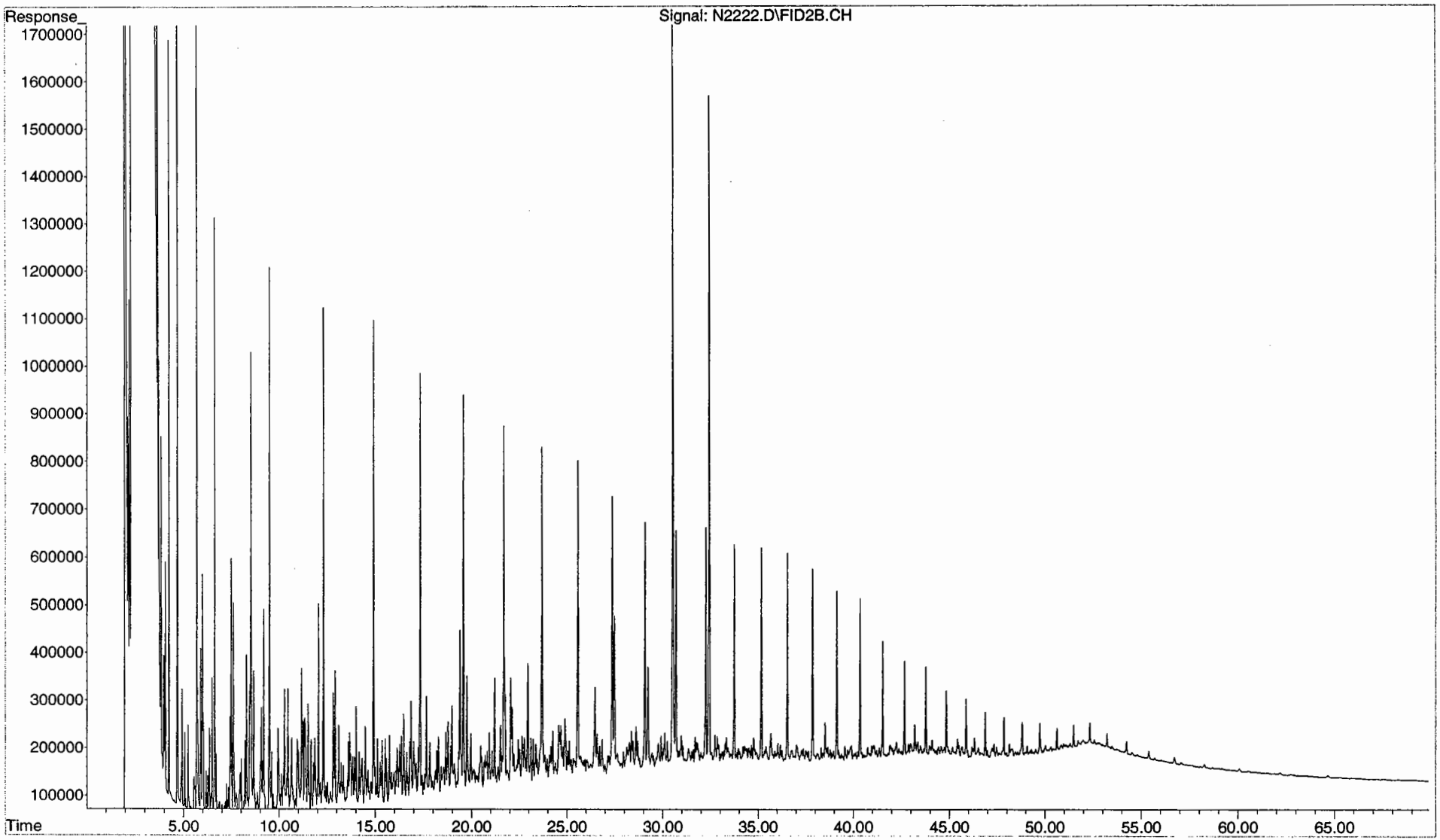
File : F:\N\DATA\SND0045.SEC\N2220.D
Operator : RR
Acquired : 4-21-2004 01:27:37 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: BE163SRM-P(3)
Misc Info : NIST 1944
Vial Number: 59

SRM
BE163SRM



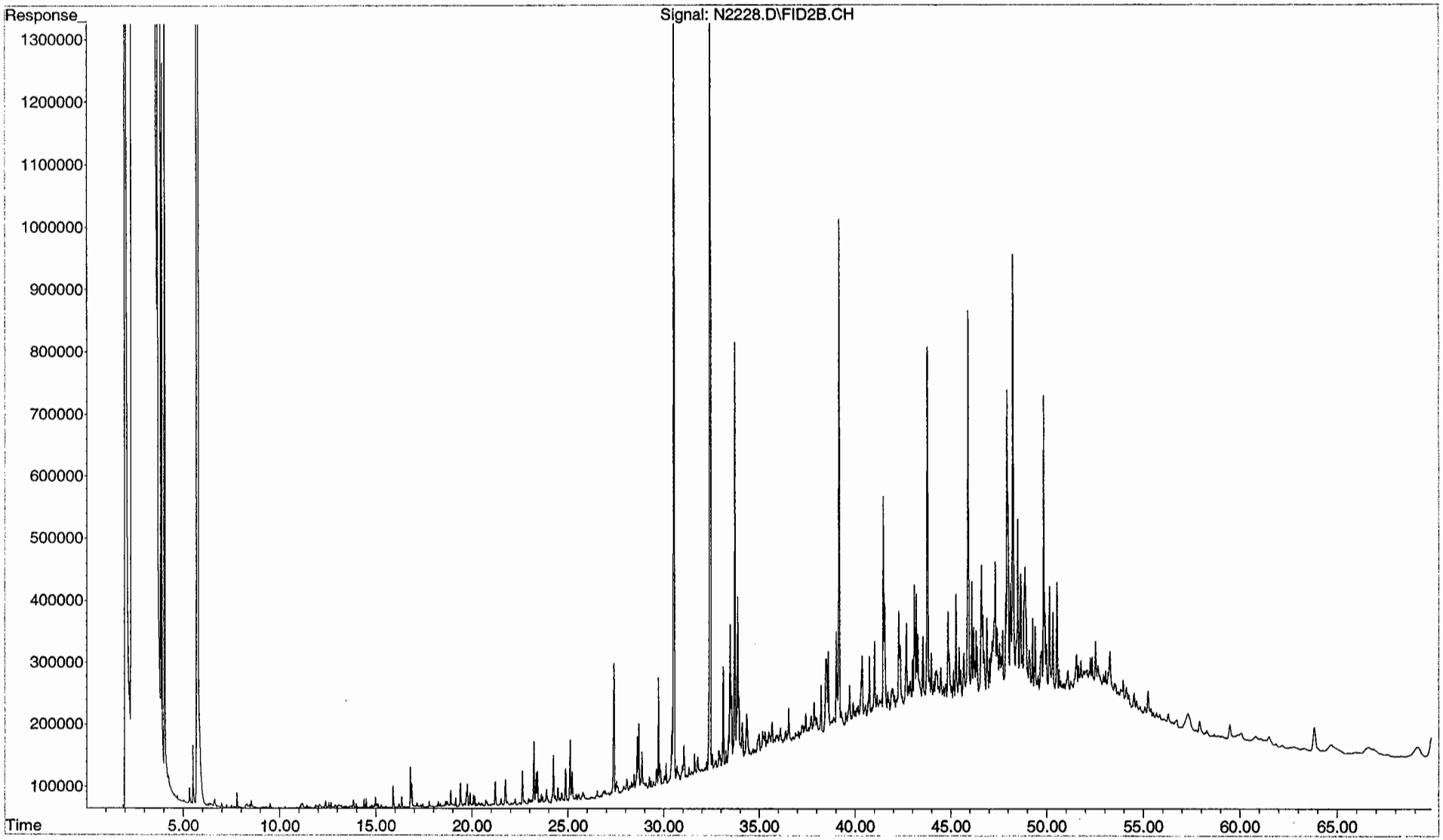
File : F:\N\DATA\SND0045.SEC\N2222.D
Operator : RR
Acquired : 4-21-2004 02:49:41 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: BE212NSC-P(0)
Misc Info : North Slope Crude
Vial Number: 60

North Slope Crude
BE212NSC



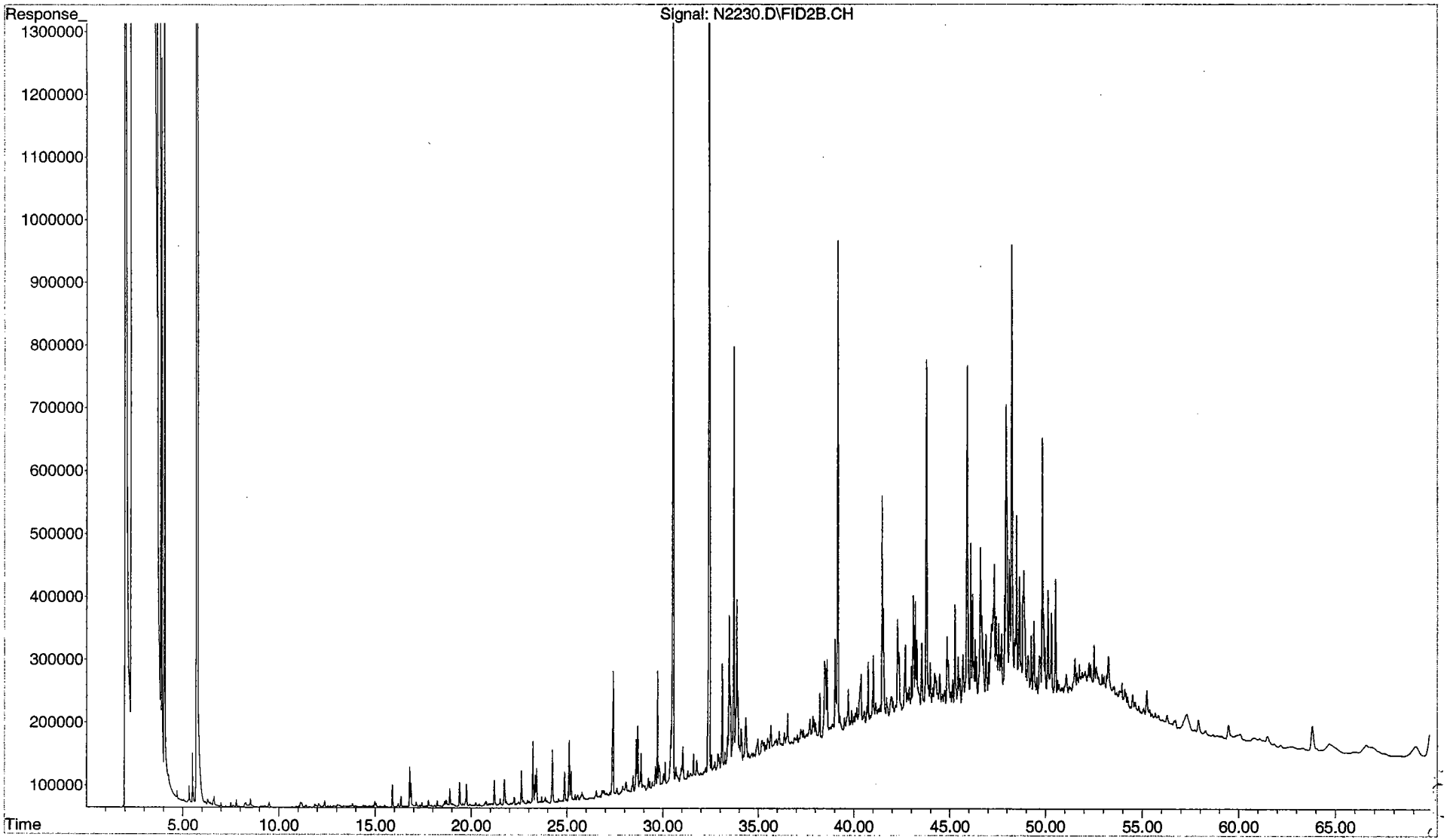
File : F:\N\DATA\SND0045.SEC\N2228.D
Operator : RR
Acquired : 4-21-2004 06:55:17 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1432MS-P(7)
Misc Info : AH-06
Vial Number: 63

AH-06 (Matrix Spike)
S1432MS



File : F:\N\DATA\SND0045.SEC\N2230.D
Operator : RR
Acquired : 4-21-2004 08:17:49 AM using AcqMethod EXXON.M
Instrument : Inst. N
Sample Name: S1432MSD-P(7)
Misc Info : AH-06
Vial Number: 64

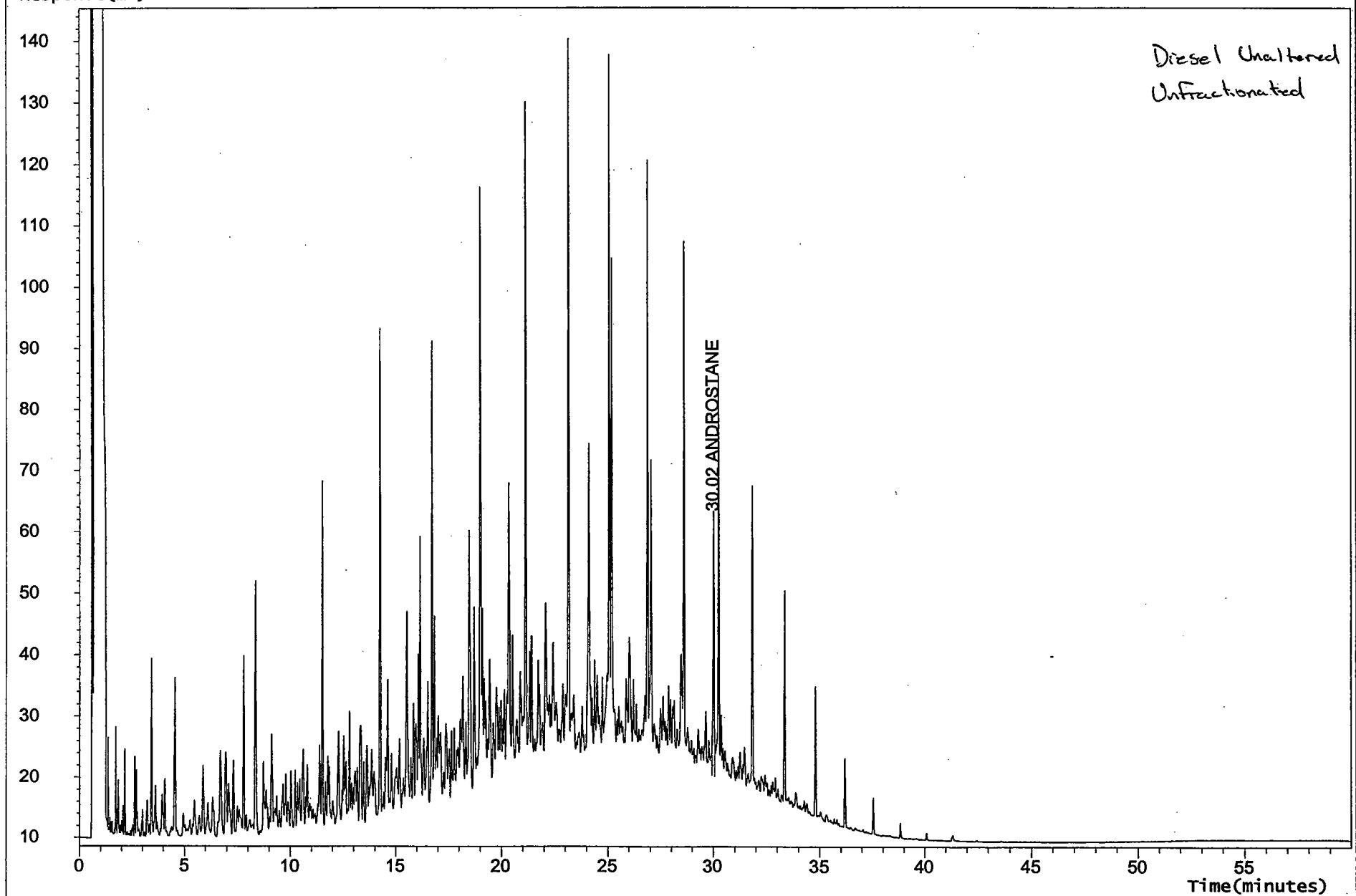
AH-06 (Matrix Spike Dup)
S1432MSD



Analysis: sd0729,9,1
Instrument: chanl_08
Response(mV)

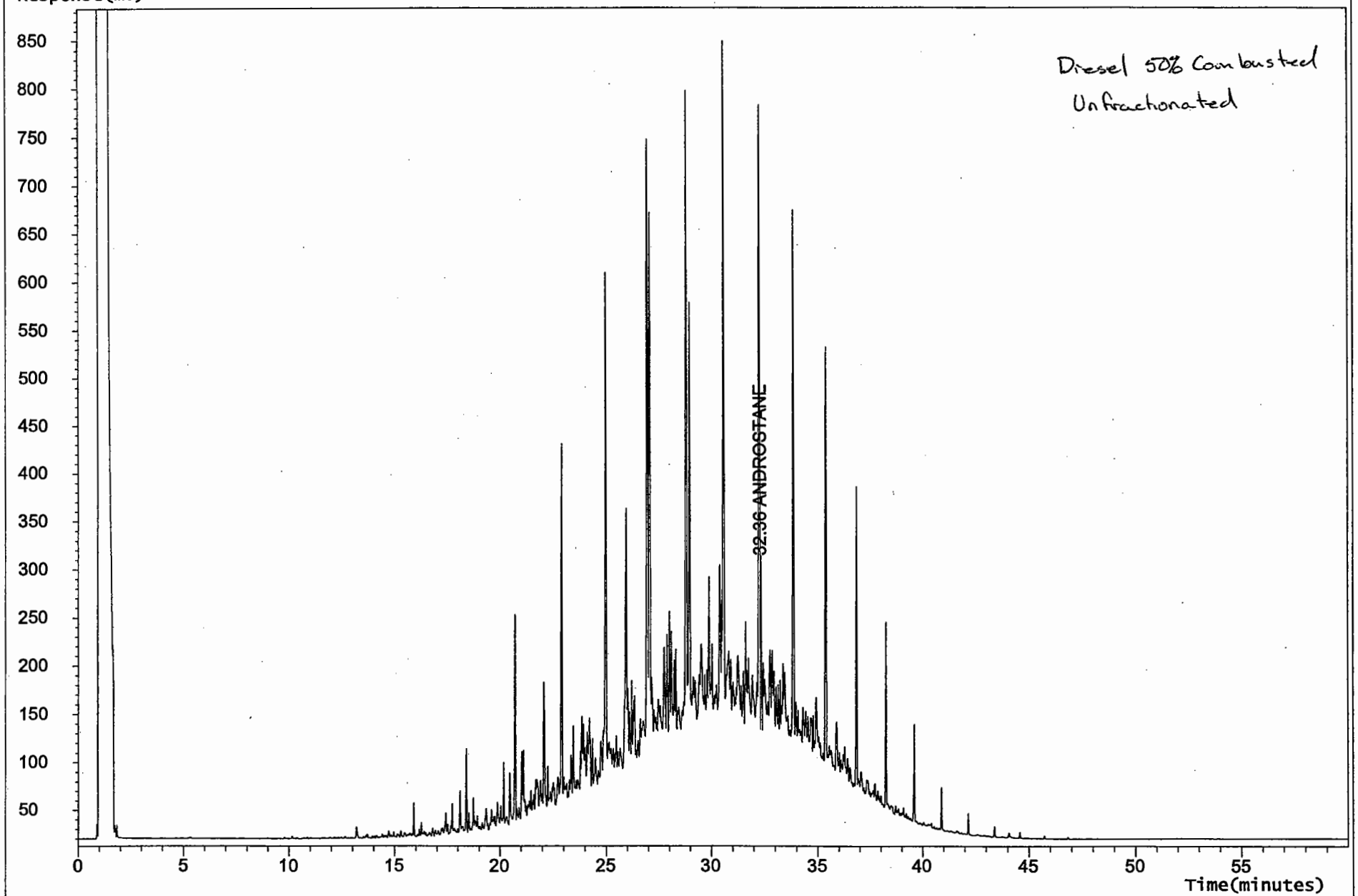
ZM25IC

Project: hydrocarbons
Method: mc0888



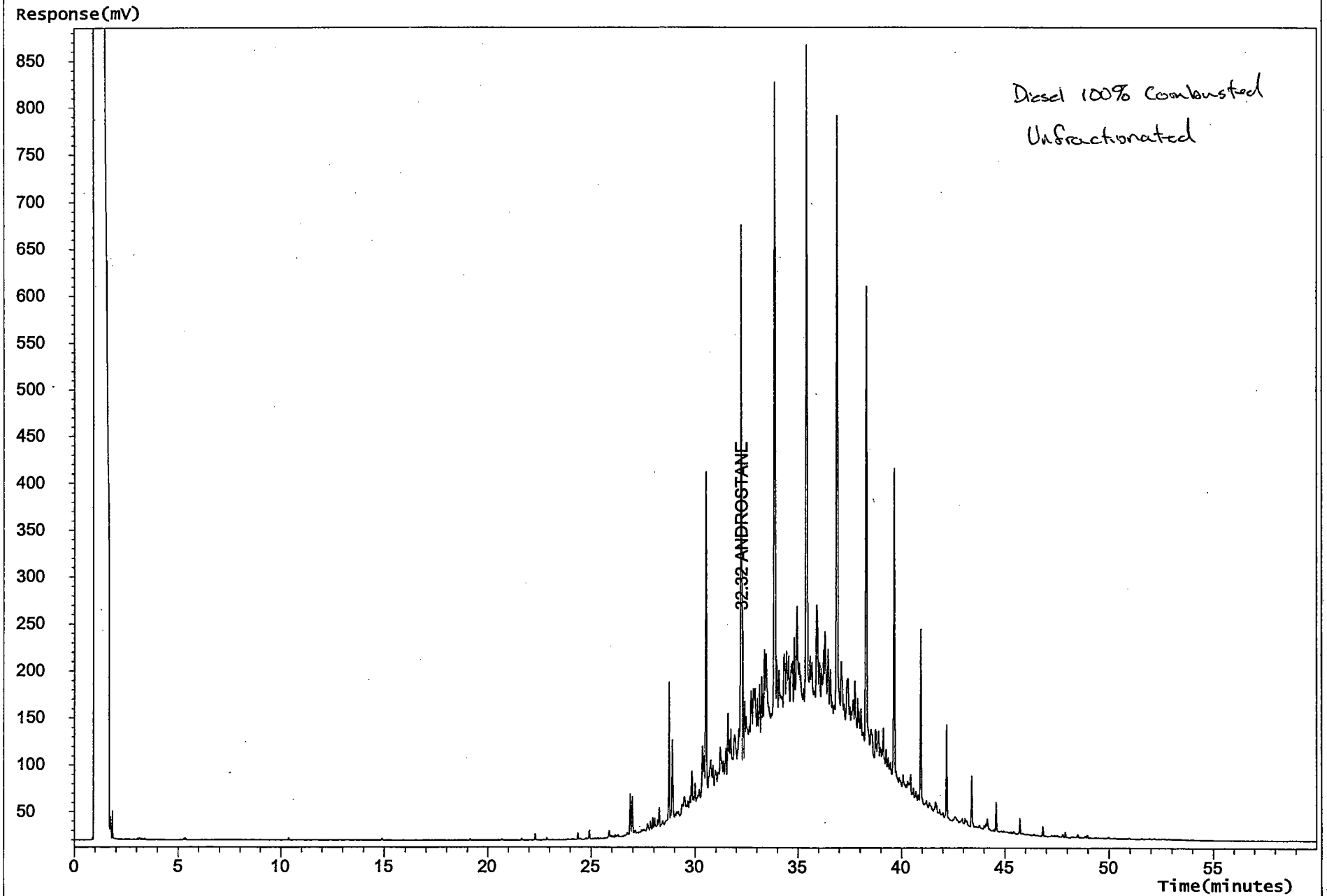
Acquisition Time: 18 Nov 2001 at 03:16.36

Analysis: sc1487,26,1 W7747-C50-D DIESEL 50% COMB Project: hydrocarbons
Instrument: chanl_14 Method: mc1421



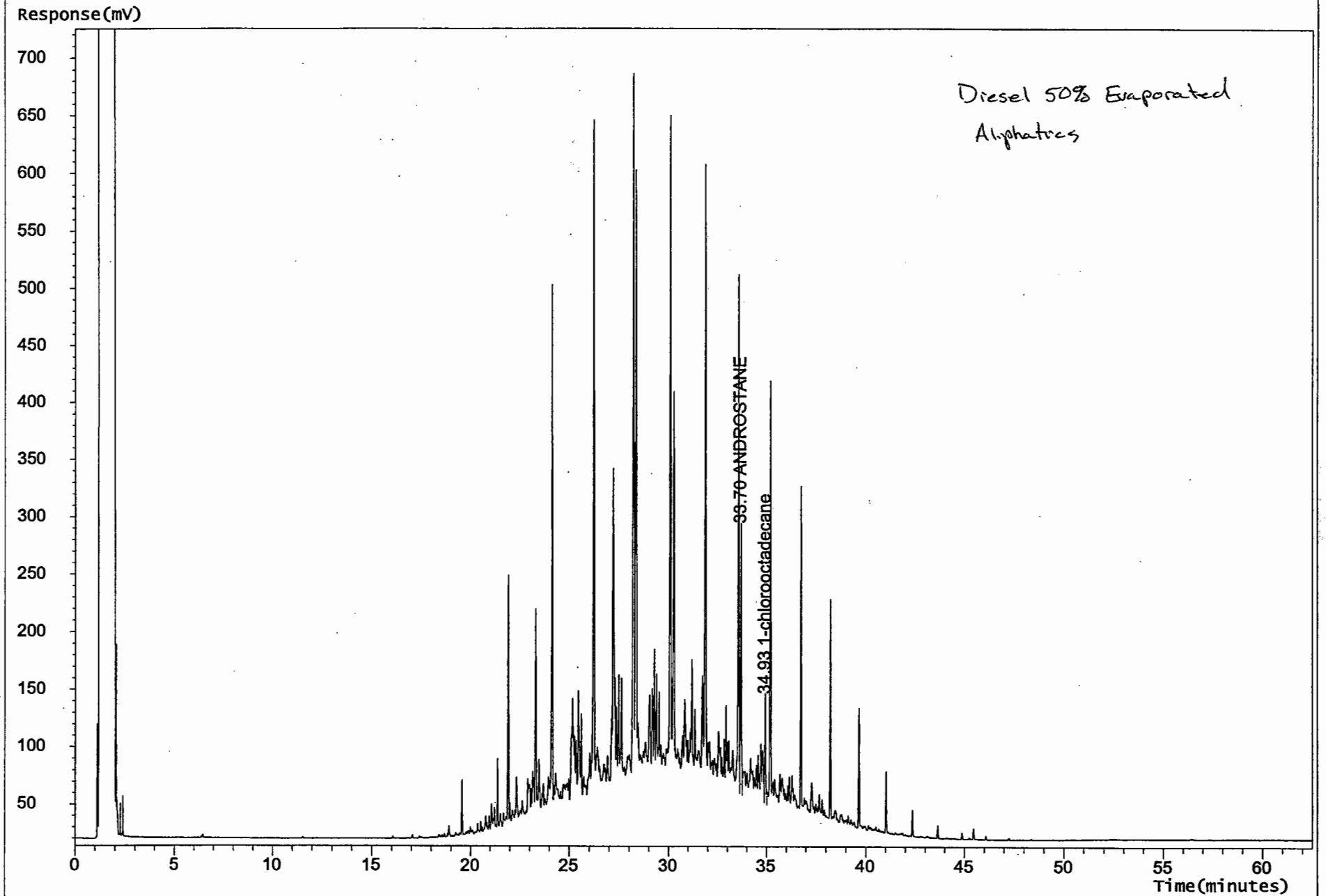
Acquisition Time: 19 Dec 2001 at 16:47.31

Analysis: sc1487,27,1 W7747-C100-D DIESEL 100% CO Project: hydrocarbons
Instrument: chanl_14 Method: mc1421



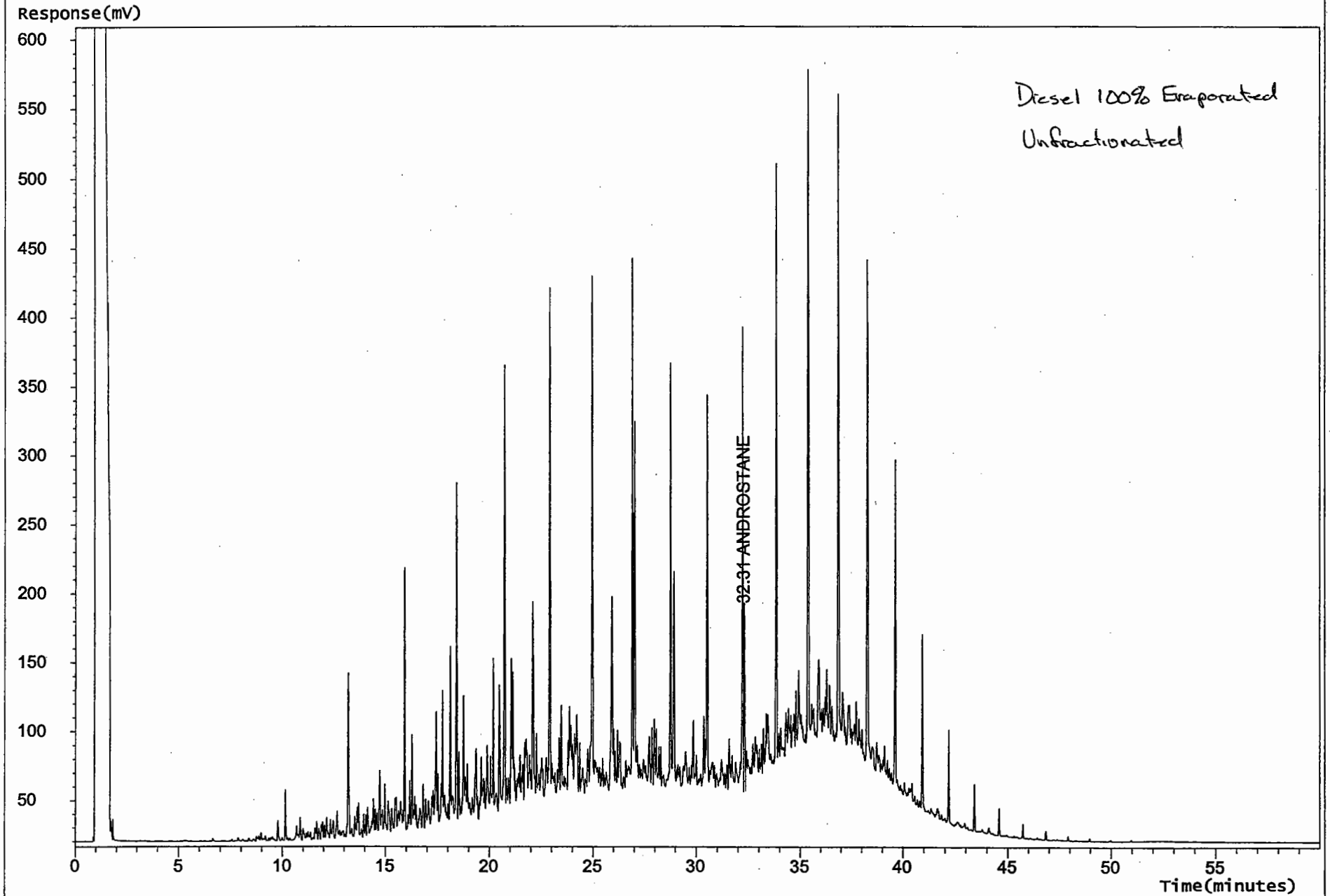
Acquisition Time: 19 Dec 2001 at 18:02.30

Analysis: sd1314,25,1 W7747-E50-DF1 DIESEL 50% EVA Project: hydrocarbons
Instrument: chanl_13 Method: mc1352



Acquisition Time: 29 Nov 2001 at 09:44.28

Analysis: sc1487,25,1 W7747-E100-D DIESEL 100% EV Project: hydrocarbons
Instrument: chanl_14 Method: mc1421

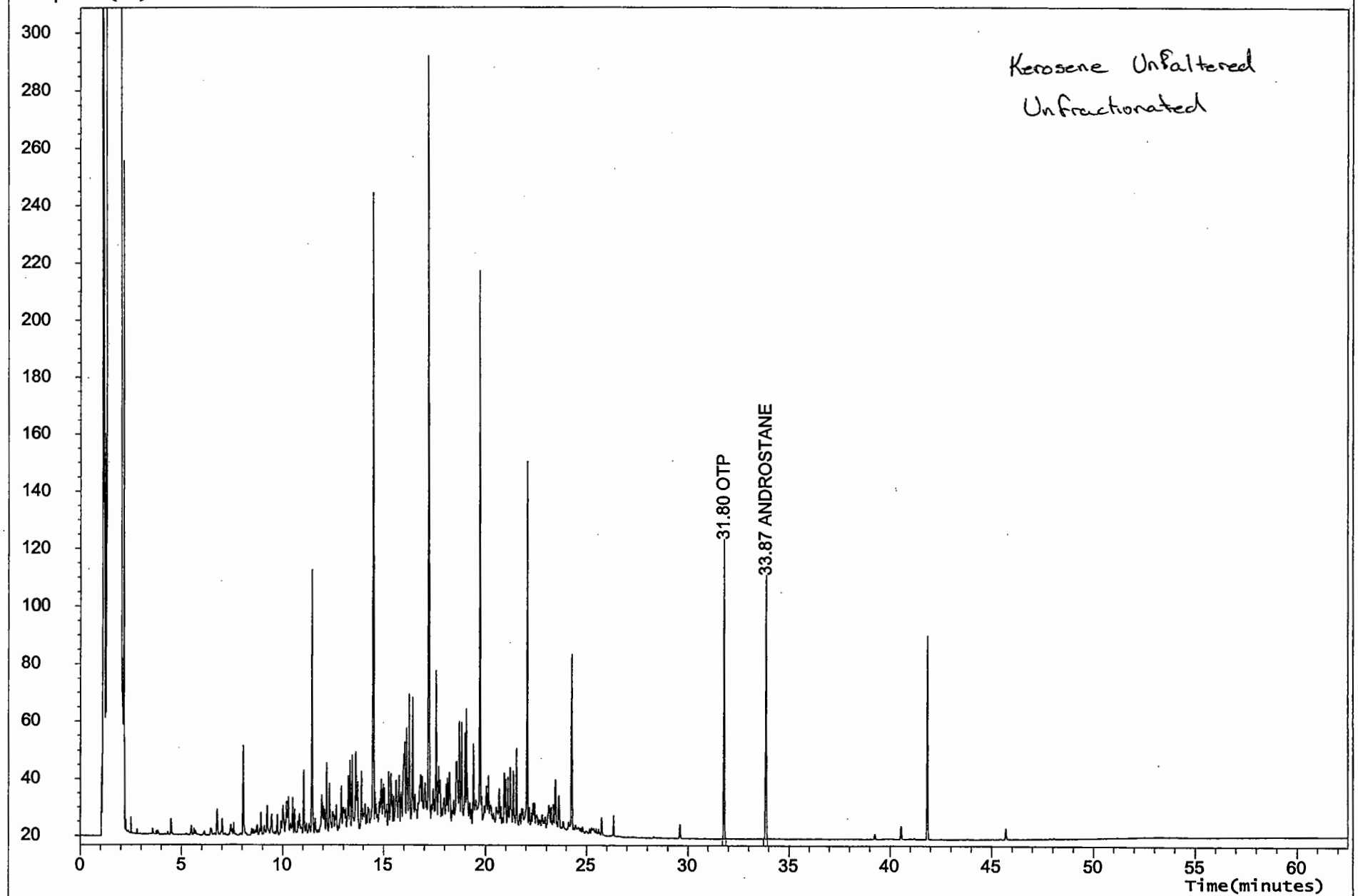


Acquisition Time: 19 Dec 2001 at 15:31.56

Analysis: sd1323,16,1
Instrument: chanl_13
Response(mV)

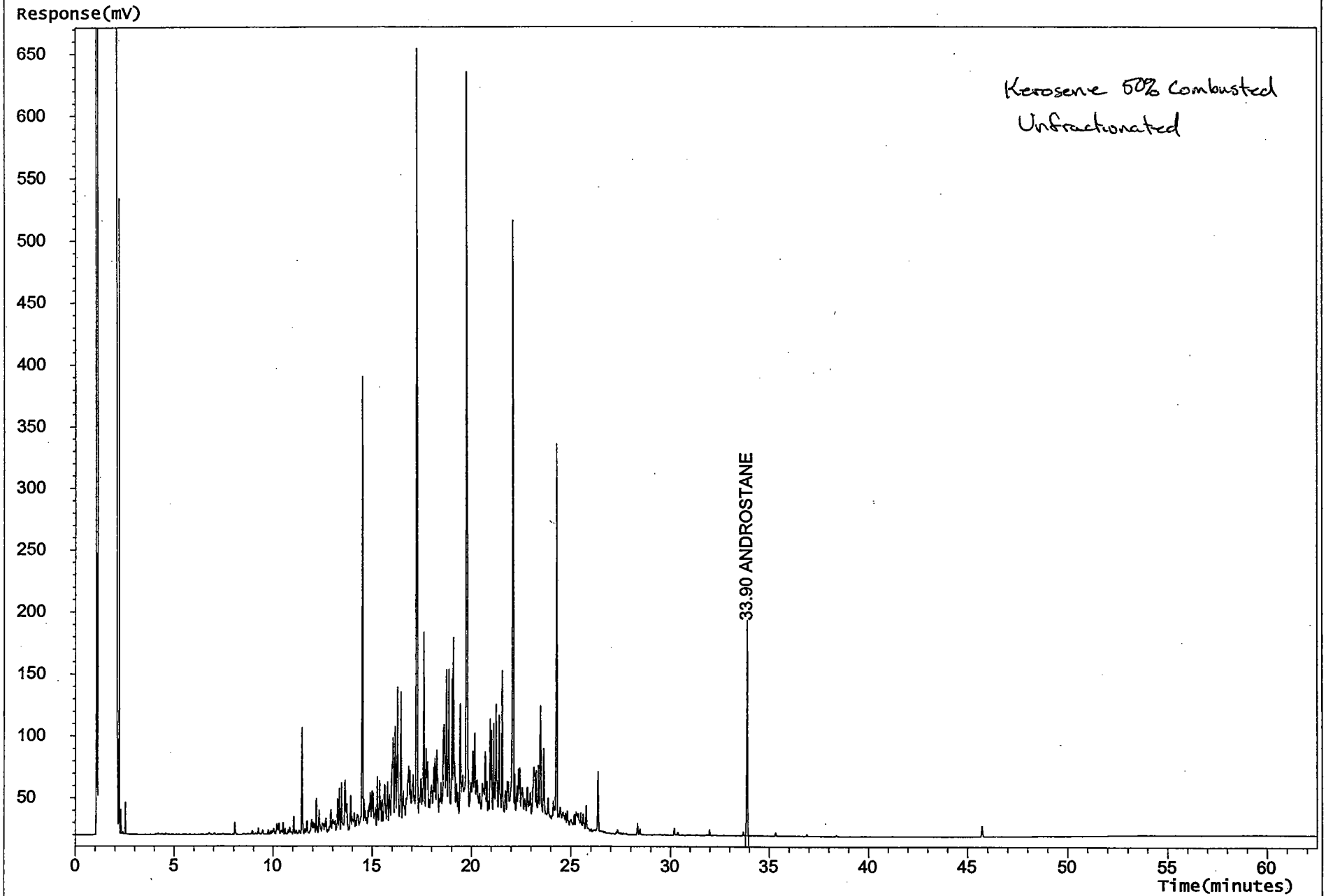
ZR36IC

Project: hydrocarbons
Method: md1322



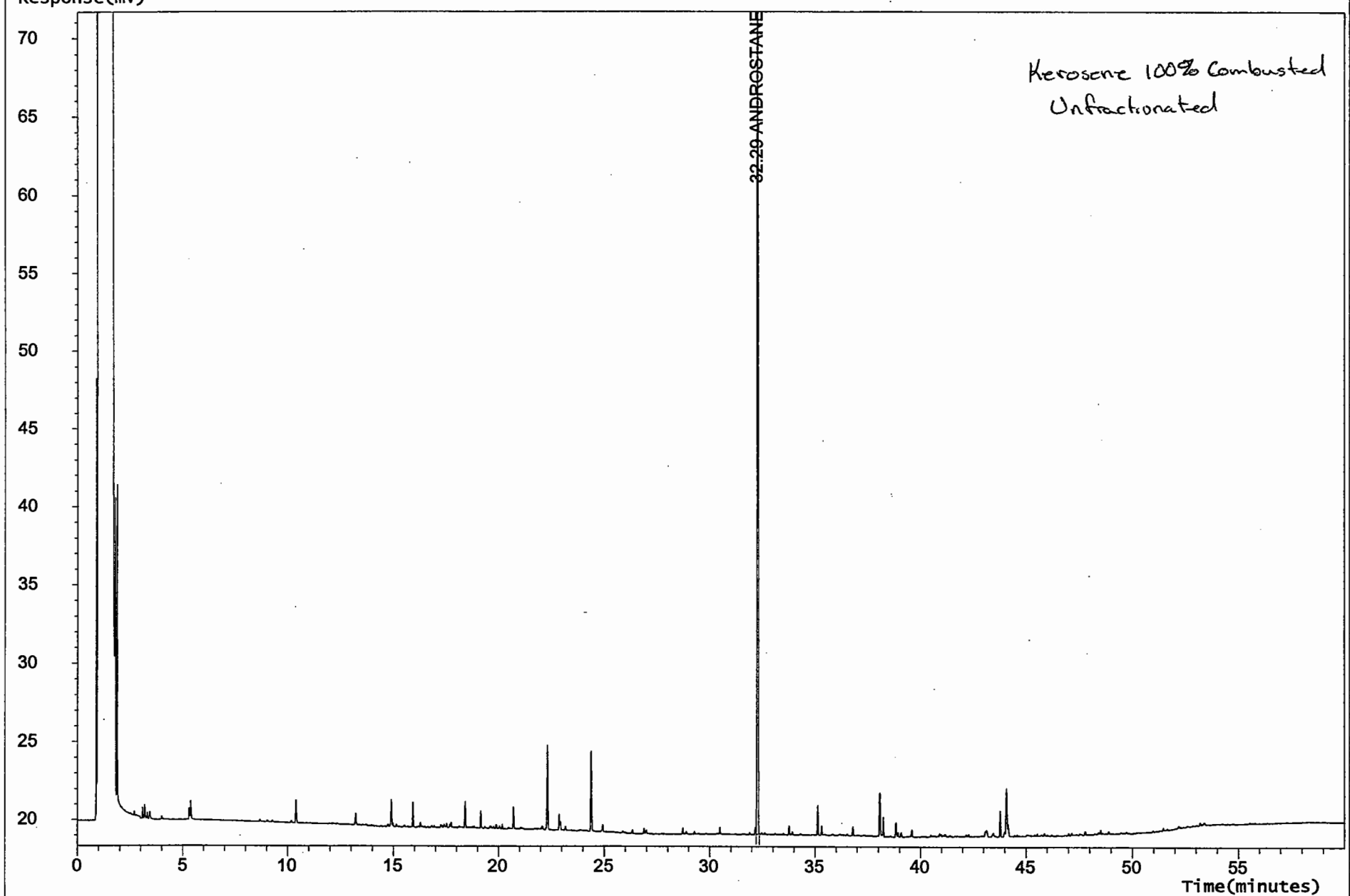
Acquisition Time: 08 Jan 2002 at 09:26.51

Analysis: sd1322cont,11,1 W7748-C50-D2 Project: hydrocarbons
Instrument: chanl_13 Method: md1322



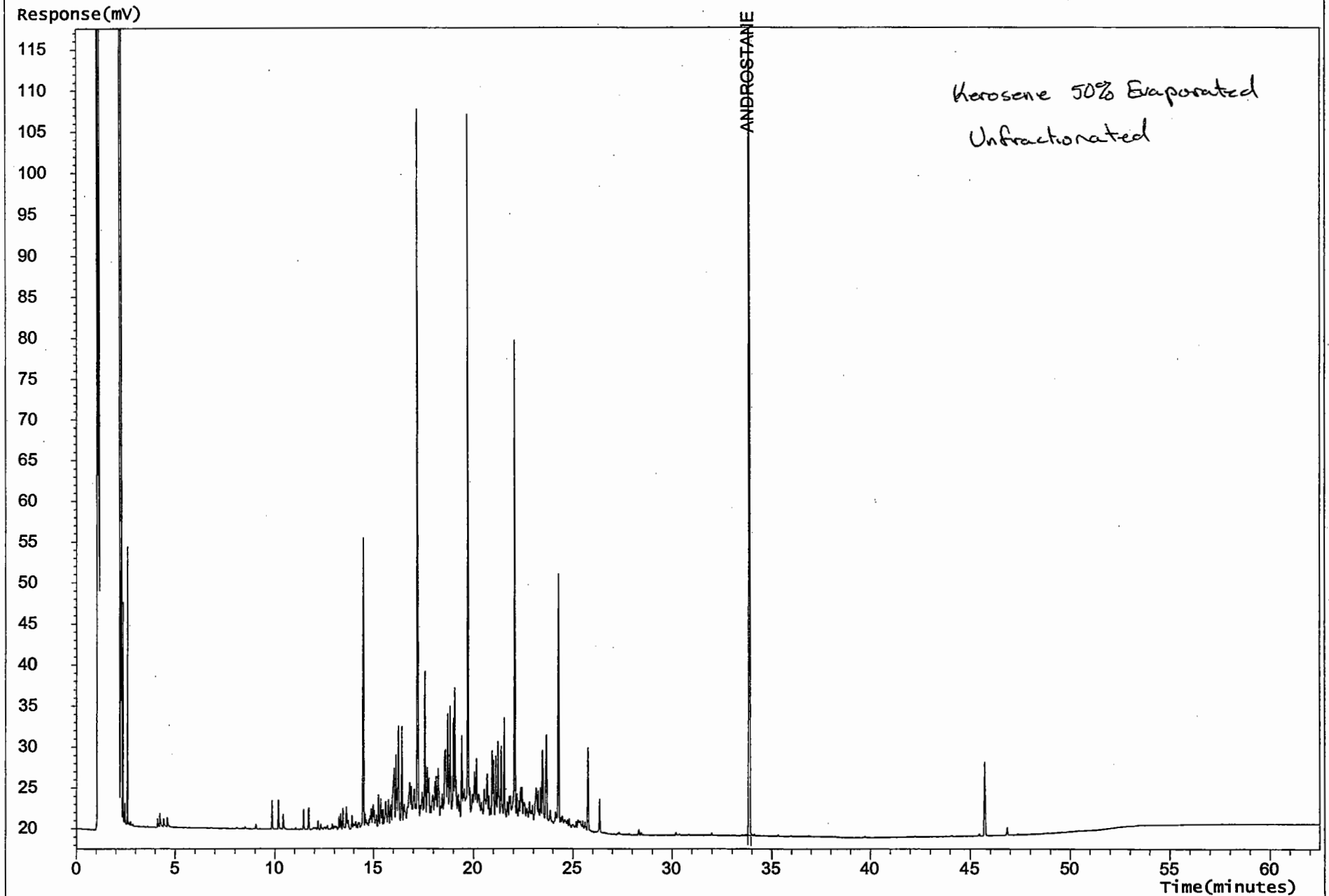
Acquisition Time: 04 Jan 2002 at 23:32.33

Analysis: sc1487,31,1 W7748-C100-D KEROSENE 100% Project: hydrocarbons
Instrument: chanl_14 Method: mc1421



Acquisition Time: 19 Dec 2001 at 23:02.51

Analysis: sd1322,12,1
Instrument: chanl_13
W7748-E50-D3
Project: hydrocarbons
Method: mc1352alk

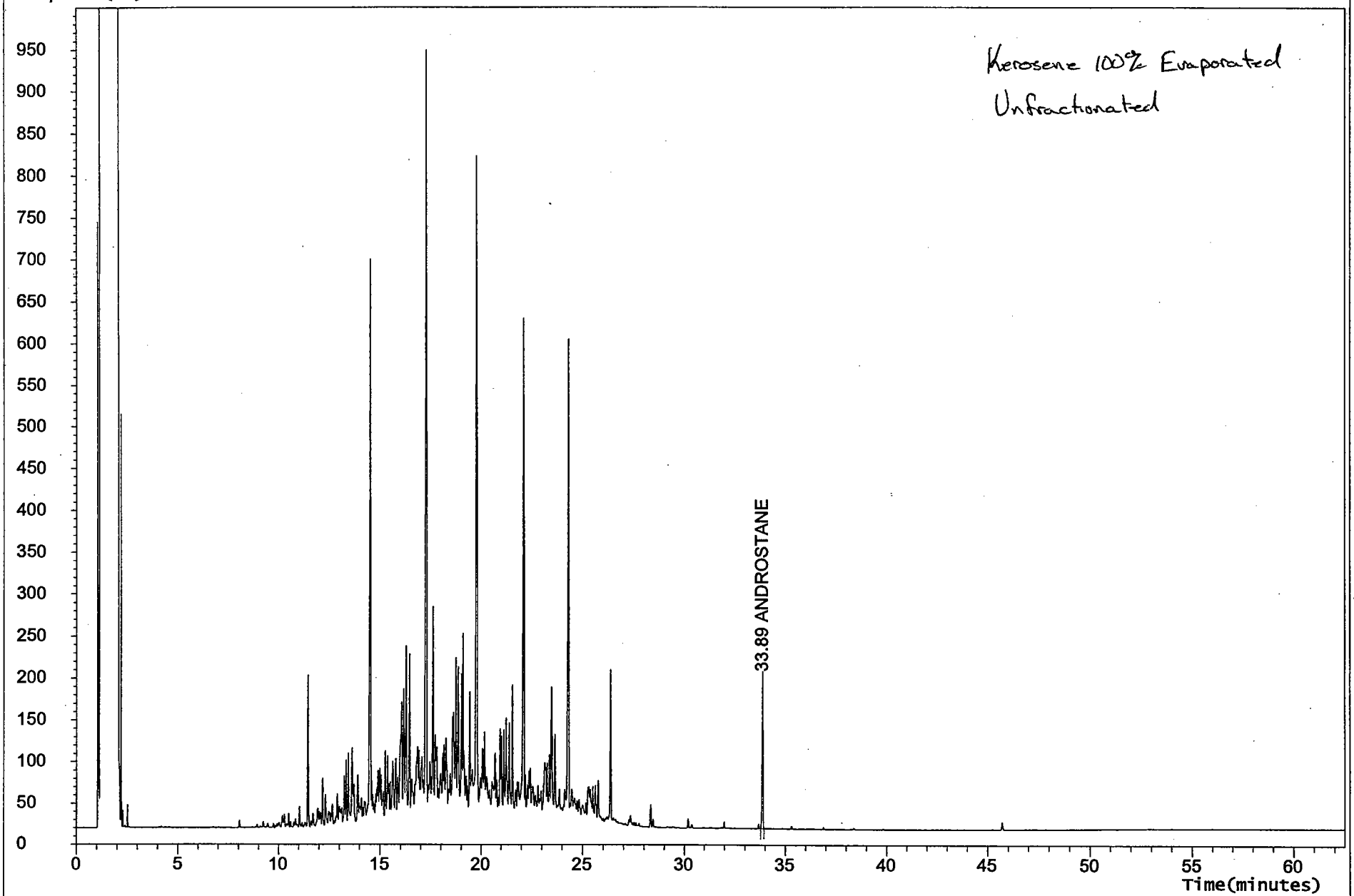


Acquisition Time: 04 Jan 2002 at 06:58.43

Analysis: sd1322cont,10,1
Instrument: chanl_13
Response(mV)

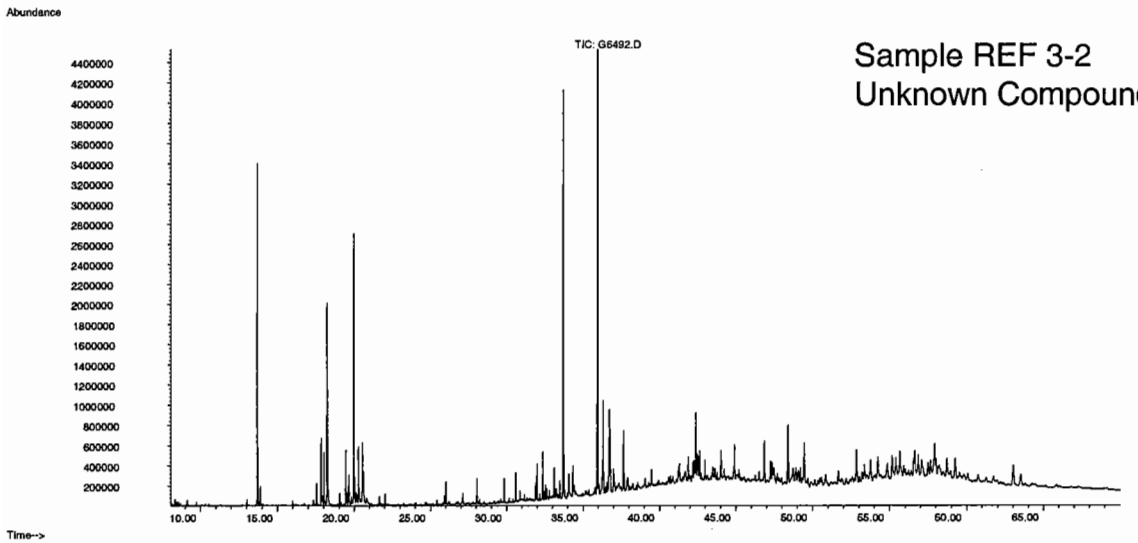
W7748-E100-D2

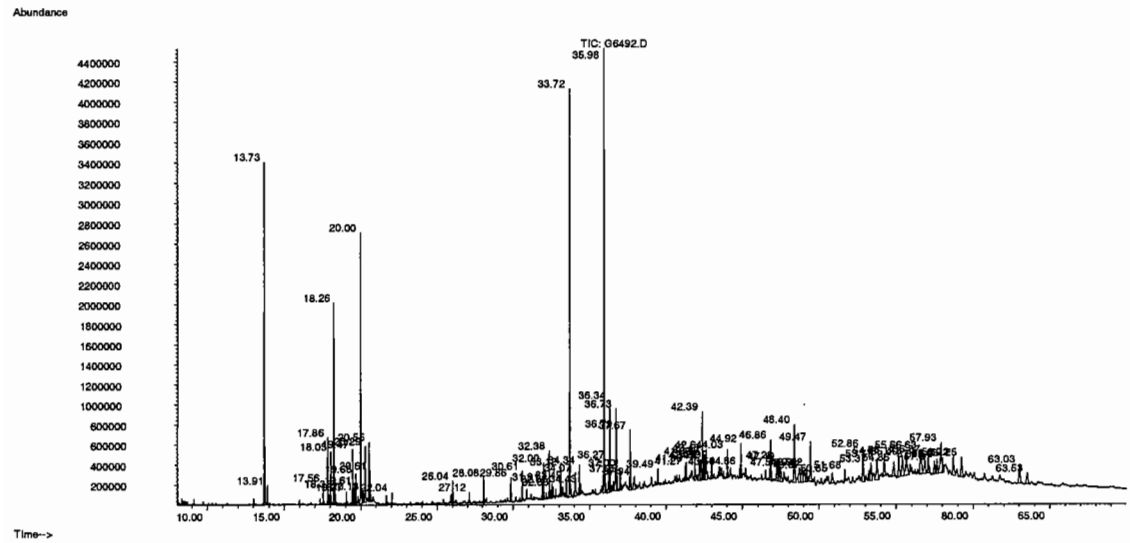
Project: hydrocarbons
Method: md1322

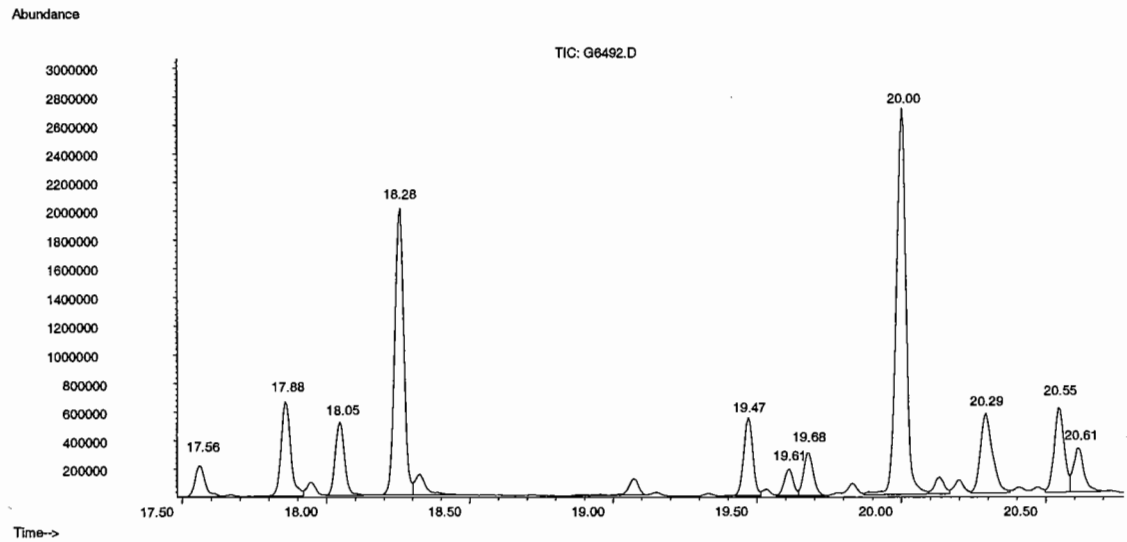


Acquisition Time: 04 Jan 2002 at 22:17.57

Sample REF 3-2
Unknown Compounds







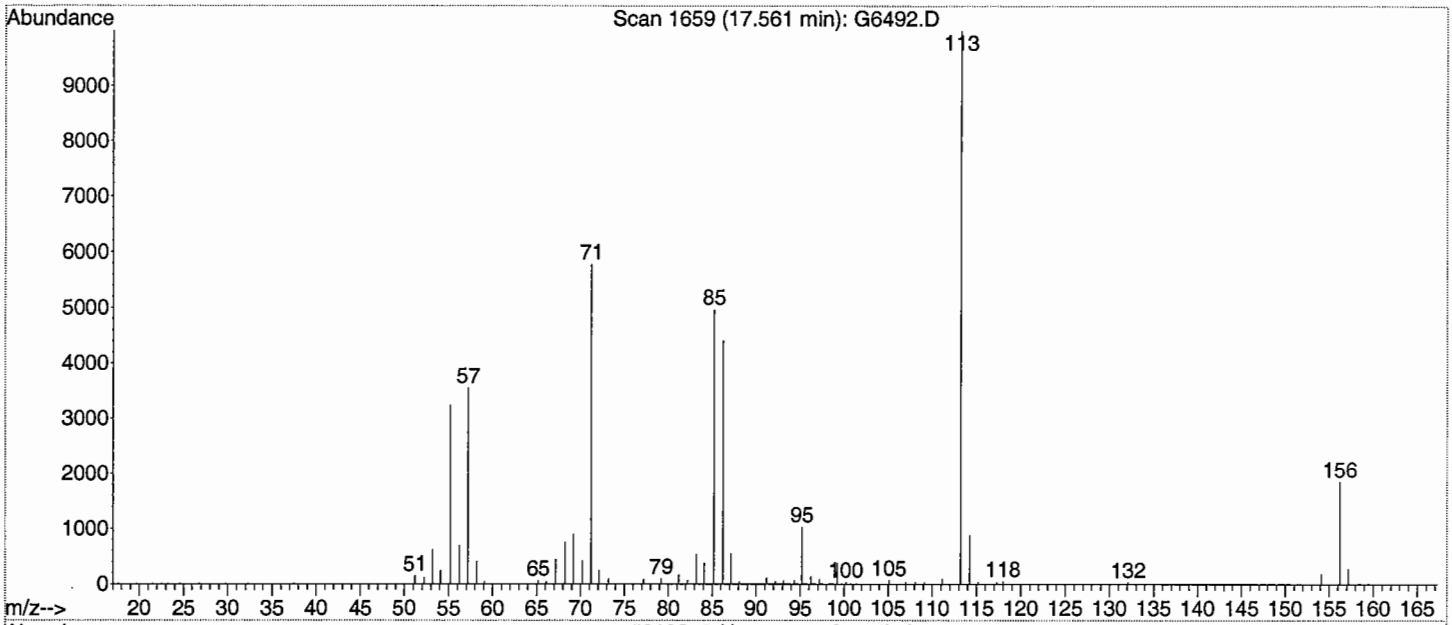
Scan 1659 (17.561 min): G6492.D S1466-P(7) REF 3-2

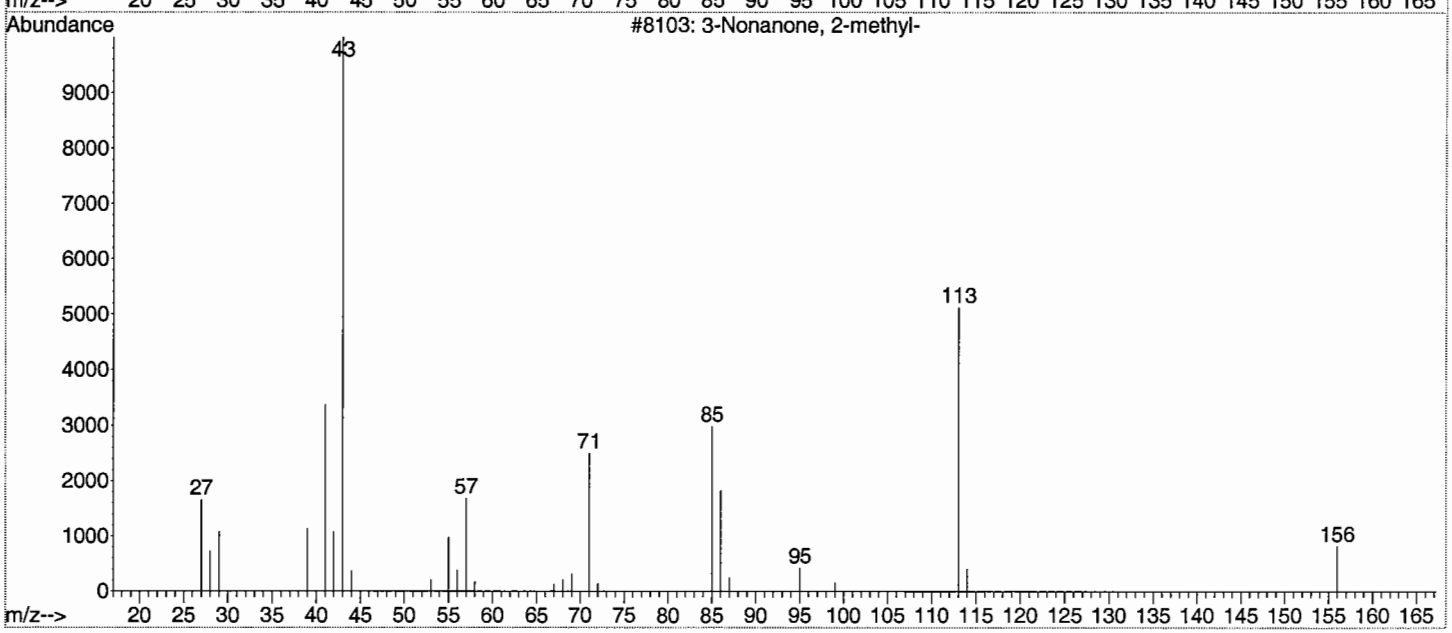
RT	m/z	RT	m/z	RT	m/z	RT	m/z
51.2	734						
52.2	557						
53.2	3119						
54.1	1219						
55.2	16287						
56.2	3468						
57.2	17824						
58.2	2077						
59.1	229						
65.2	312						
66.1	229						
67.2	2269						
68.2	3814						
69.2	4514						
70.2	2097						
71.2	28952						
72.1	1249						
73.2	491						
77.2	415						
79.2	482						
81.2	823						
82.2	355						
83.2	2698						
84.1	1913						
85.2	24896						
86.2	22176						
87.1	2775						
88.1	183						
91.2	578						
92.2	233						
93.1	320						
94.3	330						
95.2	5170						
96.2	666						
97.2	438						
99.2	1916						
100.2	163						
105.1	333						
107	182						
108.1	192						
109.1	170						
111.1	447						
113.2	50168						
114.2	4461						
115.2	196						
117.3	155						
118	219						
132.1	154						
154.1	915						
156.2	9333						
157.2	1424						

Scan 1659 (17.561 min): G6492.D
S1466-P(7)

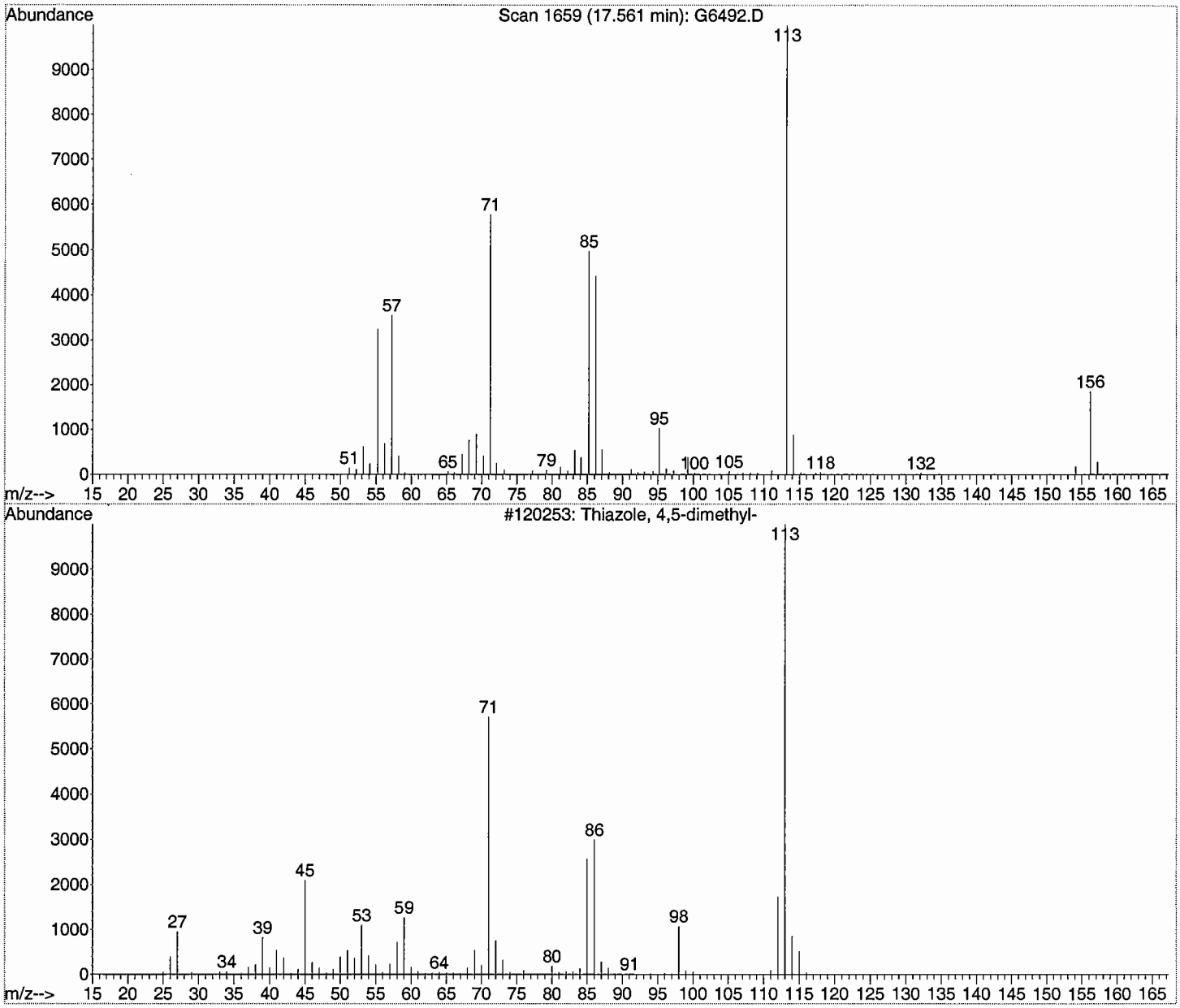
Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	3-Nonanone, 2-methyl-	156	C10H20O	94	005445-31-8
2	3-Nonanone, 2-methyl-	156	C10H20O	90	005445-31-8
3	Thiazole, 4,5-dimethyl-	113	C5H7NS	59	003581-91-7
4	Pyrimidine, 2-fluoro-4-amino-	113	C4H4FN3	46	096548-91-3
5	Isothiazole, 3,4-dimethyl-	113	C5H7NS	37	027330-46-7
6	Ethanone, 1-(trimethyloxiranyl)-	128	C7H12O2	37	015120-99-7
7	1,5-Dioxaspiro[5.5]undecane	156	C9H16O2	35	100013-92-8
8	Thiazole, 2,4-dimethyl-	113	C5H7NS	32	000541-58-2
9	Isothiazole, 3,4-dimethyl-	113	C5H7NS	32	027330-46-7
10	3,5-Heptanedione, 2,6-dimethyl-	156	C9H16O2	32	018362-64-6
11	Caprolactam	113	C6H11NO	32	000105-60-2
12	2-Pentanone, 3-ethyl-	114	C7H14O	27	006137-03-7
13	4-Piperidinone, 1-methyl-	113	C6H11NO	25	001445-73-4
14	2H-Pyran, tetrahydro-	86	C5H10O	22	000142-68-7
15	2H-Pyran, tetrahydro-	86	C5H10O	22	000142-68-7
16	4-Hydroxy-3,4,6-trimethylhept-5-enoic acid lactone	168	C10H16O2	16	100012-24-7
17	Oxirane, 2-ethyl-2-methyl-	86	C5H10O	16	030095-63-7
18	2-Pentanone, 3-ethyl-	114	C7H14O	16	006137-03-7
19	4-Piperidinone, 1-methyl-	113	C6H11NO	16	001445-73-4
20	Creatinine	113	C4H7N3O	12	000060-27-5

Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 94
ID : 3-Nonanone, 2-methyl-

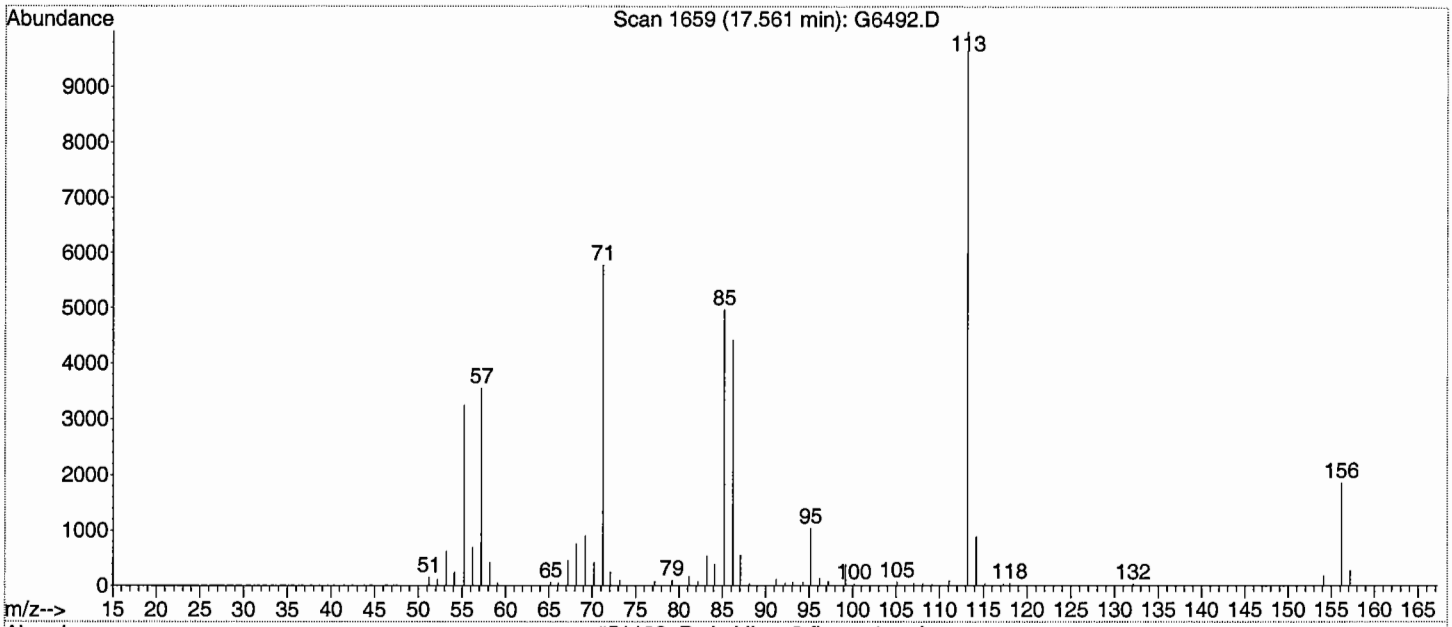


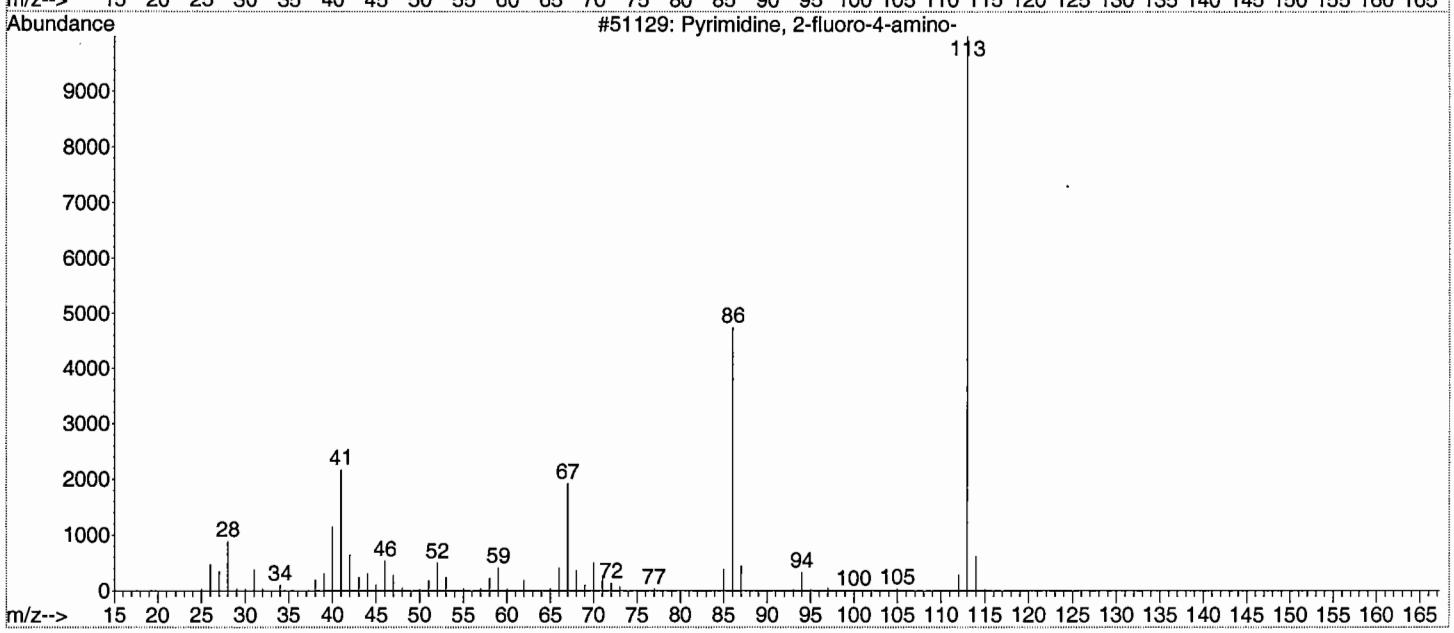


Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 59
ID : Thiazole, 4,5-dimethyl-

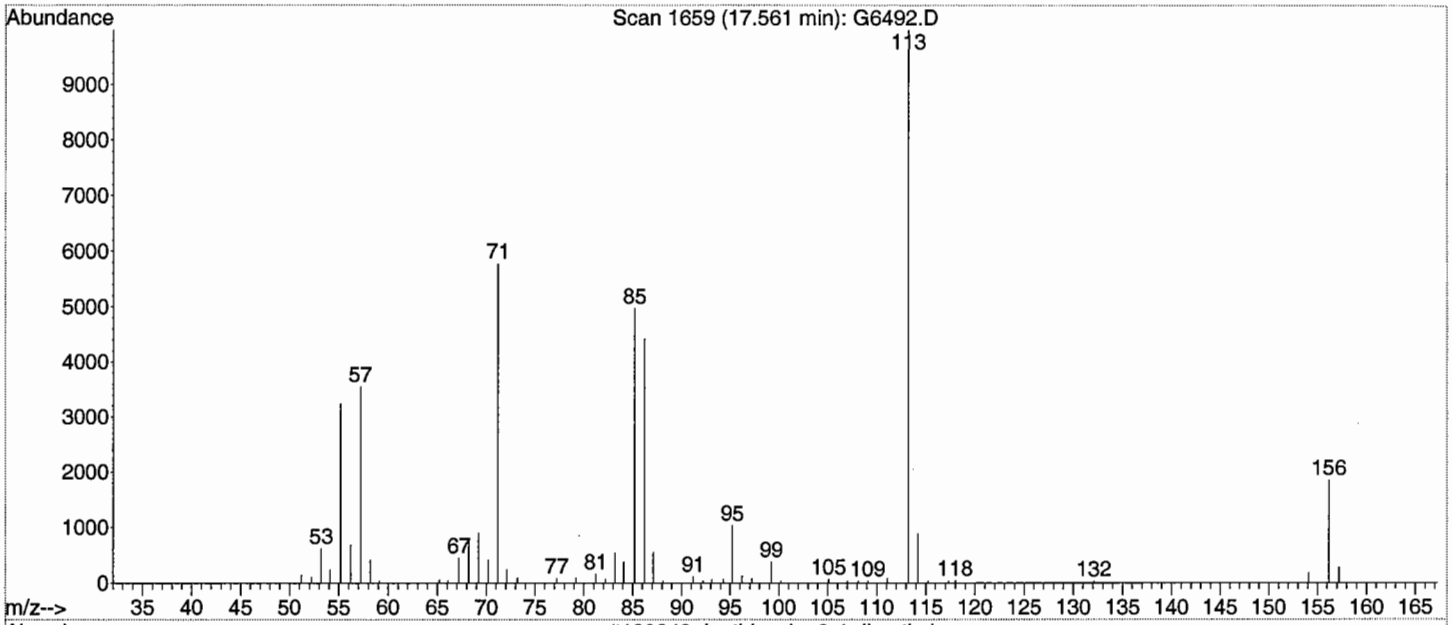


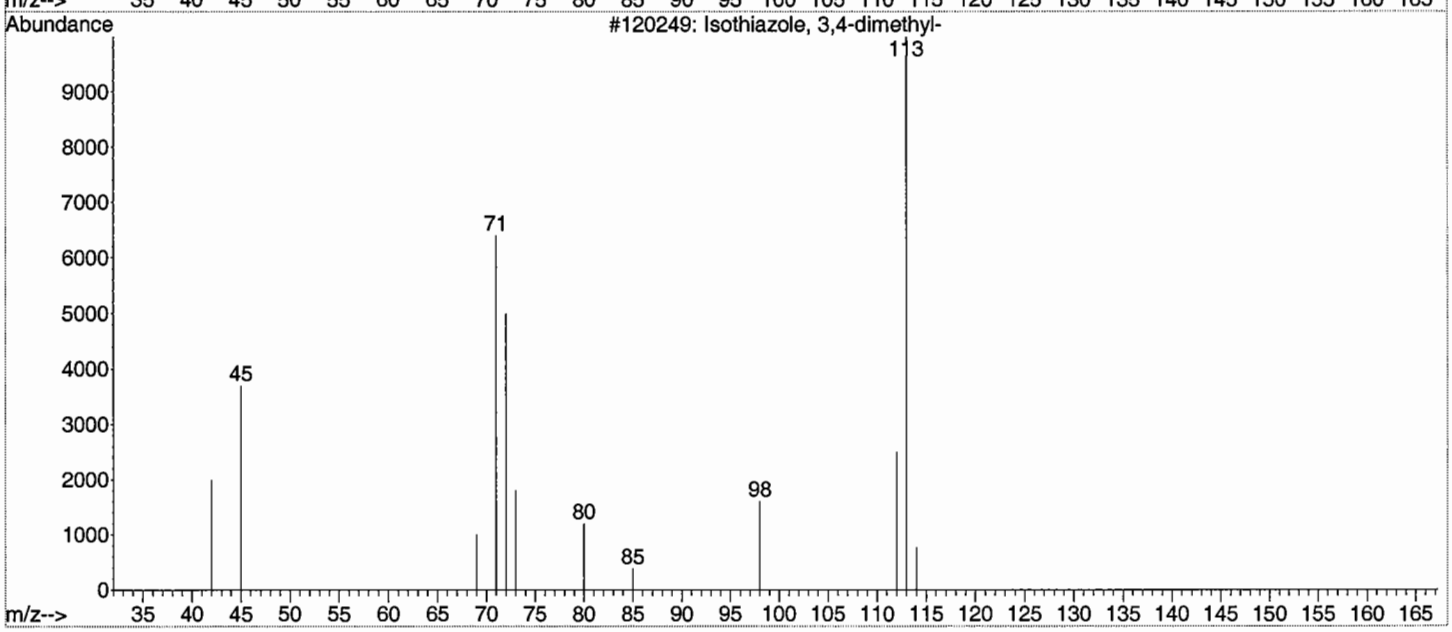
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 46
ID : Pyrimidine, 2-fluoro-4-amino-



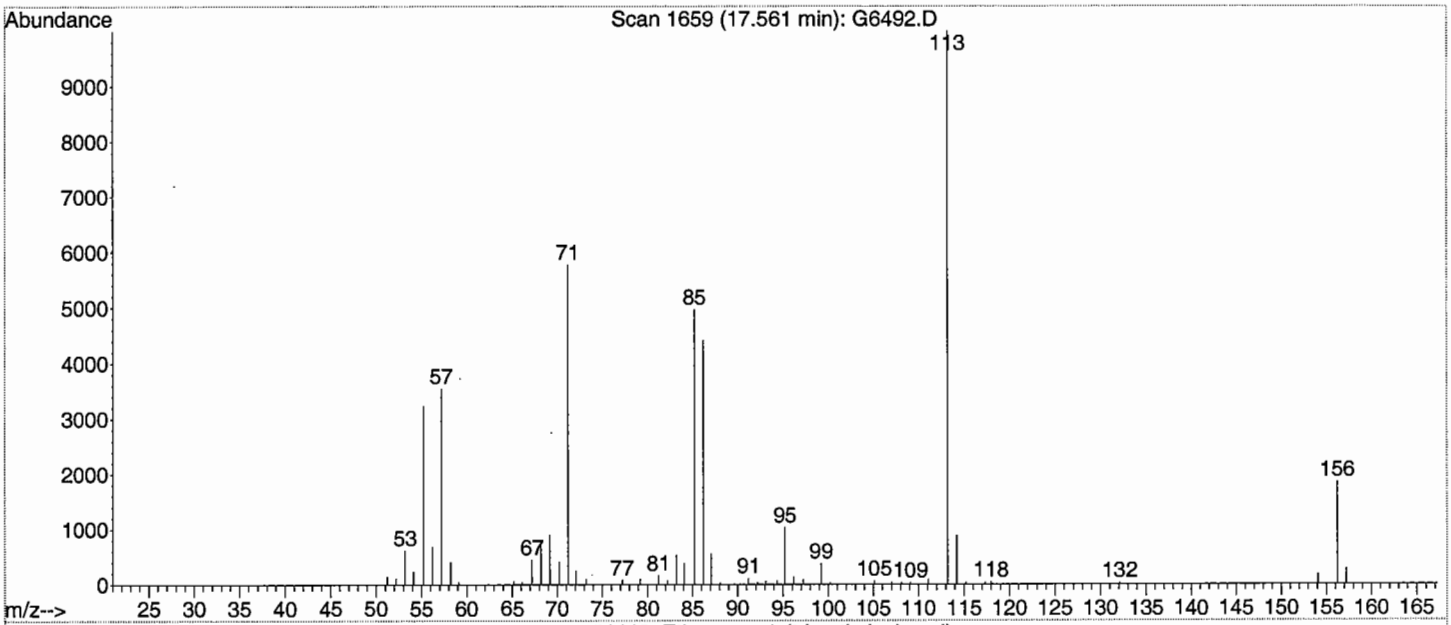


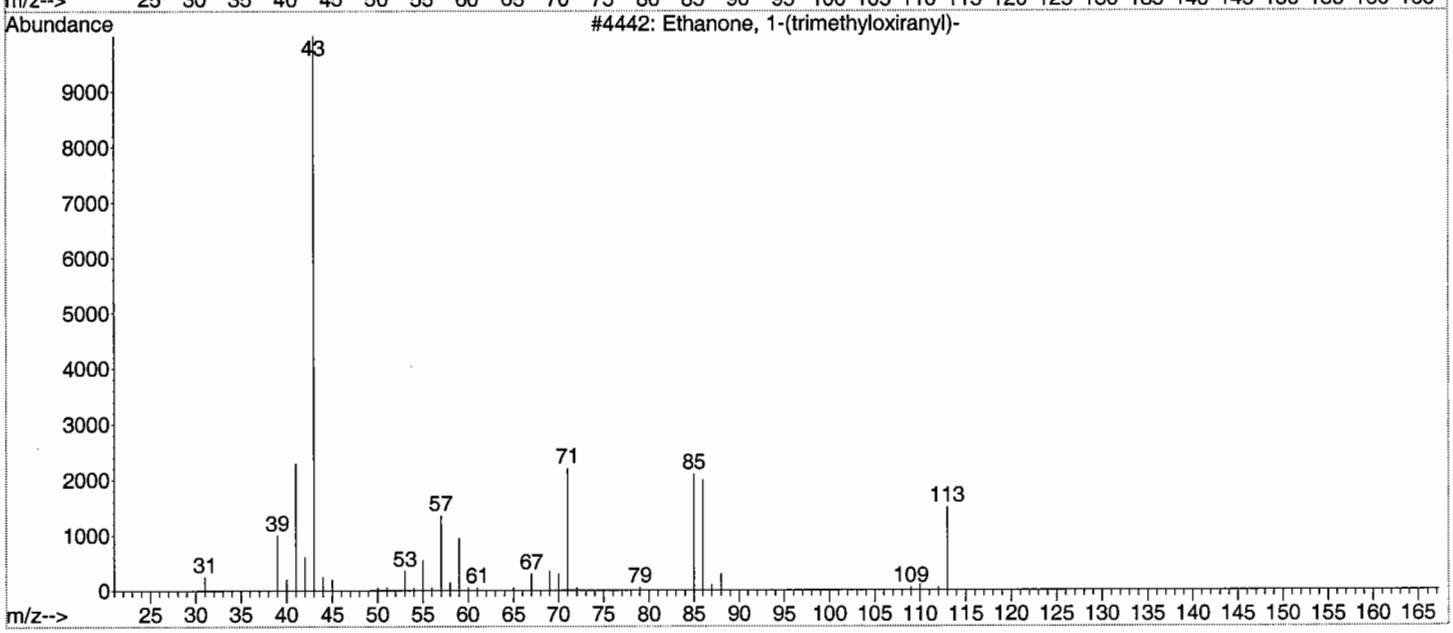
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 37
ID : Isothiazole, 3,4-dimethyl-





Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 37
ID : Ethanone, 1-(trimethyloxiranyl)-





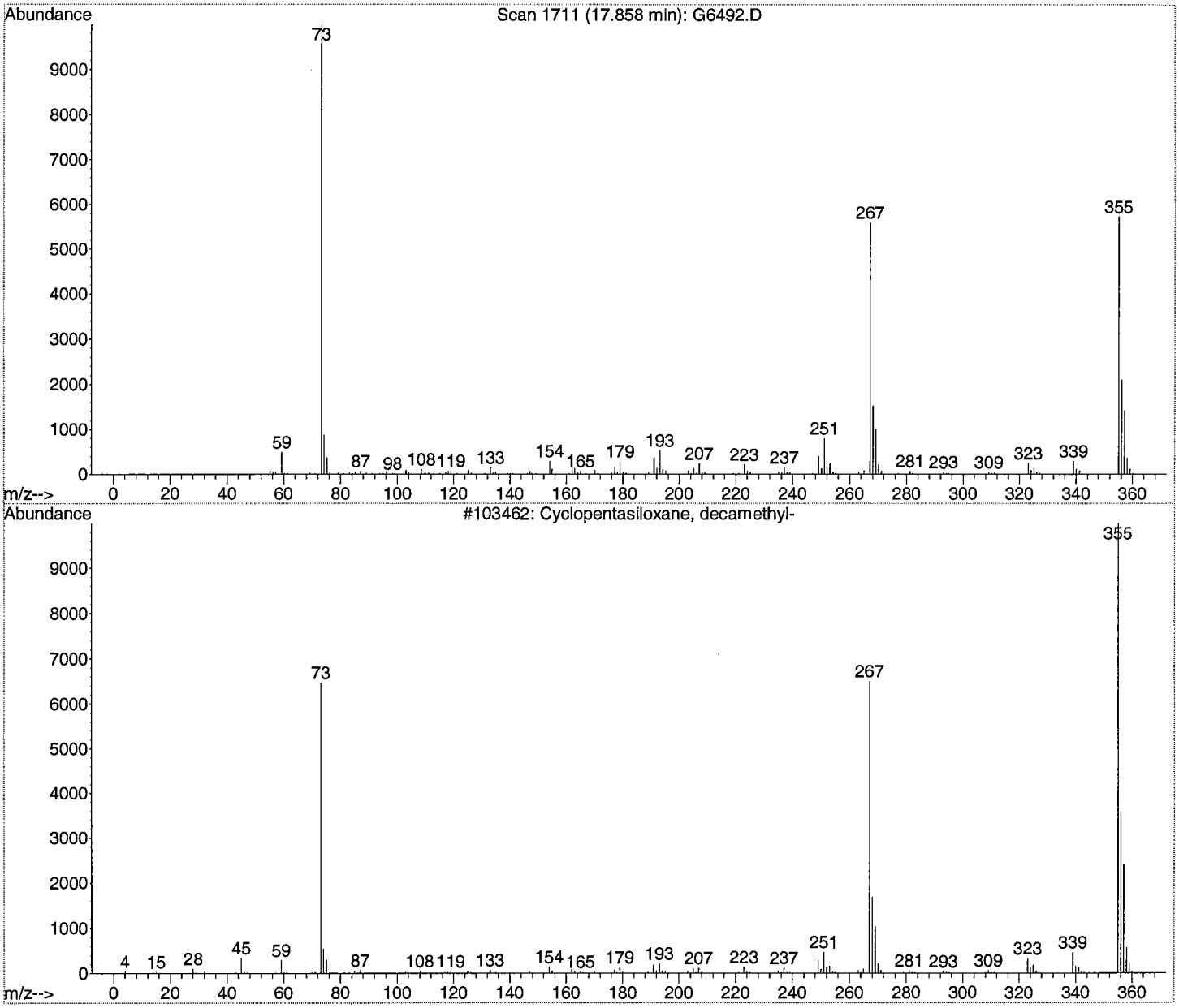
Scan 1711 (17.858 min): G6492.D S1466-P(7) REF 3-2

RT	m/z	RT	m/z	RT	m/z	RT	m/z
50.3	158	146.2	199	271.1	1275		
53.1	283	147	1054	277	207		
54	258	147.7	437	281.2	1106		
55.2	1197	149	370	282.1	374		
56.2	854	149.9	183	283.1	174		
57.1	916	154.1	4949	293	768		
58.2	373	154.9	1950	294	392		
59.2	8364	160.9	290	294.8	224		
60.1	490	162.1	3426	295.9	178		
61.2	582	162.9	2186	307.2	221		
66	175	164.1	600	309.1	634		
67.3	265	165	1119	310.1	320		
68.2	392	166.9	229	311	408		
69.2	548	170.2	1519	323.1	4137		
70.2	284	171.1	222	324.1	1482		
71.1	373	171.3	230	325.1	2270		
73.2	169920	175	188	326.1	743		
74.2	14903	176	426	327.1	496		
75.2	6261	177.1	2626	328.2	195		
76.2	520	178.1	693	339.1	4897		
77.1	290	179	4841	340.1	2060		
79.2	526	180.1	862	341.2	1397		
80.2	161	181.1	493	342	358		
81.1	361	189.1	672	343.1	177		
82.1	245	190.1	238	355.1	97328		
83.2	697	191.1	6269	356.1	35648		
84.2	273	192.1	2222	357.1	23976		
85.1	793	193.1	8918	358.1	6067		
87.1	1189	194.1	1702	359.1	1968		
88.2	259	195.1	1269	360.1	345		
89.1	646	196.1	240				
89.7	177	203.1	1339				
91	287	204.1	379				
93.2	178	205	2144				
93.8	233	206.1	572				
95.1	205	207.1	4021				
96.1	942	208.1	853				
97.1	214	209.1	622				
98.3	196	211.1	168				
99	360	219	529				
101.2	202	221	496				
103.1	1402	223	3651				
104	692	224.1	1234				
105.1	403	225.1	746				
108.5	1823	226	219				
109.5	247	235	834				
110	424	236.1	646				
111.2	528	237	2563				
112.9	215	238	1045				
115	476	239	662				
117.1	716	240	182				
118.1	1006	246.9	367				
119	1184	249.1	6726				
121.1	382	250.1	2088				
125.2	1516	251.1	13467				
126.2	589	252	2604				
129.2	179	253	4023				
131.1	347	254.1	791				
132.2	276	255	487				
133.1	2402	256.2	172				
134.1	542	263.1	947				
135	842	264.3	318				
139.1	211	265.1	1320				
140	294	267.1	95168				
140.8	320	268.1	25856				
141.1	259	269.1	17224				
145	245	270	3544				

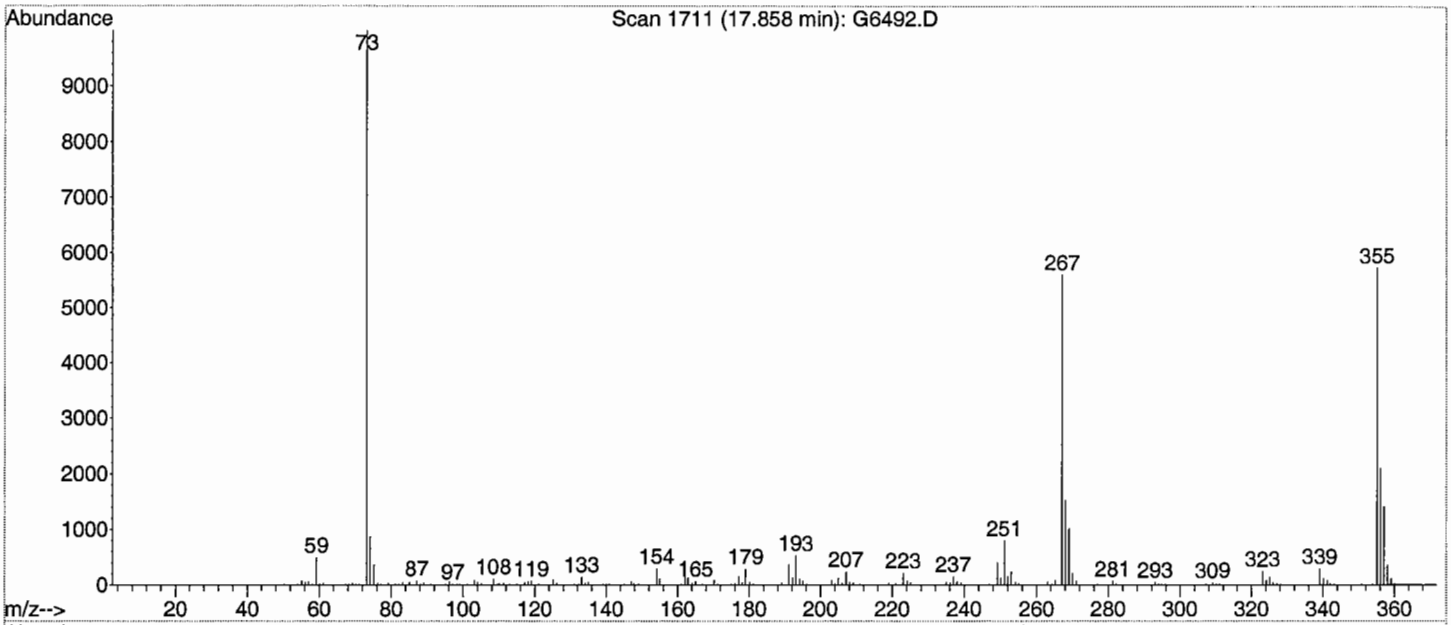
Scan 1711 (17.858 min): G6492.D
S1466-P(7)

Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	Cyclopentasiloxane, decamethyl-	370	C10H30O5Si5	91	000541-02-6
2	Cyclopentasiloxane, decamethyl-	370	C10H30O5Si5	91	000541-02-6
3	Cyclopentasiloxane, decamethyl-	370	C10H30O5Si5	91	000541-02-6
4	Cyclopentasiloxane, decamethyl-	370	C10H30O5Si5	87	000541-02-6
5	3,4-Dihydroxybenzyl alcohol,tris(trimethylsilyl)-	356	C16H32O3Si3	64	068595-79-9
6	Phenethylamine, N-methyl-.beta.,3,4-tris(trimethylsiloxy)-	399	C18H37NO3Si3	47	010538-85-9
7	Phenethylamine, N-methyl-.beta.,3,4-tris(trimethylsiloxy)-	399	C18H37NO3Si3	47	010538-85-9
8	Silane, [(fluoromethylphenylsilyl)methylidyne]tris[trimethyl-	370	C17H35FSi4	43	072190-81-9
9	Benzeneacetic acid, .alpha.,4-bis[(trimethylsilyl)oxy]-, methyl ester	326	C15H26O4Si2	38	055334-40-2
10	Benzoic acid, 2,4-bis[(trimethylsilyl)oxy]-, trimethylsilyl ester	370	C16H30O4Si3	38	010586-16-0
11	Benzeneethanamine, N-[(pentafluorophenyl)methylene]-.beta.,3,4-tris[(trimethylsilyl)oxy]-	563	C24H34F5NO3Si3	38	055429-13-5
12	p-Trimethylsilyloxyphenyl-bis(trimethylsilyloxy)ethane	370	C17H34O3Si3	38	100007-90-8
13	Silane, [[4-[1,2-bis[(trimethylsilyl)oxy]ethyl]-1,2-phenylene]bis(oxy)]bis[trimethyl-	458	C20H42O4Si4	37	056114-62-6
14	Benzoic acid, 2,4-bis[(trimethylsilyl)oxy]-, trimethylsilyl ester	370	C16H30O4Si3	37	010586-16-0
15	Benzoic acid, 2-[(trimethylsilyl)oxy]-, trimethylsilyl ester	282	C13H22O3Si2	35	003789-85-3
16	p-Trimethylsilyloxyphenyl-(trimethylsilyloxy)trimethylsilylacrylate	398	C18H34O4Si3	35	100007-90-5
17	Silane, [[4-[1,2-bis[(trimethylsilyl)oxy]ethyl]-1,2-phenylene]bis(oxy)]bis[trimethyl-	458	C20H42O4Si4	32	056114-62-6
18	3,6-Bis(N,N-dimethylamino)-9-methylcarbazole	267	C17H21N3	14	119046-55-8
19	N-Phenyl-N'-(4-N,N-diethylaminobenzylidene) hydrazine	267	C17H21N3	14	100022-21-8
20	13H-Dibenzo[a,i]carbazole	267	C20H13N	14	000239-64-5

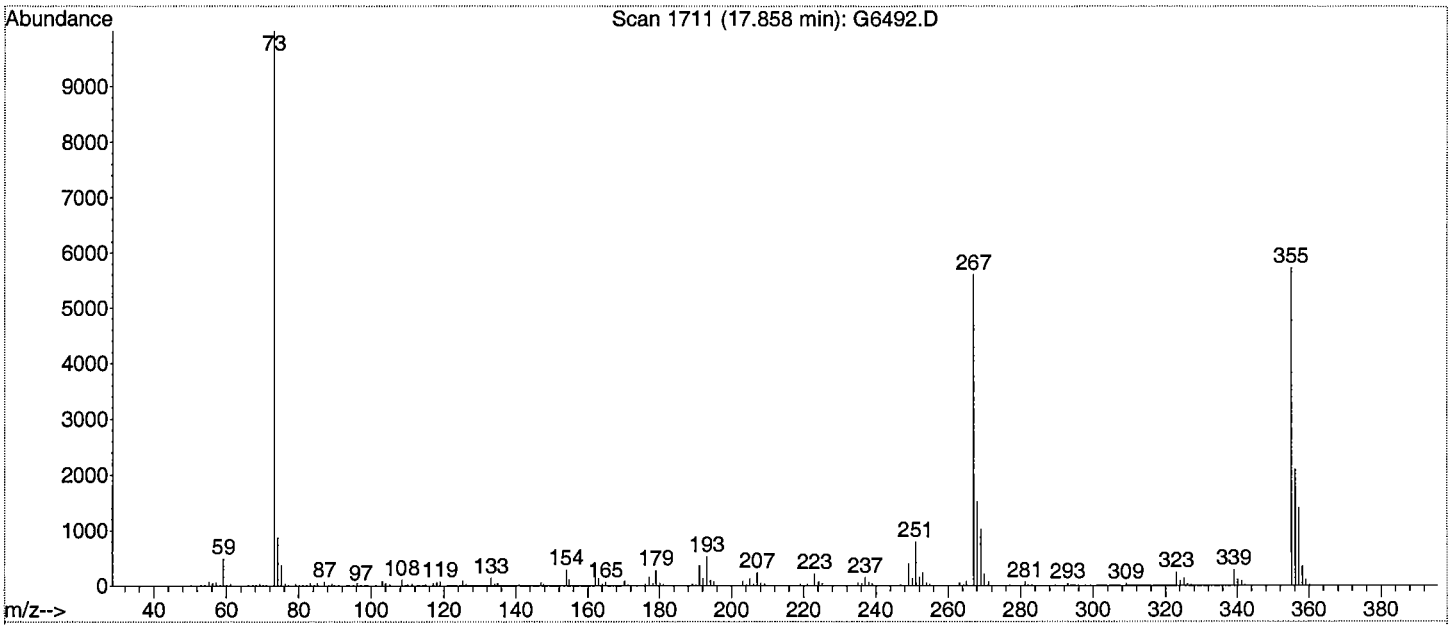
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 91
ID : Cyclopentasiloxane, decamethyl-



Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 64
ID : 3,4-Dihydroxybenzyl alcohol,tris(trimethylsilyl)-



Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 47
ID : Phenethylamine, N-methyl-.beta.,3,4-tris(trimethylsiloxy)-



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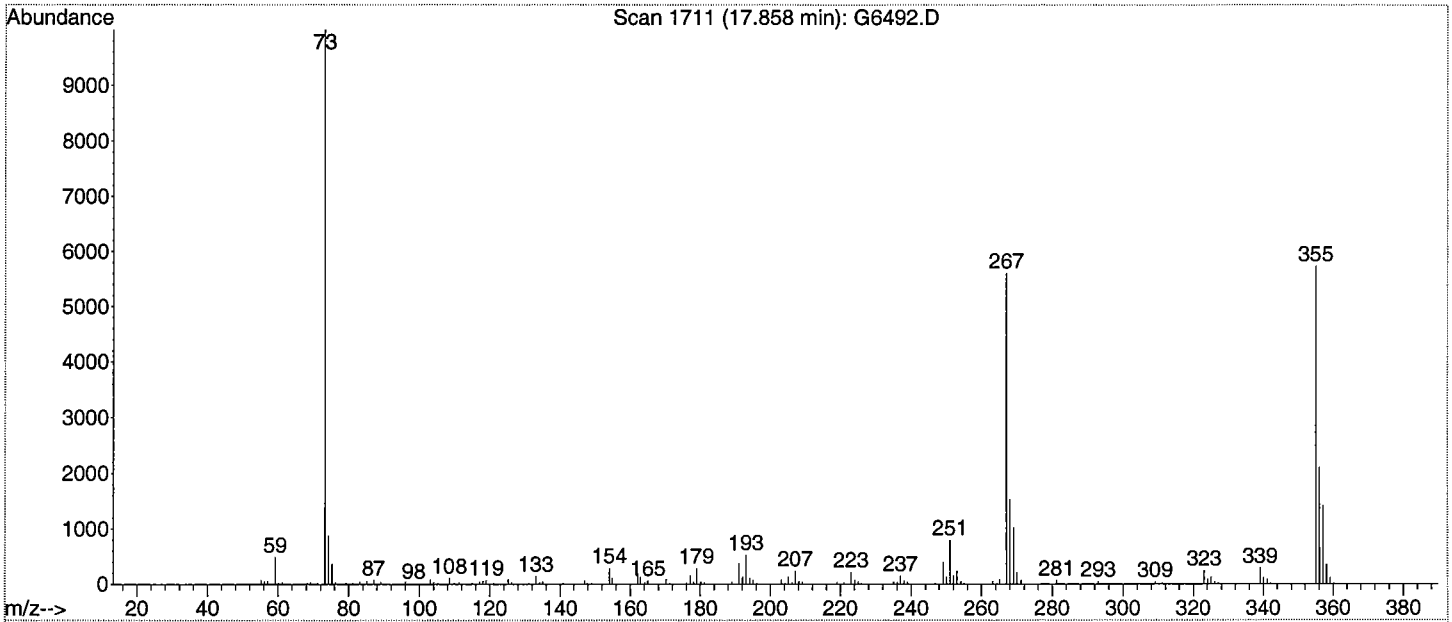
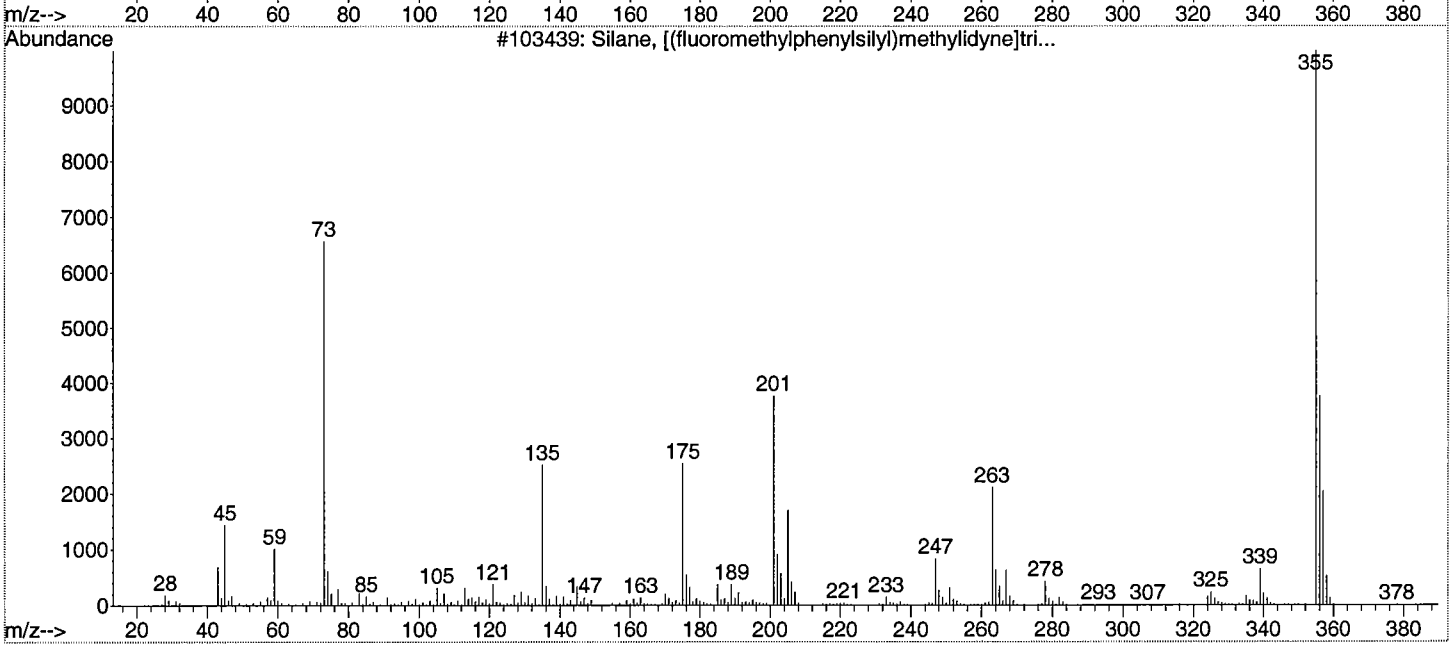
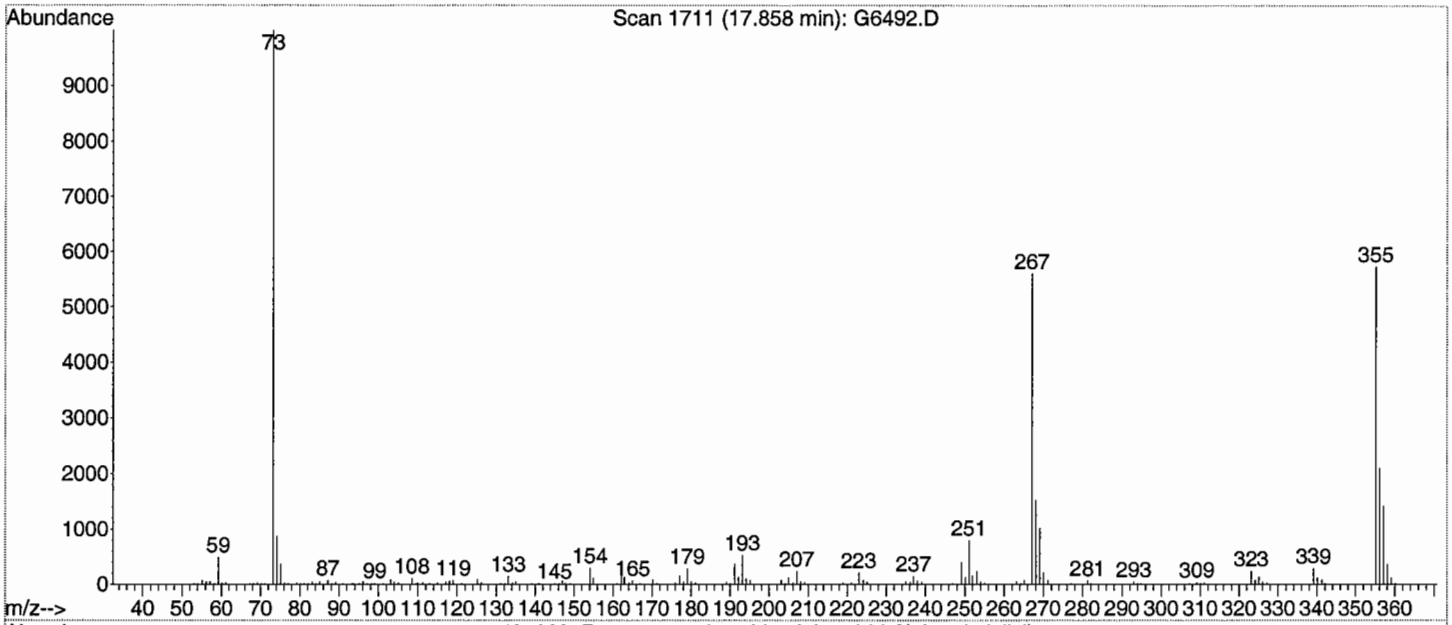
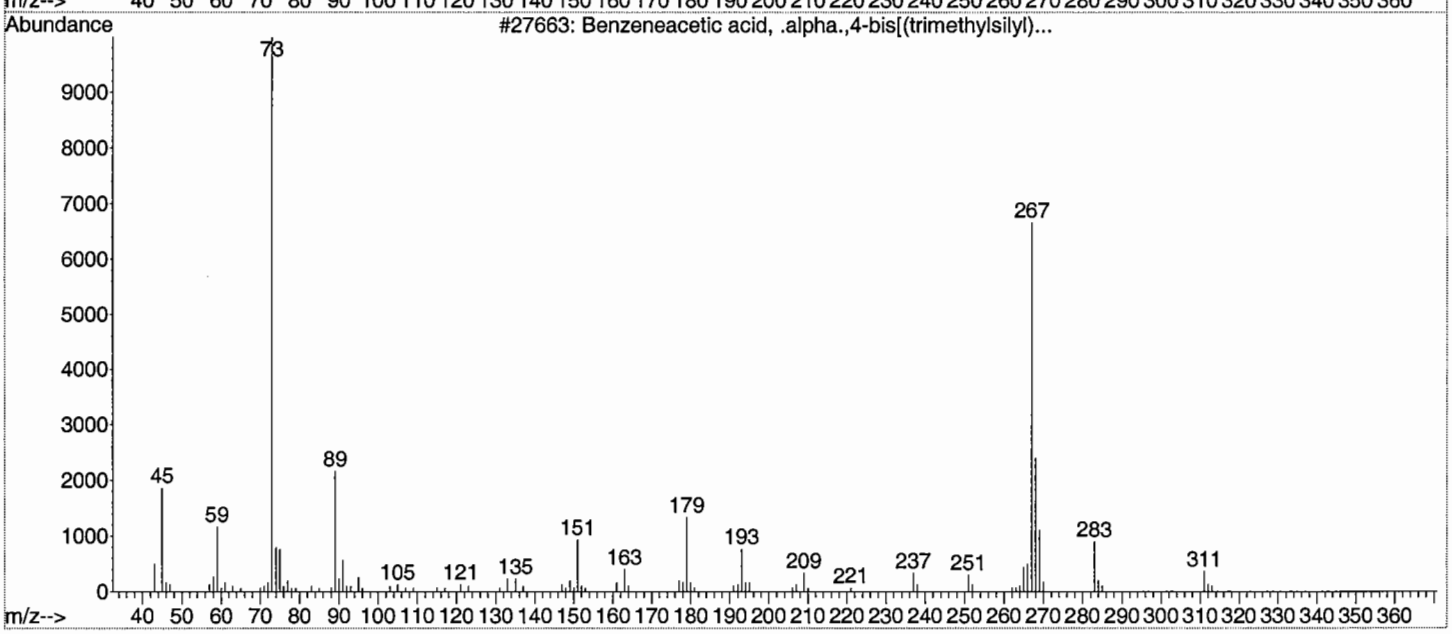
Quality : 43
ID : Silane, [(fluoromethylphenylsilyl)methylidyne]tris[trimethyl-





Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 38
ID : Benzeneacetic acid, .alpha.,4-bis[(trimethylsilyl)oxy]-, methyl ester





Scan 1744 (18.047 min): G6492.D S1466-P(7) REF 3-2

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52.2	845						
53.2	9298						
54.2	8486						
55.2	58360						
56.2	13056						
57.2	37576						
58.2	1951						
59.2	1259						
60.2	169						
61.2	171						
62.1	179						
63.1	216						
65.1	2186						
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67.2	31144						
68.2	11314						
69.2	46952						
70.2	7978						
71.2	9587						
72.2	2770						
73.2	49528						
74.2	2257						
77.2	1751						
78.2	535						
79.2	3196						
80.1	2388						
81.2	6617						
82.2	12571						
83.2	5086						
84.2	2449						
85.2	1523						
86.2	3706						
87.2	719						
91.2	1306						
93.2	5795						
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96.2	15752						
97.1	2379						
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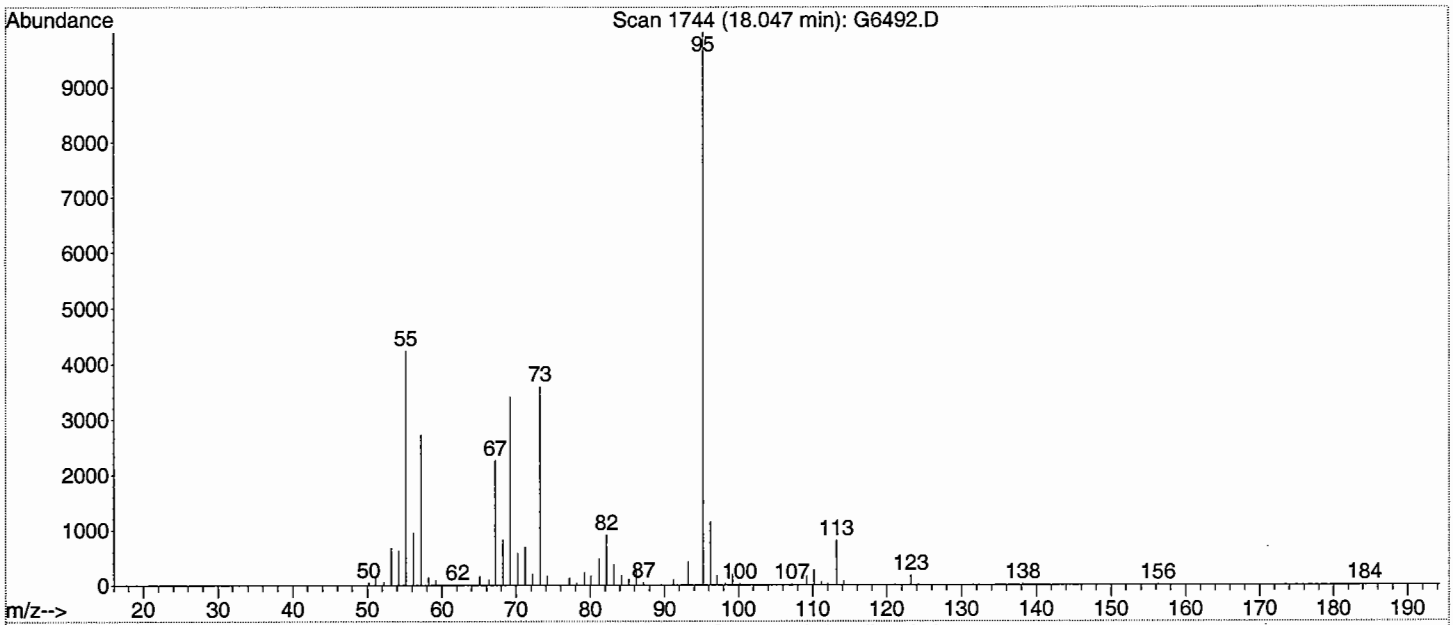
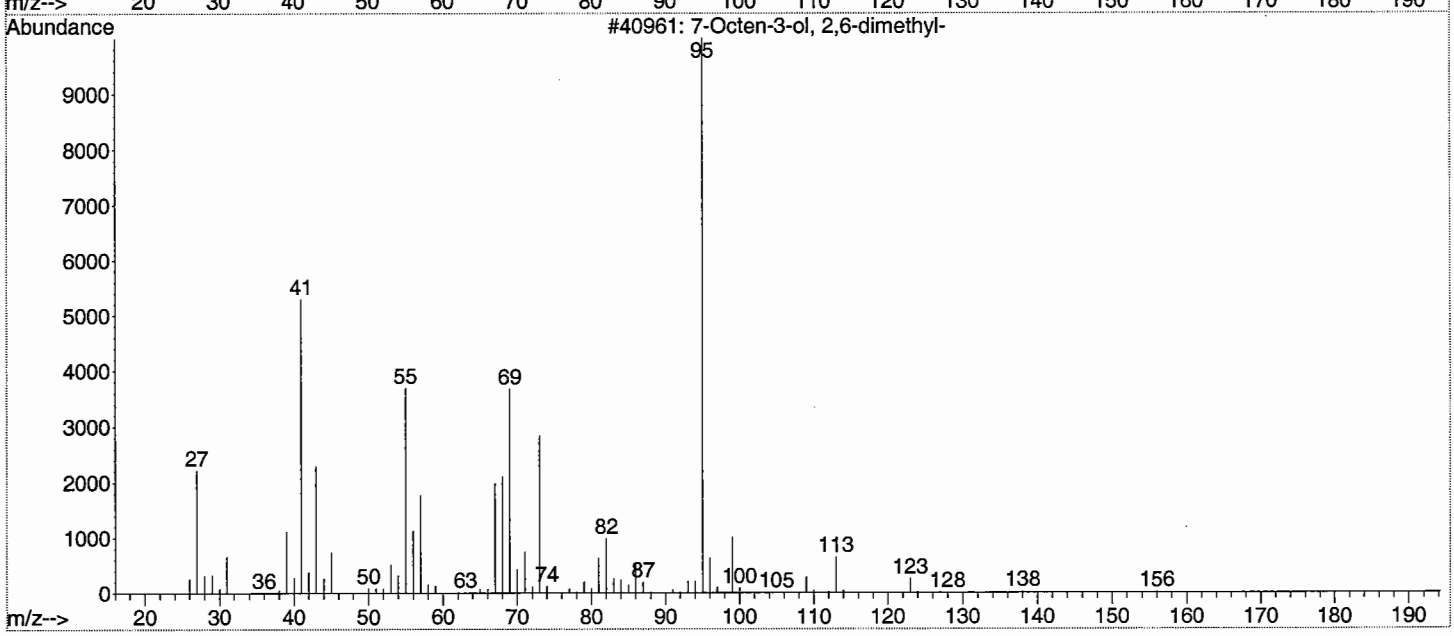
99.2	2569						
100.2	393						
105.4	176						
107.2	299						
109.2	2174						
110.2	3798						
111.2	761						
112	446						
113.2	11120						
114.2	964						
121.1	168						
123.2	2473						
124.2	171						
138.2	328						
156.3	214						
184.2	177						

Scan 1744 (18.047 min): G6492.D
S1466-P(7)

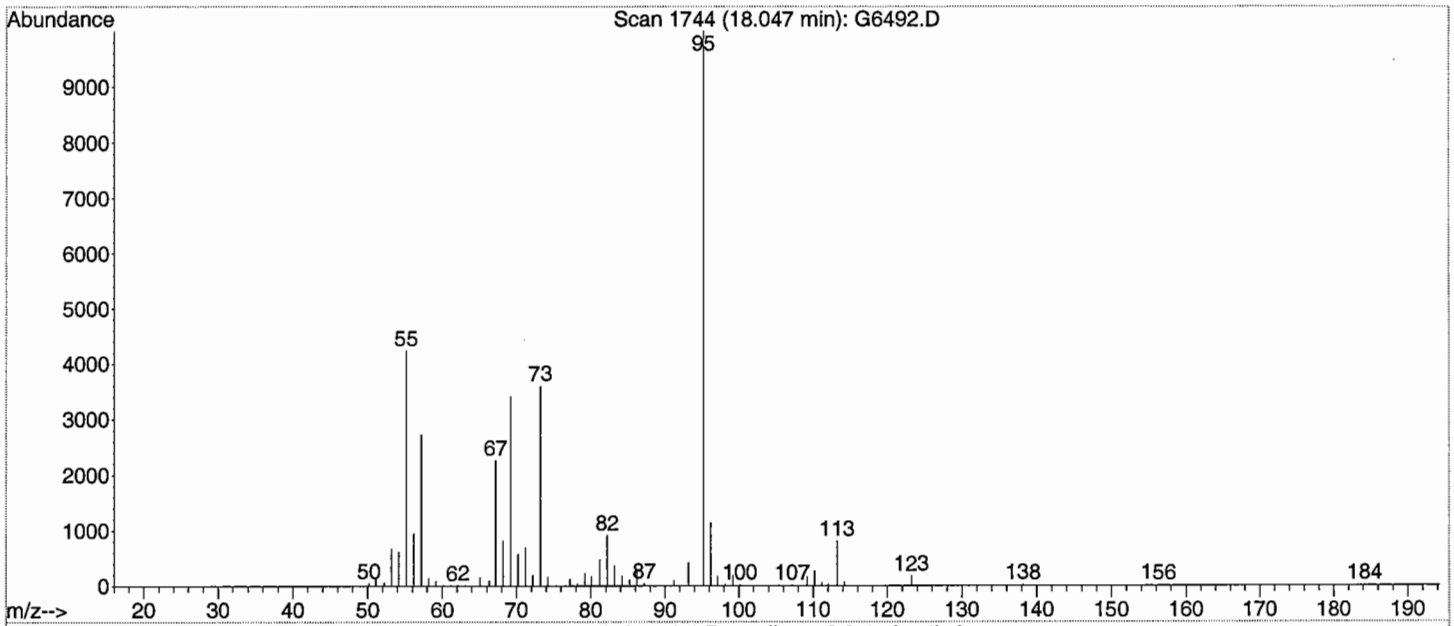
Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	7-Octen-3-ol, 2,6-dimethyl-	156	C10H20O	56	018479-56-6
2	1,4-Pentadiene, 2,3,4-trimethyl-	110	C8H14	43	072014-90-5
3	Bicyclo[2.2.1]heptane, 2-ethyl-	124	C9H16	42	002146-41-0
4	Cyclopropane, 1-(1,1-dimethylethyl)-2-methylene-	110	C8H14	40	061142-25-4
5	2-Norbornyl bromide	174	C7H11Br	40	029342-65-2
6	1,4-Cyclohexanedimethanol	144	C8H16O2	40	000105-08-8
7	Dicyclohexylmethanol	196	C13H24O	40	004453-82-1
8	Cyclohexanemethanol, 4-(1-methylethyl)-, cis-	156	C10H20O	38	013828-37-0
9	6-Hepten-1-ol, 2-methyl-	128	C8H16O	36	100013-21-2
10	1,3-Dimethyl-1-cyclohexene	110	C8H14	33	002808-76-6
11	3,5-Octadien-2-one	124	C8H12O	28	038284-27-4
12	exo-2-Bromonorbornane	174	C7H11Br	28	002534-77-2
13	Furan, tetrahydro-2,5-dipropyl-	156	C10H20O	28	004457-62-9
14	Cyclopropane, (2,2-dimethylpropylidene)-	110	C8H14	17	039647-71-7
15	1-Nonyne	124	C9H16	10	003452-09-3
16	Z-1,9-Hexadecadiene	222	C16H30	10	100024-57-1
17	1,4-Pentadiene, 2,3,3-trimethyl-	110	C8H14	9	000756-02-5
18	Z-1,9-Tetradecadiene	194	C14H26	8	100024-57-0
19	1,4-Heptadiene, 3,3,6-trimethyl-	138	C10H18	7	074498-89-8
20	1,6-Heptadiene, 2,3,6-trimethyl-	138	C10H18	7	074421-35-5

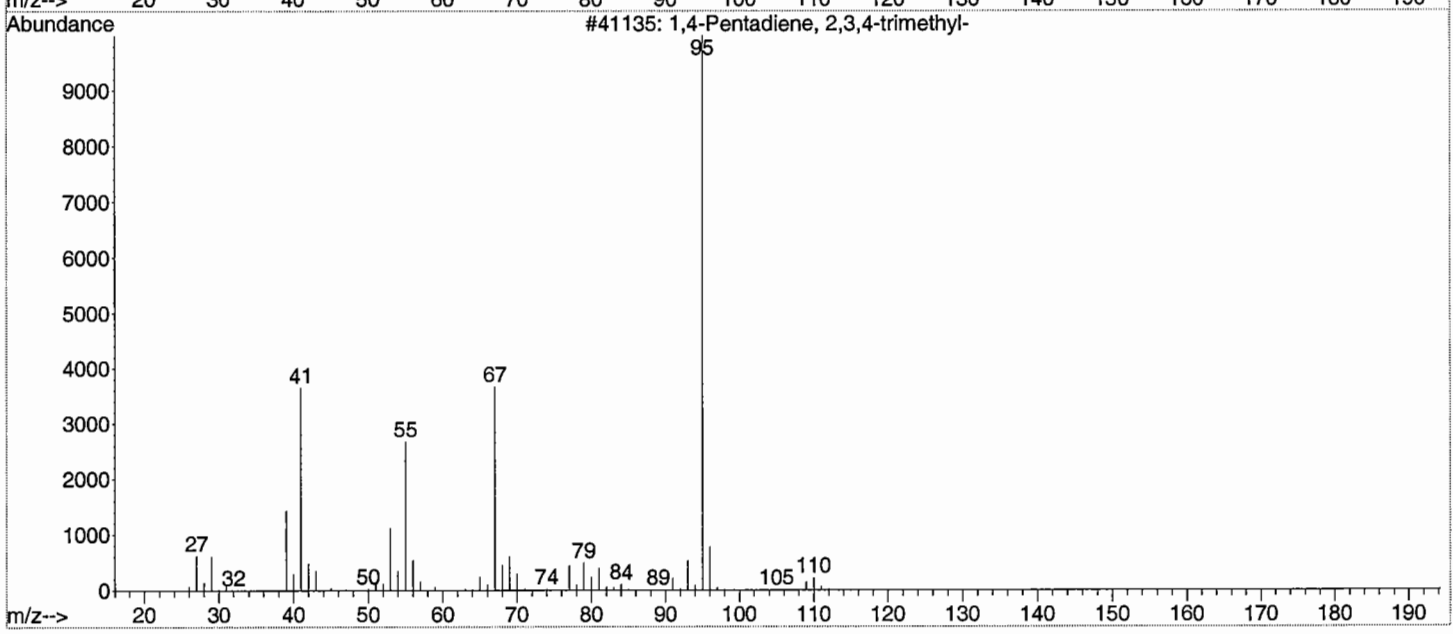
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 56
ID : 7-Octen-3-ol, 2,6-dimethyl-





Library Searched : C:\MSDChem\DATABASE\Nist98.1
Quality : 43
ID : 1,4-Pentadiene, 2,3,4-trimethyl-





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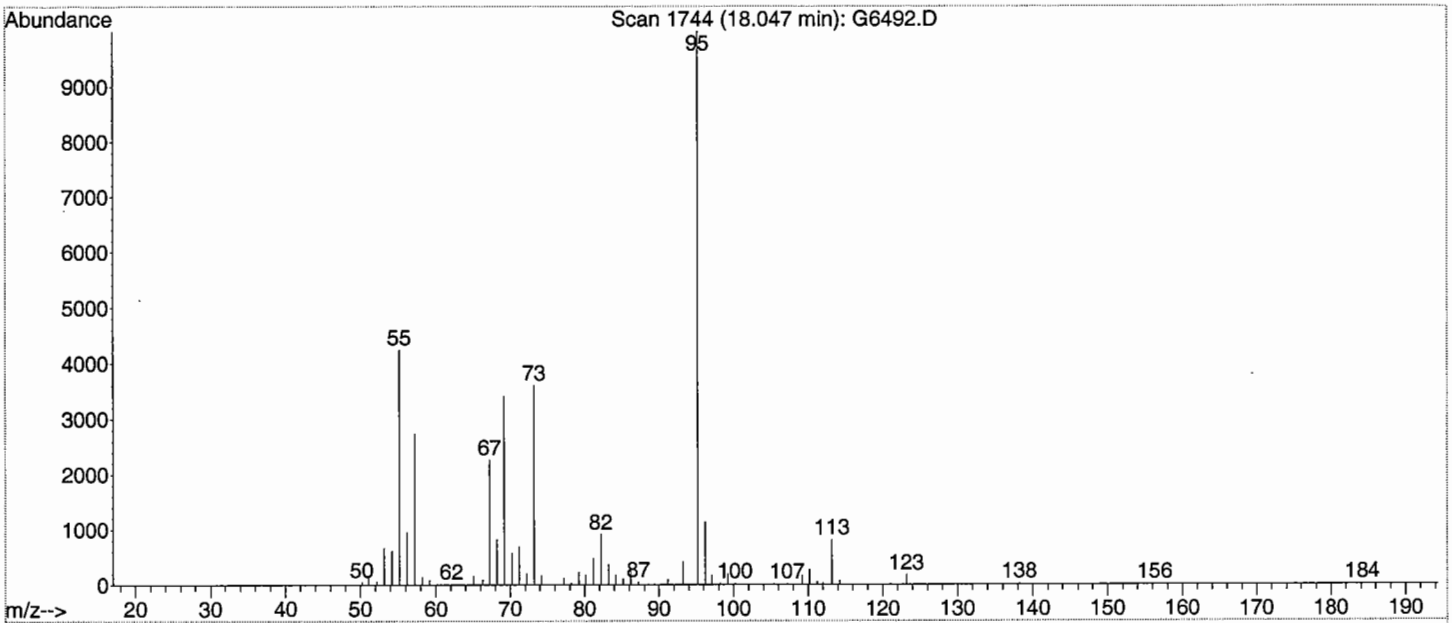
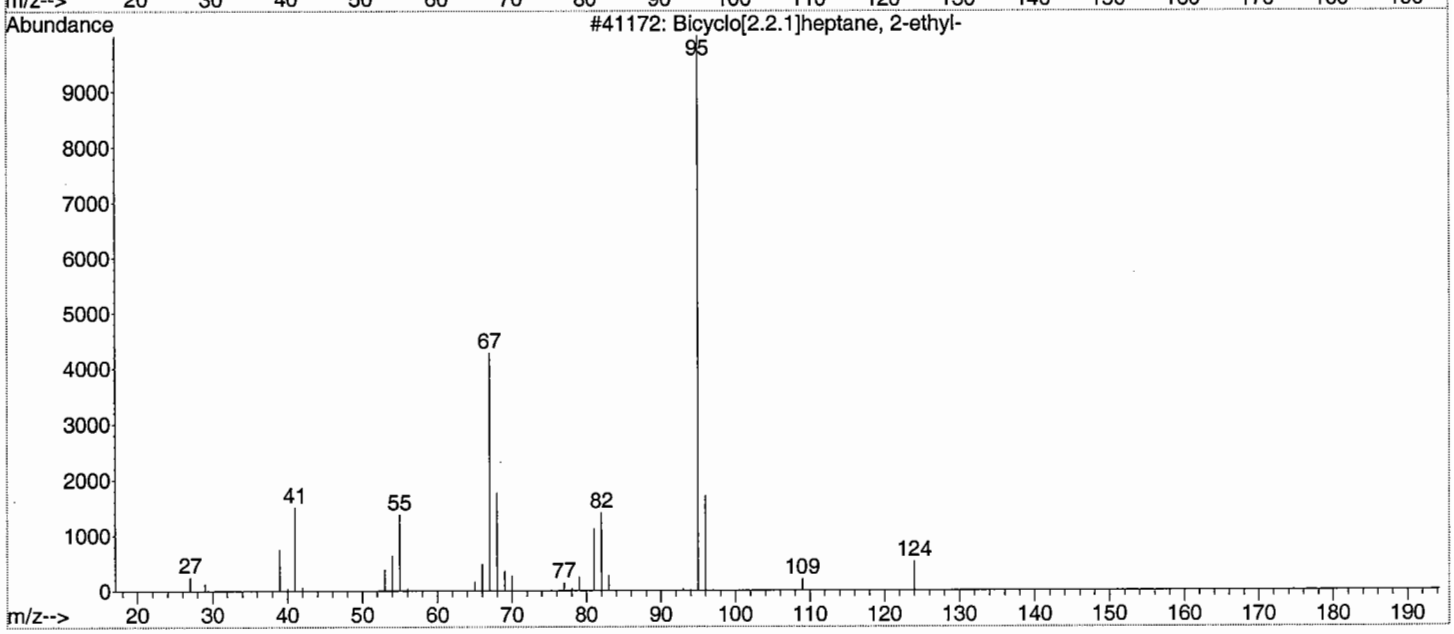
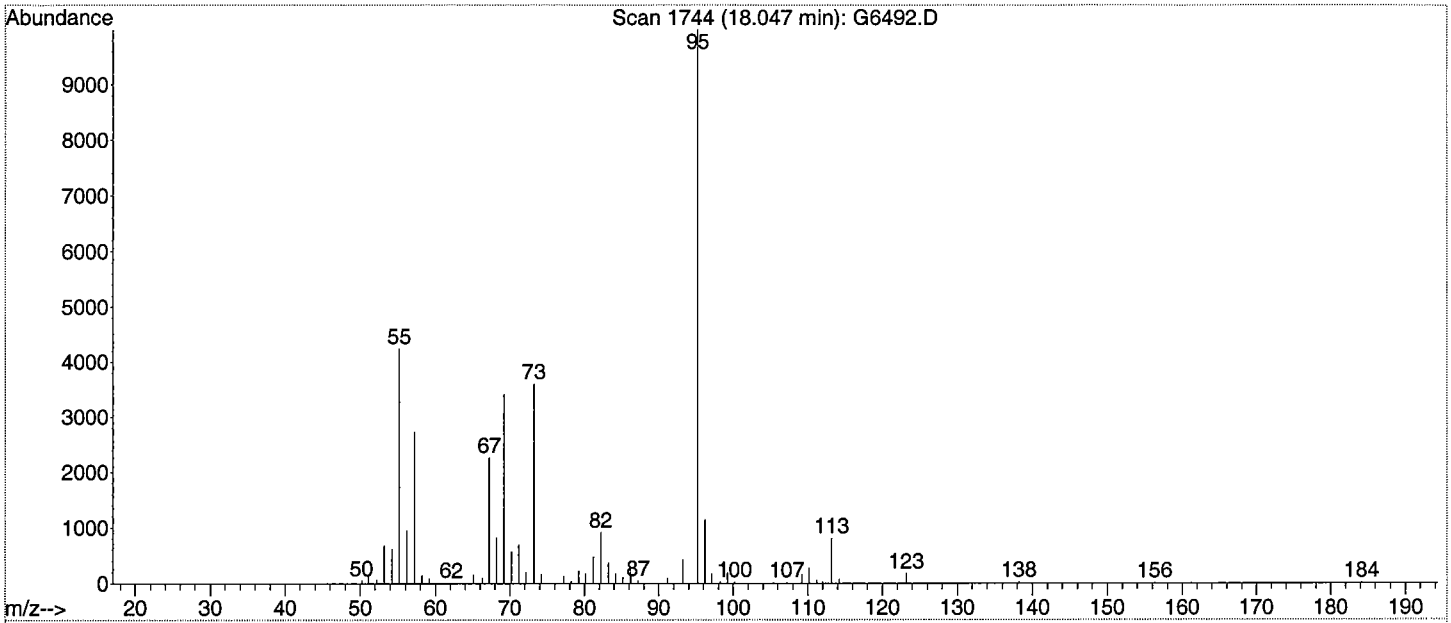
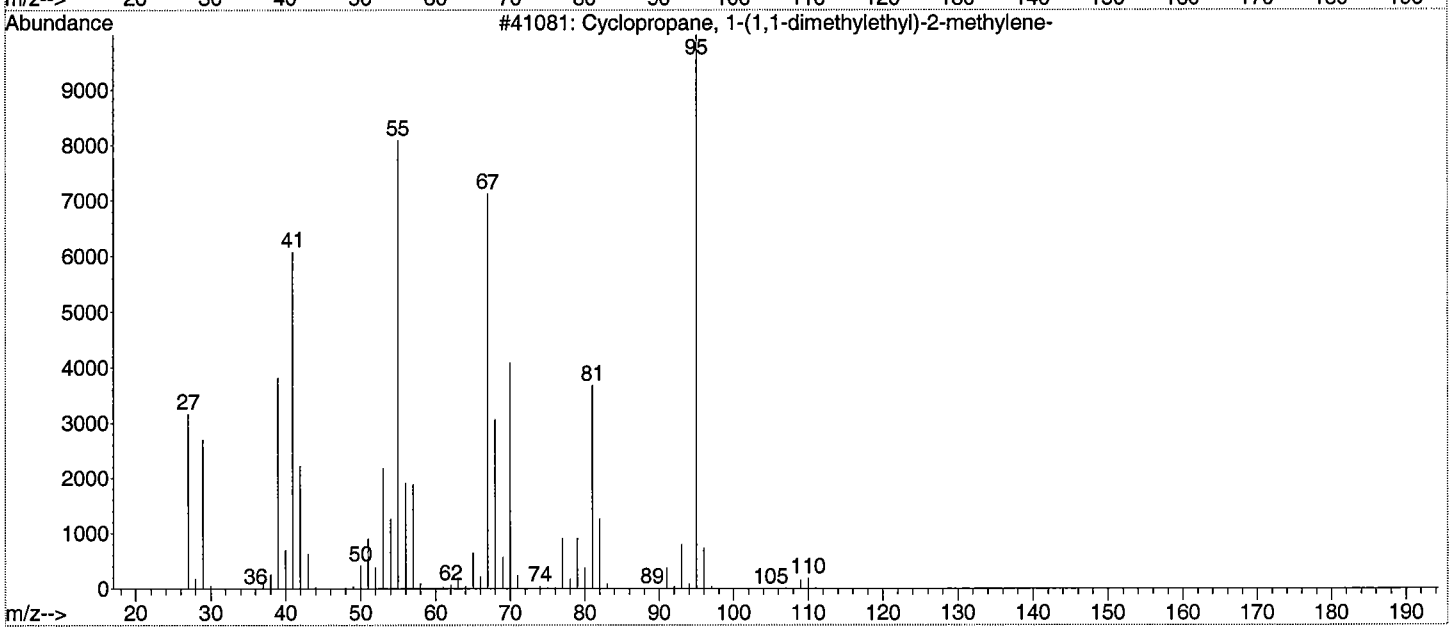
Quality : 42
ID : Bicyclo[2.2.1]heptane, 2-ethyl-



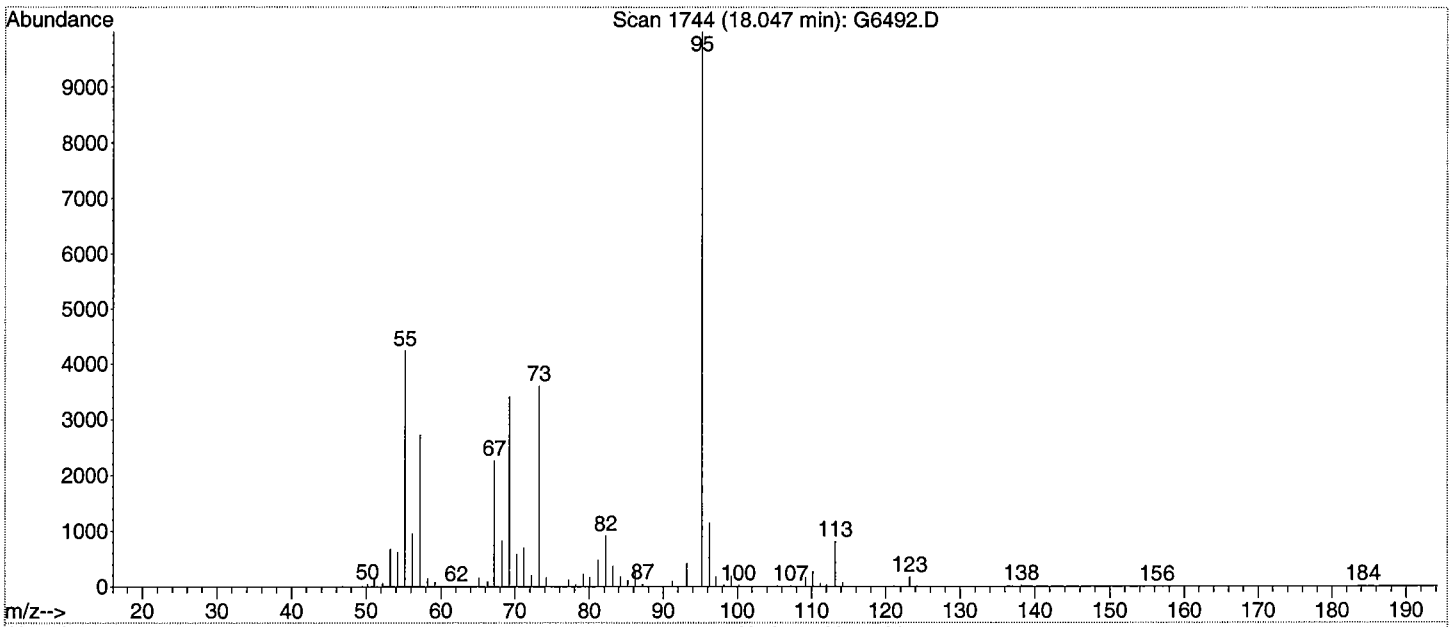


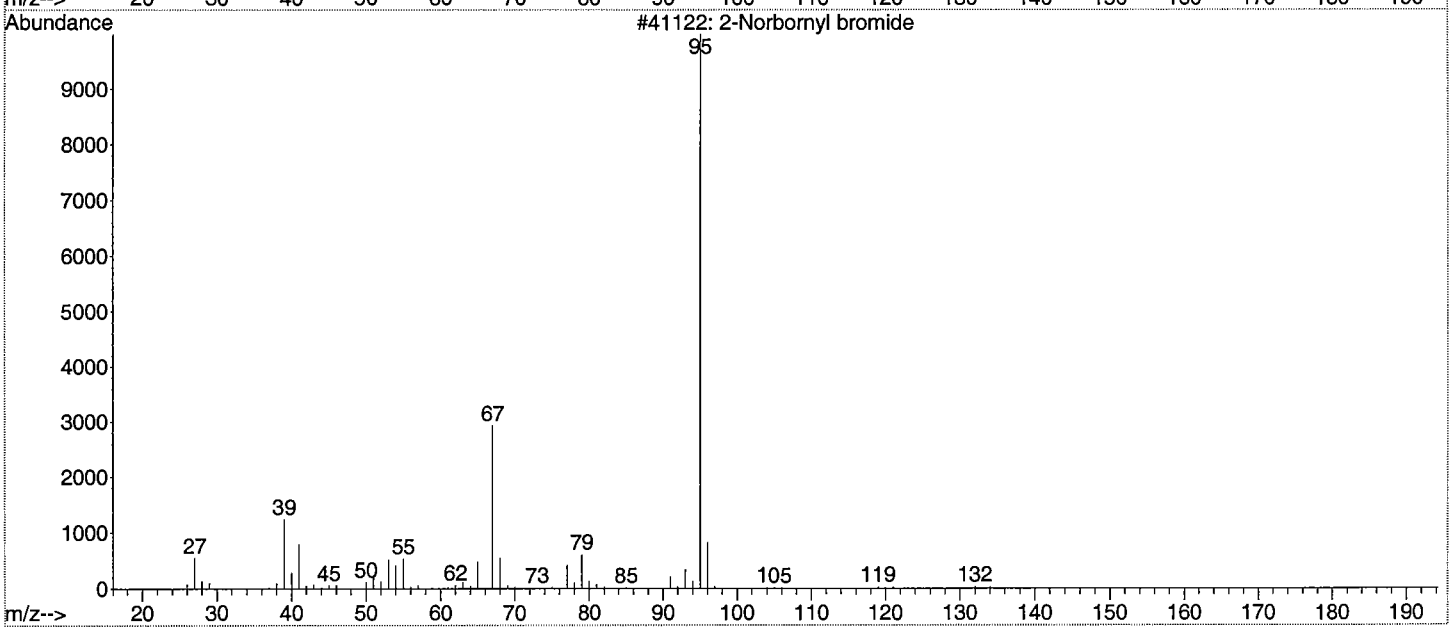
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 40
ID : Cyclopropane, 1-(1,1-dimethylethyl)-2-methylene-





Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 40
ID : 2-Norbornyl bromide





Scan 1780 (18.253 min): G6492.D S1466-P(7) REF 3-2

RT	m/z	RT	m/z	RT	m/z	RT	m/z
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51.1	2928						
52.1	1553						
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55.2	680128						
56.2	52136						
57.2	80792						
58.2	7822						
59.2	9950						
60.2	612						
61.1	190						
63.2	504						
65.2	2169						
66.2	1603						
67.2	11124						
68.2	12788						
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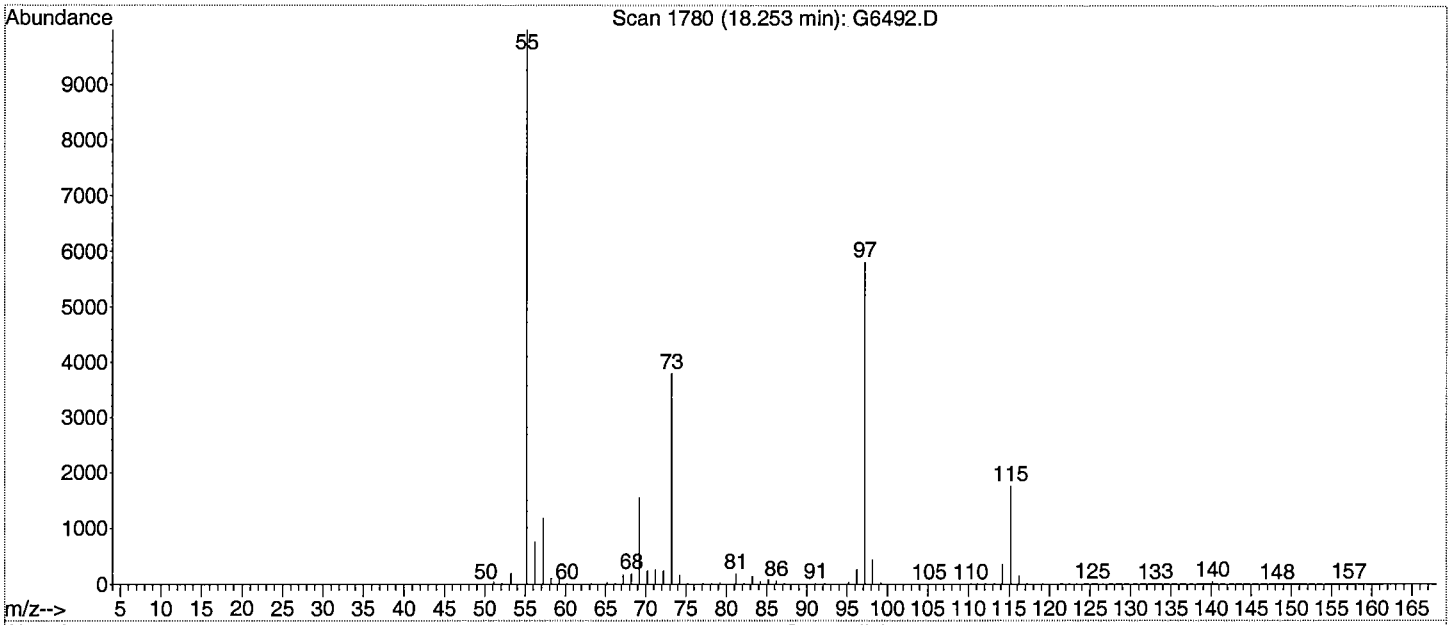
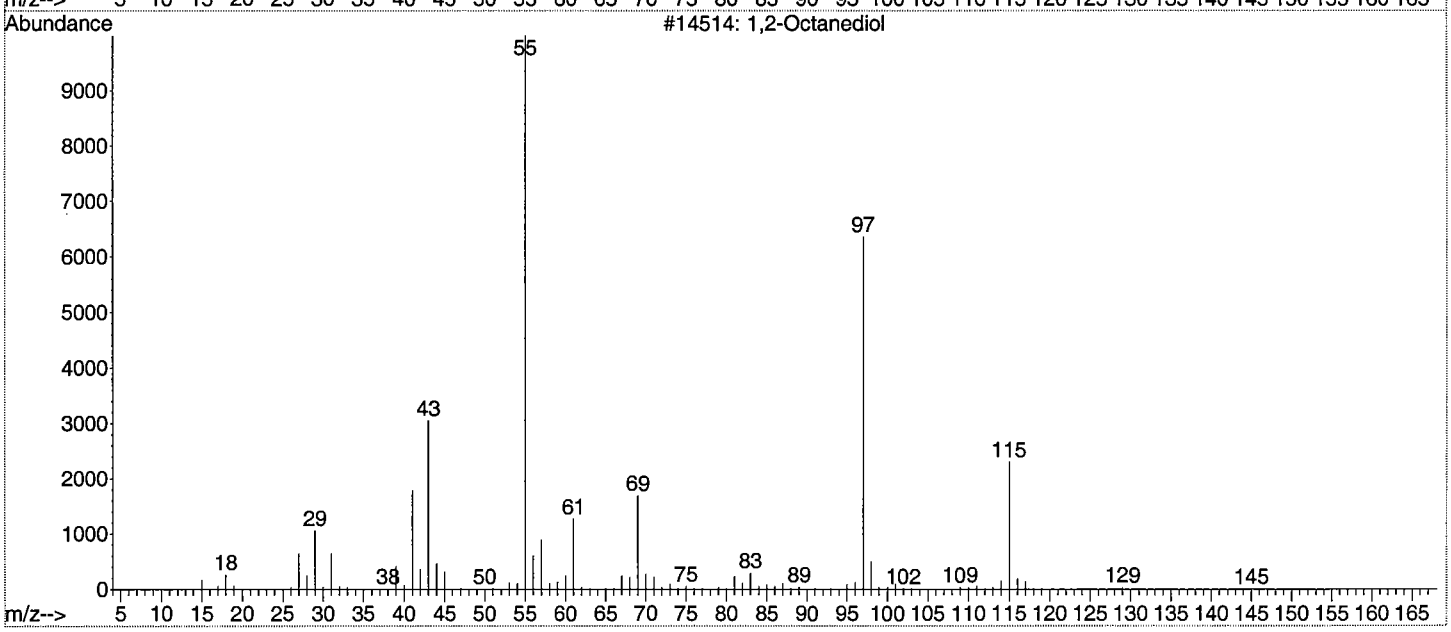
71.2	17536						
72.2	16384						
73.2	258240						
74.2	11005						
75.2	855						
77.1	1189						
78.2	504						
79.2	1958						
81.2	12559						
82.2	1479						
83.2	9892						
84.2	3397						
85.2	5936						
86.2	4179						
87.2	959						
91.1	979						
92.2	623						
93.1	334						
94	172						
95.2	2493						
96.2	17904						
97.2	395136						
98.2	29728						
99.2	1942						
101	212						
105.2	370						
109.3	255						
110.3	172						
111.1	519						
112.1	1260						
113.2	1586						
114.2	24360						
115.2	119784						
116.2	10257						
117.2	588						
119.1	315						
125.3	806						
125.9	172						
133.1	215						
140.2	2990						
141.2	350						
143.2	440						
148.2	259						
157.2	1086						
158	233						

Scan 1780 (18.253 min): G6492.D
S1466-P(7)

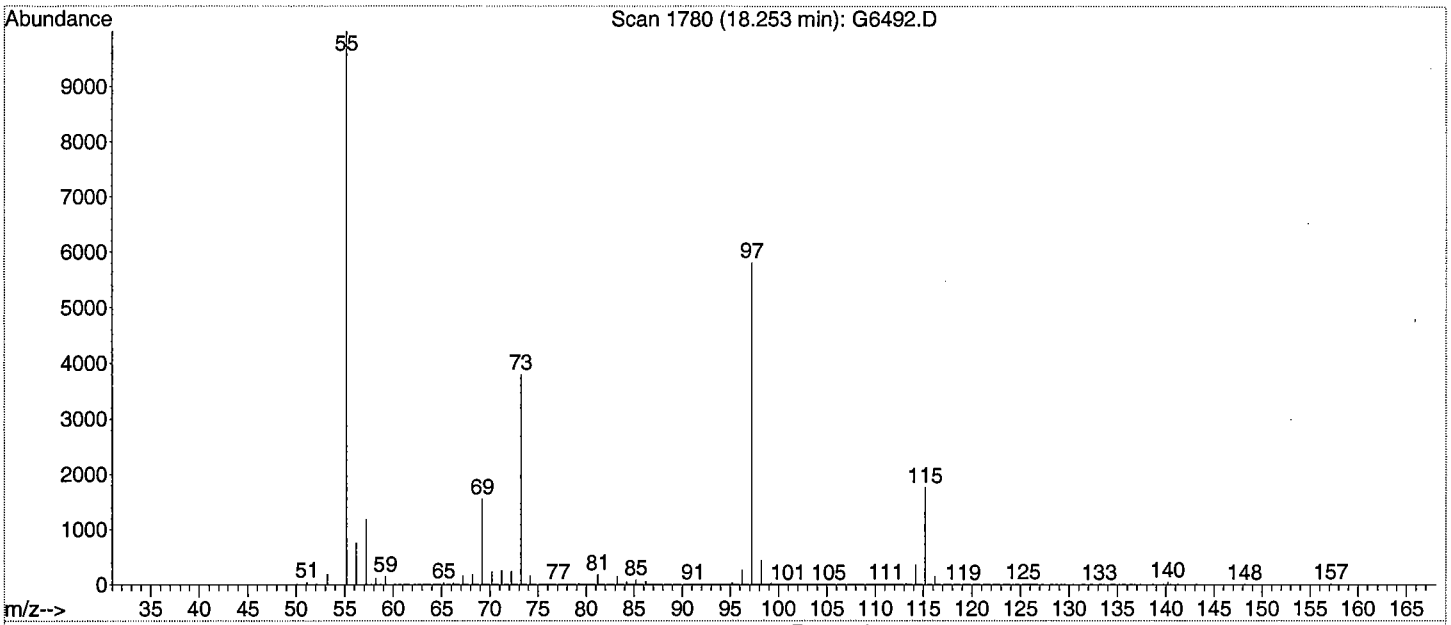
Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	1,2-Octanediol	146	C8H18O2	64	001117-86-8
2	4-Decanol	158	C10H22O	50	002051-31-2
3	3-Nonanol, 2-methyl-	158	C10H22O	50	026533-33-5
4	3-Octanol, 2,6-dimethyl-	158	C10H22O	50	018479-55-5
5	4-Decanol	158	C10H22O	45	002051-31-2
6	7-Tridecanol	200	C13H28O	40	000927-45-7
7	6-Dodecanol	186	C12H26O	38	006836-38-0
8	2-Pentene, 2,4,4-trimethyl-	112	C8H16	38	000107-40-4
9	Oxazole, 2,4-dimethyl-	97	C5H7NO	35	007208-05-1
10	2-Pentene, 3,4,4-trimethyl-	112	C8H16	28	000598-96-9
11	Cyclohexane, 1-methyl-4-(1-methylethyl)-, trans-	140	C10H20	28	001678-82-6
12	3-Hepten-2-one, (Z)-	112	C7H12O	28	069668-88-8
13	Cyclohexane, 1-methyl-4-(1-methylethyl)-, cis-	140	C10H20	28	006069-98-3
14	3-Methyl-4-decanol	172	C11H24O	25	055816-17-6
15	5-Octen-4-one, 7-methyl-	140	C9H16O	12	032064-78-1
16	3-Hepten-1-ol	114	C7H14O	9	010606-47-0
17	cis-1,2-Cyclohexanediamine	114	C6H14N2	9	001436-59-5
18	Guanidine, methyl-	73	C2H7N3	9	000471-29-4
19	Butane, 1-isothiocyanato-	115	C5H9NS	9	000592-82-5
20	2H-Pyrrol-2-one, 1,5-dihydro-1-methyl-	97	C5H7NO	9	013950-21-5

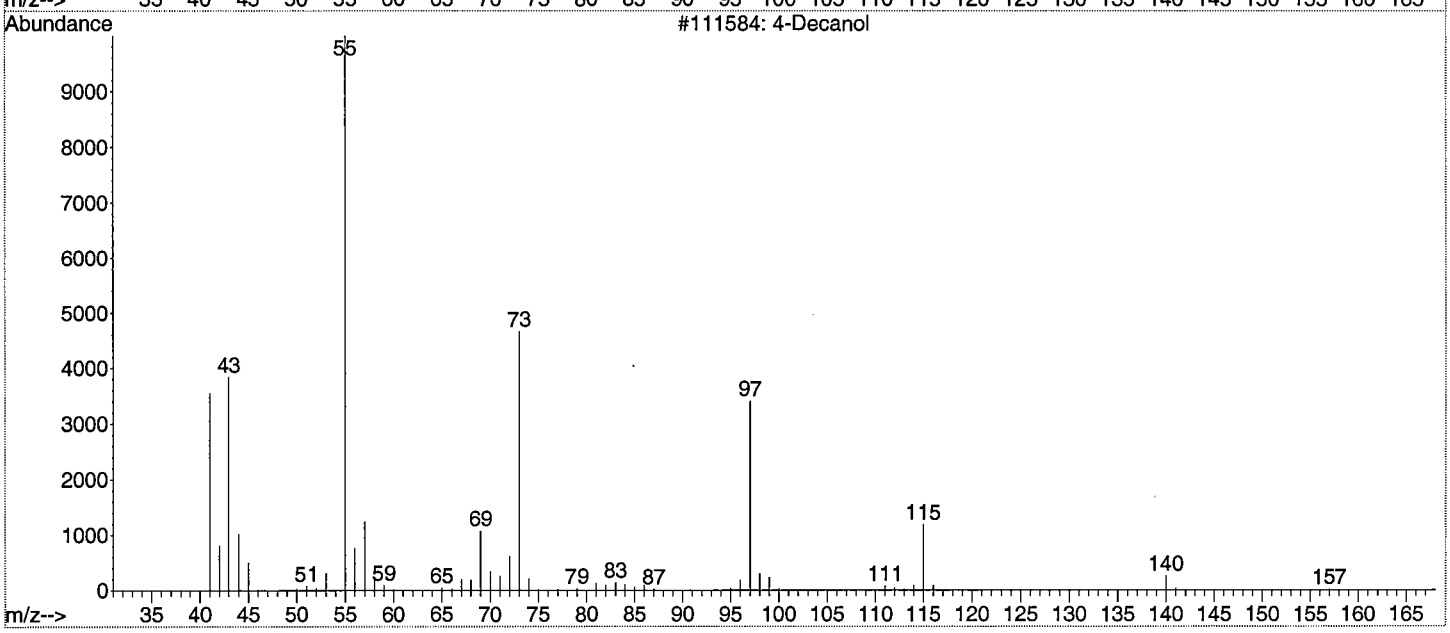
Library Searched : C:\MSDChem\DATABASE\Nist98.1
Quality : 64
ID : 1,2-Octanediol



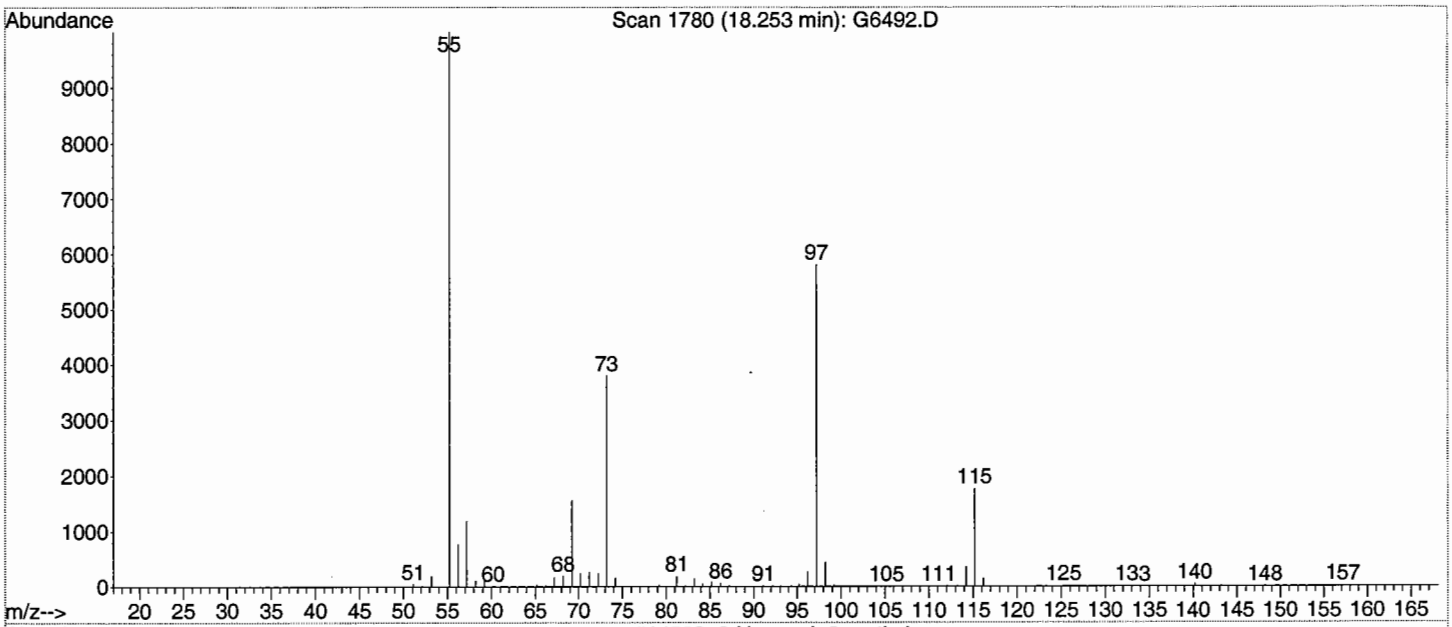


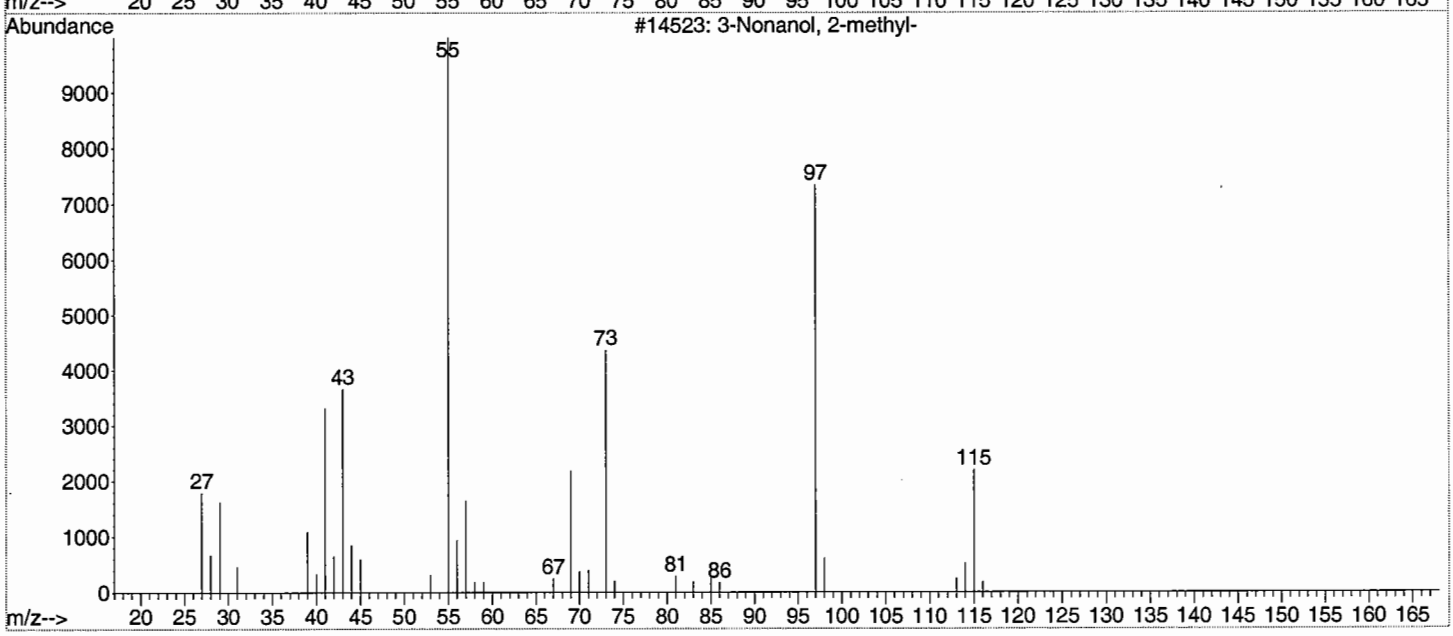
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 50
ID : 4-Decanol



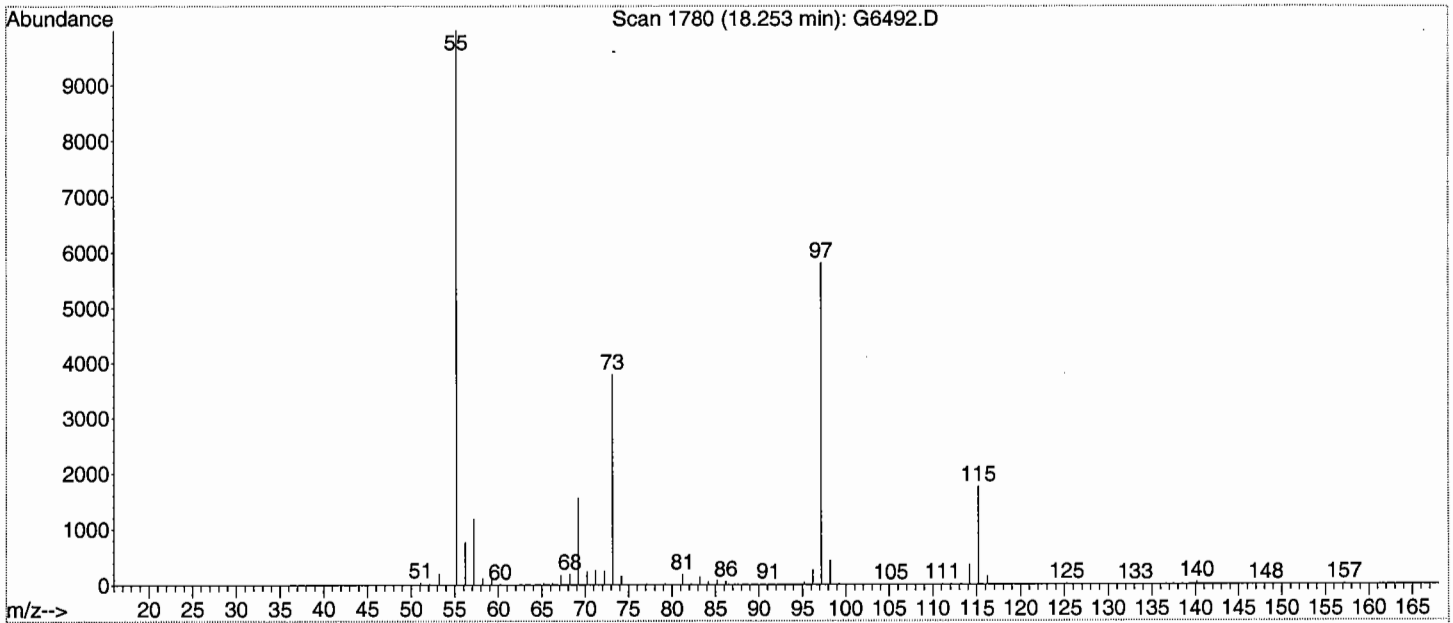


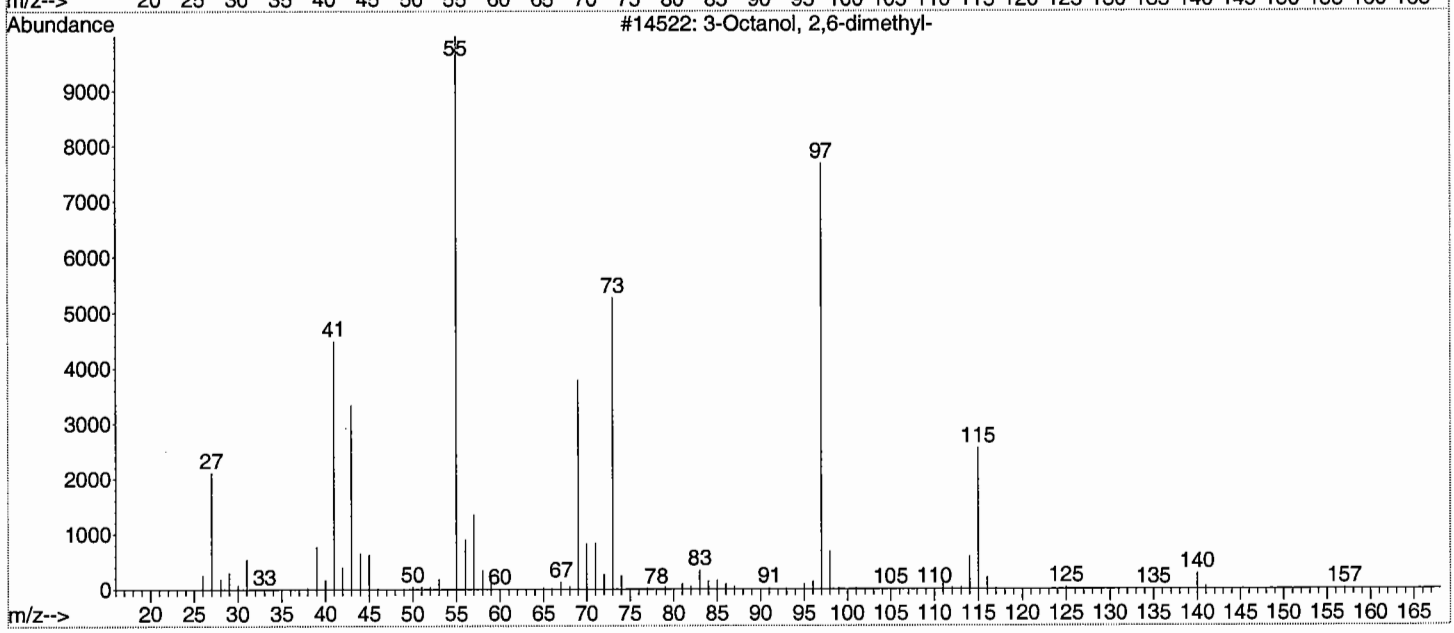
Library Searched : C:\MSDChem\DATABASE\Nist98.1
Quality : 50
ID : 3-Nonanol, 2-methyl-





Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 50
ID : 3-Octanol, 2,6-dimethyl-





Scan 1993 (19.470 min): G6492.D S1466-P(7) REF 3-2

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51.2	2137						
52.2	1244						
53.2	7789						
54.2	4876						
55.2	80512						
56.2	5923						
57.2	105896						
58.2	61896						
59.2	5303						
60.2	183						
63.1	333						
64.2	166						
65.1	1919						
66.2	562						
67.2	11052						
68.2	15749						
69.2	18576						
70.1	1797						
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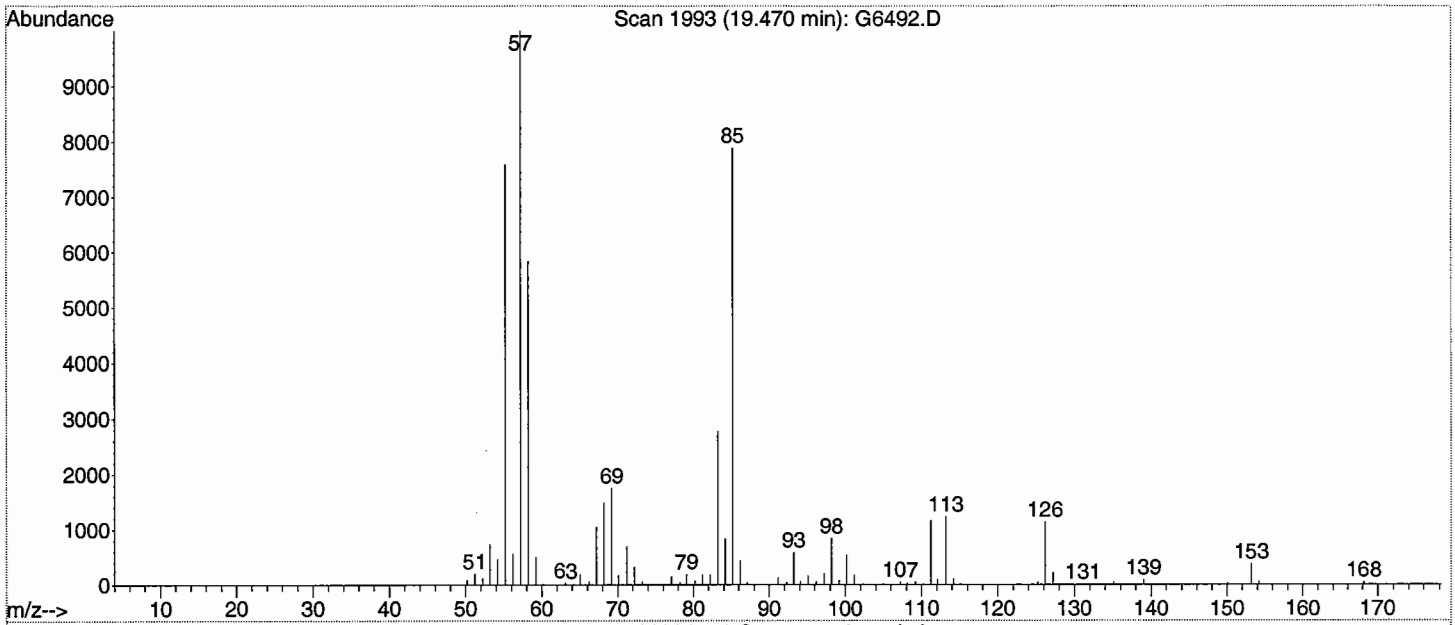
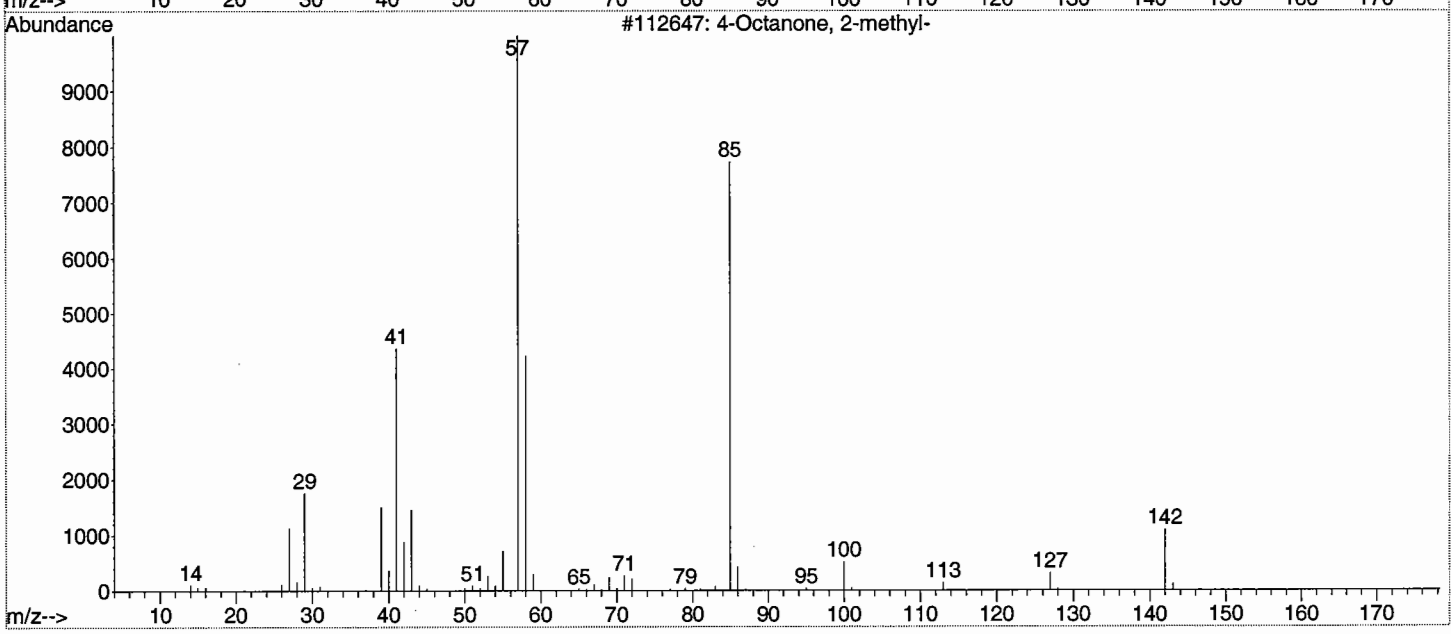
72.2	3446						
73.2	563						
77.1	1531						
78.2	384						
79.1	2036						
80.2	794						
81.2	1968						
82.2	1893						
83.2	29424						
84.2	8903						
85.2	83624						
86.2	4650						
87.1	380						
91.2	1313						
92.3	481						
93.2	6220						
94.1	603						
95.1	1723						
96.2	568						
97.2	2057						
98.2	8939						
99.2	844						
100.2	5714						
101.2	1840						
102.3	171						
105	243						
107.2	549						
108.1	261						
109.2	580						
110.2	154						
111.2	12322						
112.1	1037						
113.2	13091						
114.2	1150						
115.1	206						
125.2	464						
126.2	12074						
127.2	2305						
128.1	168						
131.1	174						
135.1	380						
139	967						
150.1	333						
153.2	3995						
154.2	602						
168.2	473						

Scan 1993 (19.470 min): G6492.D
S1466-P(7)

Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	4-Octanone, 2-methyl-	142	C9H18O	50	007492-38-8
2	5-Nonanone	142	C9H18O	50	000502-56-7
3	5-Nonanone	142	C9H18O	50	000502-56-7
4	5-Nonanone	142	C9H18O	50	000502-56-7
5	5-Nonanone	142	C9H18O	50	000502-56-7
6	Oxirane, (2-methylbutyl)-	114	C7H14O	49	053229-42-8
7	Thiazole	85	C3H3NS	47	000288-47-1
8	Thiazole	85	C3H3NS	47	000288-47-1
9	Thiazole	85	C3H3NS	47	000288-47-1
10	4-Octanone, 2-methyl-	142	C9H18O	43	007492-38-8
11	1-Iodoundecane	282	C11H23I	43	004282-44-4
12	10-Methylnonadecane	282	C20H42	38	056862-62-5
13	Cyclohexanol, 1,3-dimethyl-, cis-	128	C8H16O	38	015466-94-1
14	Cyclopropanoic acid, -2-methyl-2-methoxy, methyl ester	144	C7H12O3	25	100022-20-1
15	4-Methoxy-3-buten-2-one	100	C5H8O2	25	004652-27-1
16	Methacrylamide	85	C4H7NO	22	000079-39-0
17	2-Methyl-4-decanone	170	C11H22O	22	006628-25-7
18	Butane, 1-cyclopropylidene-5-(tetrahydro-2H-pyran-2-yloxy)-	196	C12H20O2	16	100015-62-4
19	2(3H)-Furanone, 5-hexyldihydro-	170	C10H18O2	16	000706-14-9
20	Tritetracontane	605	C43H88	12	007098-21-7

Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 50
ID : 4-Octanone, 2-methyl-





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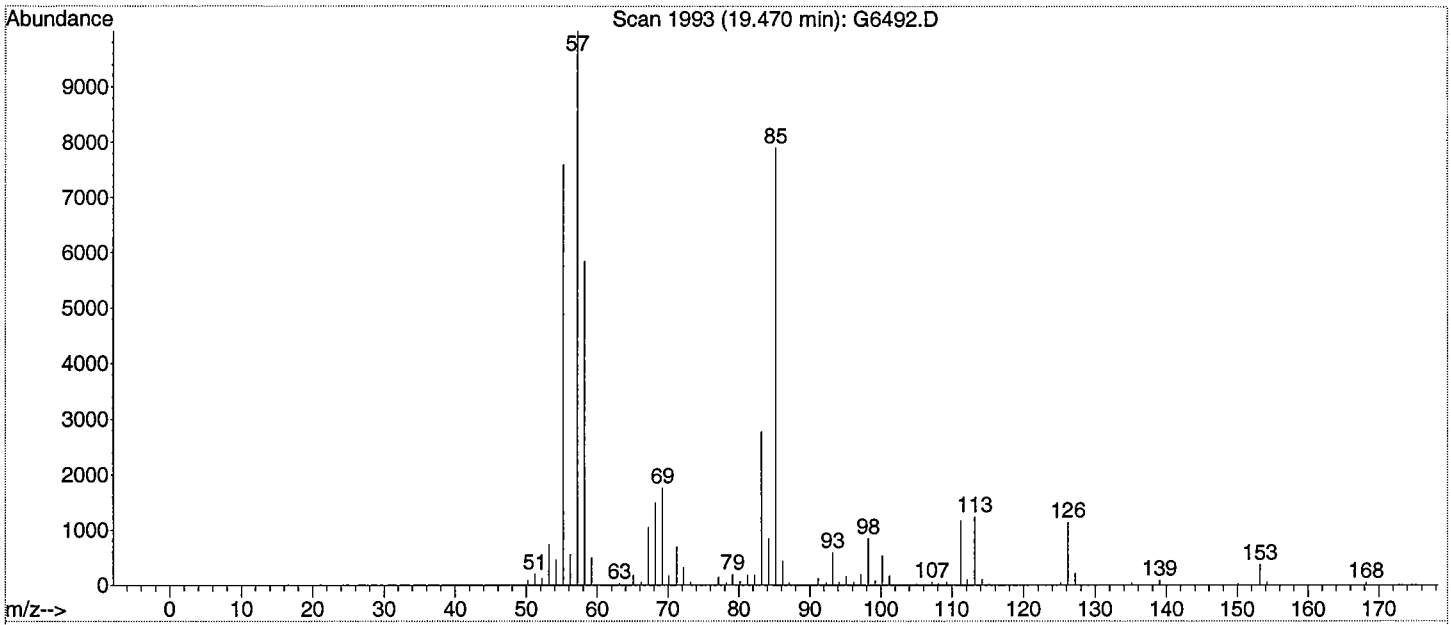
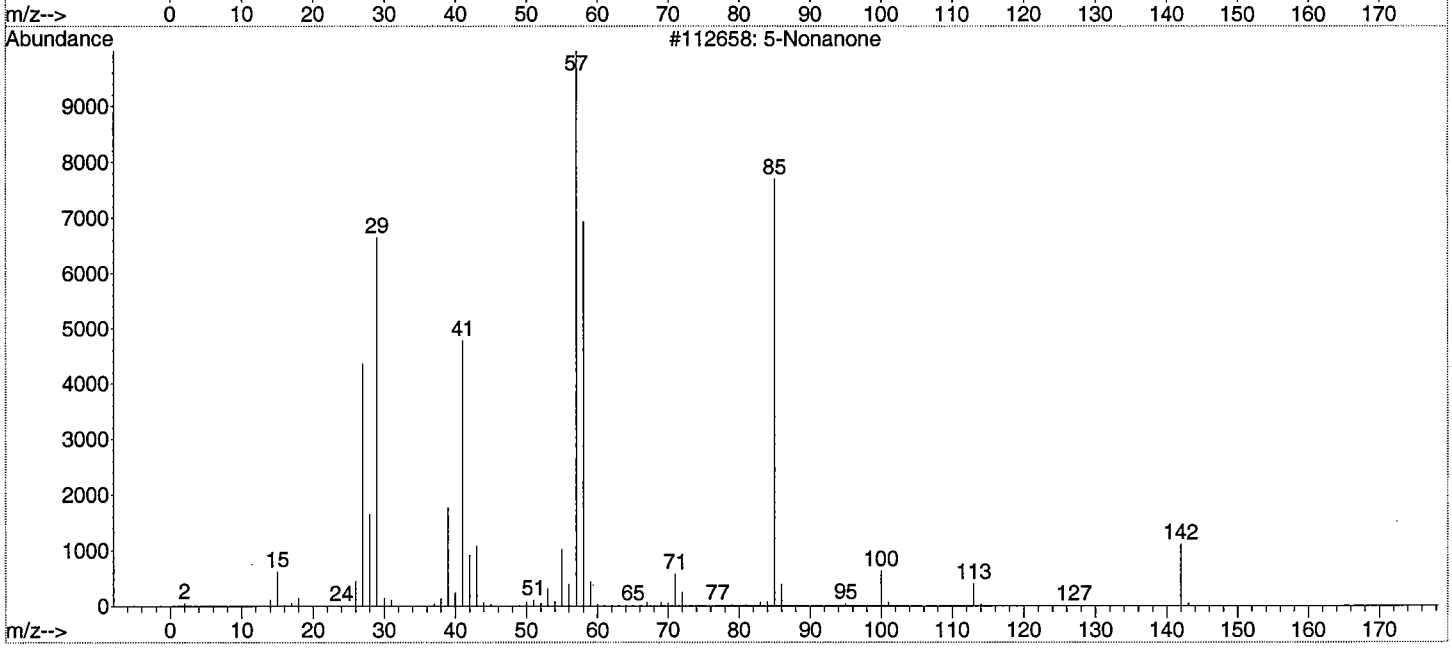
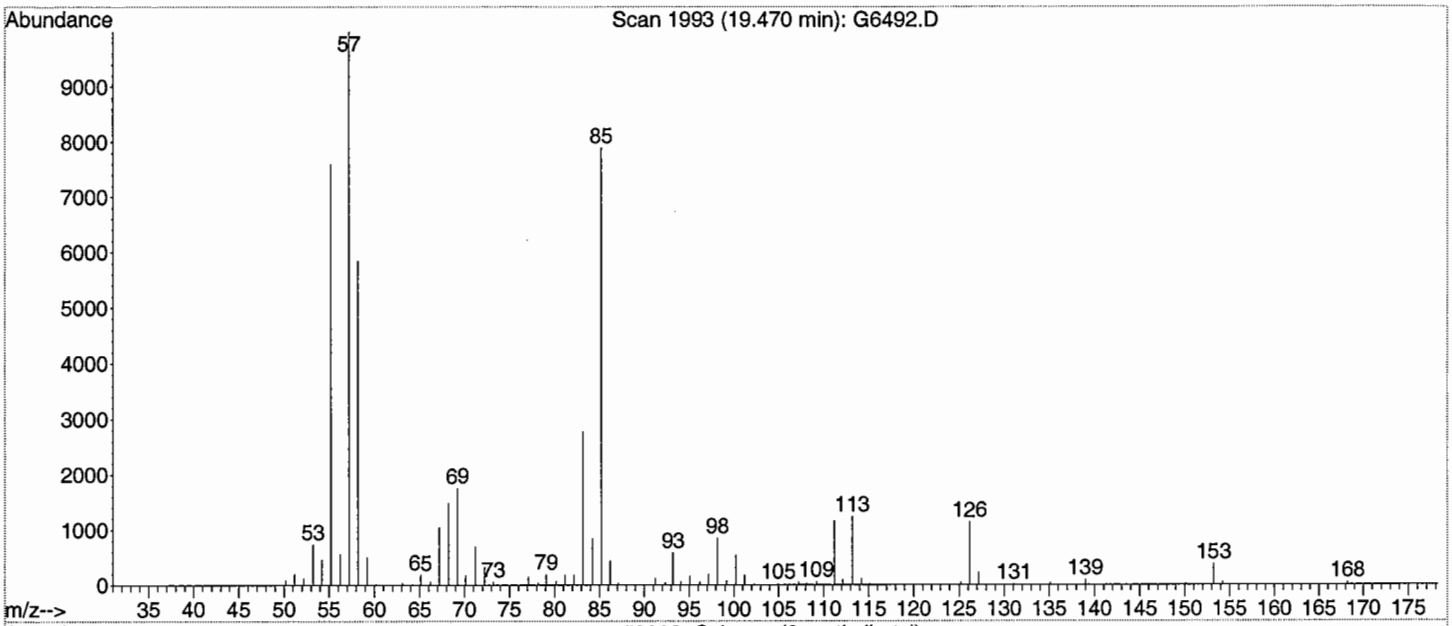
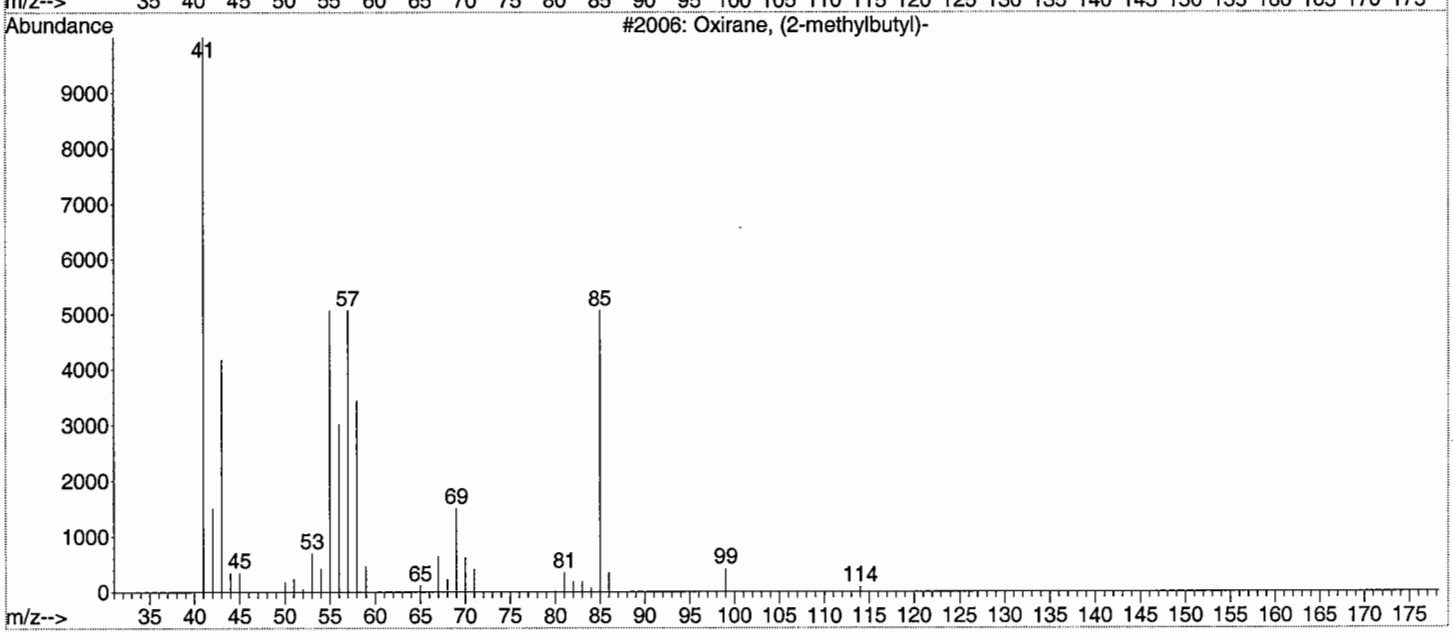
Quality : 50
ID : 5-Nonanone



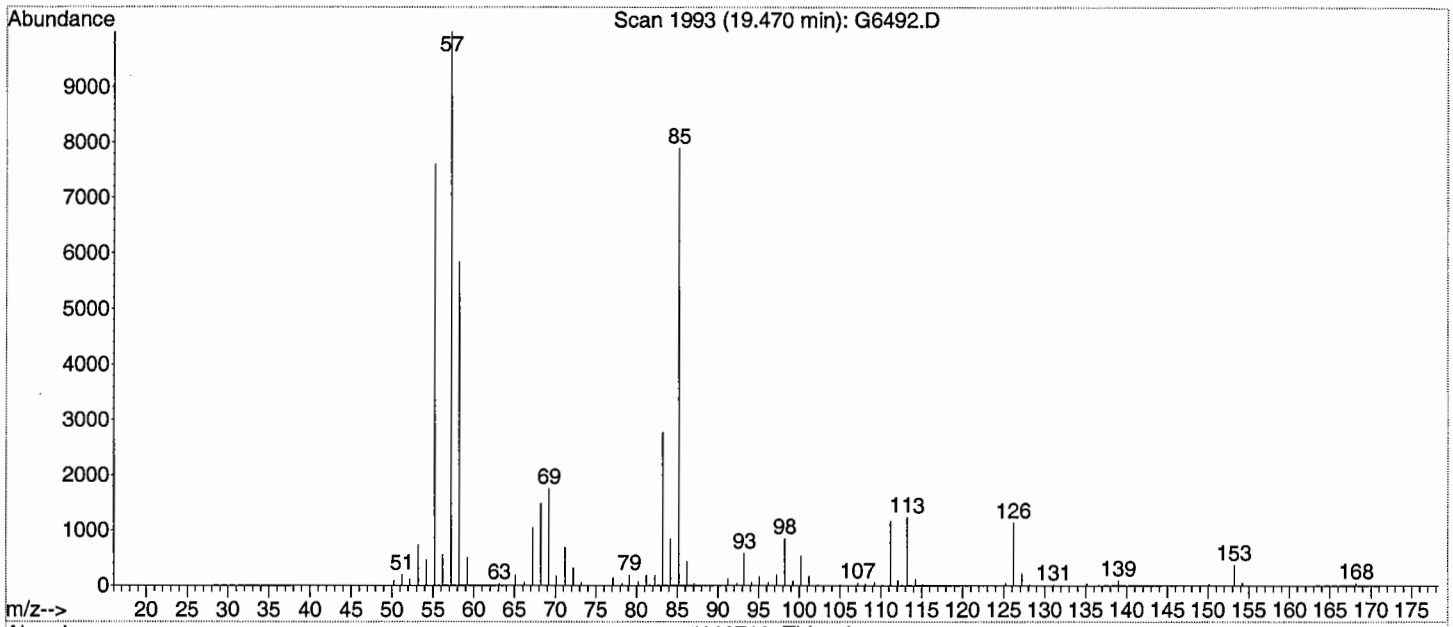


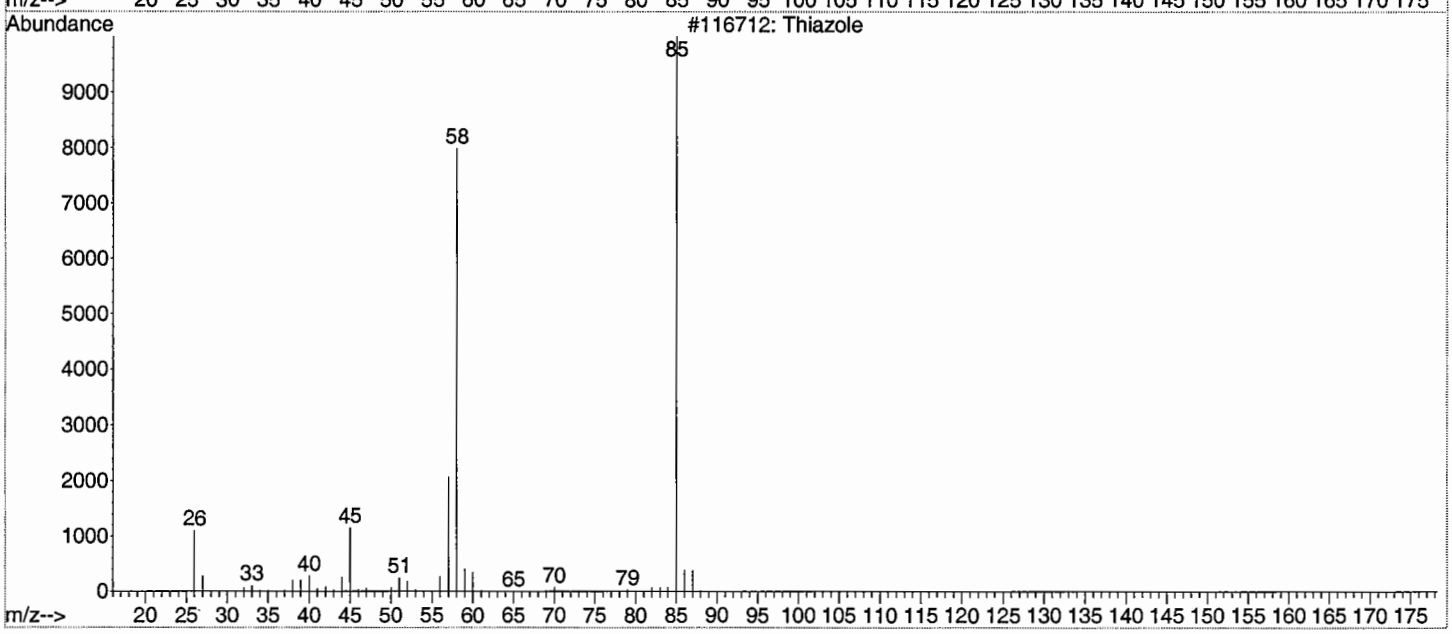
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 49
ID : Oxirane, (2-methylbutyl)-





Library Searched : C:\MSDChem\DATABASE\Nist98.1
Quality : 47
ID : Thiazole





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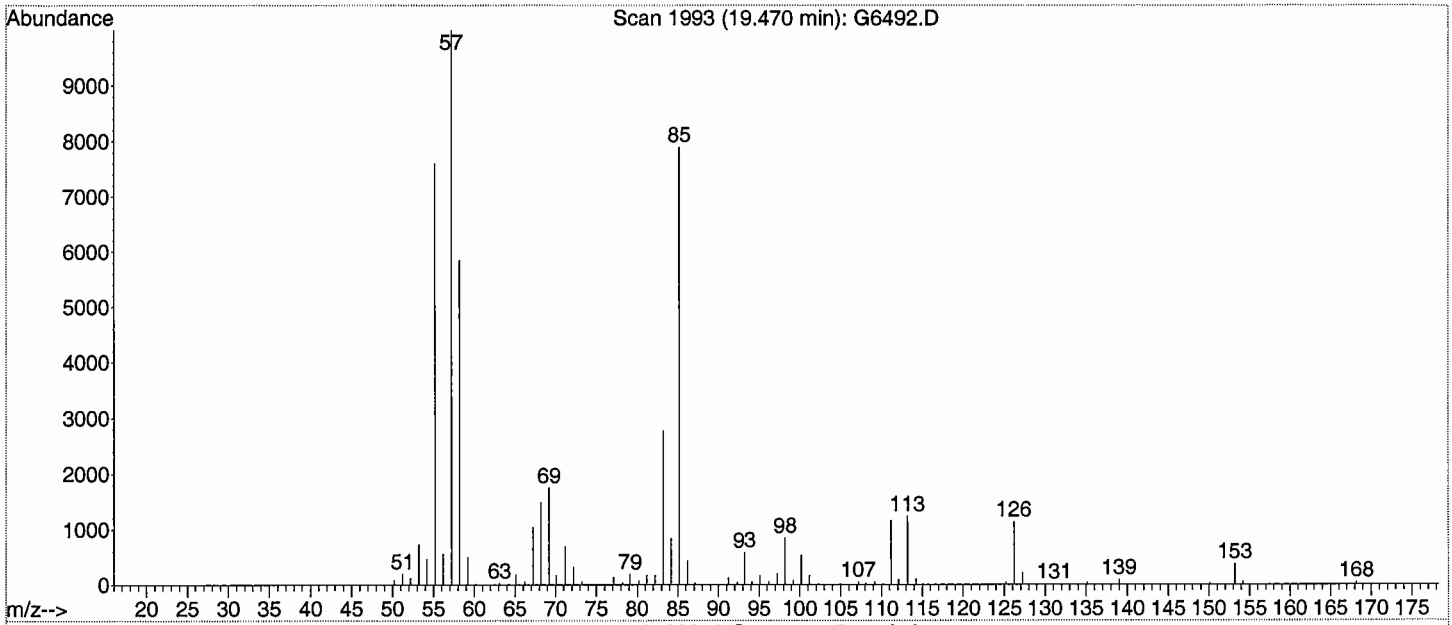
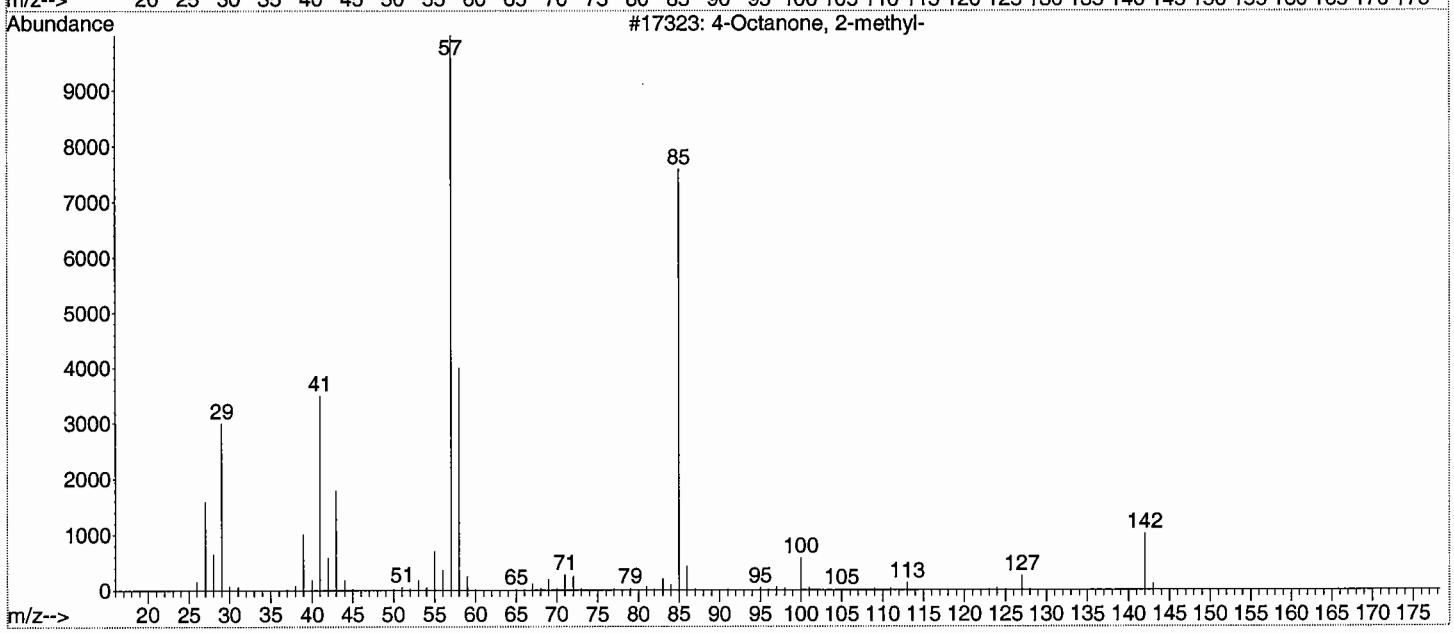
Quality : 43
ID : 4-Octanone, 2-methyl-





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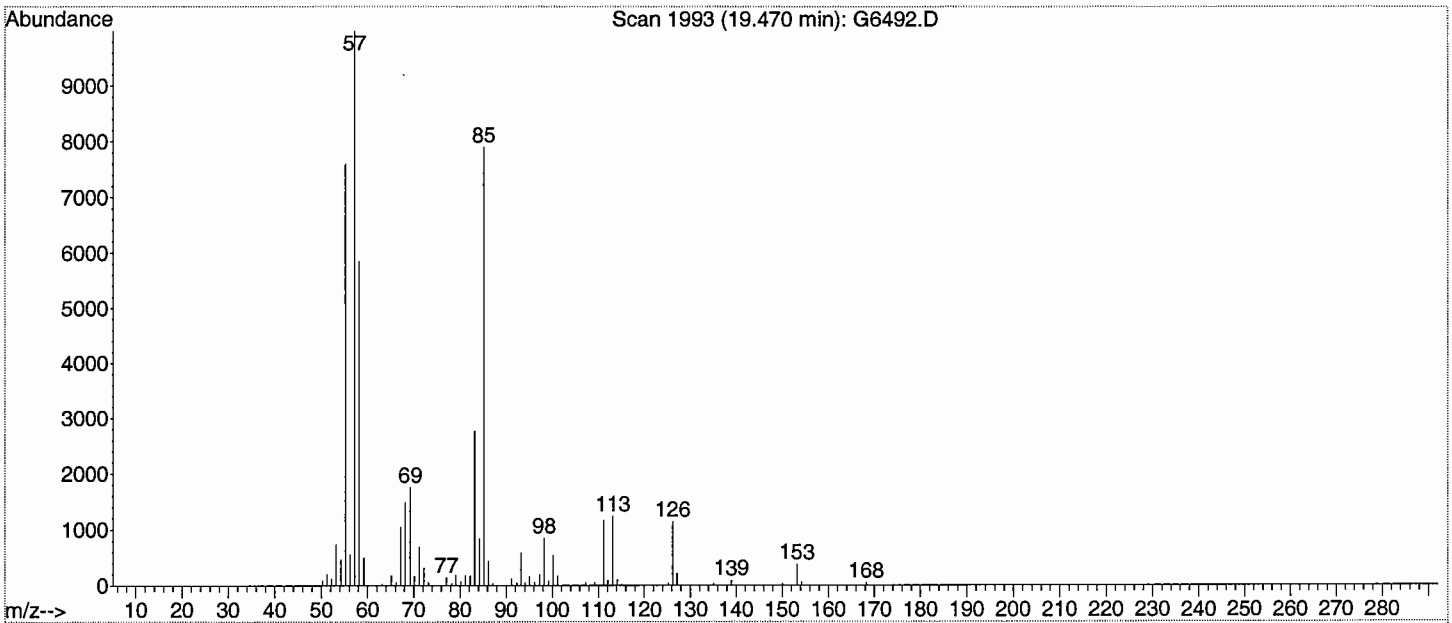

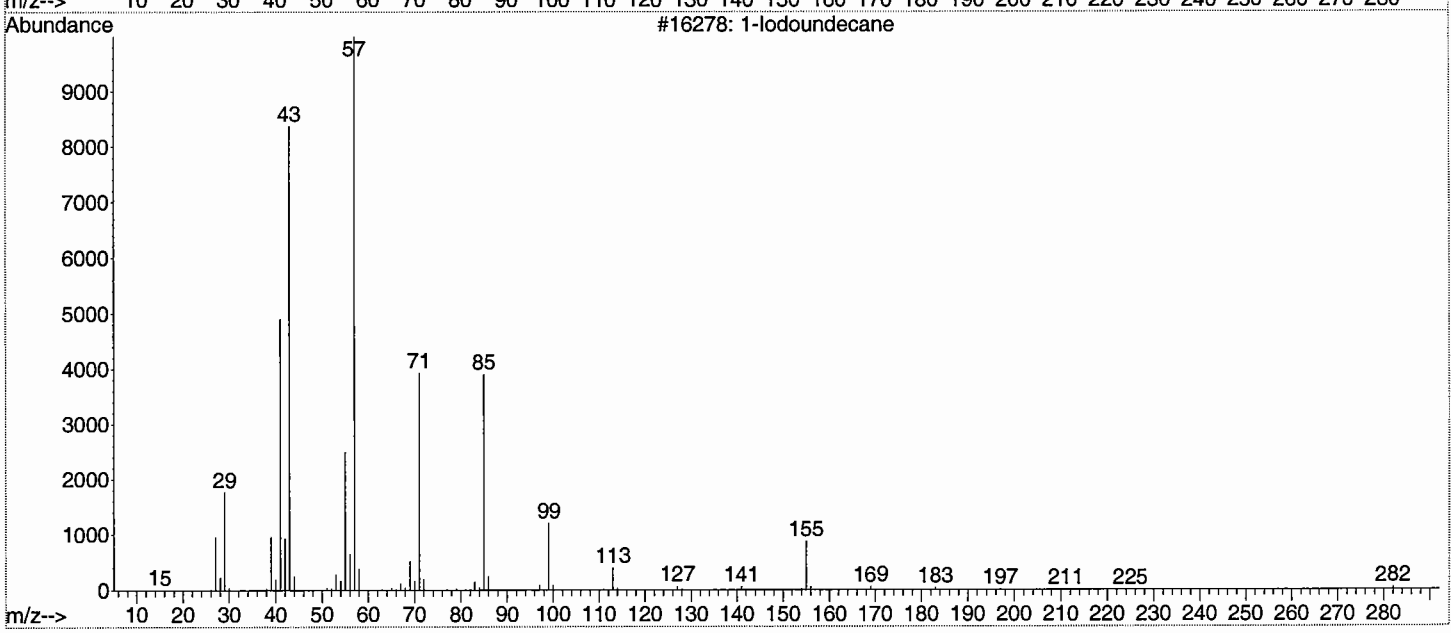

Scan 2018 (19.613 min): G6492.D S1466-P(7) REF 3-2

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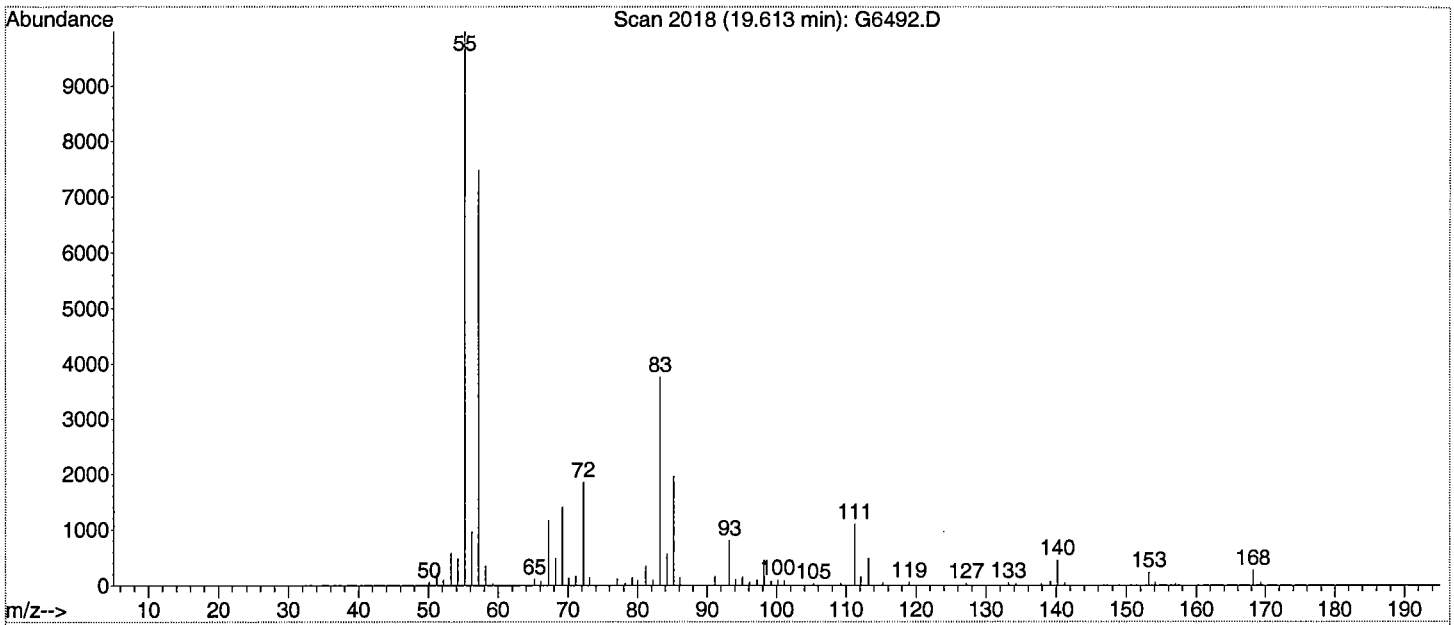
51.2	1116						
52.1	492						
53.2	2989						
54.2	2478						
55.2	51432						
56.2	4965						
57.2	38448						
58.2	1799						
59.2	175						
65.2	594						
66.1	384						
67.2	6006						
68.2	2526						
69.2	7251						
70.1	670						
71.1	897						
72.2	9563						
73.1	734						
77.1	625						
78.2	184						
79.2	729						
80	464						
81.2	1778						
82.2	496						
83.2	19376						
84.2	2908						
85.2	10120						
86.1	724						
91.1	835						
93.2	4154						
94.1	524						
95.1	759						
96.1	272						
97.2	517						
98.2	2393						
99.2	397						
100.2	488						
101.1	392						
105.3	165						
109.2	190						
111.2	5676						
112.1	813						
113.2	2518						
115.2	242						
119	299						
127.2	189						
133.2	263						
134.2	168						
137.9	166						
139.2	380						
140.2	2362						
141.2	216						
153.2	1198						
154.1	314						
157	164						
168.2	1407						
169.3	242						

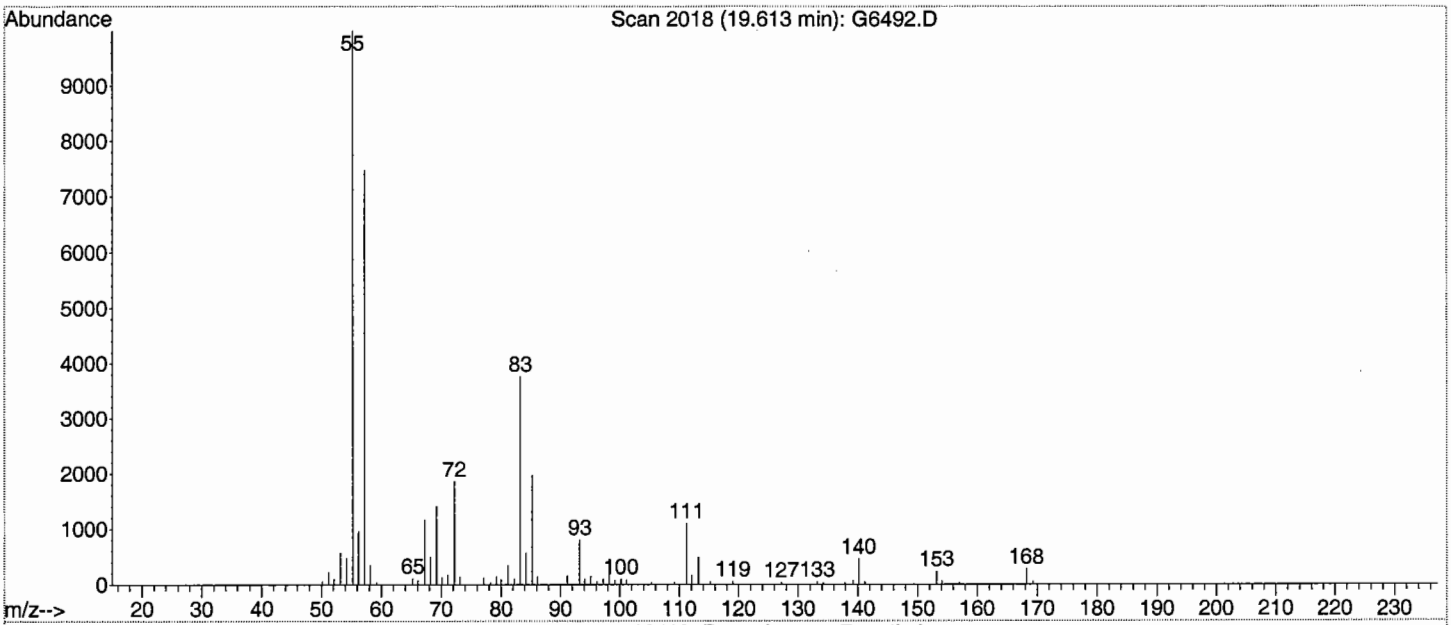
Scan 2018 (19.613 min): G6492.D
S1466-P(7)

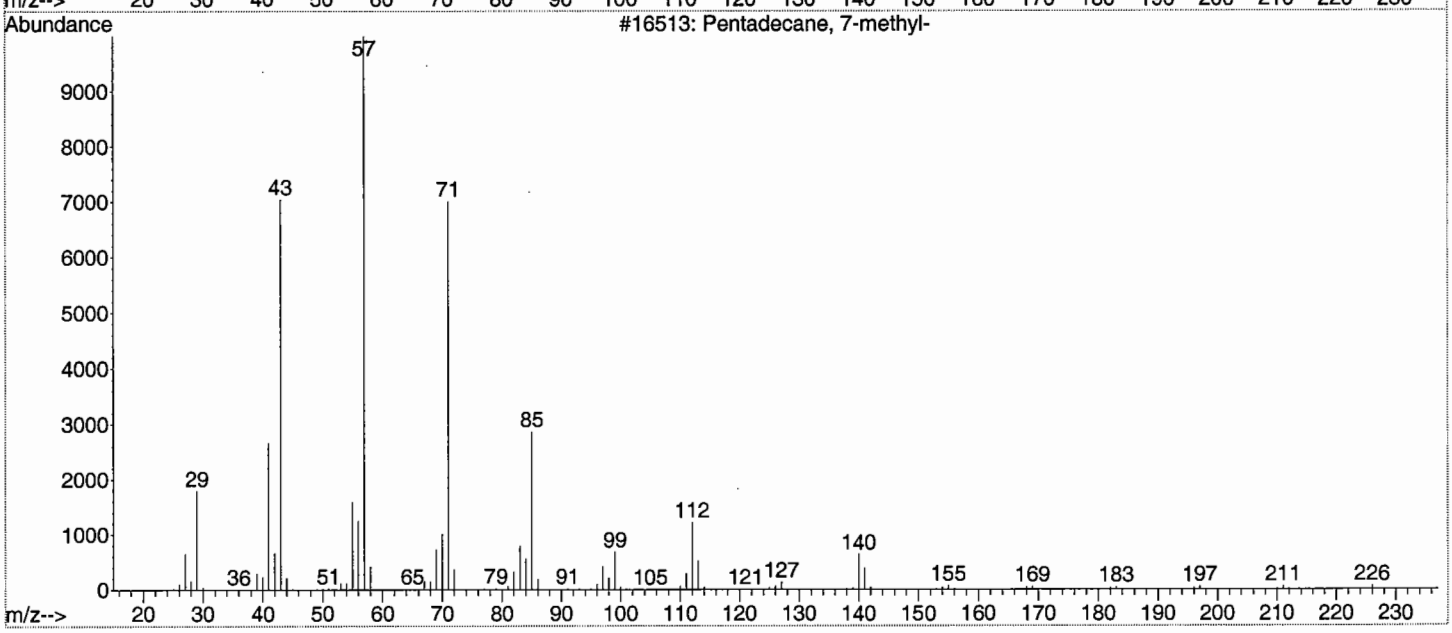
Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	Tridecane	184	C13H28	35	000629-50-5
2	Pentadecane, 7-methyl-	226	C16H34	32	006165-40-8
3	Hexane, 1-(hexyloxy)-5-methyl-	200	C13H28O	32	074421-19-5
4	3-Ethyl-3-hexene	112	C8H16	22	016789-51-8
5	3-Hexene, 3,4-dimethyl-	112	C8H16	22	030951-95-2
6	3-Ethyl-2-hexene(c,t)	112	C8H16	22	100011-81-6
7	Cyclohexane, (2-methylpropyl)-	140	C10H20	22	001678-98-4
8	Tridecane	184	C13H28	16	000629-50-5
9	Hexadecane	226	C16H34	16	000544-76-3
10	Tetradecane	198	C14H30	16	000629-59-4
11	1-Pentene, 3-ethyl-3-methyl-	112	C8H16	14	006196-60-7
12	3-Ethyl-2-hexene	112	C8H16	14	000620-00-8
13	3-Methylpenta-1,4-diene-3-ol	98	C6H10O	14	100021-53-6
14	3-Ethyl-3-hexene	112	C8H16	12	016789-51-8
15	Hexane, 3-methyl-4-methylene-	112	C8H16	12	003404-67-9
16	Pyridine, 2,3,4,5-tetrahydro-	83	C5H9N	12	000505-18-0
17	2-Propen-1-ol, 2-methyl-	72	C4H8O	11	000513-42-8
18	2-Octene, 4-ethyl-	140	C10H20	10	053966-52-2
19	4-Undecene, 7-methyl-	168	C12H24	10	076441-79-7
20	1-Octen-3-ol	128	C8H16O	10	003391-86-4

Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 35
ID : Tridecane

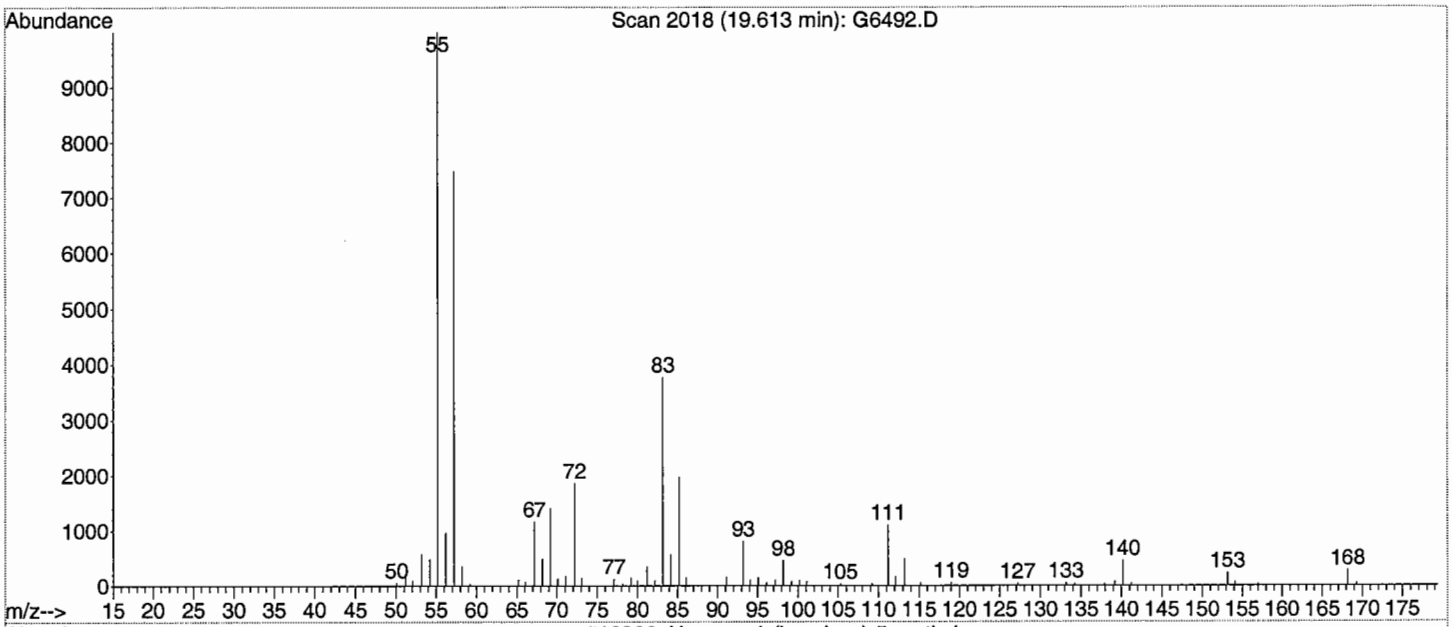


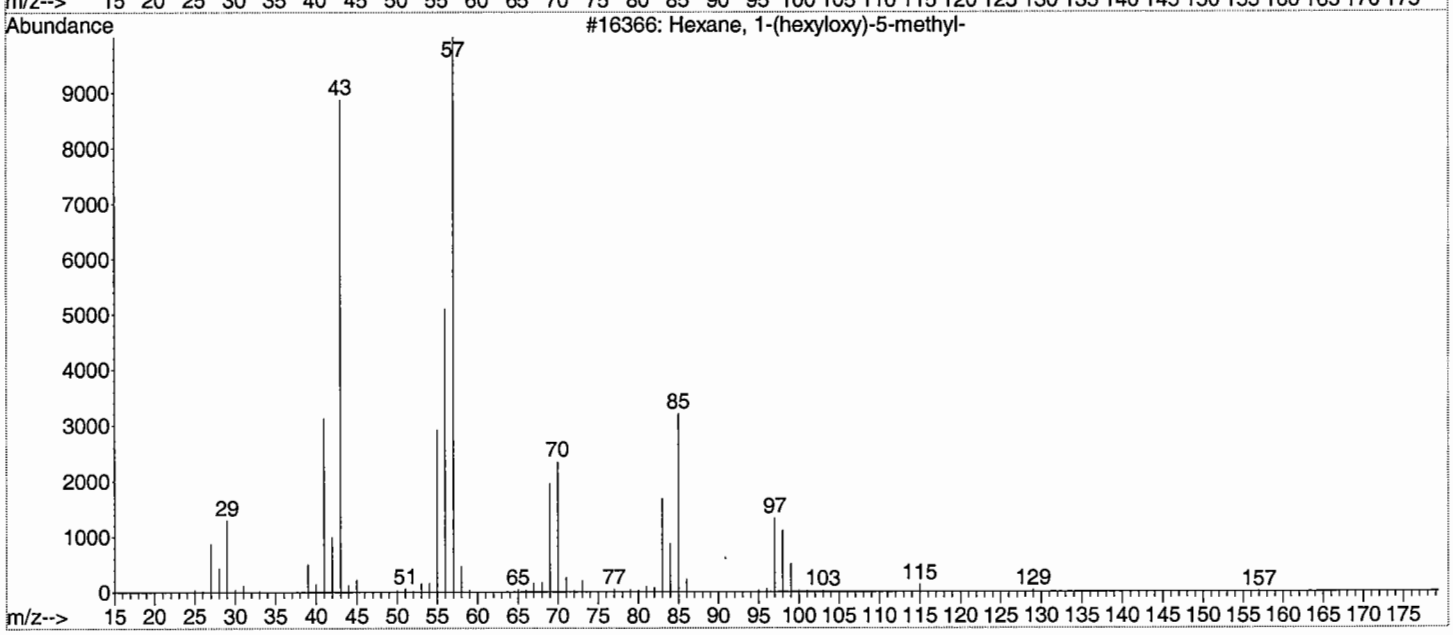
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 32
ID : Pentadecane, 7-methyl-





Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 32
ID : Hexane, 1-(hexyloxy)-5-methyl-





Library Searched : C:\MSDChem\DATABASE\Nist98.l
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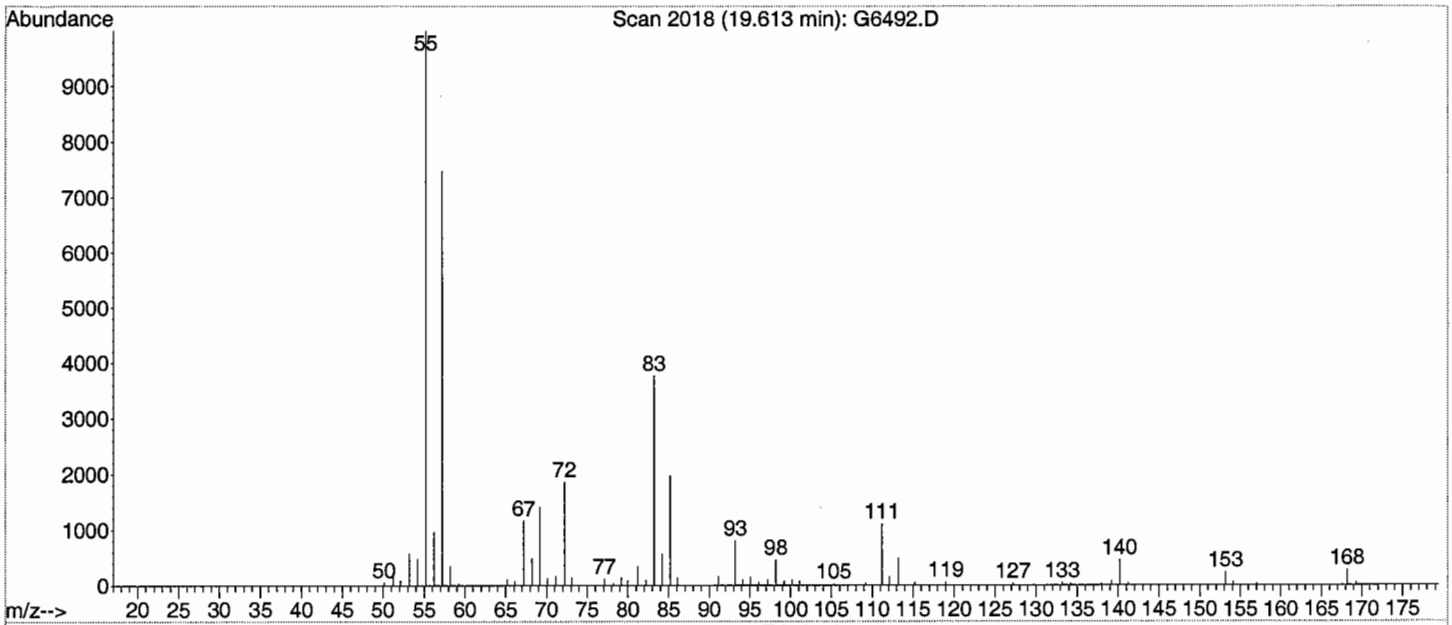
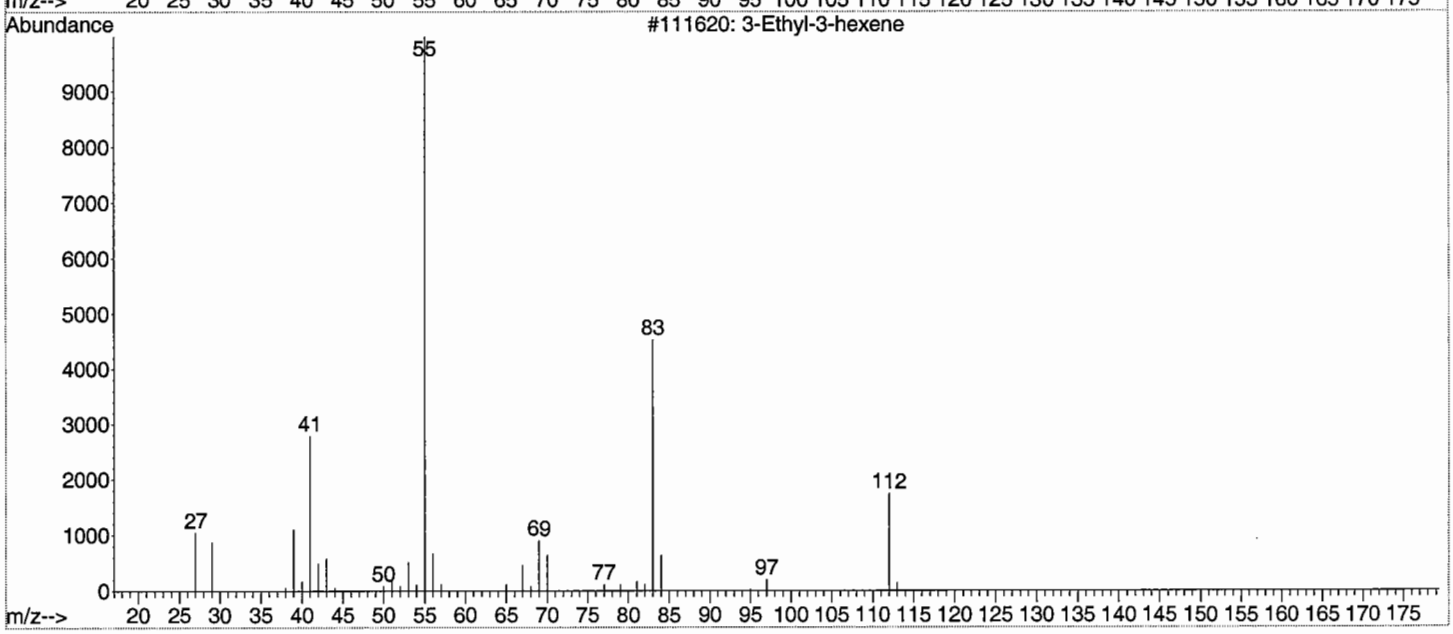
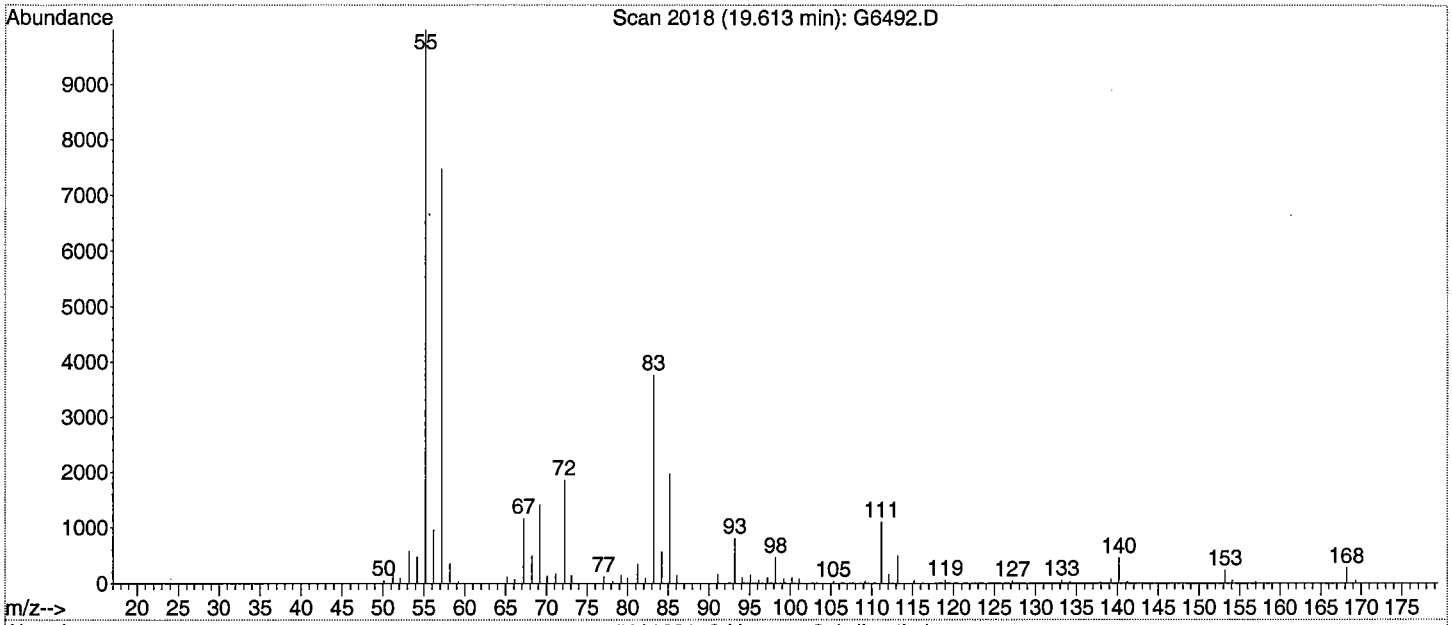
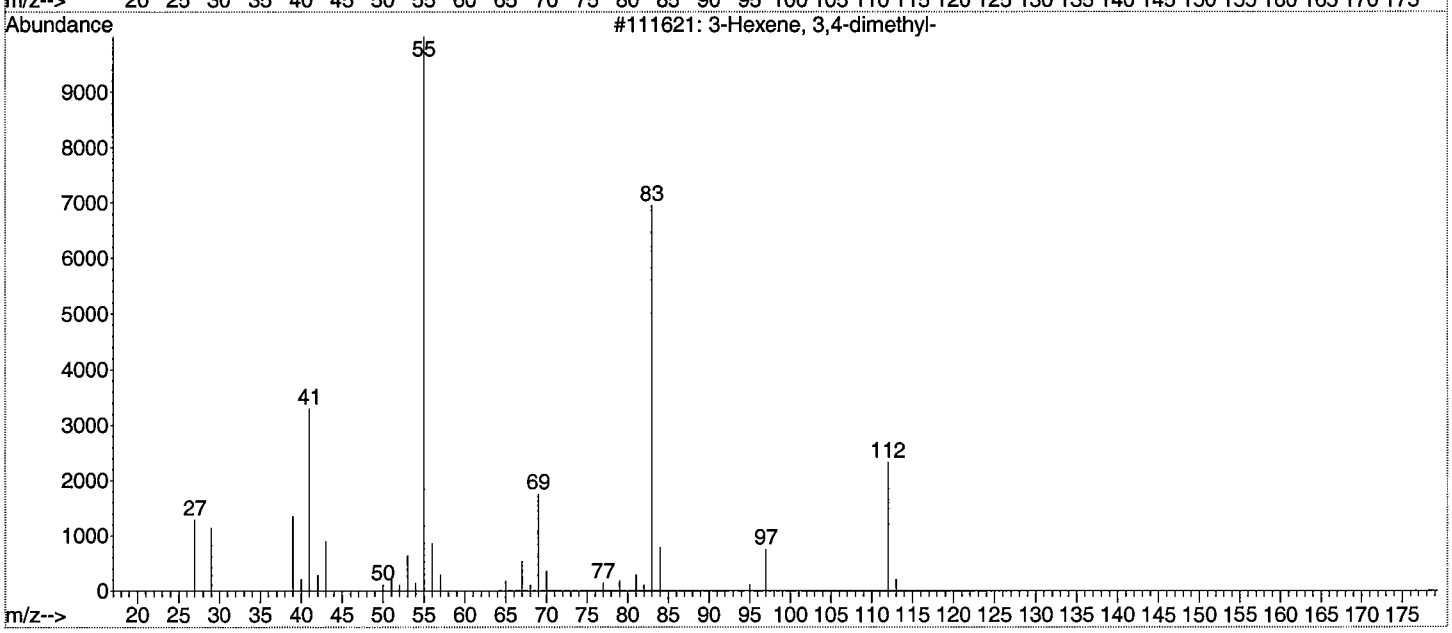


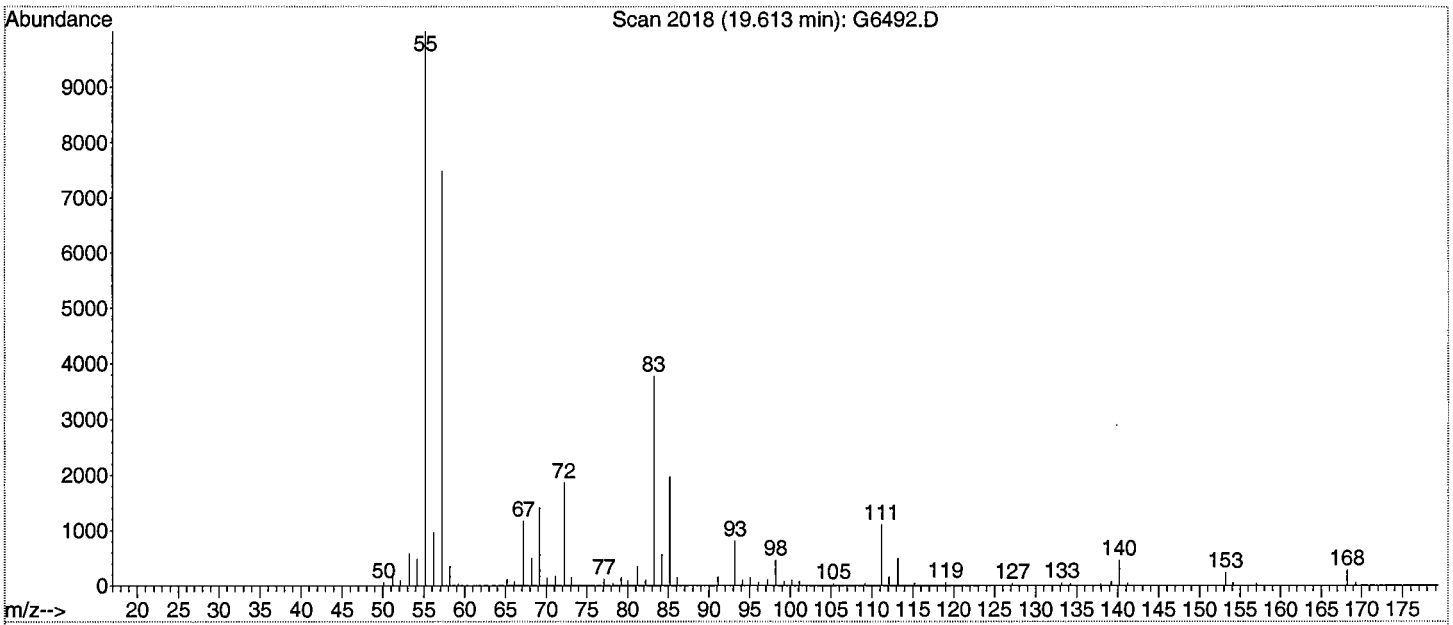


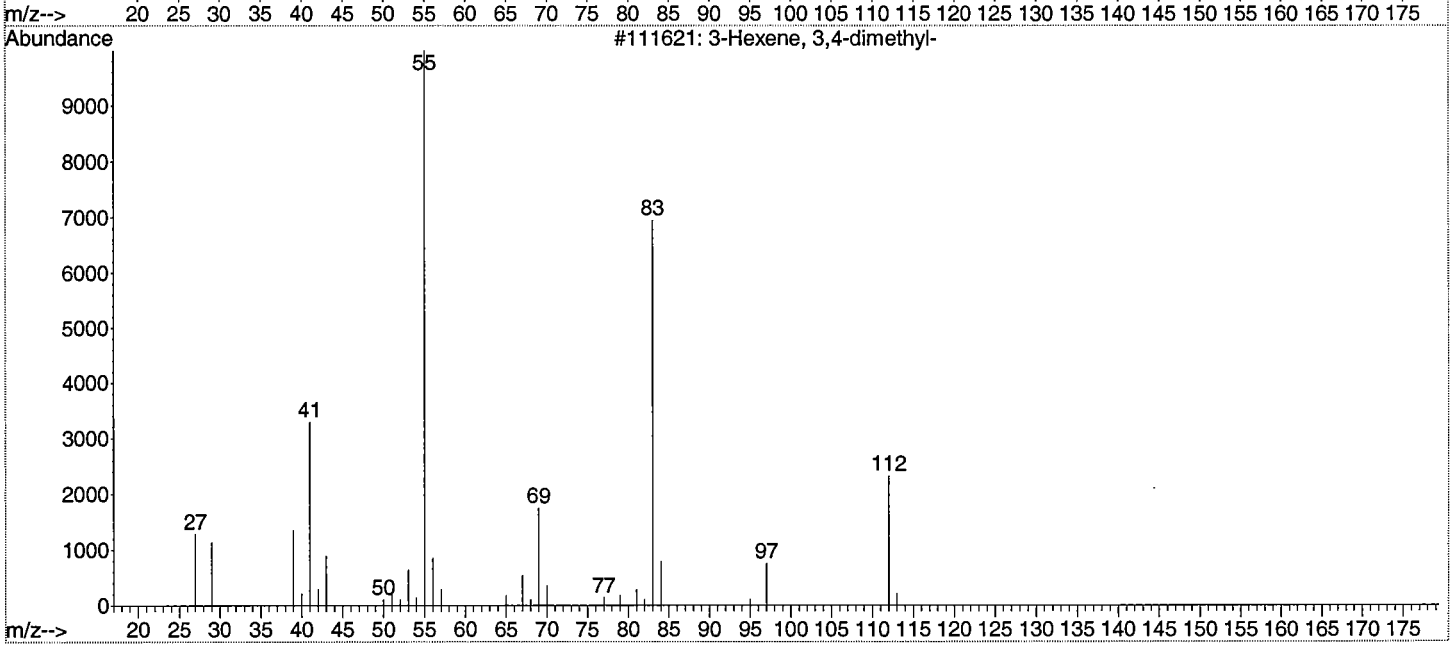
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 22
ID : 3-Hexene, 3,4-dimethyl-





Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 22
ID : 3-Hexene, 3,4-dimethyl-





Scan 2030 (19.681 min): G6492.D S1466-P(7) REF 3-2

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51.2	1144						
52.2	670						
53.2	5115						
54.2	2745						
55.2	32032						
56.2	3287						
57.2	41704						
58.2	57352						
59.1	3670						
60.2	330						
62.1	196						
63.1	264						
65.2	1178						
66.1	678						
67.2	9625						
68.2	31120						
69.2	13365						
70.2	1644						
71.2	2189						
72.2	2202						
73.2	284						
77.1	1213						
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81.2	1506						
82.2	804						
83.2	10481						
84.2	7171						
85.2	33000						
86.2	1838						
87.2	217						
91.2	720						
92.2	210						
93.2	960						
94.1	359						
95.2	2773						
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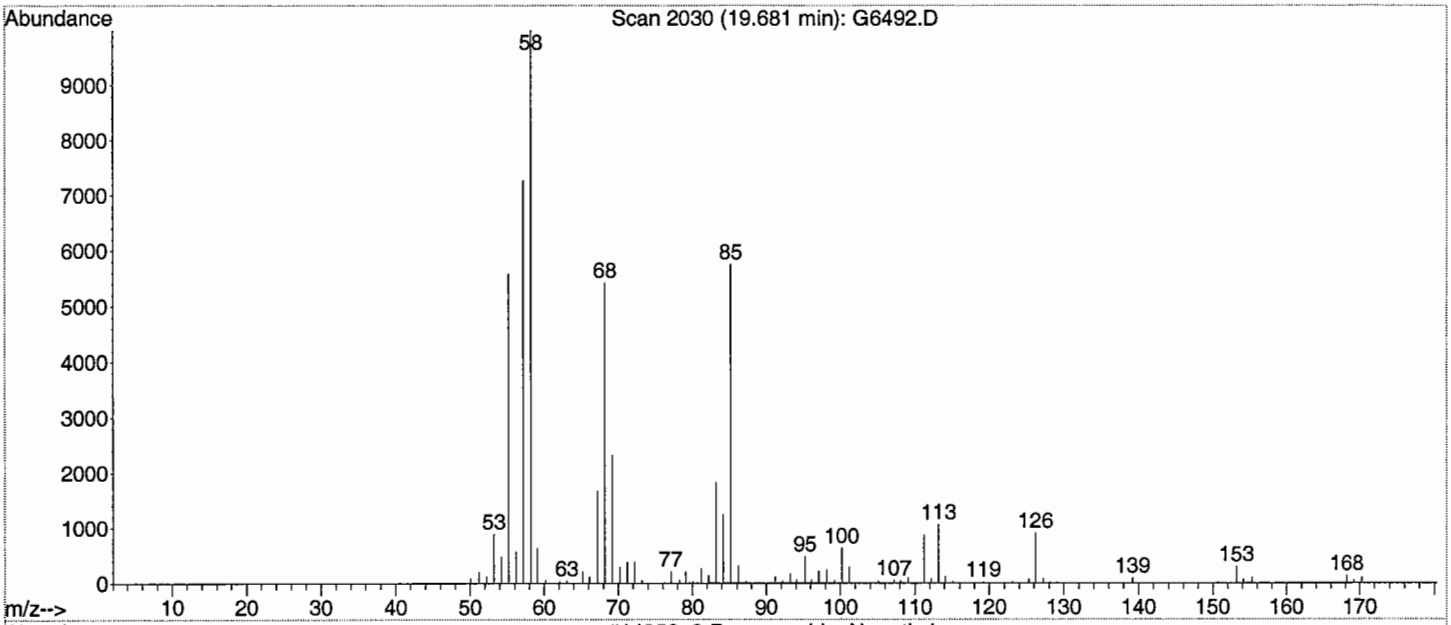
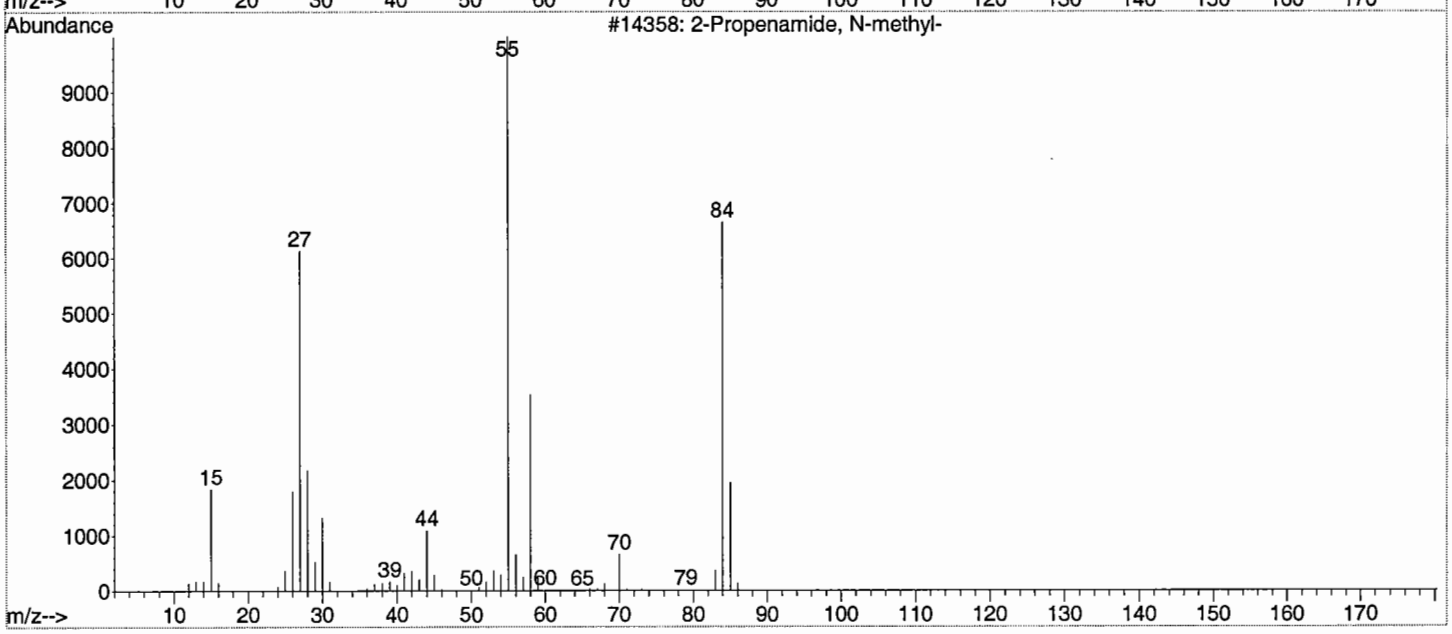
97.1	1300						
98.2	1402						
99.2	270						
100.2	3639						
101.2	1681						
105.1	221						
107.2	285						
108.1	238						
109.1	590						
111.2	4993						
112.2	485						
113.2	6110						
114.1	712						
115.1	181						
119.2	164						
123.1	165						
125.3	402						
126.2	5237						
127.2	496						
128.1	165						
129.1	162						
139.2	549						
153.2	1709						
154.1	373						
155.3	585						
168.2	781						
169.2	316						
170.3	587						

Scan 2030 (19.681 min): G6492.D
S1466-P(7)

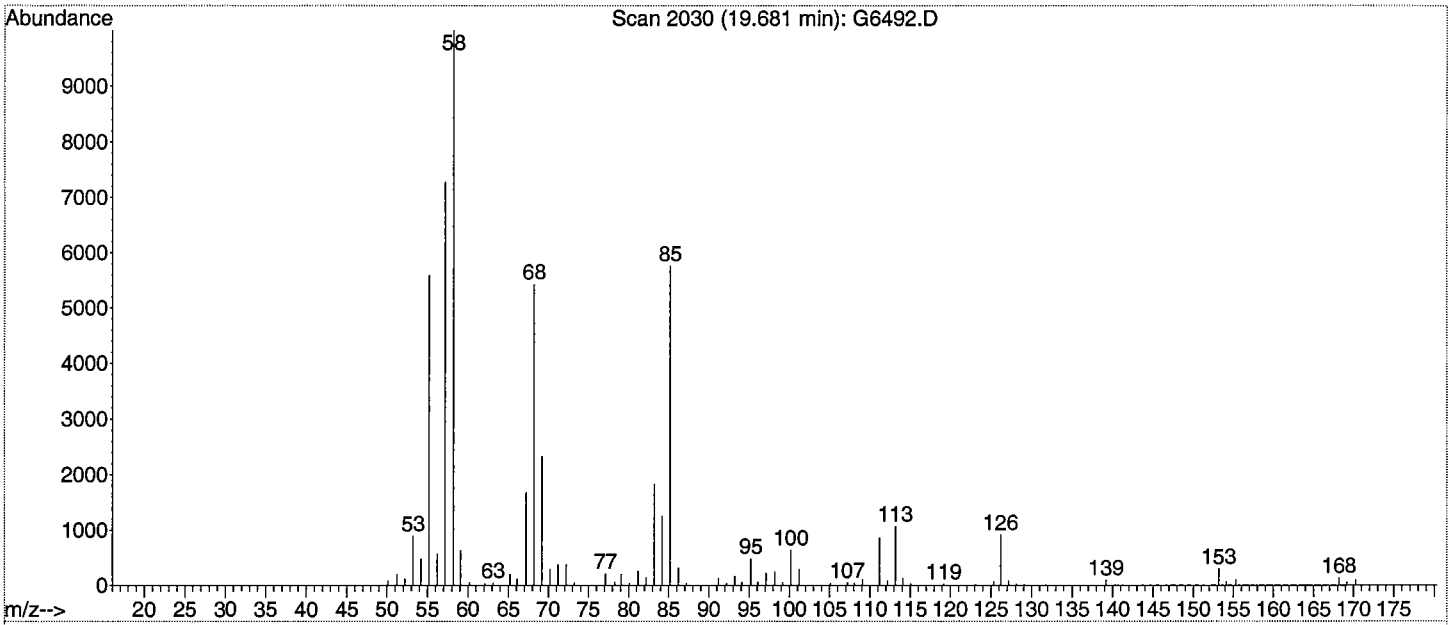
Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	2-Propenamide, N-methyl-	85	C4H7NO	43	001187-59-3
2	7-Octen-2-one	126	C8H14O	32	003664-60-6
3	Oxirane, (2-methylbutyl)-	114	C7H14O	27	053229-42-8
4	2H-Pyran, 3,4-dihydro-2-methoxy-	114	C6H10O2	27	004454-05-1
5	Etilefrin-propionyl	349	C19H27NO5	16	100012-00-4
6	Dimethyl-[2-(5-methylcyclohexa-1,4-dienyloxy)ethyl]amine	181	C11H19NO	16	100018-68-0
7	2-Ethylnon-1-en-3-ol	170	C11H22O	14	100018-50-1
8	5-Undecanone	170	C11H22O	14	033083-83-9
9	Hexane, 2-methyl-	100	C7H16	10	000591-76-4
10	Cyclopropanoic acid, -2-methyl-2-methoxy, methyl ester	144	C7H12O3	10	100022-20-1
11	Oxirane, 2-butyl-3-methyl-, cis-	114	C7H14O	10	056052-93-8
12	Octane, 2,3,3-trimethyl-	156	C11H24	10	062016-30-2
13	Cyclopentane, butyl-	126	C9H18	10	002040-95-1
14	Hexane, 2-methyl-	100	C7H16	10	000591-76-4
15	Heptane, 3-methyl-	114	C8H18	10	000589-81-1
16	Cyclobutaneethanol, 1-methyl-2-(1-methylethenyl)-, (1R-cis)-	154	C10H18O	10	026532-22-9
17	4-Heptenal, (Z)-	112	C7H12O	10	006728-31-0
18	Decane, 3,6-dimethyl-	170	C12H26	10	017312-53-7
19	2(3H)-Furanone, 5-heptyldihydro-	184	C11H20O2	9	000104-67-6
20	Decane, 3,8-dimethyl-	170	C12H26	9	017312-55-9

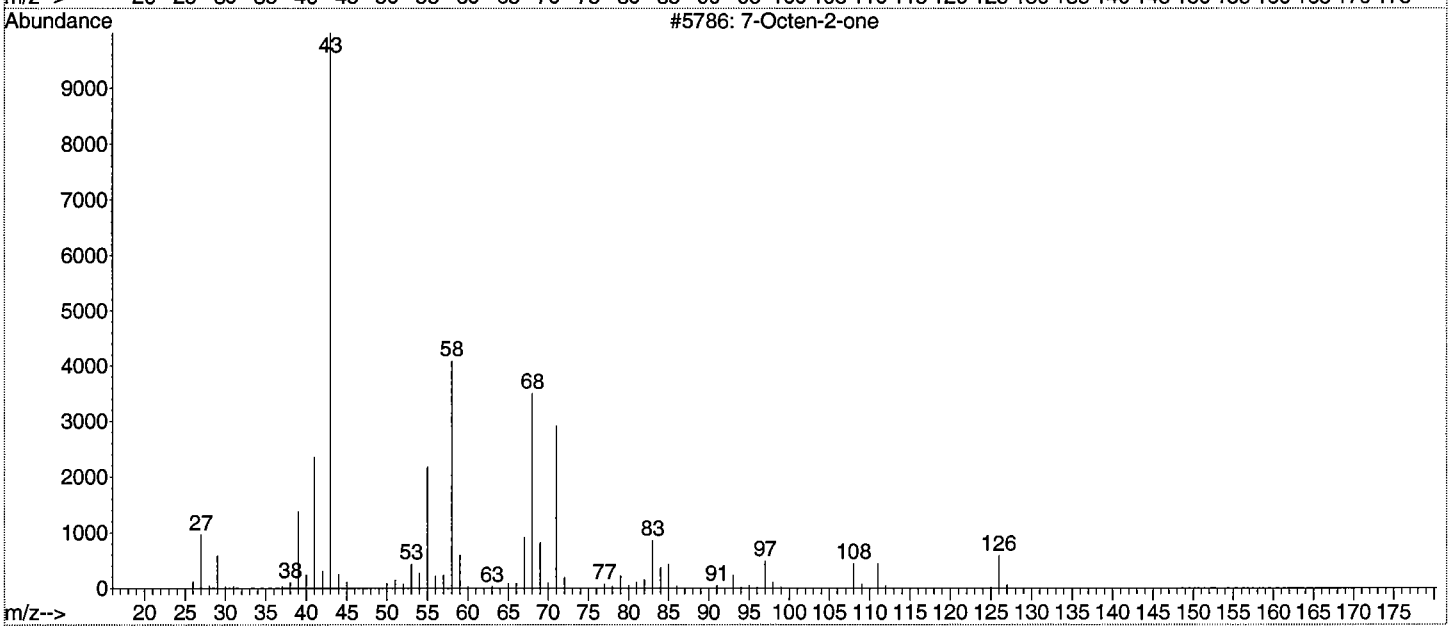
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 43
ID : 2-Propenamide, N-methyl-





Library Searched : C:\MSDChem\DATABASE\Nist98.1
Quality : 32
ID : 7-Octen-2-one





Library Searched : C:\MSDChem\DATABASE\Nist98.l
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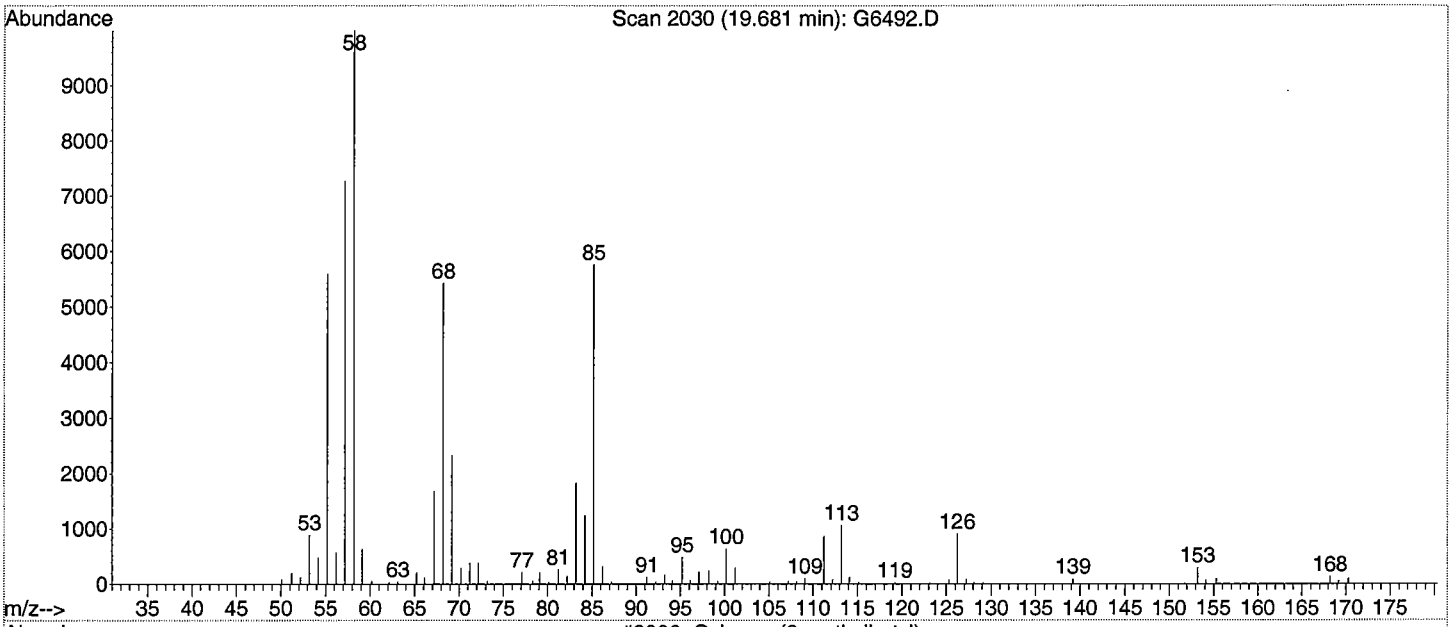

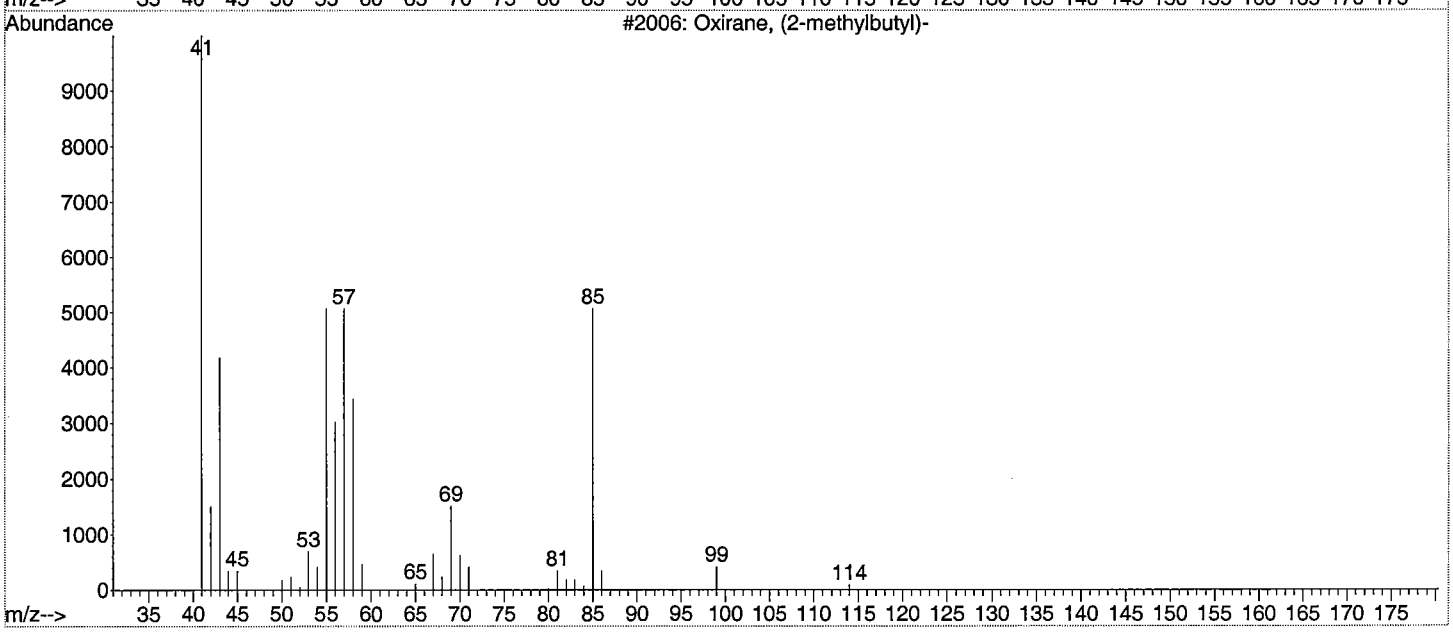

Library Searched : C:\MSDChem\DATABASE\Nist98.l
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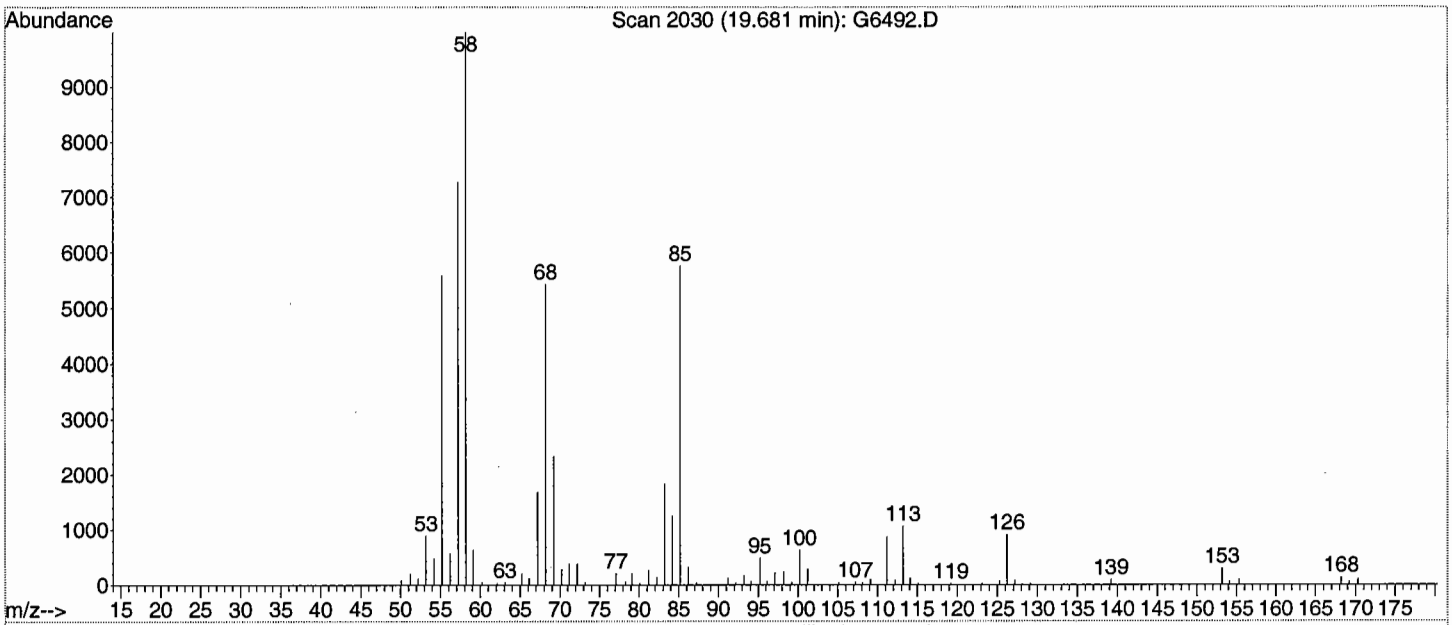
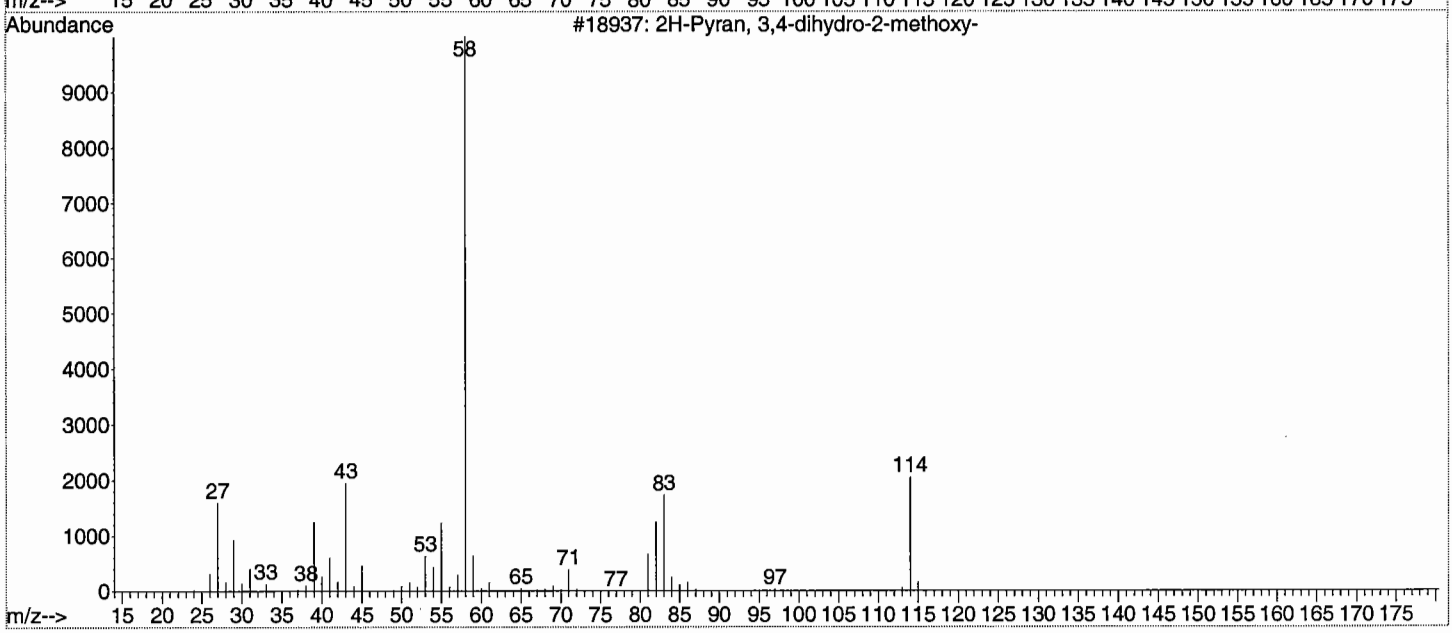
ID : 2H-Pyran, 3,4-dihydro-2-methoxy-





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Quality : 16
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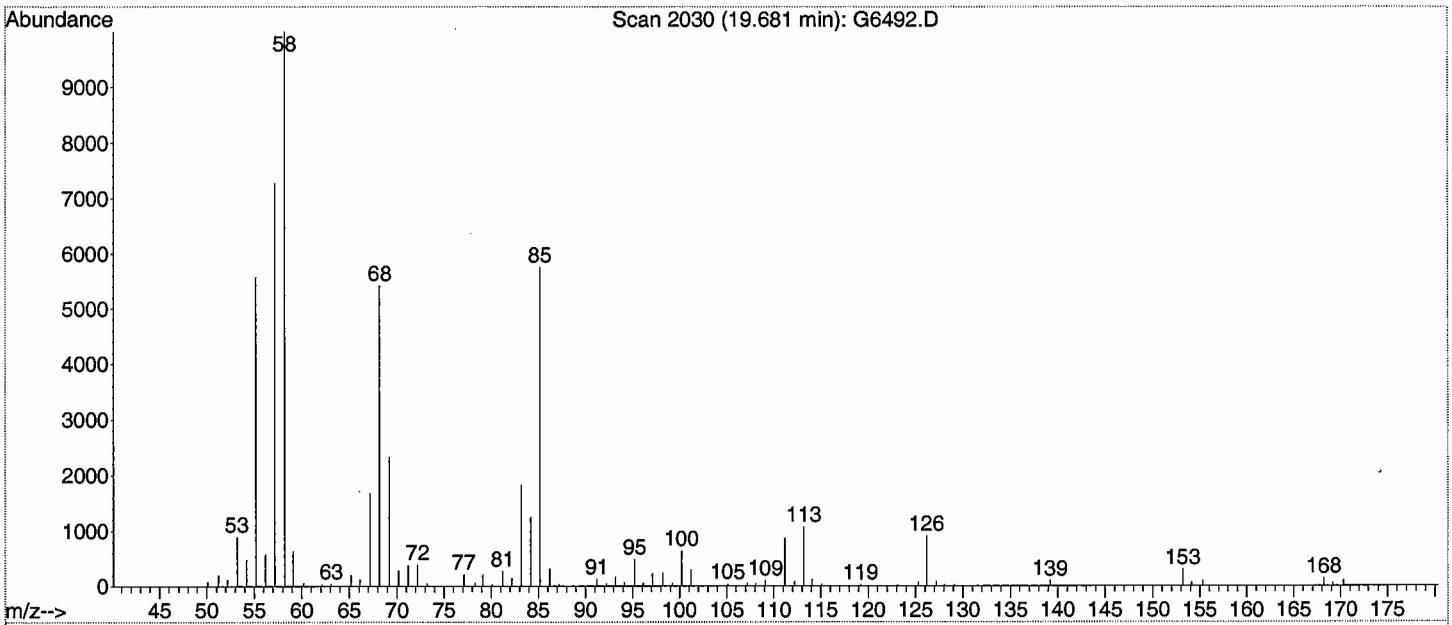

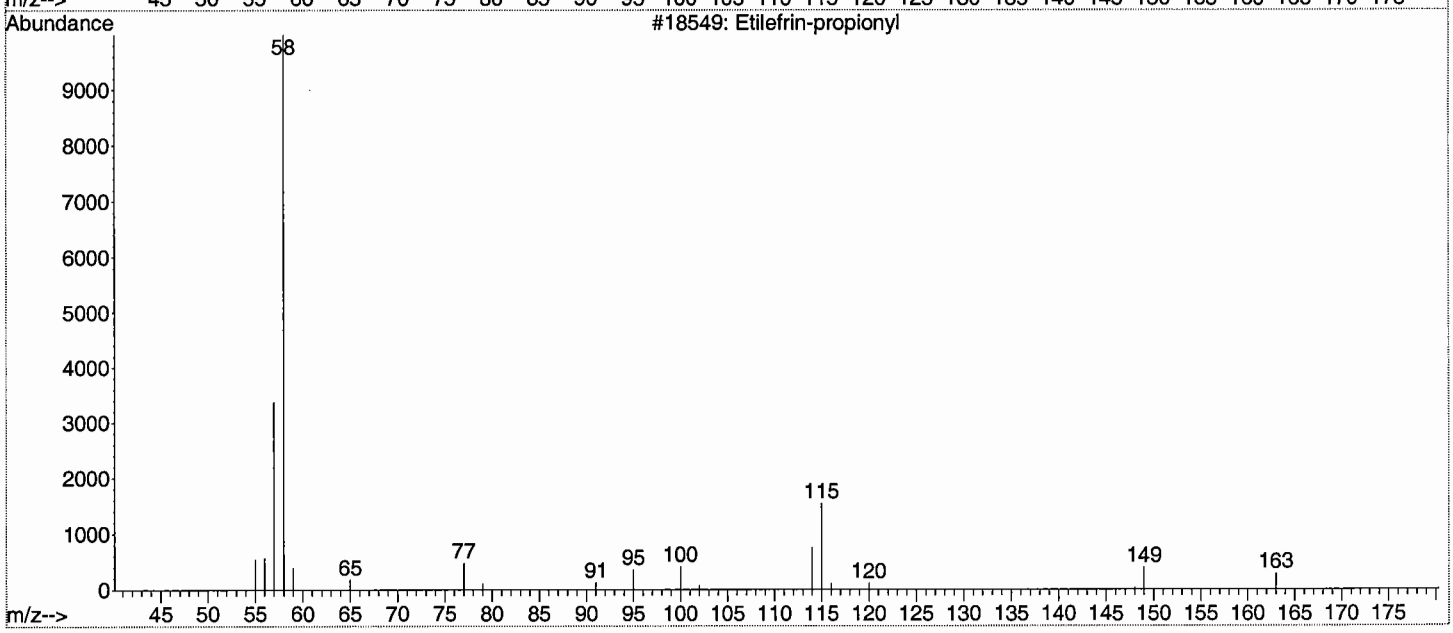

Scan 2086 (20.001 min): G6492.D S1466-P(7) REF 3-2

RT	m/z	RT	m/z	RT	m/z	RT	m/z
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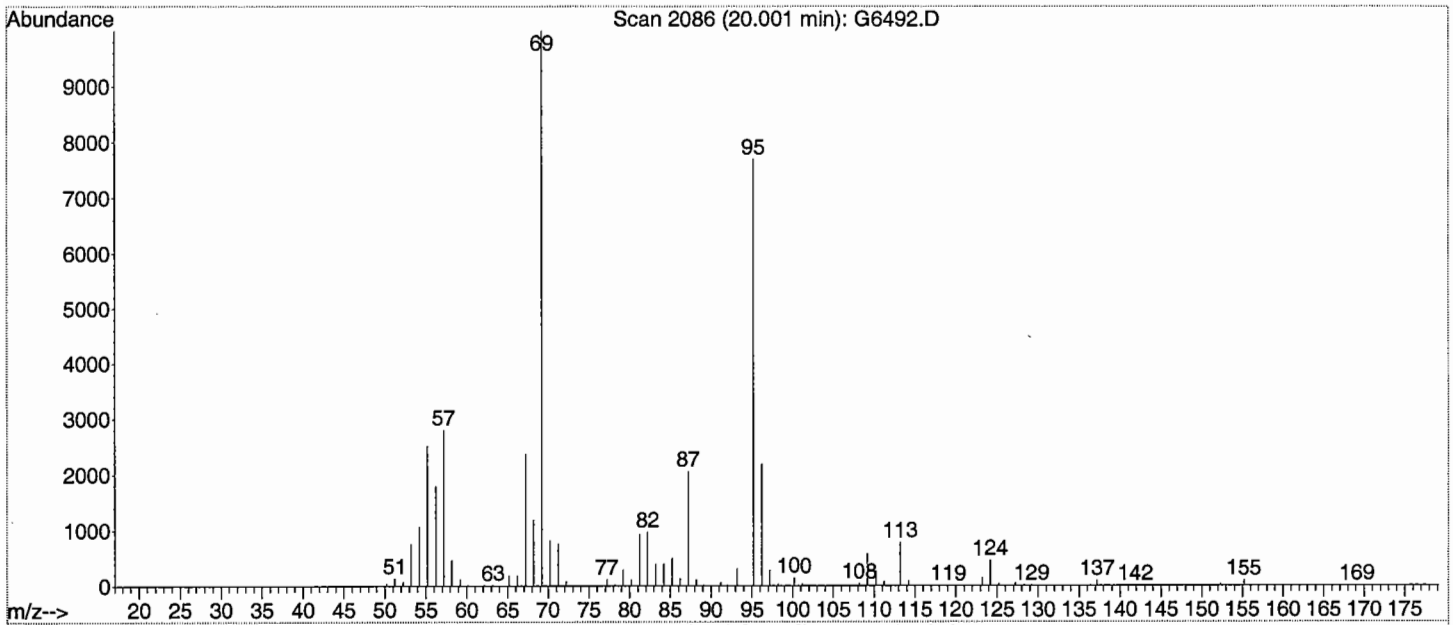
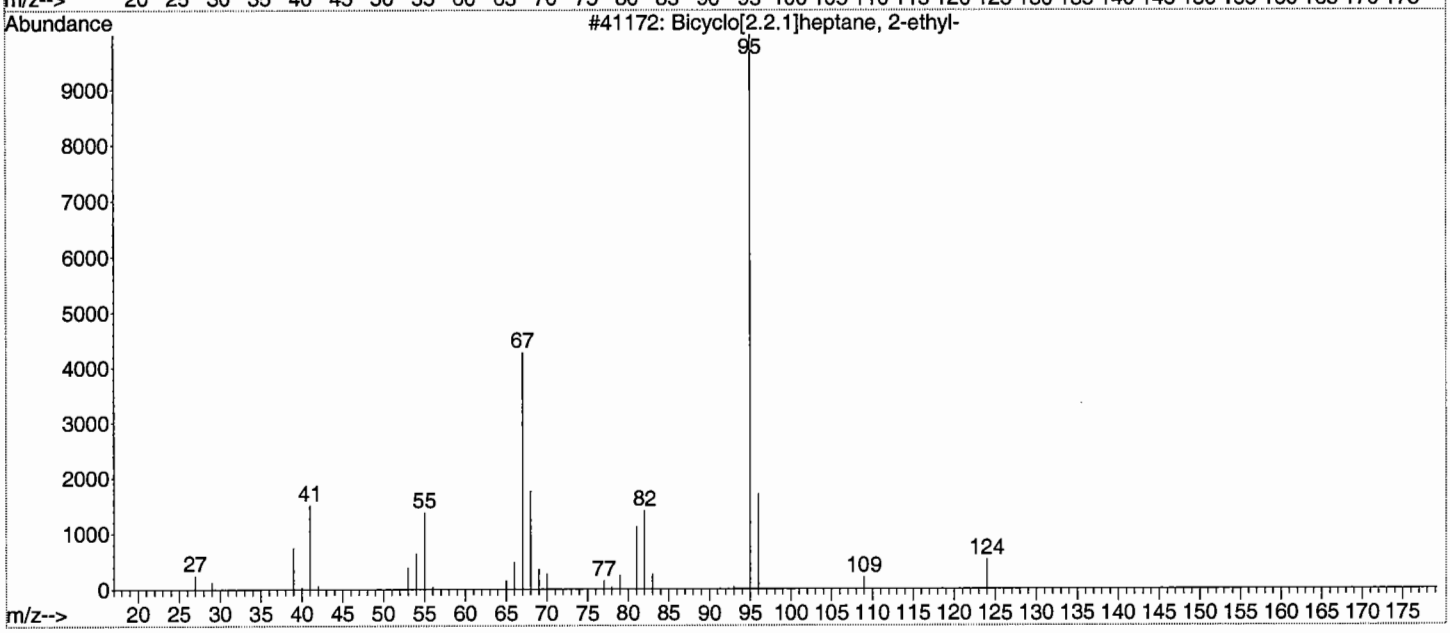
53.2	45632	137.2	5492				
54.2	63920	138.2	588				
55.2	151424	139.2	737				
56.2	107816	141.2	750				
57.2	168512	141.9	239				
58.2	28152	152.3	1803				
59.2	6923	153.2	263				
60.1	516	155.2	5818				
61.2	205	156.2	691				
62.1	438	169.1	265				
63.2	1021						
64	167						
65.2	10887						
66.2	10571						
67.2	142208						
68.2	72000						
69.2	601088						
70.2	49208						
71.2	45832						
72.2	5049						
73.1	965						
74.2	176						
77.2	6777						
78.2	1573						
79.2	17272						
80.2	6614						
81.2	55640						
82.2	58096						
83.2	23616						
84.2	23984						
85.2	30040						
86.2	7761						
87.2	123728						
88.2	6695						
89.1	503						
91.2	3783						
92	562						
93.2	18344						
95.2	462464						
96.2	131328						
97.2	17032						
98.2	1453						
99.2	1154						
100.2	8593						
101.2	1971						
105.1	570						
107.2	458						
108.2	2368						
109.2	34888						
110.2	16118						
111.2	4627						
112.2	848						
113.2	47072						
114.2	5281						
115.2	633						
116.2	155						
119.1	203						
121.2	192						
122.1	209						
123.2	8196						
124.2	27512						
125.2	2329						
126.2	299						
127.2	3036						

Scan 2086 (20.001 min): G6492.D
S1466-P(7)

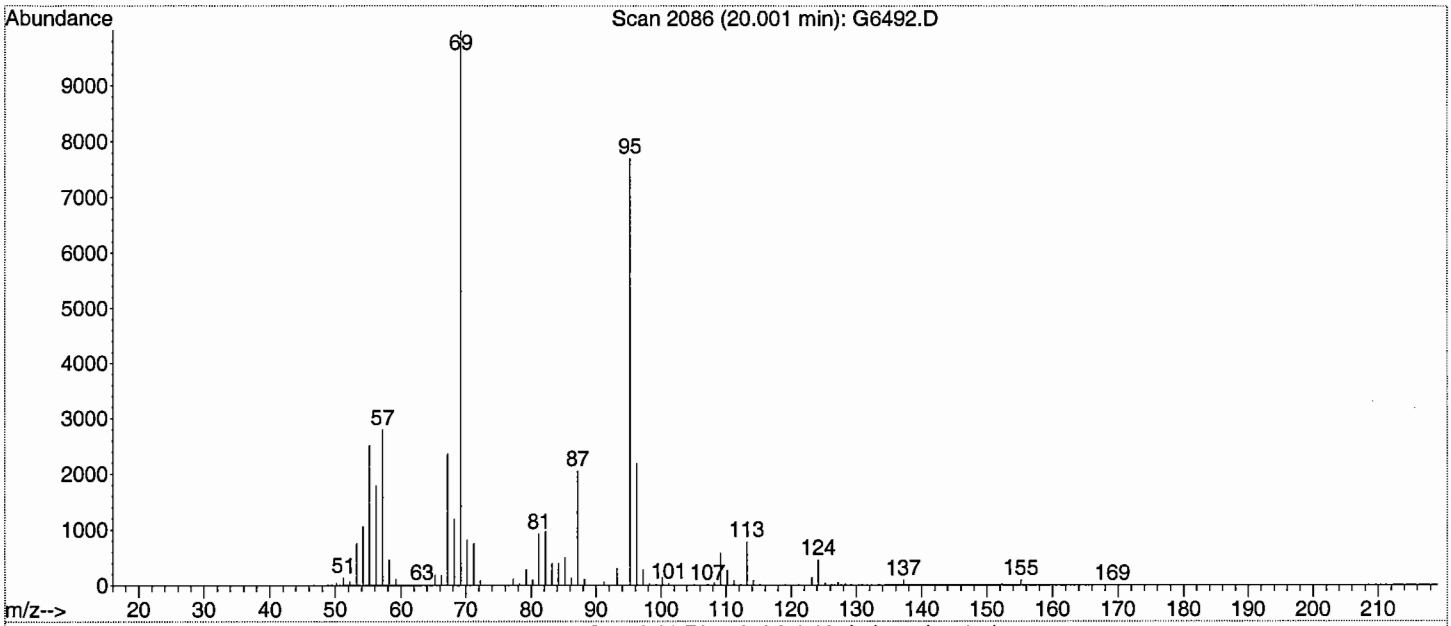
Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	Bicyclo[2.2.1]heptane, 2-ethyl-	124	C9H16	38	002146-41-0
2	6,11-Dimethyl-2,6,10-dodecatrien-1-ol	208	C14H24O	32	100019-65-3
3	1,3-Dimethyl-1-cyclohexene	110	C8H14	27	002808-76-6
4	6-Hepten-1-ol, 2-methyl-	128	C8H16O	25	100013-21-2
5	Norbornane, 2-isobutyl-	152	C11H20	25	018127-14-5
6	Cyclohexanemethanol, .alpha.-(2-methyl-2-propenyl)-	168	C11H20O	17	031569-55-8
7	5-Hepten-2-ol, 6-methyl-	128	C8H16O	17	001569-60-4
8	dl-6-Methyl-5-hepten-2-ol	128	C8H16O	17	004630-06-2
9	2-Pentanol, 1-(2-methylenecyclopropyl)-4-methyl-	154	C10H18O	17	100016-10-7
10	1,3-Dimethyl-5-trifluoroacetoxycyclohexane	224	C10H15F3O2	16	100021-66-3
11	Cyclopentane, 2-propenyl-	110	C8H14	14	003524-75-2
12	Cyclopentane, bromo-	148	C5H9Br	12	000137-43-9
13	Acetic acid, trifluoro-, 1,5-pentanediyl ester	296	C9H10F6O4	12	000453-44-1
14	2-Methyl-3-propenylcyclopropanecarboxylic acid, methyl ester	154	C9H14O2	12	118316-01-1
15	Cyclohexanol, 3,3-dimethyl-	128	C8H16O	12	000767-12-4
16	2-Nonyne	124	C9H16	12	019447-29-1
17	Cyclohexanol, 2-methyl-5-(1-methylethyl)-	156	C10H20O	12	060320-28-7
18	4-Heptanol, 2,6-dimethyl-	144	C9H20O	12	000108-82-7
19	1,5-Heptadiene, 3,3-dimethyl-, (E)-	124	C9H16	10	067682-47-7
20	Cyclohexanol, 2-methyl-5-(1-methylethyl)-, (1.alpha.,2.alpha.,5.beta.)-	156	C10H20O	10	001126-40-5

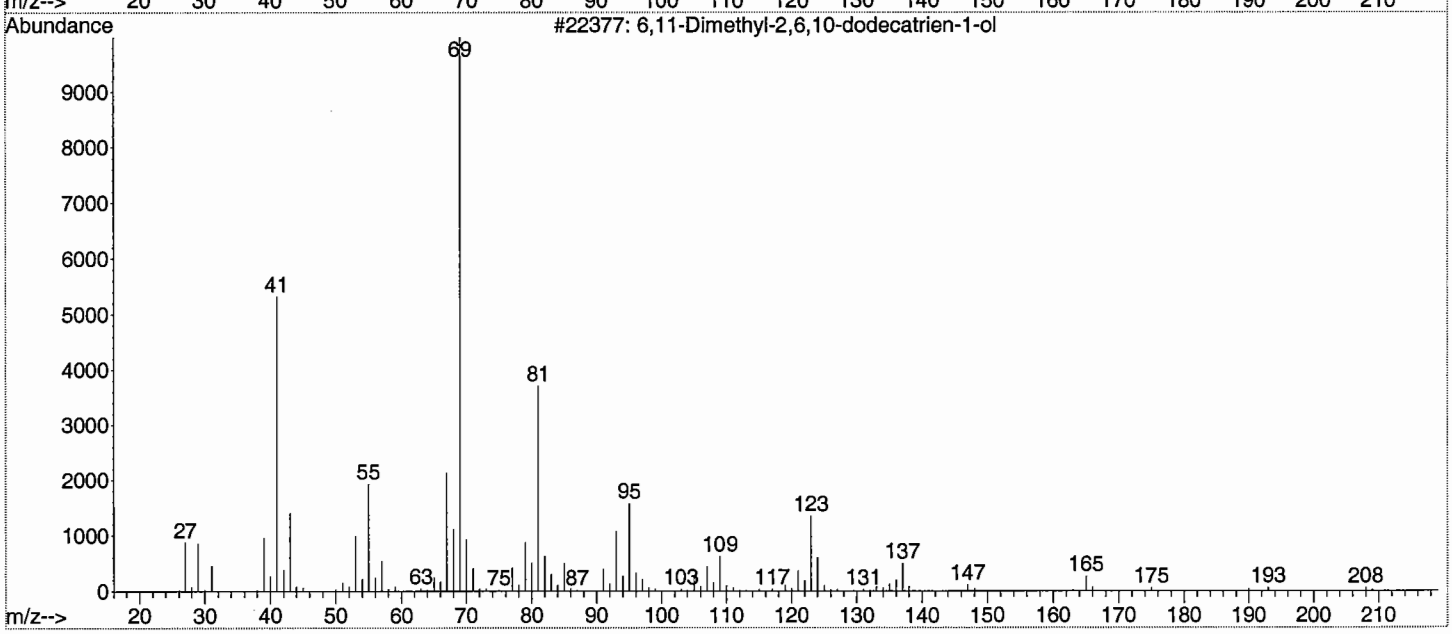
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 38
ID : Bicyclo[2.2.1]heptane, 2-ethyl-



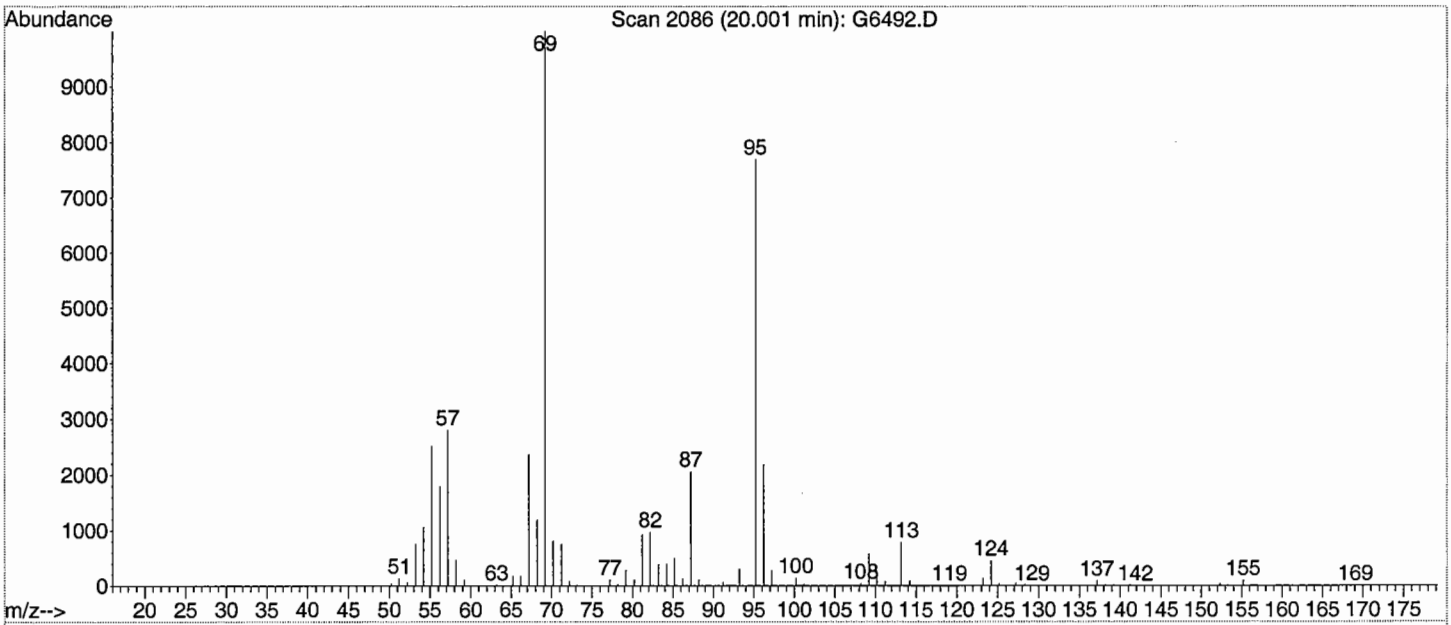


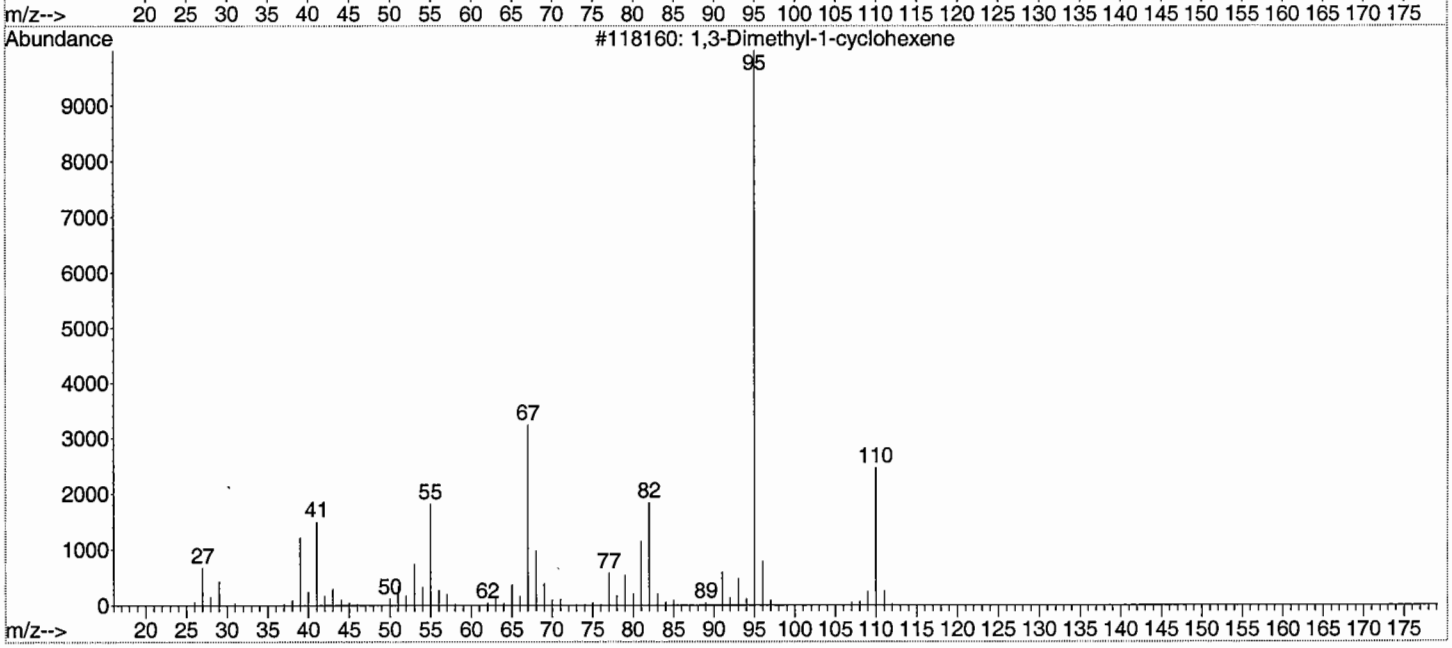
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 32
ID : 6,11-Dimethyl-2,6,10-dodecatrien-1-ol



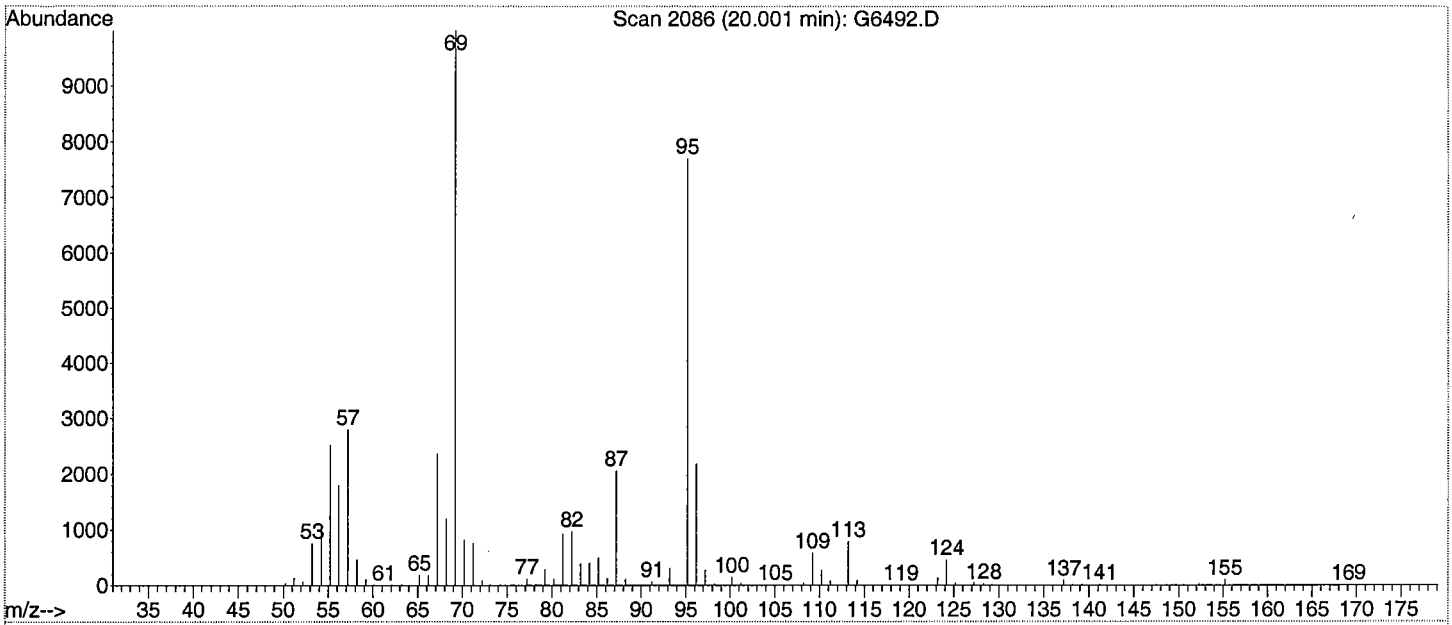


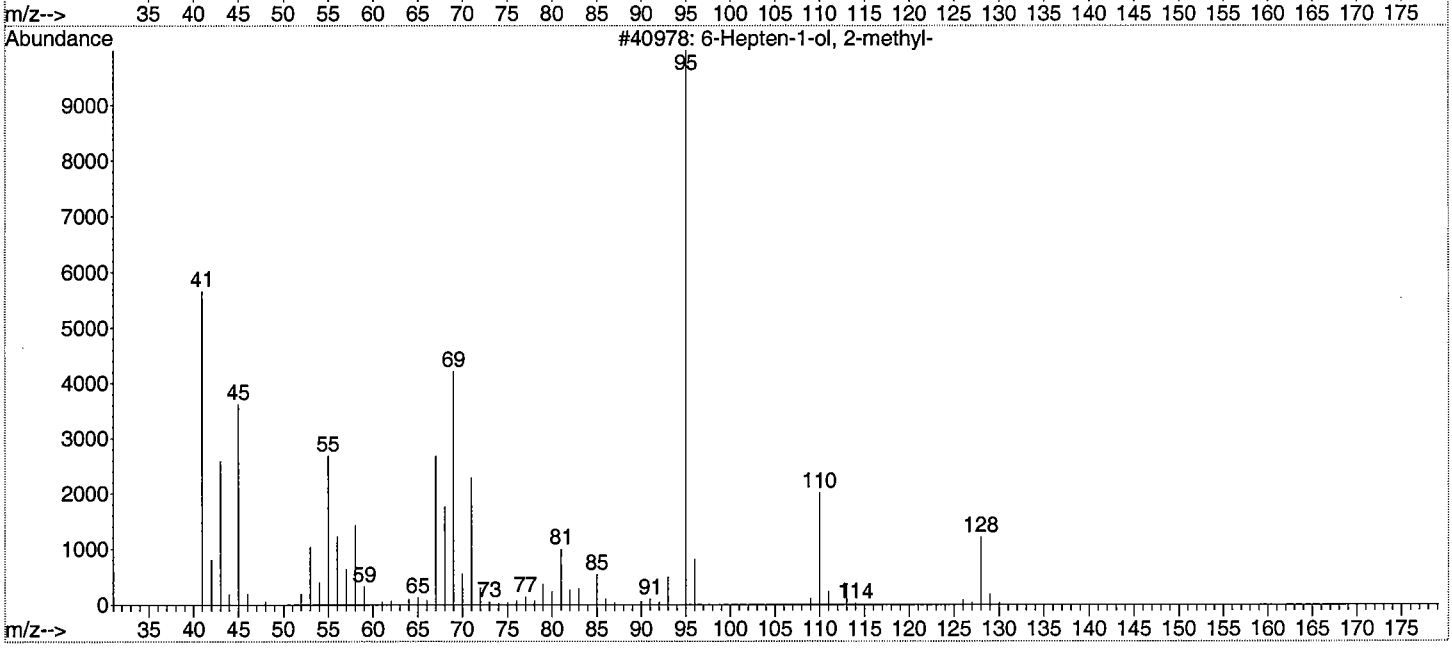
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 27
ID : 1,3-Dimethyl-1-cyclohexene





Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 25
ID : 6-Hepten-1-ol, 2-methyl-





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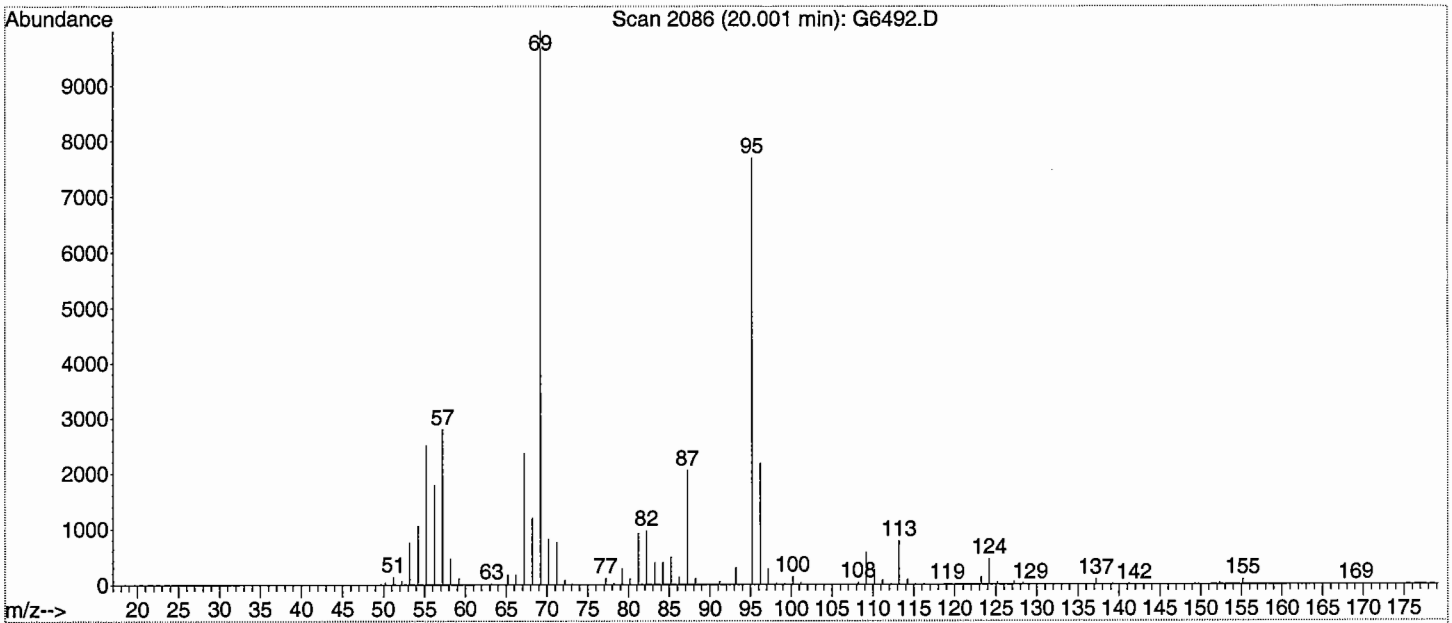
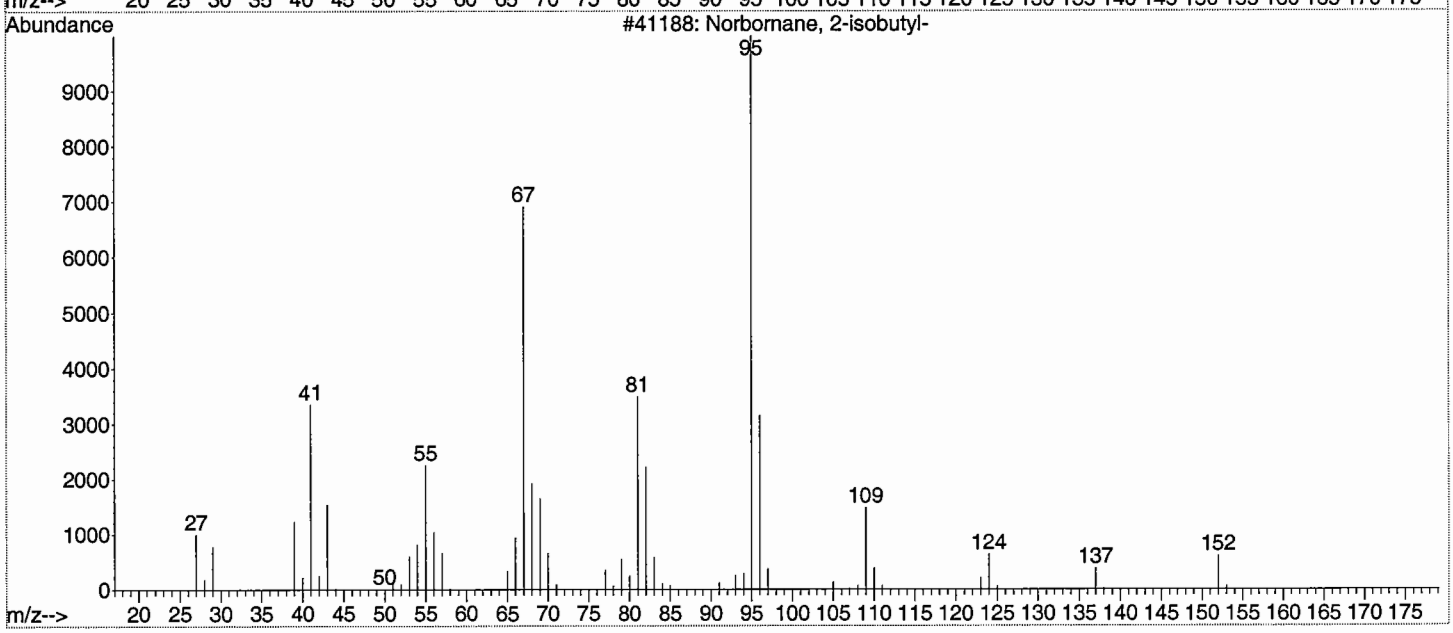
Quality : 25
ID : Norbornane, 2-isobutyl-





Scan 2137 (20.293 min): G6492.D S1466-P(7) REF 3-2

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52.2	918						
53.2	12975						
54.2	7693						
55.2	49816						
56.2	15795						
57.2	36848						
58.2	11037						
59.2	2683						
62.2	161						
63.2	398						
65.2	2159						
66.2	2159						
67.2	41944						
68.2	135552						
69.2	50288						
70.2	7759						
71.2	10914						
72.2	1921						
73.2	353						
77.1	1916						
78.1	341						
79.1	3708						
80.2	1401						
81.2	18760						
82.2	9880						
83.2	4161						
84.2	2303						
85.2	11722						
86.1	1664						
87.2	2098						
88.2	334						
89.2	226						
91.1	880						
93.2	2196						
94.2	1547						
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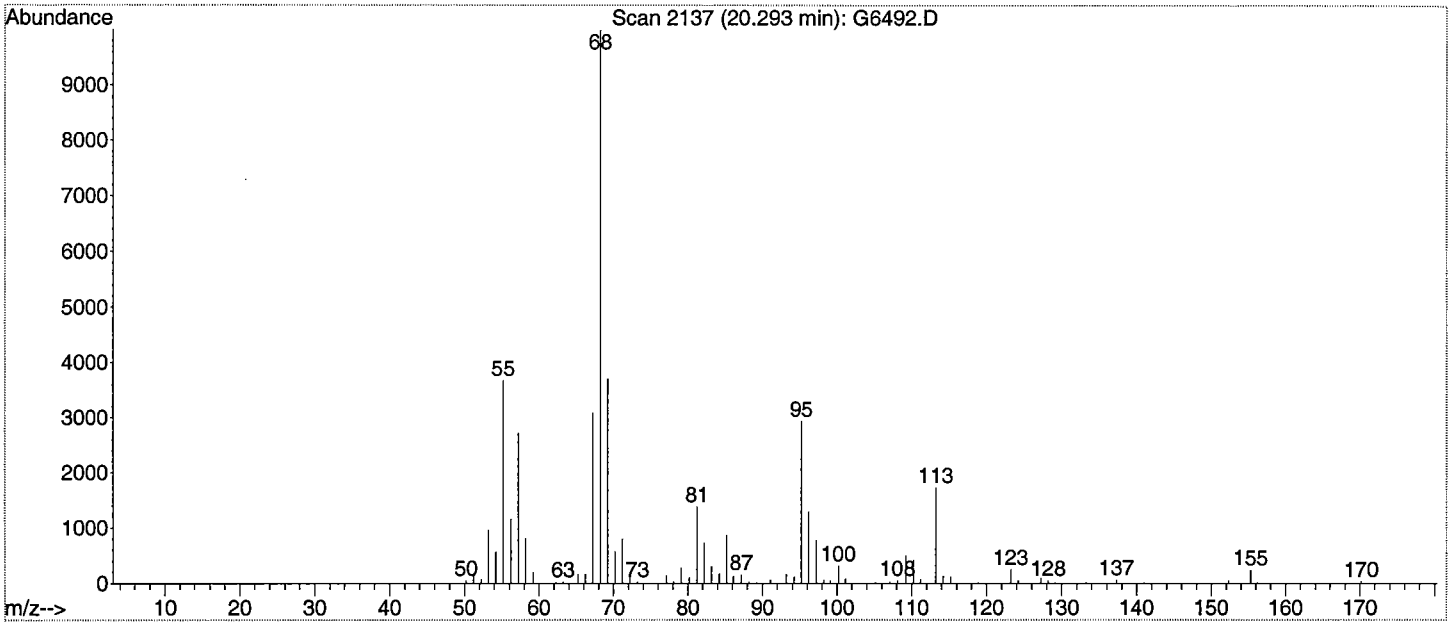
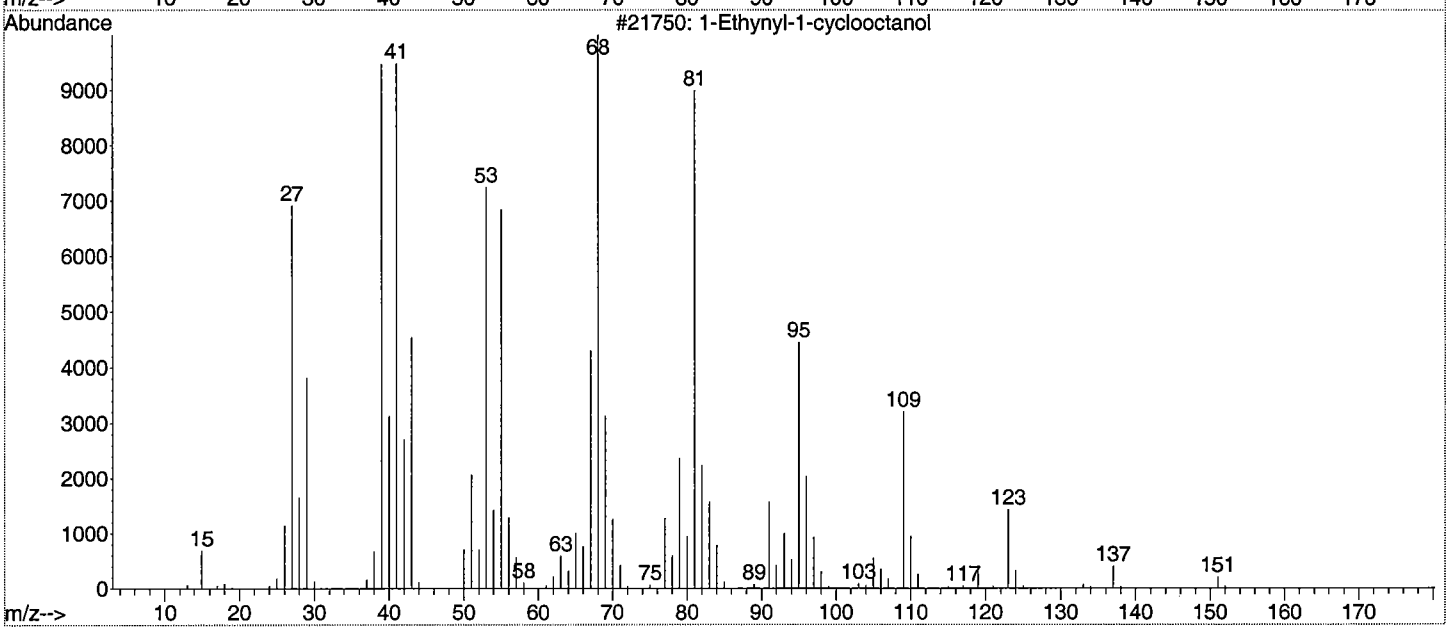
98.2	845						
99.1	631						
100.2	4230						
101.1	1153						
105.1	262						
107.1	341						
108.1	635						
109.2	6843						
110.2	5700						
111.2	927						
113.2	23440						
114.2	1843						
115.2	1618						
118.9	179						
123.2	3323						
124.2	759						
127.2	1218						
128.2	671						
129.1	207						
133.2	169						
137.3	817						
141	190						
152.3	574						
155.3	3237						
156.2	284						
170.2	431						

Scan 2137 (20.293 min): G6492.D
S1466-P(7)

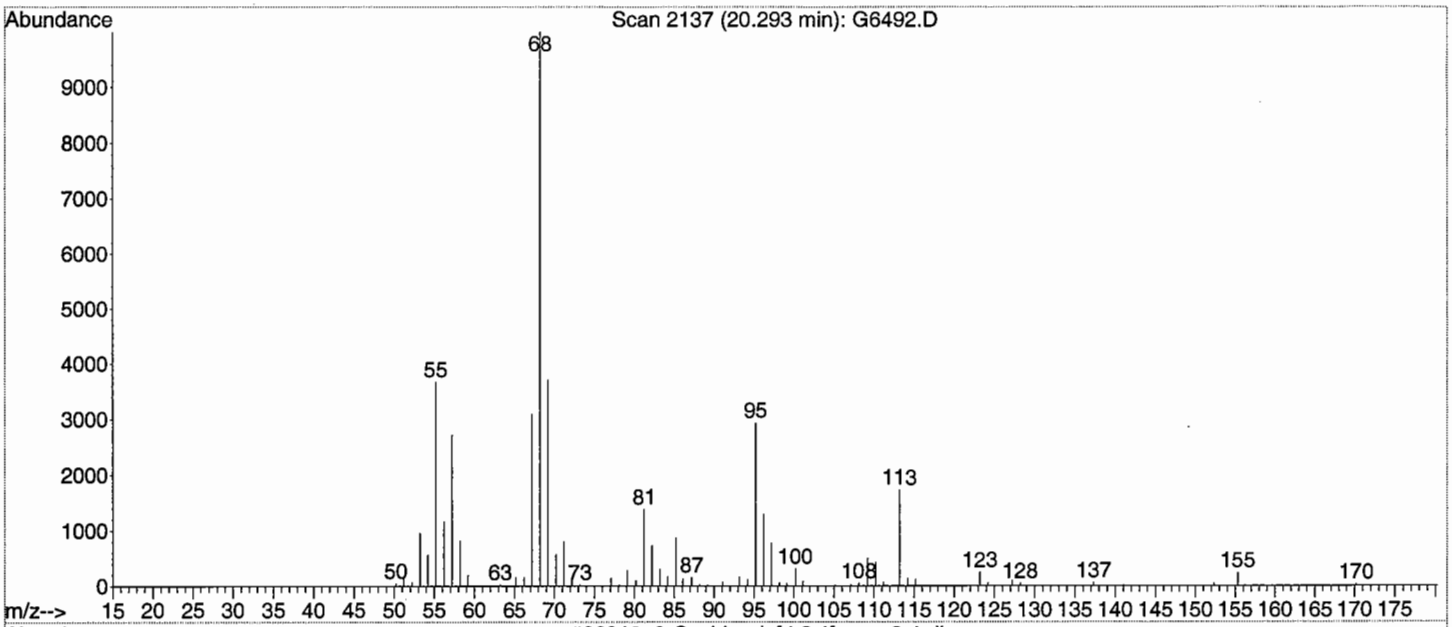
Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	1-Ethynyl-1-cyclooctanol	152	C10H16O	56	055373-76-7
2	9-Oxabicyclo[4.2.1]nona-2,4-diene	122	C8H10O	43	019740-75-1
3	6-Octen-2-one	126	C8H14O	40	035194-31-1
4	Cycloheptane, 1-methyl-4-methylene-	124	C9H16	38	023799-25-9
5	N-(5-Azidopentyl)-4-methyl-4-vinylazetidin-2-one	222	C11H18N4O	36	100011-26-2
6	3,8-Dimethyl-2,7-dioxaspiro[4,4]nonan-1,6-dione	184	C9H12O4	35	100022-21-5
7	2-Propyn-1-amine, N-methyl-	69	C4H7N	32	035161-71-8
8	Sulfamic acid, 1,7-heptanediyl ester	290	C7H18N2O6S2	25	096892-57-8
9	3,7-Dimethyl-octa-1,6-diene	138	C10H18	25	100019-04-6
10	1-Methoxy-3-(2-hydroxyethyl)nonane	202	C12H26O2	23	100021-68-2
11	Z-7-Tetradecenol	212	C14H28O	17	100024-54-8
12	9-Dodecen-1-ol, acetate, (E)-	226	C14H26O2	16	035148-19-7
13	(Z)-4-Decen-1-ol	156	C10H20O	12	057074-37-0
14	Cyclopentane, 1,1'-(1,4-butandiyl)bis-	194	C14H26	12	002980-70-3
15	Z-1,9-Hexadecadiene	222	C16H30	12	100024-57-1
16	2,7-Octadiene, 4-methyl-	124	C9H16	10	100006-17-8
17	4-Pentenal, 2-methylene-	96	C6H8O	10	017854-46-5
18	1-Methoxymethoxy-oct-2-yne	170	C10H18O2	10	100018-51-6
19	2,6-Dimethyl-1,6-heptadiene	124	C9H16	10	051708-83-9
20	7-Azabicyclo[4.1.0]heptane	97	C6H11N	10	000286-18-0

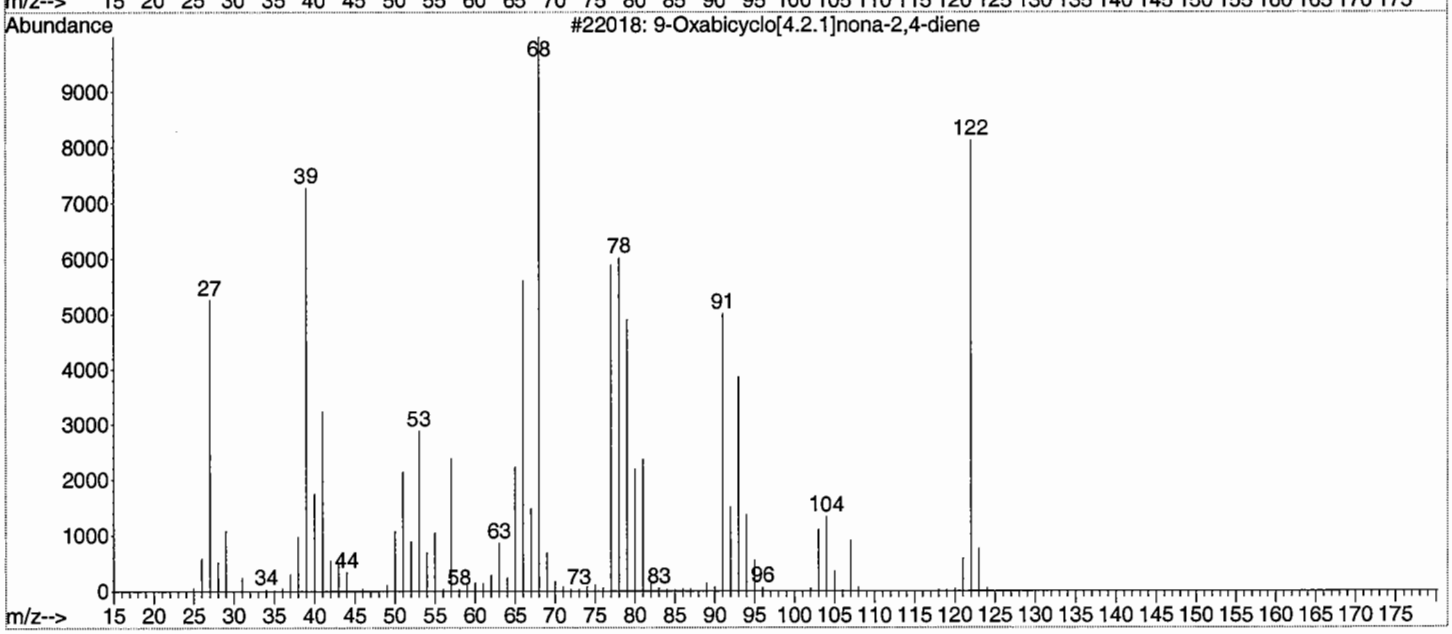
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 56
ID : 1-Ethynyl-1-cyclooctanol





Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 43
ID : 9-Oxabicyclo[4.2.1]nona-2,4-diene





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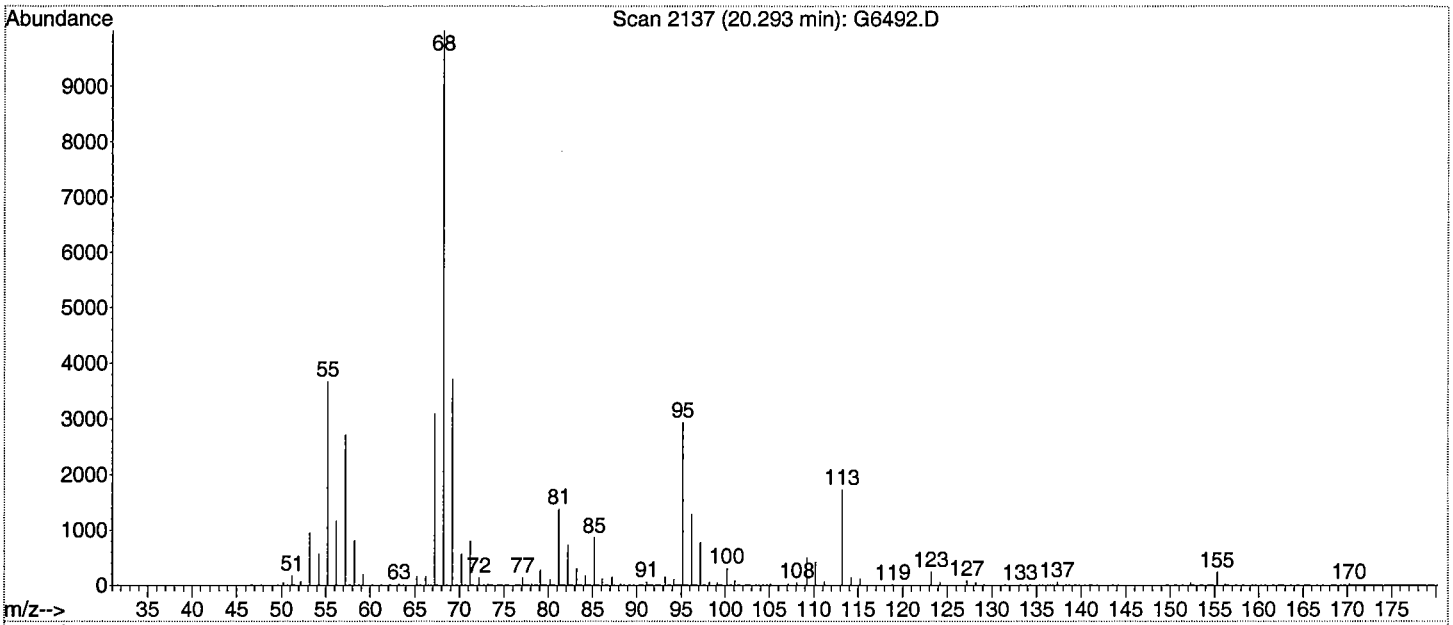
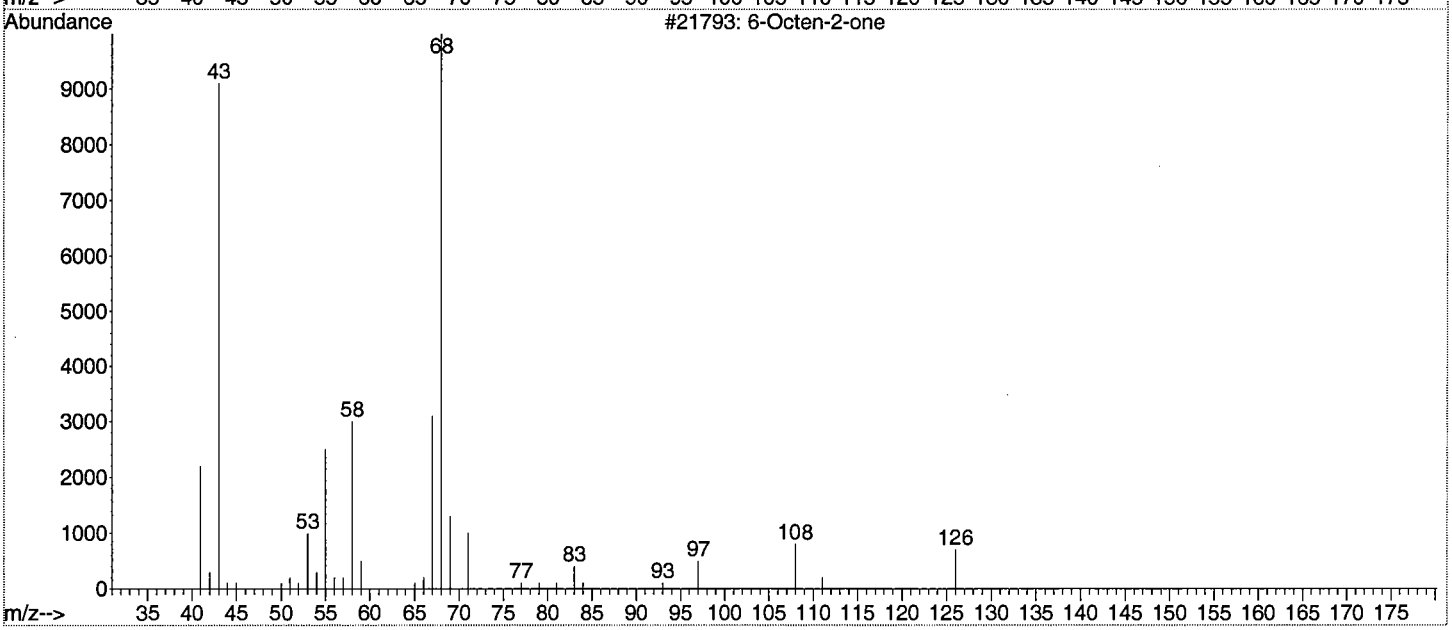
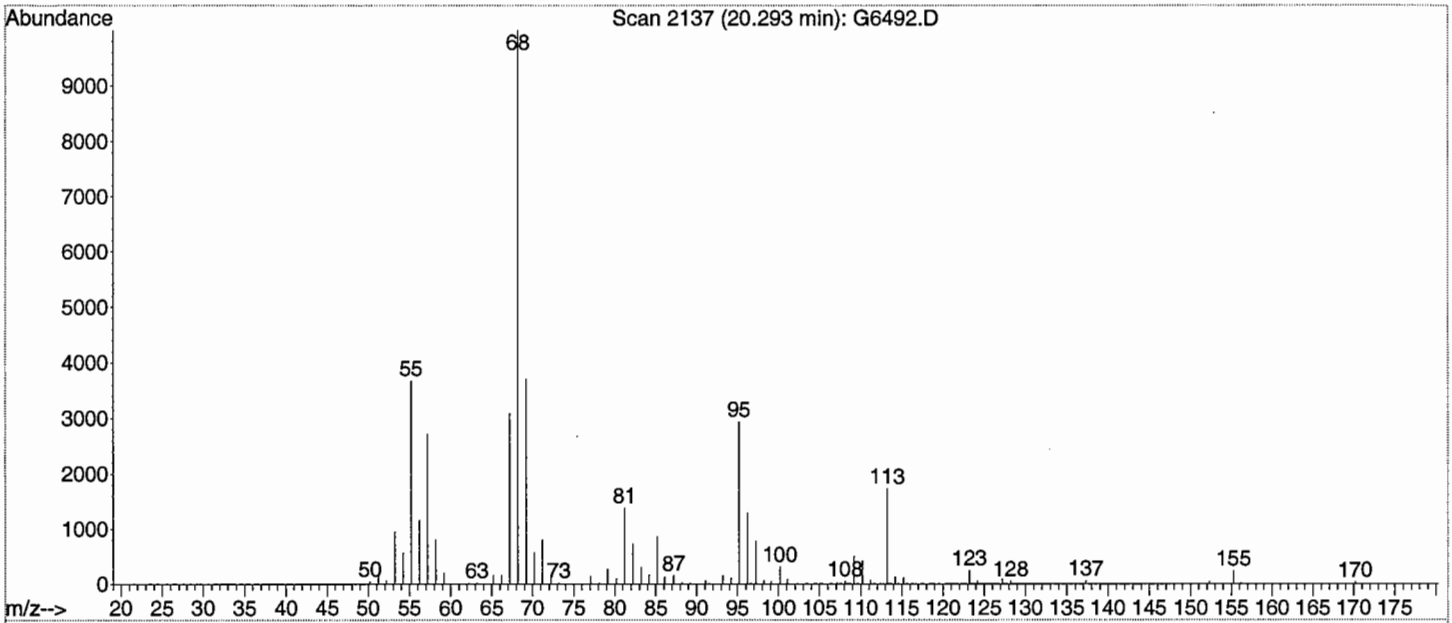
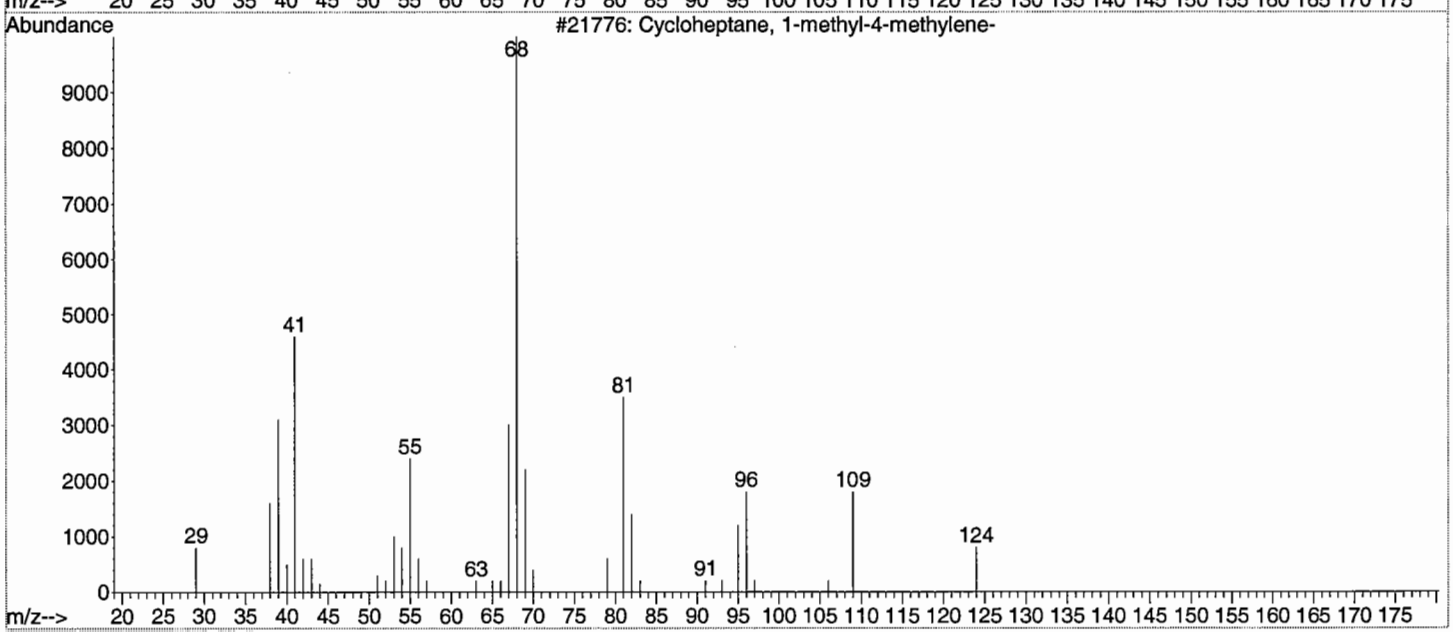
Quality : 40
ID : 6-Octen-2-one





Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 38
ID : Cycloheptane, 1-methyl-4-methylene-





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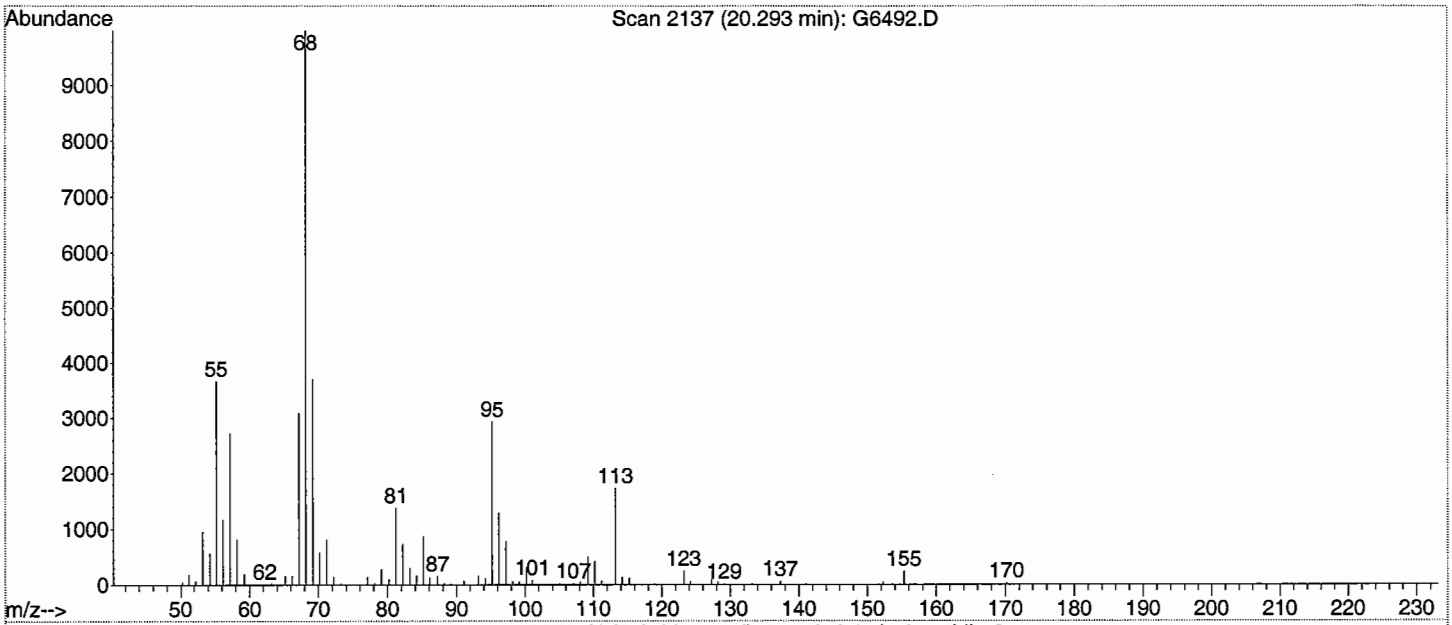
Quality : 36
ID : N-(5-Azidopentyl)-4-methyl-4-vinylazetidin-2-one



Scan 2182 (20.550 min): G6492.D S1466-P(7) REF 3-2

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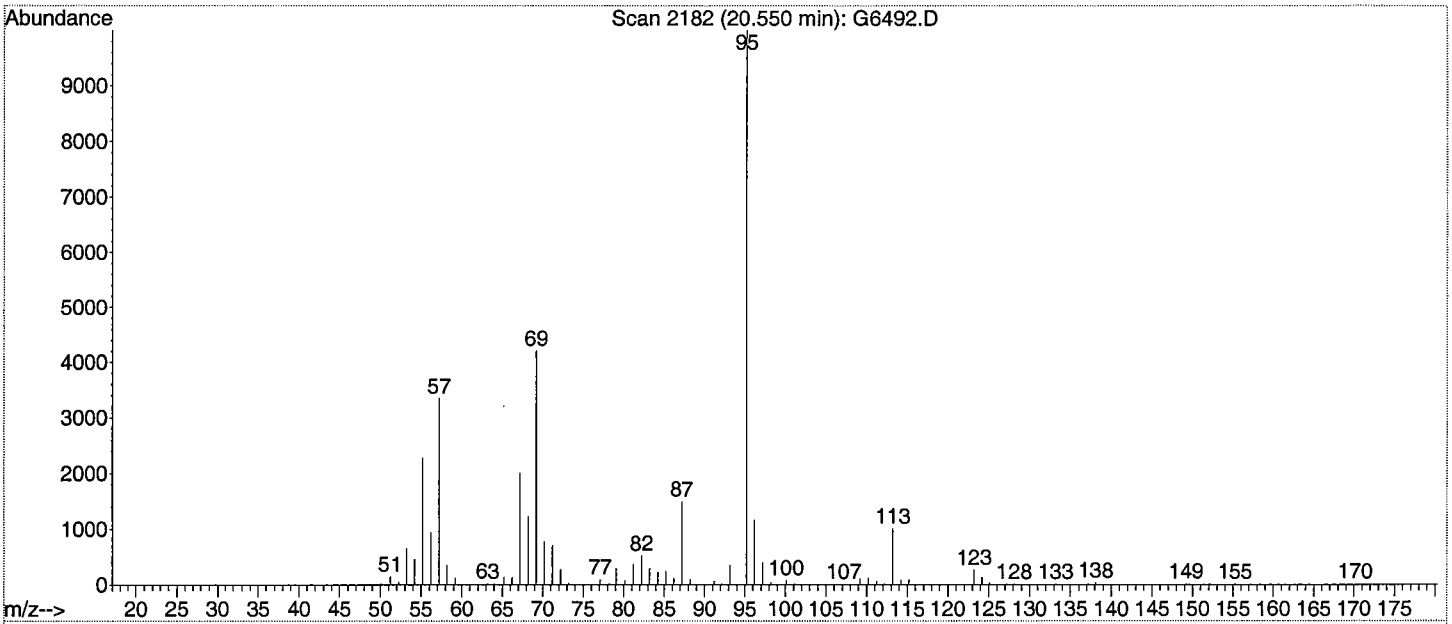
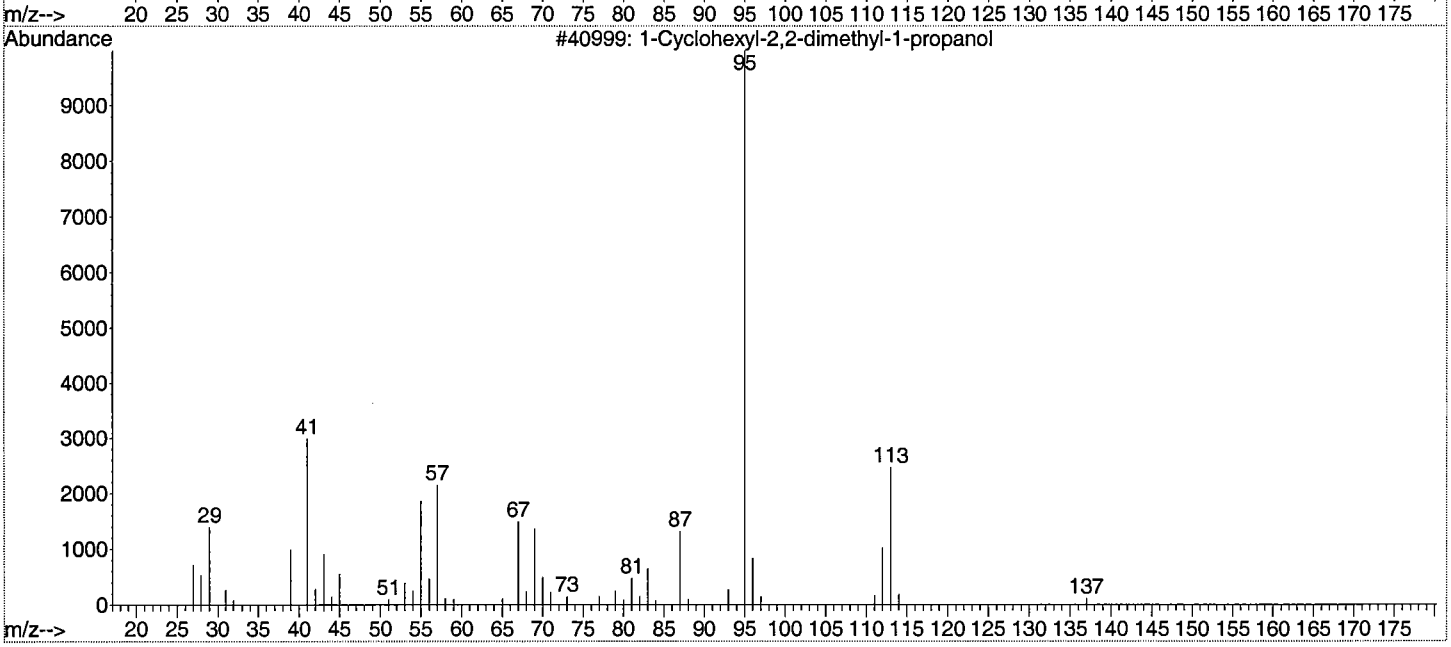
51.2	2536						
52.2	816						
53.2	11017						
54.2	7796						
55.2	38544						
56.2	15847						
57.2	56600						
58.2	5979						
59.2	2053						
60.2	161						
63.2	466						
64	312						
65.2	2356						
66.2	2204						
67.2	33992						
68.2	20736						
69.2	71160						
70.2	13093						
71.2	11927						
72.2	4679						
73.2	541						
77.1	1608						
78.2	511						
79.1	4957						
80.2	1319						
81.2	6270						
82.2	8892						
83.2	4984						
84.2	3913						
85.2	4040						
86.2	1967						
87.2	25264						
88.2	1670						
91.2	1095						
92.1	222						
93.2	5935						
95.2	169152						
96.2	19616						
97.2	6748						
98.2	764						
99.1	217						
100.1	1291						
101.1	350						
107.2	288						
108.1	282						
109.2	1868						
110.2	1987						
111.2	1023						
112.2	332						
113.2	17032						
114.2	1543						
115.2	1542						
123.2	4615						
124.2	2312						
125.1	528						
127.2	261						
128.1	201						
133.2	212						
137.2	356						
138.1	654						
149.2	322						
152.1	286						
155.3	346						
170.2	311						

Scan 2182 (20.550 min): G6492.D
S1466-P(7)

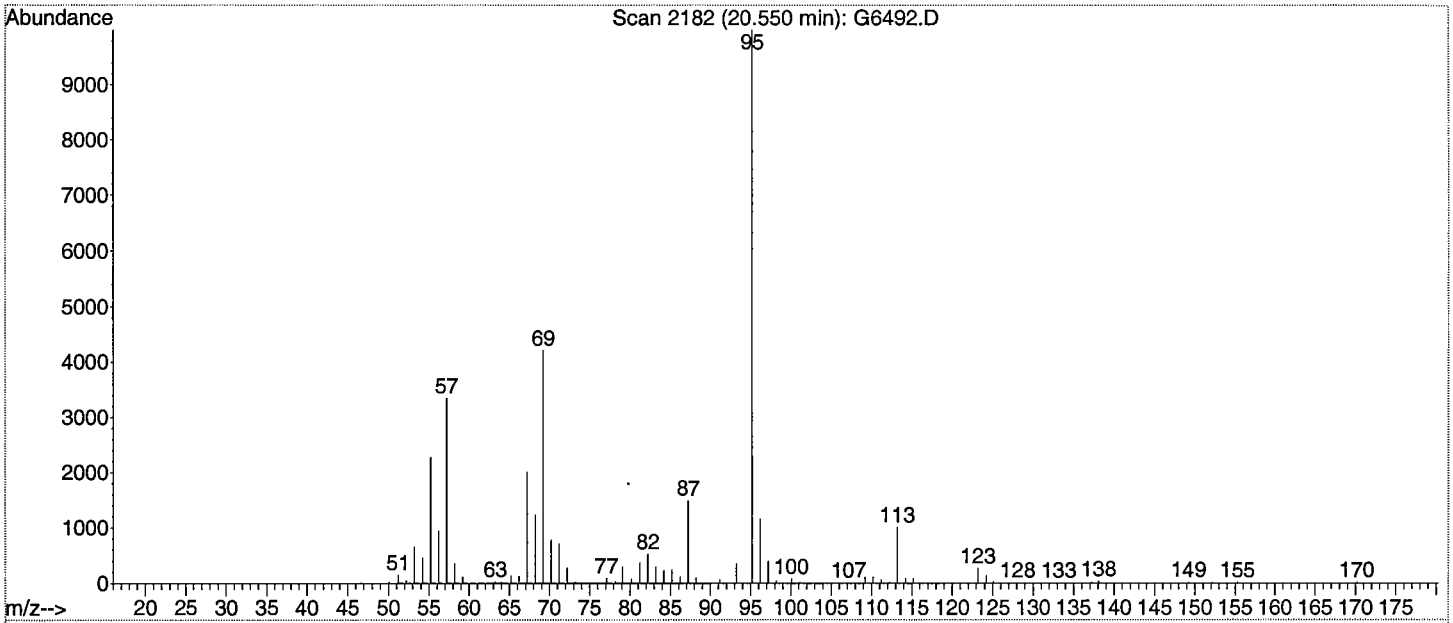
Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	1-Cyclohexyl-2,2-dimethyl-1-propanol	170	C11H22O	39	062039-14-9
2	7-Octen-3-ol, 2,6-dimethyl-	156	C10H20O	36	018479-56-6
3	Ethanone, 1-bicyclo[2.2.1]hept-2-yl-, exo-	138	C9H14O	33	000824-59-9
4	2-Pyrimidinamine	95	C4H5N3	33	000109-12-6
5	Bicyclo[2.2.1]heptane, 2-(1-buten-3-yl)-	150	C11H18	33	055170-90-6
6	Cyclohexene, 1-methyl-3-(1-methylethyl)-	138	C10H18	28	013828-31-4
7	1,4-Pentadiene, 2,3,4-trimethyl-	110	C8H14	27	072014-90-5
8	3,5-Octadien-2-one	124	C8H12O	23	038284-27-4
9	1-Nonyne	124	C9H16	23	003452-09-3
10	Cyclopropane, (2,2-dimethylpropylidene)-	110	C8H14	12	039647-71-7
11	1-Nonyne	124	C9H16	10	003452-09-3
12	1,6-Octadiene, 2,5-dimethyl-, (E)-	138	C10H18	10	068702-25-0
13	1,6-Heptadiene, 2,5,5-trimethyl-	138	C10H18	10	062238-28-2
14	1,6-Octadiene, 2,5-dimethyl-, (E)-	138	C10H18	9	068702-25-0
15	3-Octyne, 6-methyl-	124	C9H16	9	062108-34-3
16	1,8-Nonadiene	124	C9H16	7	004900-30-5
17	Oxirane, 5-hexenyl-	126	C8H14O	7	019600-63-6
18	8-Heptadecyne, 1-bromo-	314	C17H31Br	7	056599-94-1
19	1,4-Hexadiene, 2,3-dimethyl-	110	C8H14	7	018669-52-8
20	Cyclopropane, 1-(1,1-dimethylethyl)-2-methylene-	110	C8H14	7	061142-25-4

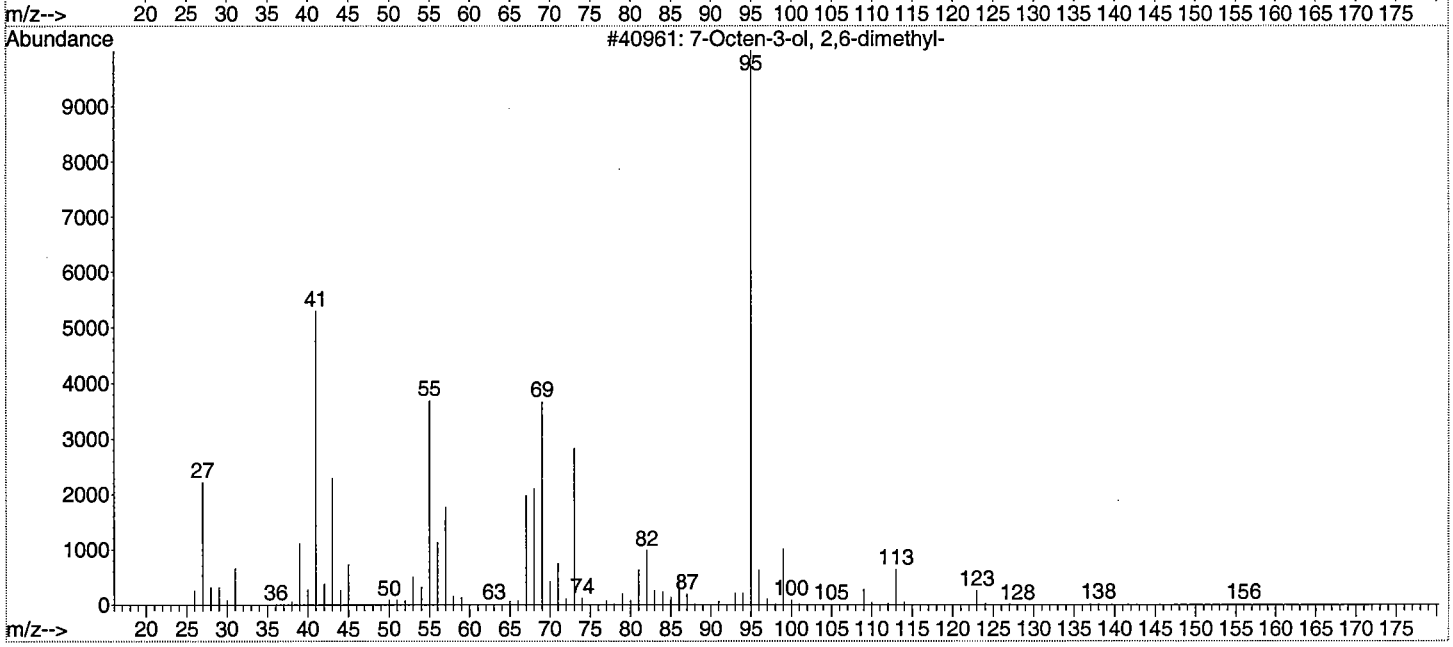
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 39
ID : 1-Cyclohexyl-2,2-dimethyl-1-propanol





Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 36
ID : 7-Octen-3-ol, 2,6-dimethyl-





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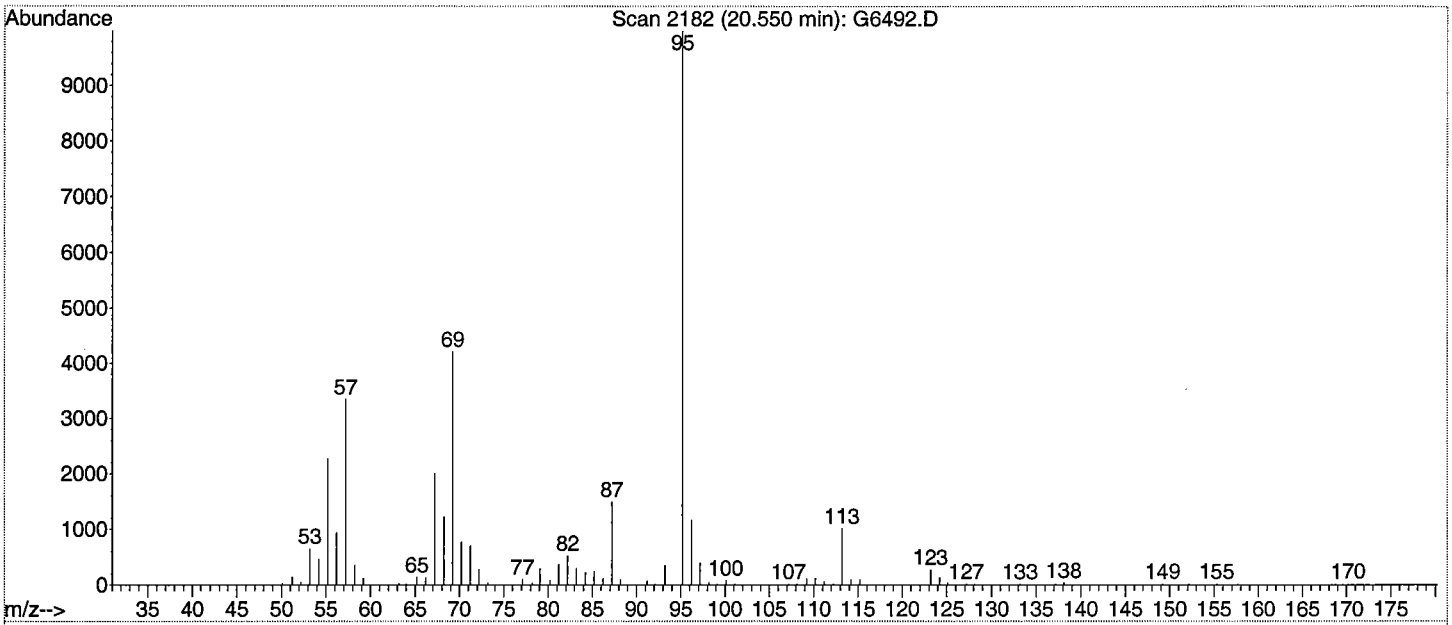
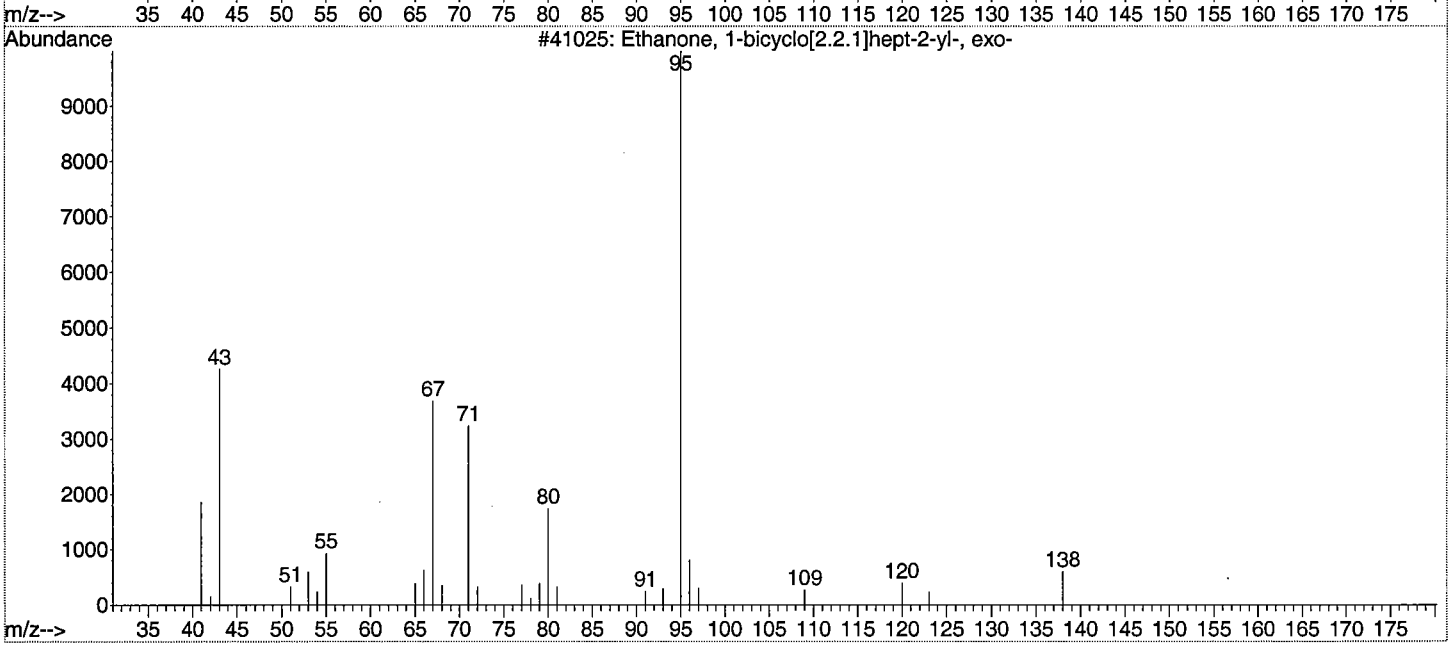
Quality : 33
ID : Ethanone, 1-bicyclo[2.2.1]hept-2-yl-, exo-





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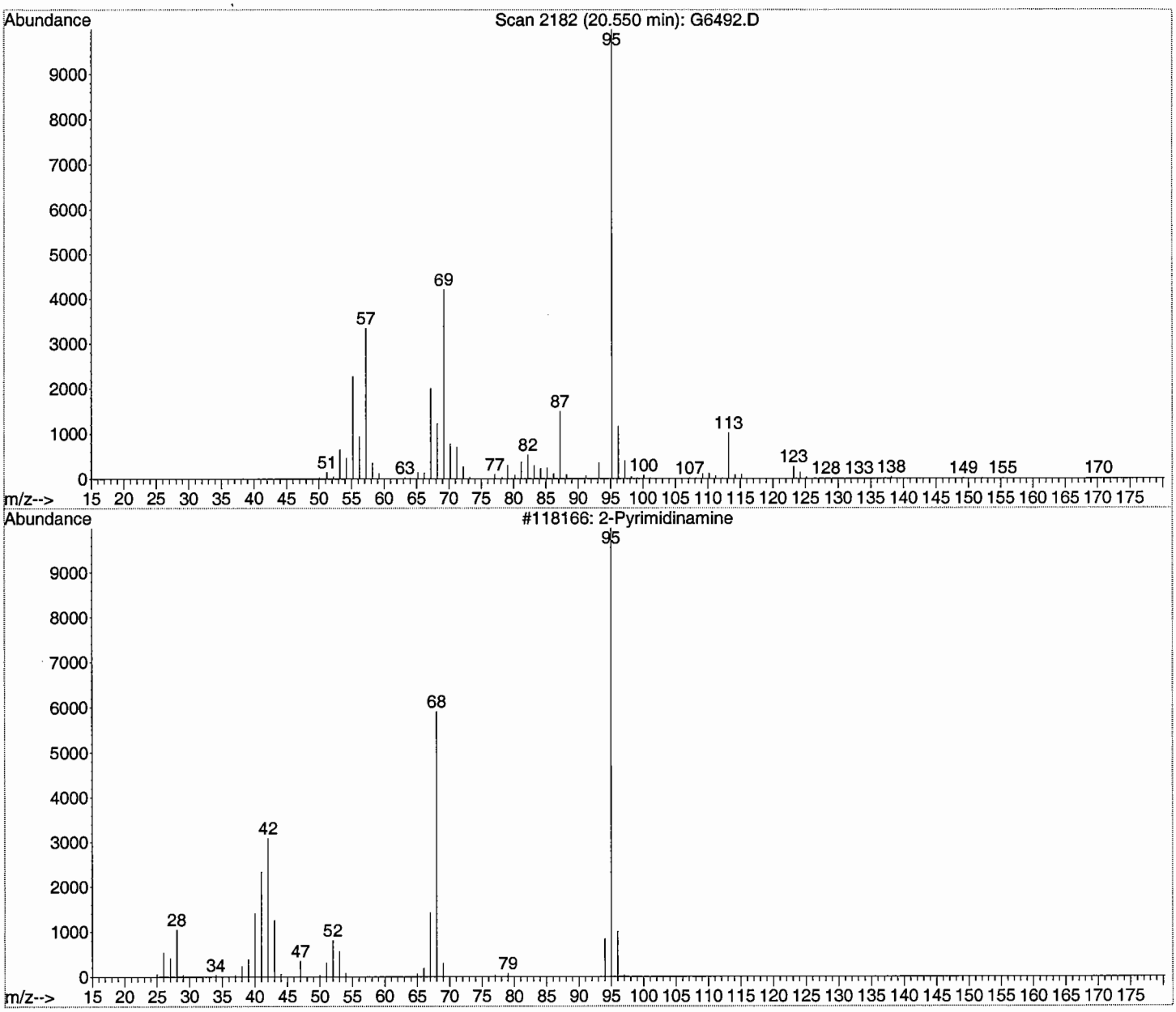
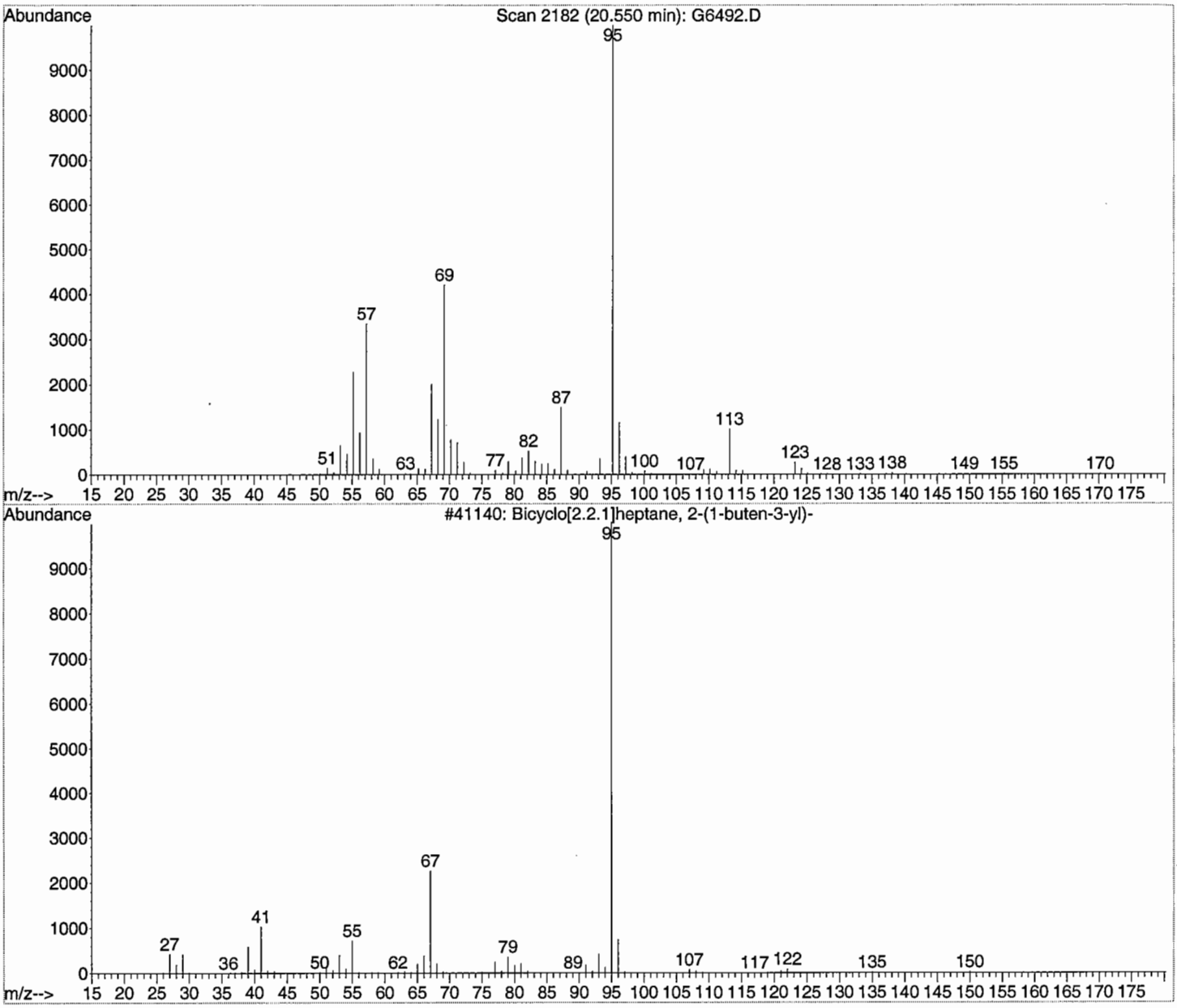
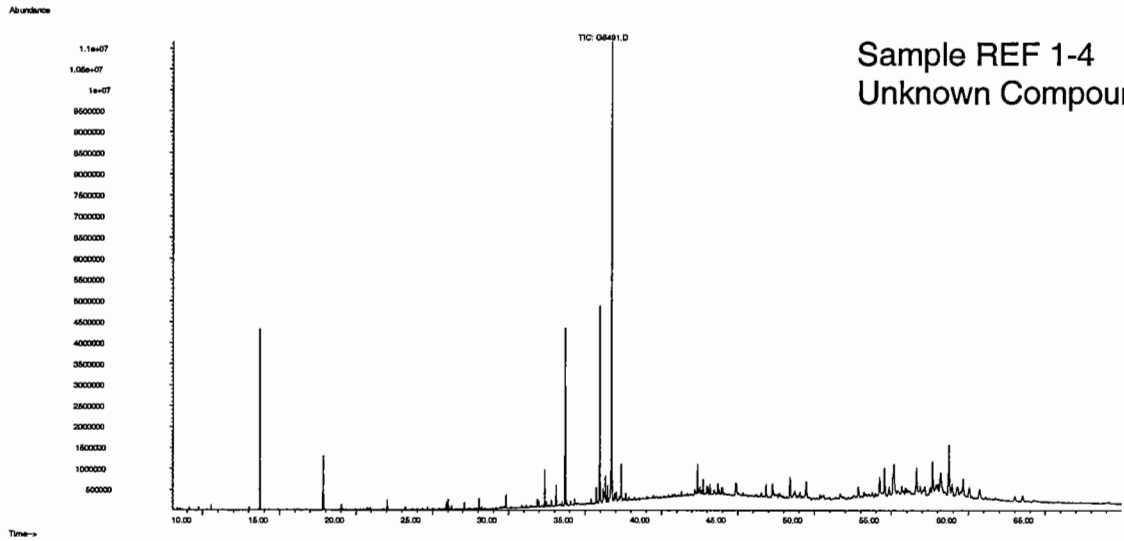
Quality : 33
ID : 2-Pyrimidinamine

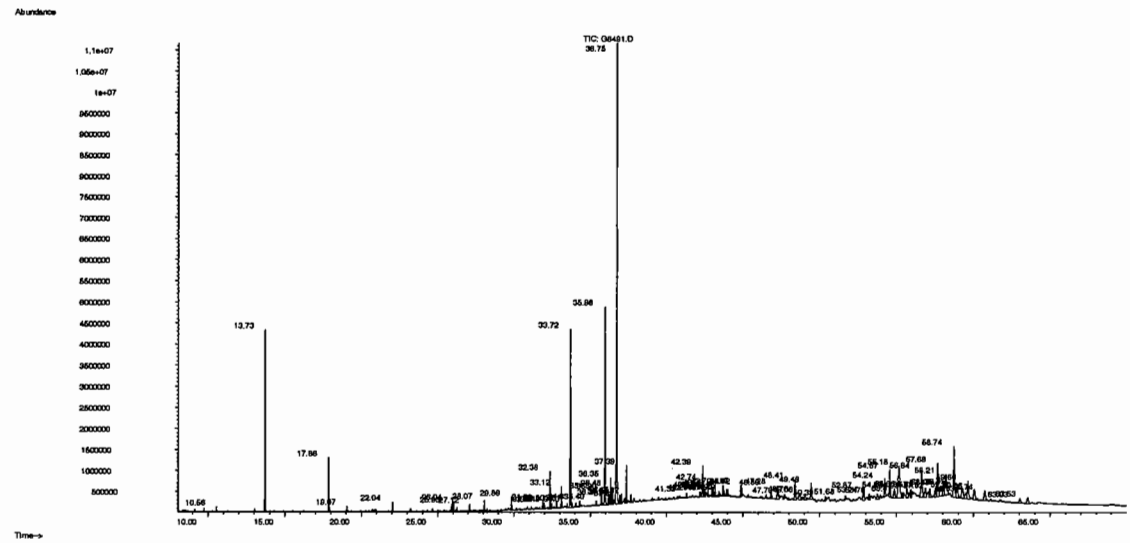


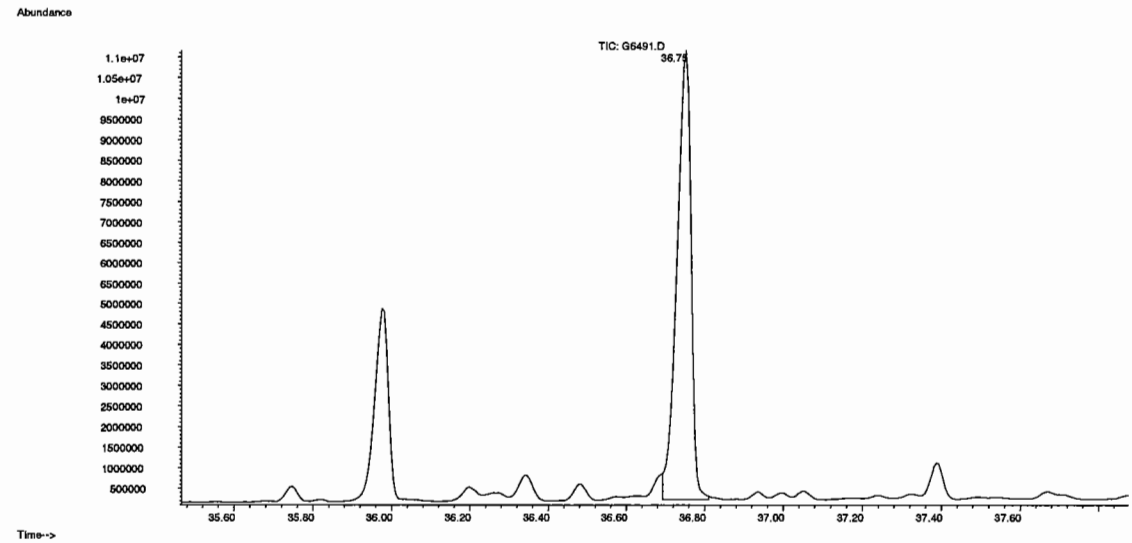
Library Searched : C:\MSDChem\DATABASE\Nist98.l
Quality : 33
ID : Bicyclo[2.2.1]heptane, 2-(1-buten-3-yl)-



Sample REF 1-4
Unknown Compounds







Scan 5017 (36.753 min): G6491.D S1445-P(7) REF 1-4

RT	m/z	RT	m/z	RT	m/z	RT	m/z
50.1	2060	120.2	47504	187.2	2144	263.4	1297
51.2	8037	121.2	456000	188.2	1183	264.2	622
52.2	5092	122.2	96952	189.3	26944	265.2	428
53.2	102416	123.2	254528	190.2	8576	267.9	189
54.2	27384	124.2	33936	191.3	64712	269.1	181
55.2	757248	125.2	16356	192.3	26472	272.4	655
56.2	58488	126.2	2412	193.3	63424	273.3	13512
57.2	196352	127.2	2572	194.3	13993	274.3	7373
58.2	9049	128.1	6020	195.2	1969	275.3	4335
59.1	586	129.2	6594	196.2	225	276.4	1105
60.1	376	130.1	3656	197.2	320	277.4	659
61.2	703	131.2	13838	198.1	486	278.4	298
62.1	499	132.2	6914	199.1	613	279.2	203
63.2	1748	133.2	70856	200.2	1765	282.3	268
65.2	39696	134.2	33400	201.2	3384	285.2	186
66.2	16021	135.2	178880	202.2	10695	286.2	444
67.2	314176	136.2	40112	203.3	31224	287.3	3771
68.2	92256	137.2	78928	204.3	12000	288.3	1342
69.2	514432	138.2	16244	205.3	45240	289.4	1880
70.2	43344	139.2	4613	206.3	55008	290.4	631
71.2	69896	140.2	971	207.3	13633	291.4	345
72.2	4327	141.1	2594	208.3	3378	298.3	189
73.2	571	142.2	1518	209.2	648	301.3	5349
74.1	2323	143.2	2614	210.3	285	302.4	1798
75.2	2574	144.2	1484	211.3	310	303.4	529
77.2	130312	145.2	9252	212.1	150	305.3	156
78.2	25120	146.2	3528	213.1	166	306.5	192
79.2	260288	147.2	44488	215.2	2265	312.4	171
80.2	86064	148.2	19304	216.2	787	314.4	246
81.2	634880	149.2	118752	217.3	9393	315.4	1624
82.2	142912	150.2	22736	218.3	8479	316.3	939
83.2	292352	151.2	29920	219.3	33192	317.3	341
84.2	21312	152.2	7729	220.3	8837	318.2	264
85.2	25480	153.2	2856	221.3	2119	322.3	163
86.2	1969	154.3	1227	222.2	1044	323.8	153
87.2	1333	155.1	980	223.2	326	327.2	163
88.2	2526	156.2	329	224.2	278	328.2	217
89	1347	157.1	1330	225.2	296	329.4	21896
91.2	238720	158.2	432	226.1	202	330.4	5265
92.2	60392	159.2	5088	227.3	234	331.5	822
93.2	488512	160.2	3539	231.3	293504	341.9	201
94.2	138432	161.2	51888	232.3	56064	344.4	33056
95.2	663232	162.2	17192	233.3	13706	345.4	8539
96.2	91160	163.2	79768	234.3	2527	346.4	1433
97.2	143040	164.2	13613	235.2	699		
98.2	13106	165.2	15914	236.3	320		
99.2	3464	166.3	8569	237.2	199		
100.3	1264	167.3	2134	238.2	202		
101.2	2354	168.3	846	239.2	302		
102.3	2152	169.1	490	242.2	181		
103.2	13407	170.2	300	243.2	672		
104.2	7088	171.1	514	245.3	31440		
105.2	152000	172.4	198	247.3	345792		
106.2	49432	173.2	3152	248.3	70008		
107.2	511936	174.3	2105	249.3	9548		
108.2	131648	175.2	46000	250.3	1150		
109.2	465920	176.2	11209	251.2	219		
110.2	70968	177.2	40000	251.5	230		
111.2	56048	178.2	9267	253.1	221		
112.2	5390	179.3	37376	254.1	210		
113.2	2625	180.3	13504	254.4	221		
114.2	530	181.2	2091	256	245		
115.2	12514	182.2	422	257.3	669		
116.1	5793	183.3	516	259.3	270720		
117.2	20176	184.2	201	260.3	63776		
118.2	6856	185.1	398	261.3	15999		
119.2	129296	186.3	154	262.3	3243		

Scan 5017 (36.753 min): G6491.D
S1445-P(7)

Rank	PBM Library Compound Name	MW	Formula	Quality	CAS #
1	4-Hydroxy-4-(4,6-dimethylcyclohex-3-enyl)butan-2-one	196	C12H20O2	22	100021-52-7
2	2-Naphthalenamine, 1,2,4a,5,6,7,8,8a-octahydro-4a-methyl-	165	C11H19N	11	056053-03-3
3	1,4-Pentadiene, 2,3,3-trimethyl-	110	C8H14	11	000756-02-5
4	Cyclohexane, 1,2-dimethyl-3,5-bis(1-methylethenyl)-	192	C14H24	11	062337-99-9
5	4-(1,3,3-Trimethyl-bicyclo[4.1.0]hept-2-yl)-but-3-en-2-one	206	C14H22O	11	100019-46-0
6	3-Allylcyclohexene	122	C9H14	10	100020-44-0
7	2-Cyclopentene-1-acetaldehyde, 2-formyl-.alpha.,3-dimethyl-	166	C10H14O2	10	075332-42-2
8	Butane, 1-chloro-4-(methylenecyclopropyl)-	144	C8H13Cl	10	100015-84-8
9	1,4-Pentadiene, 2,3,3-trimethyl-	110	C8H14	10	000756-02-5
10	Cyclopentene, 1,2,3-trimethyl-	110	C8H14	10	000473-91-6
11	Longipinane, (E)-	206	C15H26	10	100015-61-4
12	Ketone, 1,5-dimethylbicyclo[2.1.0]pent-5-yl methyl	138	C9H14O	10	024081-57-0
13	1,3-Dimethyl-1-cyclohexene	110	C8H14	10	002808-76-6
14	Bicyclo[3.1.0]hexan-3-ol, 4-methyl-1-(1-methylethyl)-	154	C10H18O	10	000513-23-5
15	1,5-Hexadiene, 2,5-dimethyl-	110	C8H14	10	000627-58-7
16	7-(1,3-Dimethylbuta-1,3-dienyl)-1,6,6-trimethyl-3,8-dioxatricyclo[5.1.0.0(2,4)]octane	234	C15H22O2	10	100019-02-2
17	Cyclohexene, 3-methyl-6-(1-methylethyl)-	138	C10H18	10	005256-65-5
18	1,3,3-Trimethyl-2-hydroxymethyl-3,3-dimethyl-4-(3-methylbut-2-enyl)-cyclohexene	222	C15H26O	10	100014-41-0
19	Cyclohexene, 1-ethyl-	110	C8H14	10	001453-24-3
20	1-Methylidene-2b-hydroxymethyl-3,3-dimethyl-4a-(3-methylbut-2-enyl)-cyclohexane	222	C15H26O	10	100014-49-8

Library Searched : C:\MSDChem\DATABASE\Nist98.l
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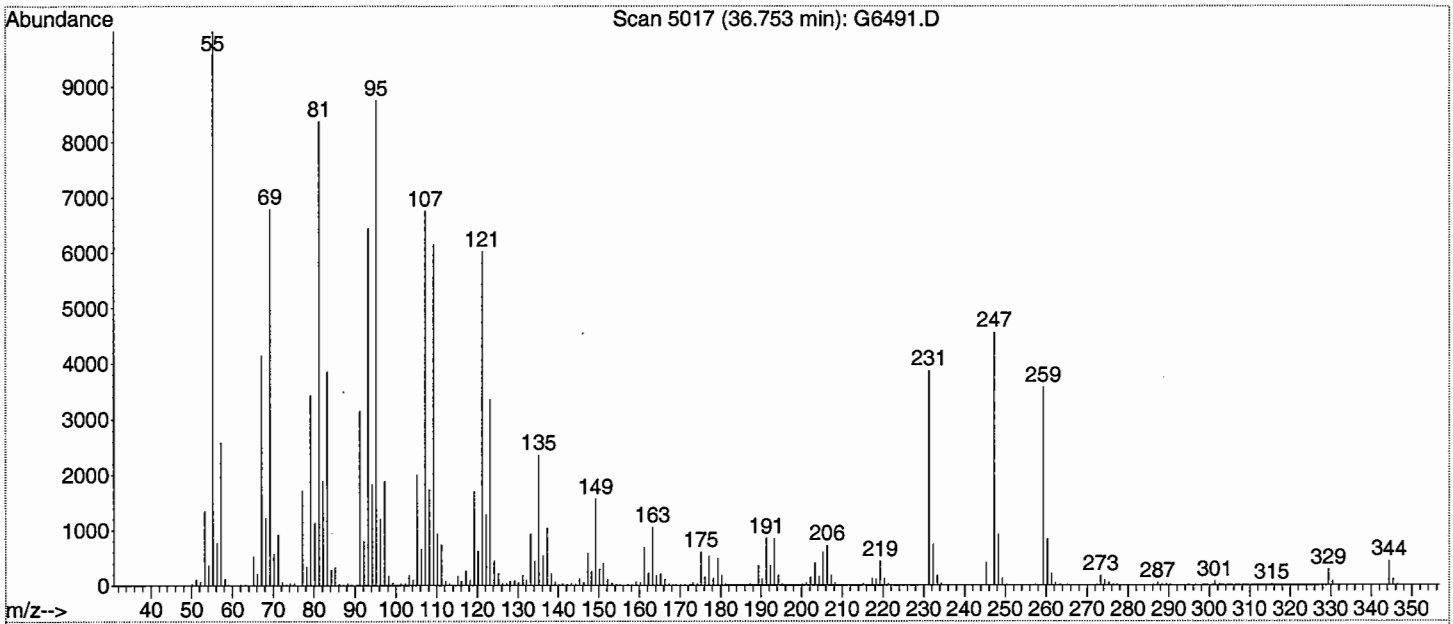
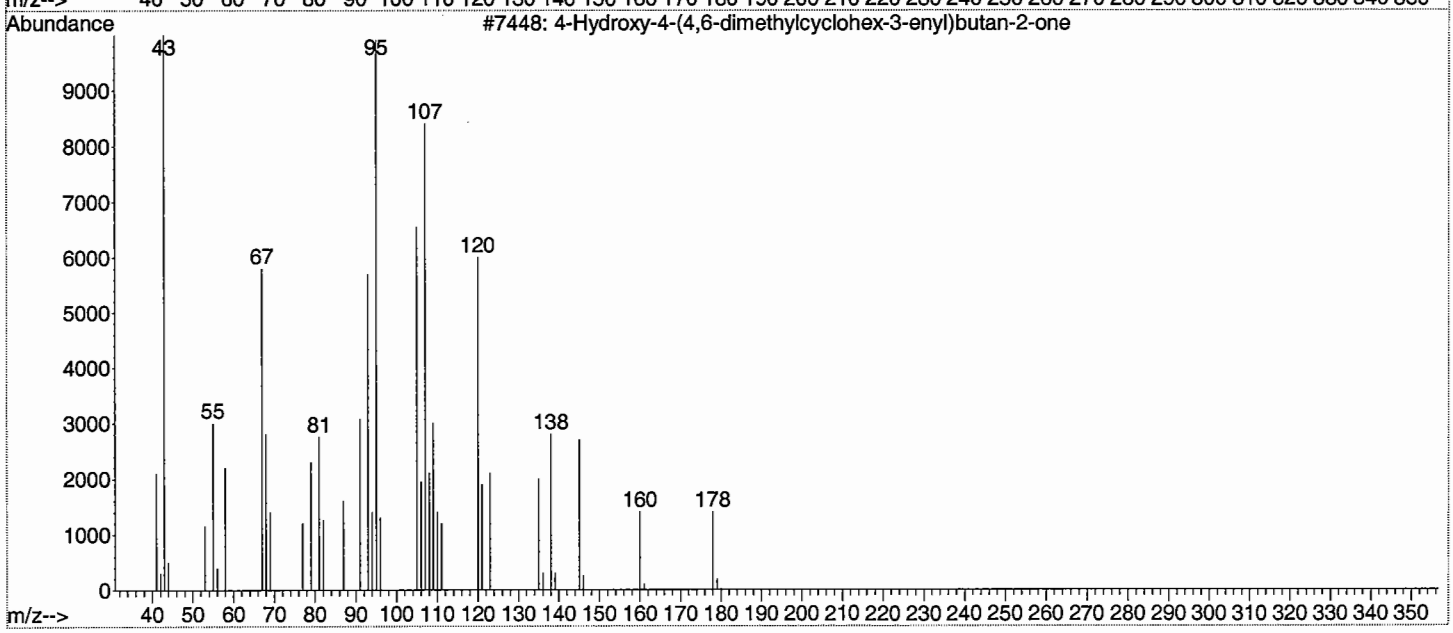
ID : 4-Hydroxy-4-(4,6-dimethylcyclohex-3-enyl)butan-2-one





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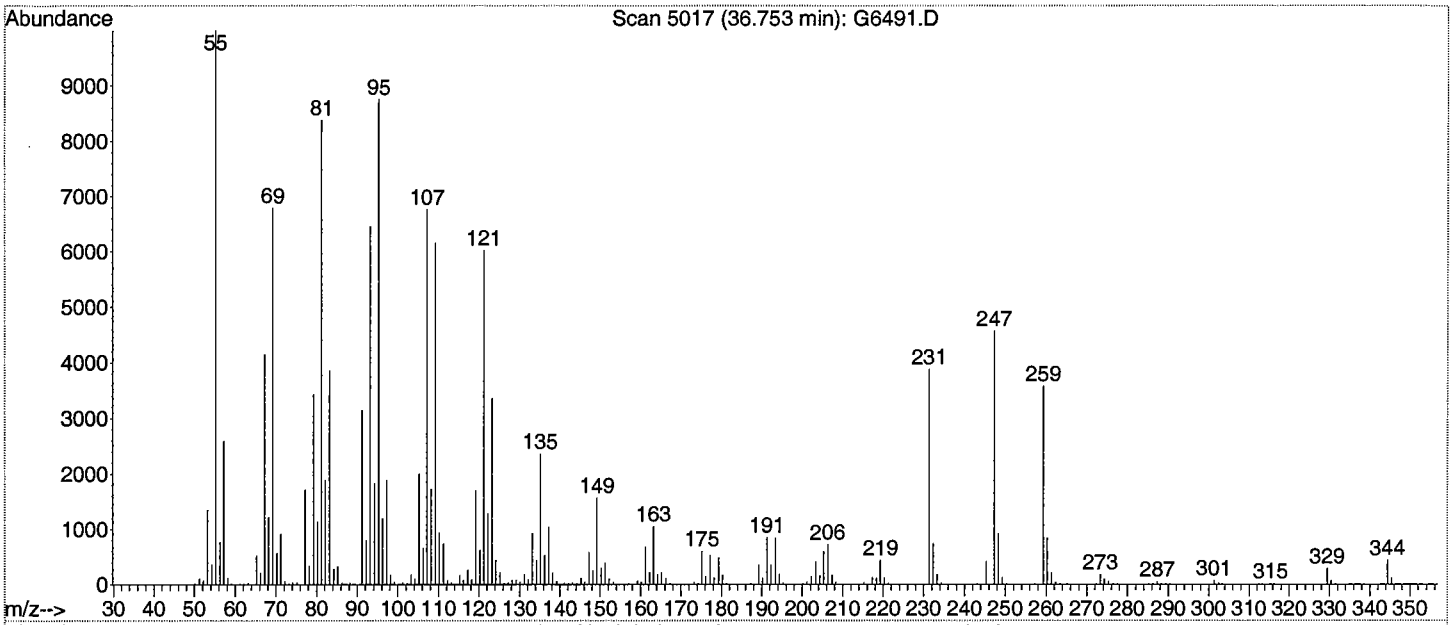

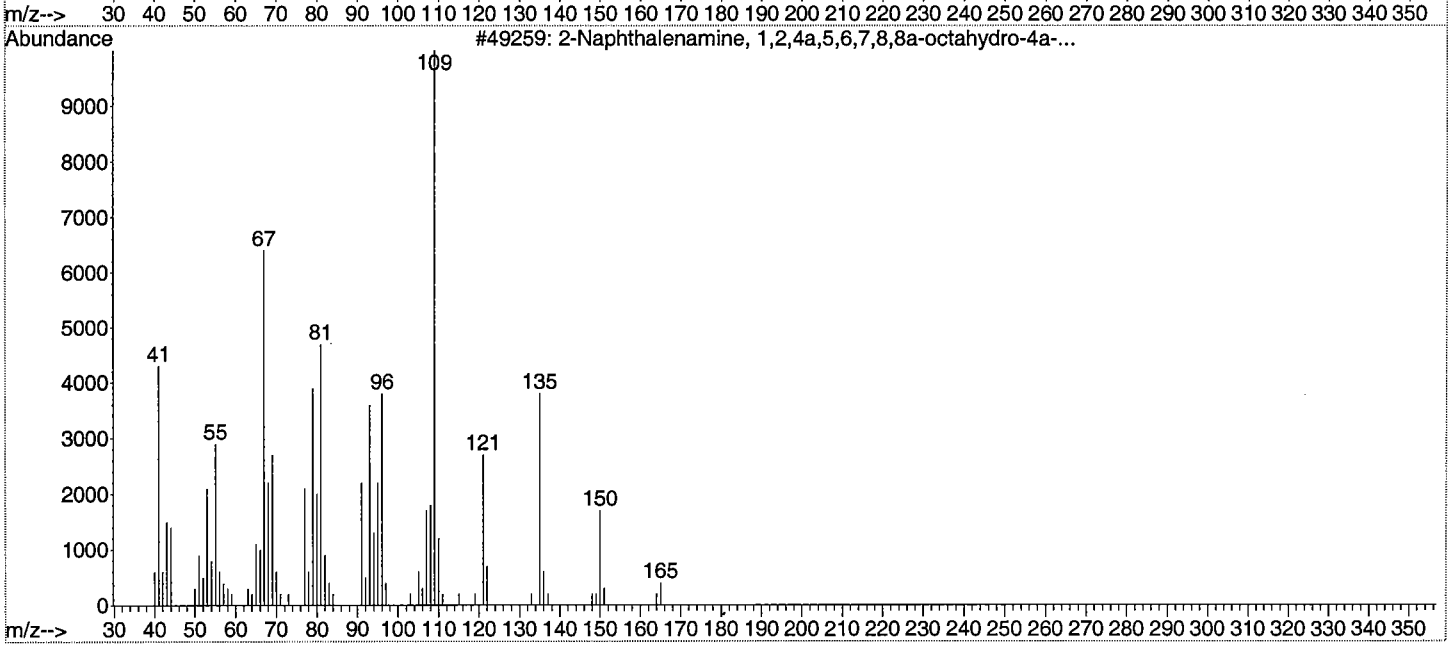

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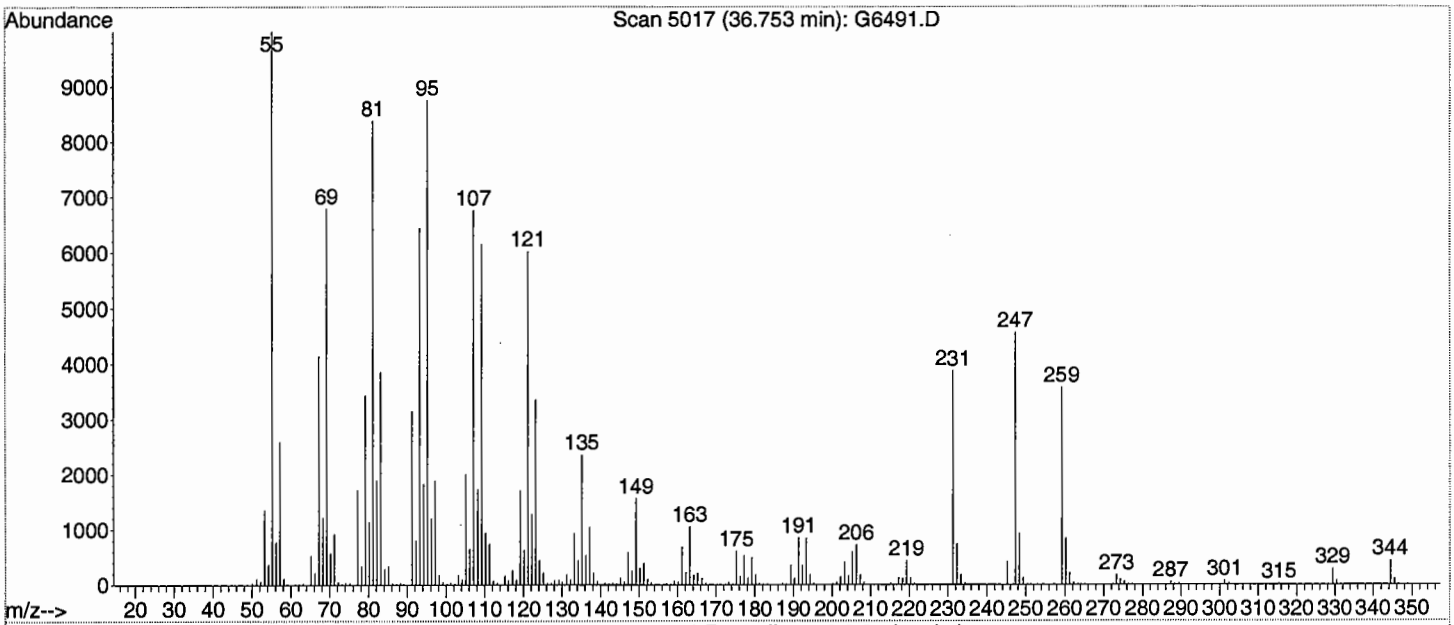
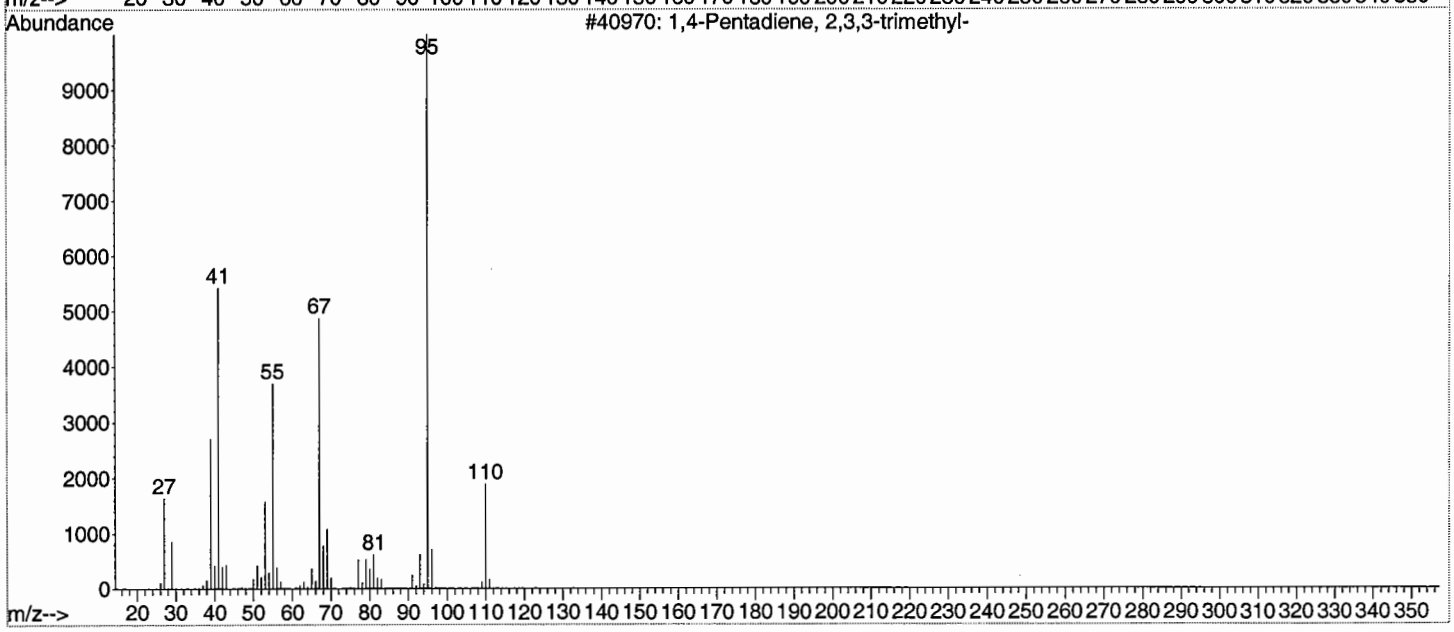
ID : 1,4-Pentadiene, 2,3,3-trimethyl-





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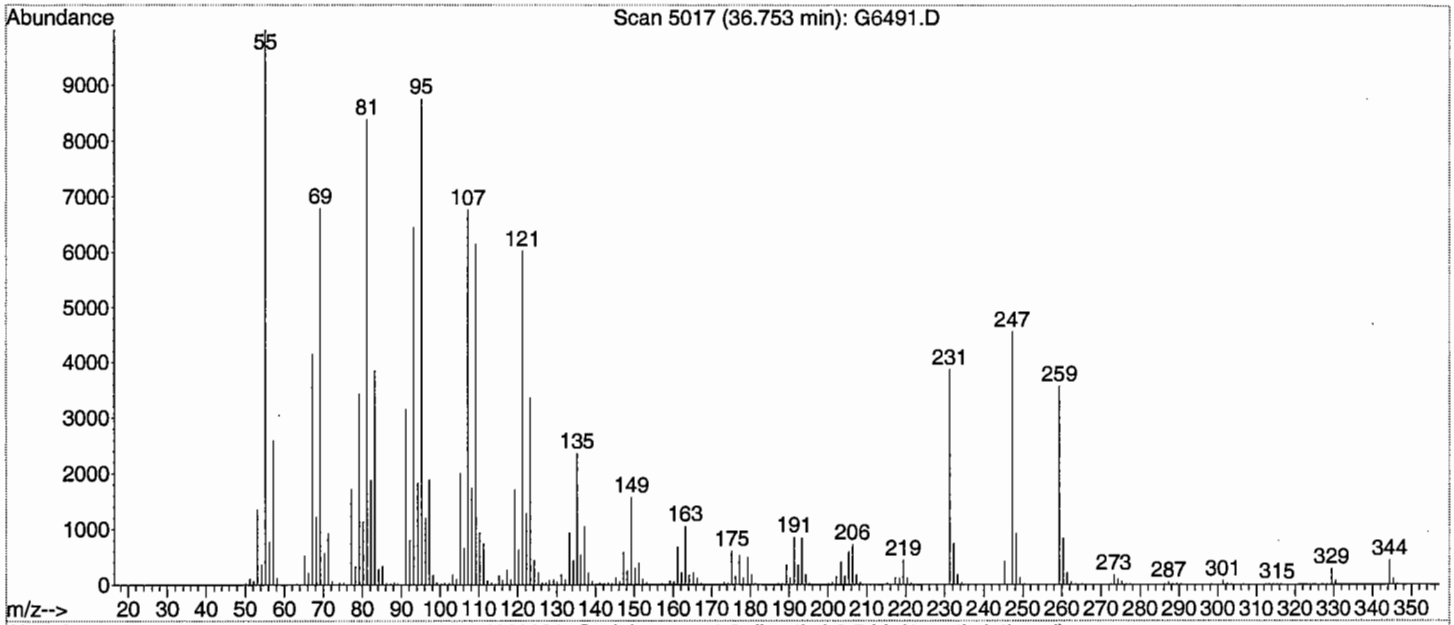

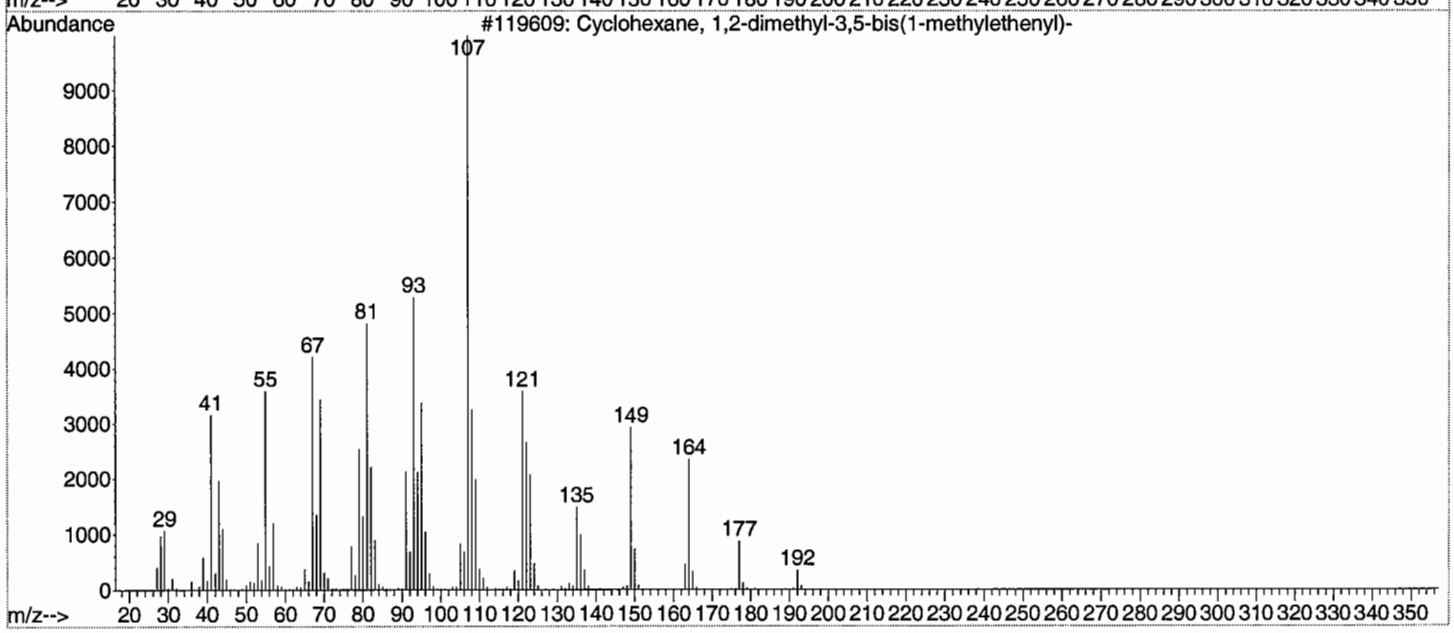

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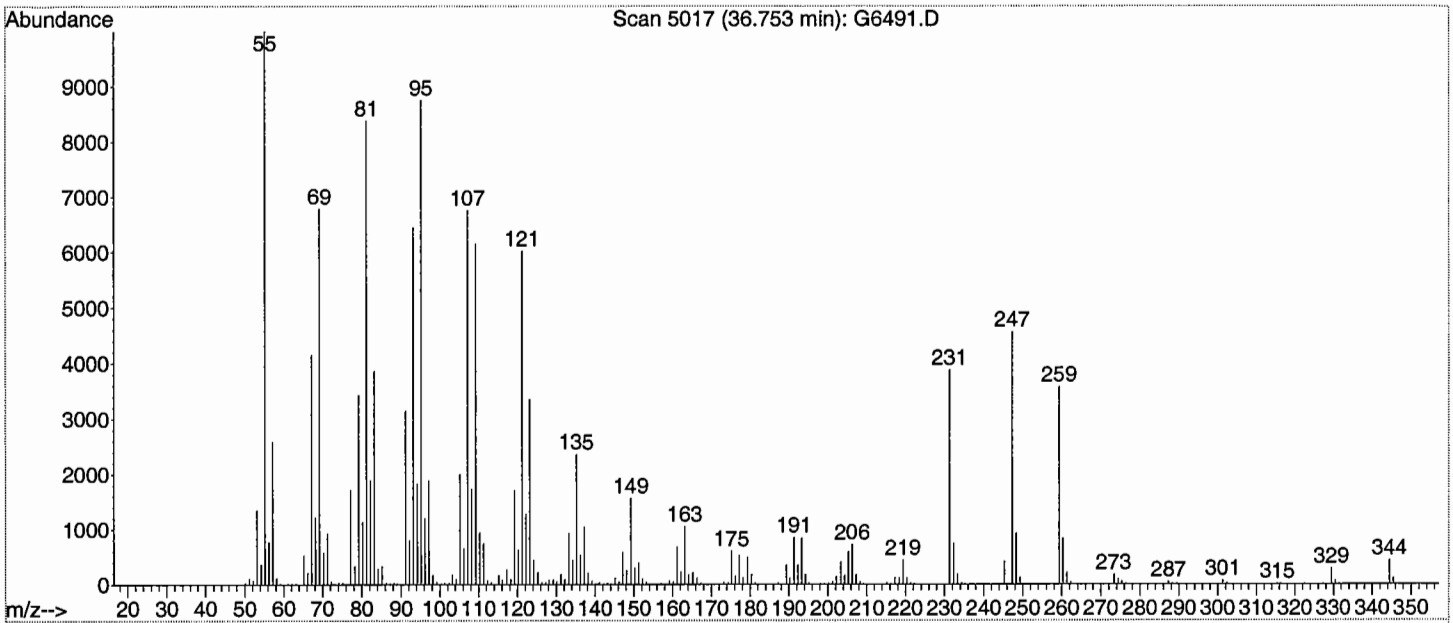

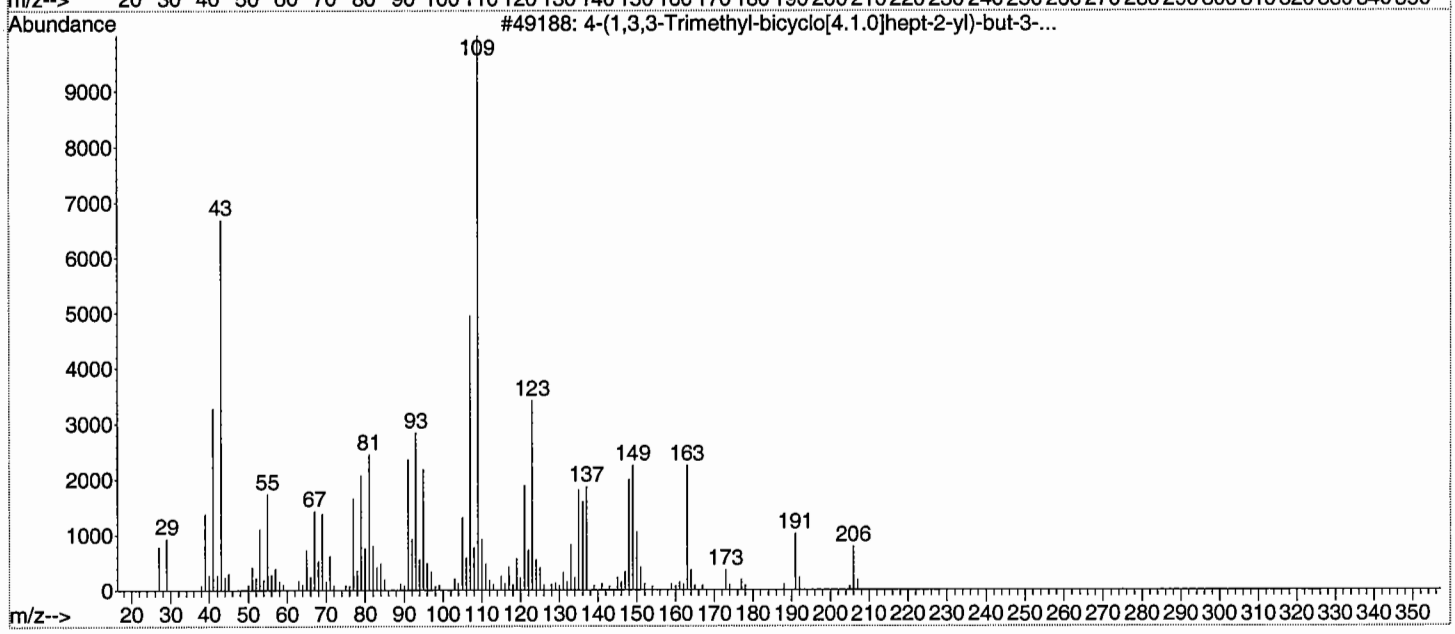

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 1-1	Source 1-2	Source 2-1	Source 2-2
Battelle ID	S1483-P	S1485-P	S1484-P	S1486-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/04	03/26/04	03/26/04	03/26/04
Extraction Date	04/06/04	04/06/04	04/06/04	04/06/04
Analysis Date	04/21/04	04/22/04	04/22/04	04/22/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	10.53	16.63	9.36	10.63
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	26.91	25.39	18.42	18.21
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	18.95	121.5	3366.92	3685.04
Acenaphthylene	159.35	963.01	U	650.9
Acenaphthene	12.26	47.19	440.58	748.75
Fluorene	42.99	144.77	677.93	983.53
Anthracene	529.63	1885.32 D	222.68	651.79
Phenanthrene	363.61	959.02	1563.07	2766.64
Benzo(a)anthracene	770.25	3812.16 D	314.01	1059.88
Fluoranthene	2548.92 D	6958 D	461.79	1942.94
Pyrene	2131.25 D	8016.78 D	491.82	1739.83
Chrysene	1297.64 D	6548.95 D	338.46	1207.94
Benzo(b)fluoranthene	1020.86 D	7235.67 D	382.86	1128.68
Benzo(j/k)fluoranthene	985.73	6221.25 D	347.37	1029.39
Benzo(a)pyrene	318.34	2338.54 D	328.14	988.67
Indeno(1,2,3-cd)pyrene	435.21	2707.7 D	307.27	935.45
Dibenz(a,h)anthracene	116.24	824.9	91.54	258.74
Benzo(g,h,i)perylene	300.82	1904.12 D	295.21	875.34
2-Methylnaphthalene	11.17	50	9428.33 D	10012.1
Surrogate Recoveries (%)				
Naphthalene-d8	73	156 N	112	101
Phenanthrene-d10	89	180 N	69	58
Chrysene-d12	90	208 N	107	96

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 3-1	Source 3-2	Source 4-1	REF 1-1
Battelle ID	S1481-P	S1482-P	S1457-P	S1442-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/04	03/26/04	03/24/04	03/24/04
Extraction Date	04/06/04	04/06/04	04/06/04	04/05/04
Analysis Date	04/21/04	04/21/04	04/21/04	04/18/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	8.95	12.54	11.76	16.87
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	27.28	26.38	26.66	25.43
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	13.46	163.29	29.74	0.86 B
Acenaphthylene	11.28	26.26	172.28	0.56
Acenaphthene	4.93	64.95	24.44	0.1 J
Fluorene	5.49	66.46	44.35	0.28
Anthracene	20.83	66.01	211.64	0.86
Phenanthrene	92.64	235.38	916.28	3.12
Benzo(a)anthracene	58.96	186.42	321.7	2.01
Fluoranthene	136.26	329.37	1202.09	4.73
Pyrene	106.45	271.02	1089.54	4.15
Chrysene	67.89	213.61	636.01	2.35
Benzo(b)fluoranthene	66.93	261.65	494.83	2.52
Benzo(j/k)fluoranthene	62.47	213.57	464.01	2.42
Benzo(a)pyrene	42.38	170.42	369.75	2.41
Indeno(1,2,3-cd)pyrene	51.87	180.88	362.83	2.45
Dibenz(a,h)anthracene	13.09	46.3	83.98	0.44
Benzo(g,h,i)perylene	44.71	154.26	357.35	2.16
2-Methylnaphthalene	4.15	99.56	15.3	0.25 B
Surrogate Recoveries (%)				
Naphthalene-d8	79	70	137 N	73
Phenanthrene-d10	92	85	101	90
Chrysene-d12	84	78	111	83

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	REF 1-2	REF 1-4	REF 2-1	REF 2-3
Battelle ID	S1443-P	S1445-P	S1447-P	S1449-P
Sample Type	SA	SA	SA	SA
Collection Date	03/24/04	03/24/04	03/24/04	03/24/04
Extraction Date	04/05/04	04/06/04	04/06/04	04/05/04
Analysis Date	04/18/04	04/21/04	04/21/04	04/18/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	21.07	42.69	56.18	44.88
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	23.92	17.58	13.22	16.57
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	1 B	10.82	16.73	10.33
Acenaphthylene	0.92	13.02	18.3	11.84
Acenaphthene	0.15 J	2.15	3.46	2.11
Fluorene	0.43	5.97	8.62	5.25
Anthracene	1.24	18.21	24.55	15.87
Phenanthrene	2.83	34.4	43.53	31
Benzo(a)anthracene	2.51	36.82	48.84	31.22
Fluoranthene	6.22	90.43	115.97	68.33
Pyrene	5.76	78.35	104.41	64.5
Chrysene	3.67	48.48	64.66	43.4
Benzo(b)fluoranthene	4.76	68.74	92.88	57.66
Benzo(j/k)fluoranthene	4.58	58.71	80.25	50.46
Benzo(a)pyrene	3.9	54.75	74.11	48.35
Indeno(1,2,3-cd)pyrene	4.86	61.45	79.62	53.12
Dibenz(a,h)anthracene	0.92	11.73	15.1	10.59
Benzo(g,h,i)perylene	4.36	52.46	67.1	46.21
2-Methylnaphthalene	0.43	5.07	8.16	5.02
Surrogate Recoveries (%)				
Naphthalene-d8	59	61	55	67
Phenanthrene-d10	90	83	75	93
Chrysene-d12	83	76	66	83

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	REF 2-5	REF 3-1	REF 3-2	REF 3-4
Battelle ID	S1451-P	S1467-P	S1466-P	S1464-P
Sample Type	SA	SA	SA	SA
Collection Date	03/24/04	03/25/04	03/25/04	03/25/04
Extraction Date	04/05/04	04/05/04	04/06/04	04/05/04
Analysis Date	04/18/04	04/18/04	04/21/04	04/18/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	19.57	56.08	57.26	42.62
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	24.14	13.20	13.08	17.36
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	2.78	10.41	13.96	7.23
Acenaphthylene	2.32	18.54	27.11	12.51
Acenaphthene	0.46	4.08	5.82	3.27
Fluorene	1.01	9.77	16.22	7.01
Anthracene	2.95	28.79	52.05	24.61
Phenanthrene	7.41	78.59	164.01	64.8
Benzo(a)anthracene	6.96	86.82	175.29	74.24
Fluoranthene	14.47	199.6	406.54	168.96
Pyrene	13.73	172.48	345.26	143.79
Chrysene	8.54	103.7	188.13	78.42
Benzo(b)fluoranthene	10.15	120.11	203.99	89.22
Benzo(j/k)fluoranthene	10	119.13	202.15	83.62
Benzo(a)pyrene	9.49	115.78	206.95	90.04
Indeno(1,2,3-cd)pyrene	9.98	112.25	186.49	79.31
Dibenz(a,h)anthracene	1.89	21.04	36.27	15.99
Benzo(g,h,i)perylene	8.7	91.76	148.83	65.5
2-Methylnaphthalene	0.91	4.77	5.42	3.18
Surrogate Recoveries (%)				
Naphthalene-d8	73	60	59	63
Phenanthrene-d10	97	85	86	91
Chrysene-d12	88	78	80	84

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-03	AH-06	AH-06 (DUP-03)	AH-08
Battelle ID	S1438-P	S1432-P	S1430-P	S1421-P
Sample Type	SA	SA	SA	SA
Collection Date	03/23/04	03/23/04		03/22/04
Extraction Date	04/06/04	04/06/04	04/06/04	04/05/04
Analysis Date	04/21/04	04/20/04	04/20/04	04/17/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	48.97	61.05	59.17	70.53
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	15.46	11.82	12.43	8.87
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	13.64	18.32	16.91	29.74
Acenaphthylene	90.09	58.74	52.99	115.95
Acenaphthene	10.69	8.62	7.73	13.69
Fluorene	30.35	16.83	14.45	25.07
Anthracene	275.05	93.37	78.59	180.96
Phenanthrene	348.94	177.09	157.03	303.89
Benzo(a)anthracene	715.48	167.23	154.97	333.13
Fluoranthene	1869.8 D	376.06	335.13	660.03
Pyrene	1977.37 D	406.32	368.78	1125.23
Chrysene	1644.13 D	292.35	252.47	615.92
Benzo(b)fluoranthene	1408.11 D	280.68	254.02	572.41
Benzo(j/k)fluoranthene	1100.54	270.95	244.66	518.85
Benzo(a)pyrene	792.32	213.6	194.69	386.33
Indeno(1,2,3-cd)pyrene	662.89	204.58	179.39	356.55
Dibenz(a,h)anthracene	156.39	43.37	39.27	74.94
Benzo(g,h,i)perylene	516.3	173.03	152.79	309.96
2-Methylnaphthalene	6.97	9.24	8.24	16.12

Surrogate Recoveries (%)

Naphthalene-d8	66	70	68	67
Phenanthrene-d10	83	94	91	80
Chrysene-d12	76	85	83	71

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-11	AH-11 (DUP-01)	AH-17	AH-23
Battelle ID	S1424-P	S1426-P	S1435-P	S1452-P
Sample Type	SA	SA	SA	SA
Collection Date	03/22/04	03/22/04	03/23/04	03/24/04
Extraction Date	04/05/04	04/05/04	04/06/04	04/05/04
Analysis Date	04/17/04	04/17/04	04/21/04	04/18/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	65.57	63.33	73.33	63.48
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	10.27	11.15	8.12	11.05
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	26.77	32.9	45.09	46.1
Acenaphthylene	121.5	148.52	171.97	259.86
Acenaphthene	20.33	22.77	22.87	56.52
Fluorene	30.13	33.55	39.43	73.35
Anthracene	166.67	188.33	208.38	390.41
Phenanthrene	396.25	474.38	497.5	924.53
Benzo(a)anthracene	324.68	326.25	380.61	665.32
Fluoranthene	694.9	746.19	1083.67	1914.77
Pyrene	790.88	894.36	1049.11	1957.11
Chrysene	549.07	571.49	626.91	1110.94
Benzo(b)fluoranthene	525.88	584.48	641.86	1137
Benzo(j/k)fluoranthene	500.3	551.87	617.11	999.91
Benzo(a)pyrene	425.84	465.48	497.2	829.48
Indeno(1,2,3-cd)pyrene	367.47	411.62	462.31	722.15
Dibenz(a,h)anthracene	82.28	90.56	100.55	160
Benzo(g,h,i)perylene	326.92	359.99	411.55	605.79
2-Methylnaphthalene	13.37	16.31	21.51	23.13
Surrogate Recoveries (%)				
Naphthalene-d8	64	70	82	86
Phenanthrene-d10	85	86	94	97
Chrysene-d12	77	78	85	90

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-26	AH-26	AH-28	AH-29
Battelle ID	S1505-P	S1505DUP-P	S1468-P	S1491-P
Sample Type	SA	QADU	SA	SA
Collection Date	03/27/04	3/27/2004	03/25/04	03/26/04
Extraction Date	04/06/04	4/6/2004	04/07/04	04/06/04
Analysis Date	04/22/04	4/22/2004	04/21/04	04/22/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	55.9	55.9	30.8	65.24
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	13.52	13.28	21.08	10.51
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	36.52	31.62	67.83	128.42
Acenaphthylene	285.68	257.41	785.17	534.97
Acenaphthene	37.73	29.73	56.46	97.39
Fluorene	74.23	62.11	145.02	136.72
Anthracene	314.15	283.67	792.27	758.28
Phenanthrene	1193.18	1072.51	3316.29	1486.2
Benzo(a)anthracene	535.47	470.18	1339.47	1187.49
Fluoranthene	1519.36	1384.92	4081.99	4751.11 D
Pyrene	1533.21	1408.29	4143.47	4322.01
Chrysene	871.45	802.05	2227.35	1974.39
Benzo(b)fluoranthene	789.32	730.45	1745.9	2195.47
Benzo(j/k)fluoranthene	709.63	644.63	1725.11	2033.61
Benzo(a)pyrene	664.35	593.03	1623.42	1503.46
Indeno(1,2,3-cd)pyrene	572.98	522.87	1361.12	1294.8
Dibenz(a,h)anthracene	137.19	120.86	317.72	288.39
Benzo(g,h,i)perylene	498.24	451.22	1243.88	1067.85
2-Methylnaphthalene	21.2	18.56	39.74	213.46
Surrogate Recoveries (%)				
Naphthalene-d8	60	54	99	87
Phenanthrene-d10	75	69	108	100
Chrysene-d12	69	65	101	97

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-32	AH-33	AH-33 (DUP-07)	AH-35
Battelle ID	S1490-P	S1476-P	S1473-P	S1479-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/04	03/26/04		03/26/04
Extraction Date	04/05/04	04/05/04	04/05/04	04/05/04
Analysis Date	04/18/04	04/18/04	04/18/04	04/18/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	64.53	63.68	59.96	69.32
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	10.62	10.93	12.17	9.28
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	47.25	51.39	33.56	91.66
Acenaphthylene	272.86	275.93	196.76	231.15
Acenaphthene	39.09	70.7	34.08	294.89
Fluorene	60.21	87.36	50.89	248.78
Anthracene	308.66	373.96	254.17	693.13
Phenanthrene	981.88	1169.38	758.7	2544.73
Benzo(a)anthracene	504.9	684.19	452.28	1596.69
Fluoranthene	1441.22	2003.94	1548.52	3720.28
Pyrene	1579.4	1904.58	1390.76	3322.77
Chrysene	892.57	1095.87	745.64	2034.63
Benzo(b)fluoranthene	850.15	981.63	723.68	1765.93
Benzo(j/k)fluoranthene	826.73	983.43	657.52	1643.93
Benzo(a)pyrene	702.88	819.88	543.51	1560.65
Indeno(1,2,3-cd)pyrene	643.03	733.91	500.69	1233.47
Dibenz(a,h)anthracene	142.26	163.99	109.07	292.59
Benzo(g,h,i)perylene	569.33	634.64	426.88	1000.56
2-Methylnaphthalene	23.61	25.49	17.83	44.83

Surrogate Recoveries (%)

Naphthalene-d8	79	85	62	90
Phenanthrene-d10	92	97	79	96
Chrysene-d12	84	87	71	87

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-40	AH-42	AH-45	AH-47
Battelle ID	S1509-P	S1507-P	S1474-P	S1494-P
Sample Type	SA	SA	SA	SA
Collection Date	03/27/04	03/27/04	03/26/04	03/26/04
Extraction Date	04/06/04	04/05/04	04/06/04	04/05/04
Analysis Date	04/22/04	04/18/04	04/21/04	04/18/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	19.95	28.66	70.94	21.5
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	24.30	21.97	8.87	23.59
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	45.59	32.19	30.46	31.4
Acenaphthylene	27.95	314.45	143.74	238.43
Acenaphthene	115.8	30.65	36.64	32.71
Fluorene	89.67	82.3	43.69	63.44
Anthracene	203.32	324.7	197.53	244.43
Phenanthrene	763.05	1430.2	526.04	1028.61
Benzo(a)anthracene	441.24	700.42	362.69	502.65
Fluoranthene	1100.26	1742.77	1018.6	1455.37
Pyrene	904.73	1705	933.27	1353.15
Chrysene	501.01	1078.97	583.33	738.64
Benzo(b)fluoranthene	420.58	952.29	592.35	554.41
Benzo(j/k)fluoranthene	433.61	931.27	532.37	568.44
Benzo(a)pyrene	389.82	847.16	452.96	549.11
Indeno(1,2,3-cd)pyrene	306.66	658.06	422.35	433.05
Dibenz(a,h)anthracene	75.76	163.45	94.77	100.96
Benzo(g,h,i)perylene	244.5	575.27	359.63	386.32
2-Methylnaphthalene	22.22	16.52	15.76	16.05

Surrogate Recoveries (%)

Naphthalene-d8	85	88	60	87
Phenanthrene-d10	98	98	79	90
Chrysene-d12	91	89	73	82

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-49	AH-51	Core 1-Top	Core 1-Bot
Battelle ID	S1471-P	S1502-P	S1510-P	S1511-P
Sample Type	SA	SA	SA	SA
Collection Date	03/25/04	03/27/04	03/27/04	03/27/04
Extraction Date	04/06/04	04/05/04	04/05/04	04/05/04
Analysis Date	04/21/04	04/18/04	04/18/04	04/19/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	22.42	70.2	26.29	23.84
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	23.62	8.90	22.45	22.79
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	78.46	39.27	92.86	9.45
Acenaphthylene	791.31	354.73	54.24	33.33
Acenaphthene	70.16	33.37	213.9	18.98
Fluorene	230.36	52.88	155.1	16.33
Anthracene	814.22	358.53	302.24	79.68
Phenanthrene	4493.7 D	1114.52	1441.84	134.43
Benzo(a)anthracene	1502.3	530.25	737.41	145.37
Fluoranthene	4872.56 D	1947.41	1783.54	776.86
Pyrene	4721 D	1780.72	1560.92	604.18
Chrysene	2416.21	981.43	855.55	274.36
Benzo(b)fluoranthene	1724.54	906.18	718.8	196.12
Benzo(j/k)fluoranthene	1799.07	876.16	717.41	188.42
Benzo(a)pyrene	1654.23	739.58	668.48	110.1
Indeno(1,2,3-cd)pyrene	1349.72	689.38	506.2	101.67
Dibenz(a,h)anthracene	331.17	157.21	124.04	22.72
Benzo(g,h,i)perylene	1241.54	633.68	401.58	84.54
2-Methylnaphthalene	51.56	22.8	32.75	6.28
Surrogate Recoveries (%)				
Naphthalene-d8	94	73	84	74
Phenanthrene-d10	98	87	88	80
Chrysene-d12	93	78	80	73

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Core 1-Bot	Rins-01	Rins-02
Battelle ID	S1511DUP-P	S1487-P	S1489-P
Sample Type	QADU	SA	SA
Collection Date	3/27/2004	03/26/04	03/26/04
Extraction Date	4/5/2004	03/31/04	03/31/04
Analysis Date	4/19/2004	04/17/04	04/17/04
Analytical Instrument	MS	MS	MS
% Moisture	23.84	NA	NA
Matrix	SEDIMENT	WATER	WATER
Sample Size	22.86	1.02	1.06
Size Unit-Basis	G_DRY	L_LIQUID	L_LIQUID
Units	UG/KG_DRY	NG/L_LIQUID	NG/L_LIQUID
Naphthalene	10.8	15.00	7.42 J
Acenaphthylene	183.83	2.27 J	U
Acenaphthene	27.07	U	U
Fluorene	28.77	1.02 J	0.70 J
Anthracene	299.81	1.96 J	U
Phenanthrene	203.16	6.23 J	2.91 J
Benzo(a)anthracene	1674.22	2.86 J	U
Fluoranthene	2393.46	10.22	0.92 J
Pyrene	1960.25	10.72	1.07 J
Chrysene	1707.09	5.40 J	U
Benzo(b)fluoranthene	1179.35	3.23 J	U
Benzo(j/k)fluoranthene	1094.68	4.66 J	U
Benzo(a)pyrene	756.5	3.69 J	U
Indeno(1,2,3-cd)pyrene	501.44	2.34 J	U
Dibenz(a,h)anthracene	121.65	0.83 J	U
Benzo(g,h,i)perylene	356.01	2.85 J	U
2-Methylnaphthalene	7.14	6.03 J	1.26 J

Surrogate Recoveries (%)

Naphthalene-d8	77	79	77
Phenanthrene-d10	86	91	91
Chrysene-d12	79	86	84

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Selected PAH List: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-26		AH-26			
Battelle ID	S1505-P		S1505DUP-P			
Sample Type	SA		QADU			
Collection Date	03/27/04		3/27/2004			
Extraction Date	04/06/04		4/6/2004			
Analysis Date	04/22/04		4/22/2004			
Analytical Instrument	MS		MS			
% Moisture	55.9		55.9			
Matrix	SEDIMENT		SEDIMENT			
Sample Size	13.52		13.28			
Size Unit-Basis	G_DRY		G_DRY			
Units	UG/KG_DRY		UG/KG_DRY		RPD	Qualifier
1-Ethylnaphthalene	1.22	J	1.05	J	NA	
2,6-dimethylnaphthalene	27.87		25.86		7.5	
1,5-Dimethylnaphthalene	3.87		3.42		12.3	
2-Methylfluorene	14.73		13.14		11.4	
1-Methylfluorene	12.99		11.55		11.7	
4-Methyldibenzothiophene	35.68		31.91		11.2	
2/3-Methyldibenzothiophene	30.87		28.79		7.0	
1-Methyldibenzothiophene	10.05		9.24		8.4	
3-Methylphenanthrene	206.62		184.21		11.5	
2/4-Methylphenanthrene	30.87		28.79		7.0	
2-Methylanthracene	48.35		43.77		9.9	
9-Methylphenanthrene/1-Methylanthracene	151.47		139.19		8.4	
1-Methylphenanthrene	115.64		107.26		7.5	
2,7-Dimethylphenanthrene	34.83		32.57		6.7	
1,7-Dimethylphenanthrene	37.41		35.8		4.4	
Cadalene	2.25		1.89		17.4	
Dehydroabietin(e)		U		U	NA	
Retene	9.44		10.42		9.9	
C1-benzo(b)naphthothiophenes	138.18		124.83		10.2	
C2-benzo(b)naphthothiophenes	91.24		81.95		10.7	
C3-benzo(b)naphthothiophenes	65.94		56.12		16.1	
C4-benzo(b)naphthothiophenes	27.73		24.99		10.4	
Hopane	205.02		195.99		4.5	

Surrogate Recoveries (%)

Naphthalene-d8	60	54
Phenanthrene-d10	75	69
Chrysene-d12	69	65
5b(H)-Cholane	102	103

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Procedural Blank
Battelle ID	BE164PB-P
Sample Type	PB
Collection Date	04/05/04
Extraction Date	04/05/04
Analysis Date	04/17/04
Analytical Instrument	MS
% Moisture	46.95
Matrix	SEDIMENT
Sample Size	16.02
Size Unit-Basis	G_DRY
Units	UG/KG_DRY

Naphthalene	0.26	J
Acenaphthylene		U
Acenaphthene		U
Fluorene		U
Anthracene		U
Phenanthrene		U
Benzo(a)anthracene		U
Fluoranthene		U
Pyrene		U
Chrysene		U
Benzo(b)fluoranthene		U
Benzo(j/k)fluoranthene		U
Benzo(a)pyrene		U
Indeno(1,2,3-cd)pyrene		U
Dibenz(a,h)anthracene		U
Benzo(g,h,i)perylene		U
2-Methylnaphthalene	0.07	J

Surrogate Recoveries (%)

Naphthalene-d8	88
Phenanthrene-d10	85
Chrysene-d12	80

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

PB: PAH S04-0118MS

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Laboratory Control Sample			
Battelle ID	BE165LCS-P			
Sample Type	LCS			
Collection Date	04/05/04			
Extraction Date	04/05/04			
Analysis Date	04/17/04			
Analytical Instrument	MS			
% Moisture	NA			
Matrix	SEDIMENT			
Sample Size	NA			
Size Unit-Basis	NA			
Units	NG	Target	% Recovery	Qualifier
Naphthalene	920.93	1000.55	92	
Acenaphthylene	918.15	1000.40	92	
Acenaphthene	948.51	1000.40	95	
Fluorene	934.4	1000.50	93	
Anthracene	978.6	1000.40	98	
Phenanthrene	946.98	1000.45	95	
Benzo(a)anthracene	957.33	1000.55	96	
Fluoranthene	1005.3	1000.40	100	
Pyrene	1011.58	1000.40	101	
Chrysene	1010.13	1000.50	101	
Benzo(b)fluoranthene	875.89	1000.50	88	
Benzo(j/k)fluoranthene	1075.93	1000.35	108	
Benzo(a)pyrene	908.1	1000.55	91	
Indeno(1,2,3-cd)pyrene	721.94	1000.60	72	
Dibenz(a,h)anthracene	831.47	1000.40	83	
Benzo(g,h,i)perylene	843.76	1000.50	84	
2-Methylnaphthalene	571.45	1000.50	57	

Surrogate Recoveries (%)

Naphthalene-d8	93
Phenanthrene-d10	95
Chrysene-d12	91

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

LCS: PAH S04-0118MS

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	020326-01: SRM 1944			
Battelle ID	BE166SRM-P			
Sample Type	SRM			
Collection Date	04/05/04			
Extraction Date	04/05/04			
Analysis Date	04/17/04			
Analytical Instrument	MS			
% Moisture	1.25			
Matrix	SEDIMENT			
Sample Size	1.15			
Size Unit-Basis	G_DRY			
Units	UG/KG_DRY	Target	% Difference	Qualifier
Naphthalene	1135.98	1650.00	31.2	
Acenaphthylene	859.84			
Acenaphthene	269.03			
Fluorene	363.33			
Anthracene	1333.93	1770.00	24.6	
Phenanthrene	4287.45	5270.00	18.6	
Benzo(a)anthracene	4202.37	4720.00	11.0	
Fluoranthene	7137.27	8920.00	20.0	
Pyrene	7496.8	9700.00	22.7	
Chrysene	5332.97	5900.00	9.6	
Benzo(b)fluoranthene	3771.93	3870.00	2.5	
Benzo(j/k)fluoranthene	4105	4390.00	6.5	
Benzo(a)pyrene	3438.8	4300.00	20.0	
Indeno(1,2,3-cd)pyrene	2957.45	2780.00	6.4	
Dibenz(a,h)anthracene	748.54	759.00	1.4	
Benzo(g,h,i)perylene	2816.15	2840.00	0.8	
2-Methylnaphthalene	388.15			

Surrogate Recoveries (%)

Naphthalene-d8	81
Phenanthrene-d10	101
Chrysene-d12	93

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	GD81: North Slope Crude				
Battelle ID	BE174NSC-P				
Sample Type	NSC				
Collection Date	04/05/04				
Extraction Date	04/05/04				
Analysis Date	04/17/04				
Analytical Instrument	MS				
% Moisture	NA				
Matrix	SEDIMENT				
Sample Size	5.28				
Size Unit-Basis	MG_OIL				
Units	MG/KG_OIL		Target	% Difference	Qualifier
Naphthalene	664.37		714.43	7.0	
Acenaphthylene		U			
Acenaphthene	12.61				
Fluorene	73.6		87.56	15.9	
Anthracene		U			
Phenanthrene	257.65		272.58	5.5	
Benzo(a)anthracene		U			
Fluoranthene	3.76				
Pyrene	11.08				
Chrysene	45.35		50.99	11.1	
Benzo(b)fluoranthene	6.55				
Benzo(j/k)fluoranthene		U			
Benzo(a)pyrene		U			
Indeno(1,2,3-cd)pyrene		U			
Dibenz(a,h)anthracene	0.79	J			
Benzo(g,h,i)perylene	2.98				
2-Methylnaphthalene	825.13				

Surrogate Recoveries (%)

Naphthalene-d8	93
Phenanthrene-d10	98
Chrysene-d12	86

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

NSC: PAH S04-0118MS

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	AH-11	AH-11			
Battelle ID	S1424-P	S1424MS-P			
Sample Type	SA	MS			
Collection Date	03/22/04	3/22/2004			
Extraction Date	04/05/04	4/5/2004			
Analysis Date	04/17/04	4/17/2004			
Analytical Instrument	MS	MS			
% Moisture	65.57	63.02			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	10.27	5.69			
Size Unit-Basis	G_DRY	G_DRY			
Units	UG/KG_DRY	UG/KG_DRY	Target	% Recovery	Qualifier
Naphthalene	26.77	134.47	175.84	61	
Acenaphthylene	121.5	259.36	175.82	78	
Acenaphthene	20.33	160.13	175.82	80	
Fluorene	30.13	180.45	175.83	85	
Anthracene	166.67	337.42	175.82	97	
Phenanthrene	396.25	501.49	175.83	60	
Benzo(a)anthracene	324.68	478.66	175.84	88	
Fluoranthene	694.9	772.06	175.82	44	
Pyrene	790.88	935.67	175.82	82	
Chrysene	549.07	648.09	175.83	56	
Benzo(b)fluoranthene	525.88	712.06	175.83	106	
Benzo(j/k)fluoranthene	500.3	630.86	175.81	74	
Benzo(a)pyrene	425.84	578.82	175.84	87	
Indeno(1,2,3-cd)pyrene	367.47	547.58	175.85	102	
Dibenz(a,h)anthracene	82.28	261.35	175.82	102	
Benzo(g,h,i)perylene	326.92	475.11	175.83	84	
2-Methylnaphthalene	13.37	92.78	175.83	45	

Surrogate Recoveries (%)

Naphthalene-d8	64	64
Phenanthrene-d10	85	91
Chrysene-d12	77	82

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

MS: PAH S04-0118MS

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	AH-11					
Battelle ID	S1424MSD-P					
Sample Type	MSD					
Collection Date	3/22/2004					
Extraction Date	4/5/2004					
Analysis Date	4/17/2004					
Analytical Instrument	MS					
% Moisture	65.97					
Matrix	SEDIMENT					
Sample Size	5.36					
Size Unit-Basis	G_DRY					
Units	UG/KG_DRY	Target	% Recovery	Qualifier	RPD (%)	Qualifier
Naphthalene	151.89	186.67	67		9.4	
Acenaphthylene	272.83	186.64	81		3.8	
Acenaphthene	177.67	186.64	84		4.9	
Fluorene	201.25	186.66	92		7.9	
Anthracene	372.37	186.64	110		12.6	
Phenanthrene	529.48	186.65	71		16.8	
Benzo(a)anthracene	526.06	186.67	108		20.4	
Fluoranthene	852.06	186.64	84		62.5	
Pyrene	917.79	186.64	68		18.7	
Chrysene	737.28	186.66	101		57.3	
Benzo(b)fluoranthene	759.4	186.66	125	n	16.5	
Benzo(j/k)fluoranthene	697.05	186.63	105		34.6	
Benzo(a)pyrene	625.5	186.67	107		20.6	
Indeno(1,2,3-cd)pyrene	596.5	186.68	123	n	18.7	
Dibenz(a,h)anthracene	291.81	186.64	112		9.3	
Benzo(g,h,i)perylene	522.52	186.66	105		22.2	
2-Methylnaphthalene	103.58	186.66	48		6.5	

Surrogate Recoveries (%)

Naphthalene-d8	72
Phenanthrene-d10	98
Chrysene-d12	90

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

MS: PAH S04-0118MS

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Core 1-Bot	Core 1-Bot		
Battelle ID	S1511-P	S1511DUP-P		
Sample Type	SA	QADU		
Collection Date	03/27/04	3/27/2004		
Extraction Date	04/05/04	4/5/2004		
Analysis Date	04/19/04	4/19/2004		
Analytical Instrument	MS	MS		
% Moisture	23.84	23.84		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	22.79	22.86		
Size Unit-Basis	G_DRY	G_DRY		
Units	UG/KG_DRY	UG/KG_DRY	RPD	Qualifier
Naphthalene	9.45	10.8	13.3	
Acenaphthylene	33.33	183.83	138.6	N
Acenaphthene	18.98	27.07	35.1	N
Fluorene	16.33	28.77	55.2	N
Anthracene	79.68	299.81	116.0	N
Phenanthrene	134.43	203.16	40.7	N
Benzo(a)anthracene	145.37	1674.22	168.0	N
Fluoranthene	776.86	2393.46	102.0	N
Pyrene	604.18	1960.25	105.8	N
Chrysene	274.36	1707.09	144.6	N
Benzo(b)fluoranthene	196.12	1179.35	143.0	N
Benzo(j/k)fluoranthene	188.42	1094.68	141.3	N
Benzo(a)pyrene	110.1	756.5	149.2	N
Indeno(1,2,3-cd)pyrene	101.67	501.44	132.6	N
Dibenz(a,h)anthracene	22.72	121.65	137.1	N
Benzo(g,h,i)perylene	84.54	356.01	123.2	N
2-Methylnaphthalene	6.28	7.14	12.8	

Surrogate Recoveries (%)

Naphthalene-d8	74	77
Phenanthrene-d10	80	86
Chrysene-d12	73	79

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

DUP: PAH S04-0118MS

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Procedural Blank	
Battelle ID	BE152PB-P	
Sample Type	PB	
Collection Date	03/31/04	
Extraction Date	03/31/04	
Analysis Date	04/16/04	
Analytical Instrument	MS	
% Moisture	NA	
Matrix	LIQUID	
Sample Size	1.00	
Size Unit-Basis	L_LIQUID	
Units	NG/L_LIQUID	
Naphthalene	1.23	J
Acenaphthylene		U
Acenaphthene		U
Fluorene	0.80	J
Anthracene		U
Phenanthrene	0.86	J
Benzo(a)anthracene		U
Fluoranthene		U
Pyrene		U
Chrysene		U
Benzo(b)fluoranthene		U
Benzo(j/k)fluoranthene		U
Benzo(a)pyrene		U
Indeno(1,2,3-cd)pyrene		U
Dibenz(a,h)anthracene		U
Benzo(g,h,i)perylene		U
2-Methylnaphthalene	0.52	J
Surrogate Recoveries (%)		
Naphthalene-d8	81	
Phenanthrene-d10	89	
Chrysene-d12	86	

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

PB: PAH L04-0113MS1

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: EA Davisville

Client ID	Laboratory Control Sample			
Battelle ID	BE153LCS-P			
Sample Type	LCS			
Collection Date	03/31/04			
Extraction Date	03/31/04			
Analysis Date	04/17/04			
Analytical Instrument	MS			
% Moisture	NA			
Matrix	LIQUID			
Sample Size	1.00			
Size Unit-Basis	L_LIQUID			
Units	NG/L_LIQUID	Target	% Recovery	Qualifier
Naphthalene	823.36	1000.55	82	
Acenaphthylene	837.09	1000.40	84	
Acenaphthene	853.79	1000.40	85	
Fluorene	851.95	1000.50	85	
Anthracene	994.17	1000.40	99	
Phenanthrene	892.77	1000.45	89	
Benzo(a)anthracene	960.51	1000.55	96	
Fluoranthene	965.33	1000.40	96	
Pyrene	984.45	1000.40	98	
Chrysene	971.32	1000.50	97	
Benzo(b)fluoranthene	937.29	1000.50	94	
Benzo(j/k)fluoranthene	1041.40	1000.35	104	
Benzo(a)pyrene	946.75	1000.55	95	
Indeno(1,2,3-cd)pyrene	857.45	1000.60	86	
Dibenz(a,h)anthracene	934.06	1000.40	93	
Benzo(g,h,i)perylene	895.03	1000.50	89	
2-Methylnaphthalene	523.02	1000.50	52	
Surrogate Recoveries (%)				
Naphthalene-d8	85			
Phenanthrene-d10	92			
Chrysene-d12	89			

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

LCS: PAH L04-0113MS1

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 1-1	Source 1-2	Source 2-1	Source 2-2
Battelle ID	S1483-P	S1485-P	S1484-P	S1486-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/04	03/26/04	03/26/04	03/26/04
Extraction Date	04/06/04	04/06/04	04/06/04	04/06/04
Analysis Date	04/21/04	04/22/04	04/22/04	04/22/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	10.53	16.63	9.36	10.63
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	26.91	25.39	18.42	18.21
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	18.95	121.5	3366.92	3685.04
C1-Naphthalenes	11.13	50.08	13521.05 D	16595.28
C2-Naphthalenes	18.3	74.17	27106.04 D	39174.57 D
C3-Naphthalenes	16.09	60.98	23552.06	37990.98
C4-Naphthalenes	15.01	66.36	11451.07	18774.92
Biphenyl	4.61	28.79	950.42	932.39
Acenaphthylene	159.35	963.01	U	650.9
Acenaphthene	12.26	47.19	440.58	748.75
Dibenzofuran	20.84	97.72	536.8	566.8
Fluorene	42.99	144.77	677.93	983.53
C1-Fluorenes	13.39	52.62	1529.79	2311.29
C2-Fluorenes	30.33	117.84	2184.03	3466.46
C3-Fluorenes	270.32	696.03	1592.49	2531.03
Anthracene	529.63	1885.32 D	222.68	651.79
Phenanthrene	363.61	959.02	1563.07	2766.64
C1-Phenanthrenes/Anthracenes	259.41	740.27	3132.17	4585.52
C2-Phenanthrenes/Anthracenes	224.69	848.09	3349.5	5164.25
C3-Phenanthrenes/Anthracenes	114.16	632.53	1782.96	2934.56
C4-Phenanthrenes/Anthracenes	48.39	328.53	674.2	1158.59
Dibenzothiophene	16.27	44.19	335.9	440.96
C1-Dibenzothiophenes	21.54	62.36	769.5	1124.55
C2-Dibenzothiophenes	27.39	105.15	726.1	1114.97
C3-Dibenzothiophenes	21.03	114.26	449.43	775.02
C4-Dibenzothiophenes	11.39	69.13	194.89	376.53
Benzo(b)fluorene	54.22	309.99	62.9	362.48
Fluoranthene	2548.92 D	6958 D	461.79	1942.94
Pyrene	2131.25 D	8016.78 D	491.82	1739.83
C1-Fluoranthenes/Pyrenes	859.07	4961.26	489.61	1592.16
C2-Fluoranthenes/Pyrenes	935.7	3347.51	363.01	882.18
C3-Fluoranthenes/Pyrenes	420.92	2626.94	241.05	554.67
Benzo(a)anthracene	770.25	3812.16 D	314.01	1059.88
Chrysene	1297.64 D	6548.95 D	338.46	1207.94
C1-Chrysenes	406.81	2606.47	167.63	606.28
C2-Chrysenes	158.53	1104.16	106.32	339.2
C3-Chrysenes	111.86	798.23	81	200.37
C4-Chrysenes	74.73	532.93	37.42	103
Benzo(b)fluoranthene	1020.86 D	7235.67 D	382.86	1128.68
Benzo(j/k)fluoranthene	985.73	6221.25 D	347.37	1029.39
Benzo(a)fluoranthene	109.55	768.56	77.21	313.25
Benzo(e)pyrene	709.62	4431.3 D	326.28	959.95
Benzo(a)pyrene	318.34	2338.54 D	328.14	988.67
Perylene	107.47	782.42	92.3	311.56
Indeno(1,2,3-cd)pyrene	435.21	2707.7 D	307.27	935.45
Dibenz(a,h)anthracene	116.24	824.9	91.54	258.74
Benzo(g,h,i)perylene	300.82	1904.12 D	295.21	875.34
Benzo(b)naphtho(1,2-d)thiophene	41.9	191.45	12.78	42.12
Benzo(b)naphtho(2,1-d)thiophene	170.51	729.54	59.22	196.05
Benzo(b)naphtho(2,3-d)thiophene	40.71	198.63	20.39	70.76
2-Methylnaphthalene	11.17	50	9428.33 D	10012.1
1-Methynaphthalene	5.08	20.91	4005.44 D	6484.68
2-Ethylnaphthalene	0.82	4.09	1107.97 D	1480.82 D

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Detailed PAH-Biomarker: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 1-1	Source 1-2	Source 2-1	Source 2-2
Battelle ID	S1483-P	S1485-P	S1484-P	S1486-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/04	03/26/04	03/26/04	03/26/04
Extraction Date	04/06/04	04/06/04	04/06/04	04/06/04
Analysis Date	04/21/04	04/22/04	04/22/04	04/22/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	10.53	16.63	9.36	10.63
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	26.91	25.39	18.42	18.21
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
1-Ethylnaphthalene	0.38 J	1.76	351.46 D	536.36 D
2,6-dimethylnaphthalene	4.53	19.11	8219.92 D	10893.68 D
1,5-Dimethylnaphthalene	0.7 J	2.4	1030.33 D	1533.91 D
2-Methylfluorene	3.96	12.86	343.11	457.78
1-Methylfluorene	3.54	12.95	576.95	838.01
4-Methyldibenzothiophene	7.61	19.39	324.75	455.42
2/3-Methyldibenzothiophene	5.72	18.38	266.36	378.3
1-Methyldibenzothiophene	2.27	5.53	91.52	130.61
3-Methylphenanthrene	35.72	75.42	893.42	1313.5
2/4-Methylphenanthrene	5.72	18.38	266.36	378.3
2-Methylanthracene	54.9	227.69	152.17	258.4
9-Methylphenanthrene/1-Methylanthracene	57.19	172.53	601.43	923.46
1-Methylphenanthrene	58.32	131.91	408.68	591.19
2,7-Dimethylphenanthrene	19.45	77.74	276.06	375.64
1,7-Dimethylphenanthrene	23.24	92.55	225.72	354.45
Cadalene	1.97	5.05	148.76	256.93
Dehydroabietin(e)	U	U	102.67	363.82
Retene	17.84	136.38	182.82	570.52
C1-benzo(b)naphthothiophenes	126.75	769.63	64.24	191.58
C2-benzo(b)naphthothiophenes	54.36	360.6	50.49	158.25
C3-benzo(b)naphthothiophenes	31.63	246.61	40.17	117.38
C4-benzo(b)naphthothiophenes	5.38	60.32	20.44	65.51
Hopane	9.5	66.94	38.73	887.67
Surrogate Recoveries (%)				
Naphthalene-d8	73	156 N	112	101
Phenanthrene-d10	89	180 N	69	58
Chrysene-d12	90	208 N	107	96
5b(H)-Cholane	101	106	105	103

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 3-1	Source 3-2	Source 4-1	REF 1-4
Battelle ID	S1481-P	S1482-P	S1457-P	S1445-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/04	03/26/04	03/24/04	03/24/04
Extraction Date	04/06/04	04/06/04	04/06/04	04/06/04
Analysis Date	04/21/04	04/21/04	04/21/04	04/21/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	8.95	12.54	11.76	42.69
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	27.28	26.38	26.66	17.58
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	13.46	163.29	29.74	10.82
C1-Naphthalenes	6.43	164.09	36.98	7.88
C2-Naphthalenes	10.42	143.06	72.96	19.42
C3-Naphthalenes	10.61	70.53	79.28	8.33
C4-Naphthalenes	10.76	40.17	45.63	5.7
Biphenyl	3.41	140.29	27.84	4.73
Acenaphthylene	11.28	26.26	172.28	13.02
Acenaphthene	4.93	64.95	24.44	2.15
Dibenzofuran	7.95	306.41	30.56	4.44
Fluorene	5.49	66.46	44.35	5.97
C1-Fluorenes	2.9	10.06	44.07	4.93
C2-Fluorenes	6.73	23.65	72.35	9.33
C3-Fluorenes	15.42	46.7	185.19	11.89
Anthracene	20.83	66.01	211.64	18.21
Phenanthrene	92.64	235.38	916.28	34.4
C1-Phenanthrenes/Anthracenes	37.05	103.02	507.82	30.16
C2-Phenanthrenes/Anthracenes	35.51	93.89	451.29	98.66
C3-Phenanthrenes/Anthracenes	25.55	76.67	189.91	14.2
C4-Phenanthrenes/Anthracenes	16.17	57	84.43	6.23
Dibenzothiophene	5.19	18.56	57.81	3.52
C1-Dibenzothiophenes	7.47	25.85	85.41	5.19
C2-Dibenzothiophenes	14.02	39.66	130.85	6.66
C3-Dibenzothiophenes	16.33	45.73	148.67	5.95
C4-Dibenzothiophenes	13.43	56.66	113.78	3.36
Benzo(b)fluorene	8.84	29.36	35.04	8.73
Fluoranthene	136.26	329.37	1202.09	90.43
Pyrene	106.45	271.02	1089.54	78.35
C1-Fluoranthenes/Pyrenes	50.67	148.85	539.86	46.97
C2-Fluoranthenes/Pyrenes	36.88	118.3	519.86	33
C3-Fluoranthenes/Pyrenes	22.55	68.74	257.63	20.88
Benzo(a)anthracene	58.96	186.42	321.7	36.82
Chrysene	67.89	213.61	636.01	48.48
C1-Chrysenes	27.85	95.74	338.06	28.06
C2-Chrysenes	17.25	58	239.15	18.15
C3-Chrysenes	17.18	45.77	213.23	13.96
C4-Chrysenes	11.38	25.17	154.86	10.51
Benzo(b)fluoranthene	66.93	261.65	494.83	68.74
Benzo(j/k)fluoranthene	62.47	213.57	464.01	58.71
Benzo(a)fluoranthene	12.23	44.43	111.71	14.47
Benzo(e)pyrene	53.66	200.56	454.31	53.98
Benzo(a)pyrene	42.38	170.42	369.75	54.75
Perylene	13.94	56.16	77.96	16.52
Indeno(1,2,3-cd)pyrene	51.87	180.88	362.83	61.45
Dibenz(a,h)anthracene	13.09	46.3	83.98	11.73
Benzo(g,h,i)perylene	44.71	154.26	357.35	52.46
Benzo(b)naphtho(1,2-d)thiophene	2.41	8.21	26.76	1.98
Benzo(b)naphtho(2,1-d)thiophene	11.74	38.25	109.54	6.67
Benzo(b)naphtho(2,3-d)thiophene	3.19	10.95	26.55	2.38
2-Methylnaphthalene	4.15	99.56	15.3	5.07
1-Methynaphthalene	2.26	63.67	18.61	2.25
2-Ethylnaphthalene	0.47 J	6.99	2.07 J	0.73

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Detailed PAH-Biomarker: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Source 3-1	Source 3-2	Source 4-1	REF 1-4
Battelle ID	S1481-P	S1482-P	S1457-P	S1445-P
Sample Type	SA	SA	SA	SA
Collection Date	03/26/04	03/26/04	03/24/04	03/24/04
Extraction Date	04/06/04	04/06/04	04/06/04	04/06/04
Analysis Date	04/21/04	04/21/04	04/21/04	04/21/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	8.95	12.54	11.76	42.69
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	27.28	26.38	26.66	17.58
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
1-Ethylnaphthalene	0.2 J	1.64	U	0.19 J
2,6-dimethylnaphthalene	2.73	40.75	10.82	11.68
1,5-Dimethylnaphthalene	0.49 J	5.7	3.11 J	0.49 J
2-Methylfluorene	0.75 J	2.94	8.37 J	0.99
1-Methylfluorene	0.64 J	2.94	9 J	1.45
4-Methyldibenzothiophene	2.71	10.79	27.53	1.94
2/3-Methyldibenzothiophene	2.41	7.78	23.04	1.69
1-Methyldibenzothiophene	1.25	3.78	17.31	0.52 J
3-Methylphenanthrene	8.66	23.49	127.21	6.84
2/4-Methylphenanthrene	2.41	7.78	23.04	1.69
2-Methylanthracene	2.87	8.87	31.02	3.12
9-Methylphenanthrene/1-Methylanthracene	7.4	20.3	105.34	6.66
1-Methylphenanthrene	6.8	19.12	79.36	4.1
2,7-Dimethylphenanthrene	2.12	4.6	24.72	1.56
1,7-Dimethylphenanthrene	4.91	17.13	30.33	2.97
Cadalene	1.99	5.41	U	0.54 J
Dehydroabietin(e)	U	24.04	U	U
Retene	26	127.52	8.1 J	3.22
C1-benzo(b)naphthothiophenes	13.01	42.78	248.92	11.88
C2-benzo(b)naphthothiophenes	16.58	47.33	433.26	11.67
C3-benzo(b)naphthothiophenes	20.29	52.75	550.27	9.93
C4-benzo(b)naphthothiophenes	15.14	27.84	363.24	4.76
Hopane	59.73	137	1048.97	88.35

Surrogate Recoveries (%)

Naphthalene-d8	79	70	137 N	61
Phenanthrene-d10	92	85	101	83
Chrysene-d12	84	78	111	76
5b(H)-Cholane	99	90	102	94

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	REF 2-1	REF 3-2	AH-03	AH-06
Battelle ID	S1447-P	S1466-P	S1438-P	S1432-P
Sample Type	SA	SA	SA	SA
Collection Date	03/24/04	03/25/04	03/23/04	03/23/04
Extraction Date	04/06/04	04/06/04	04/06/04	04/06/04
Analysis Date	04/21/04	04/21/04	04/21/04	04/20/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	56.18	57.26	48.97	61.05
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	13.22	13.08	15.46	11.82
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	16.73	13.96	13.64	18.32
C1-Naphthalenes	12.69	8.65	11.36	15.08
C2-Naphthalenes	44.17	15.87	21.73	33.08
C3-Naphthalenes	13.86	17.6	17.91	19.61
C4-Naphthalenes	8.34	11.28	14.52	13.84
Biphenyl	6.42	8.3	8.22	9.3
Acenaphthylene	18.3	27.11	90.09	58.74
Acenaphthene	3.46	5.82	10.69	8.62
Dibenzofuran	7.02	9.53	12.97	12.24
Fluorene	8.62	16.22	30.35	16.83
C1-Fluorenes	7.33	13.07	19	12.08
C2-Fluorenes	11.84	17.56	33.75	21.9
C3-Fluorenes	16.61	31.22	213.84	44.07
Anthracene	24.55	52.05	275.05	93.37
Phenanthrene	43.53	164.01	348.94	177.09
C1-Phenanthrenes/Anthracenes	42.23	98.13	280.23	126.92
C2-Phenanthrenes/Anthracenes	94.8	79.62	255.86	133.7
C3-Phenanthrenes/Anthracenes	20.89	31.51	121.53	49.58
C4-Phenanthrenes/Anthracenes	9.19	12.87	53.52	21.08
Dibenzothiophene	4.96	11.81	17.95	13.46
C1-Dibenzothiophenes	8.12	13.41	23.01	17.93
C2-Dibenzothiophenes	10.14	13.76	31.46	22.67
C3-Dibenzothiophenes	8.66	9.91	25.89	19.97
C4-Dibenzothiophenes	4.44	5.11	12.7	11.01
Benzo(b)fluorene	11.14	40.84	395.82	58.93
Fluoranthene	115.97	406.54	1869.8 D	376.06
Pyrene	104.41	345.26	1977.37 D	406.32
C1-Fluoranthenes/Pyrenes	67.18	174.2	1222.14	252.12
C2-Fluoranthenes/Pyrenes	48.56	90.15	714.24	159.08
C3-Fluoranthenes/Pyrenes	33.58	46.72	291.02	80.01
Benzo(a)anthracene	48.84	175.29	715.48	167.23
Chrysene	64.66	188.13	1644.13 D	292.35
C1-Chrysenes	43.61	80.72	508.19	124.12
C2-Chrysenes	31.52	41.32	193.76	64.94
C3-Chrysenes	21.33	22.26	97.96	36.63
C4-Chrysenes	17.98	15.88	63.71	28.36
Benzo(b)fluoranthene	92.88	203.99	1408.11 D	280.68
Benzo(j/k)fluoranthene	80.25	202.15	1100.54	270.95
Benzo(a)fluoranthene	20.03	47.91	170.62	58.17
Benzo(e)pyrene	75.13	158.68	976.19	230.03
Benzo(a)pyrene	74.11	206.95	792.32	213.6
Perylene	26.66	61.01	195.27	71.44
Indeno(1,2,3-cd)pyrene	79.62	186.49	662.89	204.58
Dibenz(a,h)anthracene	15.1	36.27	156.39	43.37
Benzo(g,h,i)perylene	67.1	148.83	516.3	173.03
Benzo(b)naphtho(1,2-d)thiophene	2.64	6.75	46.57	9.74
Benzo(b)naphtho(2,1-d)thiophene	8.94	24.49	217.38	38.16
Benzo(b)naphtho(2,3-d)thiophene	3.02	10.25	55.43	11.73
2-Methylnaphthalene	8.16	5.42	6.97	9.24
1-Methynaphthalene	3.7	2.99	3.62	4.98
2-Ethylnaphthalene	1.21	0.87	0.94 J	1.31 J

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Detailed PAH-Biomarker: Combined PAH-Biomarker Data

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	REF 2-1	REF 3-2	AH-03	AH-06
Battelle ID	S1447-P	S1466-P	S1438-P	S1432-P
Sample Type	SA	SA	SA	SA
Collection Date	03/24/04	03/25/04	03/23/04	03/23/04
Extraction Date	04/06/04	04/06/04	04/06/04	04/06/04
Analysis Date	04/21/04	04/21/04	04/21/04	04/20/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	56.18	57.26	48.97	61.05
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	13.22	13.08	15.46	11.82
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
1-Ethylnaphthalene	0.35 J	0.29 J	0.27 J	0.4 J
2,6-dimethylnaphthalene	31.57	4.6	9.56	16.53
1,5-Dimethylnaphthalene	0.85	0.73 J	0.71 J	1.15 J
2-Methylfluorene	1.43	3.5	6.81	3.03
1-Methylfluorene	2.27	3.15	3.83	3.23
4-Methyldibenzothiophene	3.01	4.32	7.32	6.26
2/3-Methyldibenzothiophene	2.61	4.3	6.88	5.87
1-Methyldibenzothiophene	0.8	1.65	2.84	2.15
3-Methylphenanthrene	10.6	23.33	53.72	30.26
2/4-Methylphenanthrene	2.61	4.3	6.88	5.87
2-Methylanthracene	4	9.52	61.69	14.12
9-Methylphenanthrene/1-Methylanthracene	9.4	20.41	49.3	27.2
1-Methylphenanthrene	6.16	14.65	39.67	18.66
2,7-Dimethylphenanthrene	2.42	4.53	14.58	6.11
1,7-Dimethylphenanthrene	3.61	6.5	22.34	7.21
Cadalene	0.75 J	0.98	1.59	2.54
Dehydroabietin(e)	U	U	U	U
Retene	6.02	5.57	12.08	5.76
C1-benzo(b)naphthothiophenes	17.2	26.27	136.84	41.93
C2-benzo(b)naphthothiophenes	17.2	18.23	62.13	31.79
C3-benzo(b)naphthothiophenes	15.11	13.57	39.79	27.8
C4-benzo(b)naphthothiophenes	8.45	5.05	10.85	10.7
Hopane	108.8	97.02	104.61	213.13

Surrogate Recoveries (%)

Naphthalene-d8	55	59	66	70
Phenanthrene-d10	75	86	83	94
Chrysene-d12	66	80	76	85
5b(H)-Cholane	95	93	103	100

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06 (DUP-03)	AH-17	AH-26	AH-26
Battelle ID	S1430-P	S1435-P	S1505-P	S1505DUP-P
Sample Type	SA	SA	SA	QADU
Collection Date		03/23/04	03/27/04	3/27/2004
Extraction Date	04/06/04	04/06/04	04/06/04	4/6/2004
Analysis Date	04/20/04	04/21/04	04/22/04	4/22/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	59.17	73.33	55.9	55.9
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	12.43	8.12	13.52	13.28
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	16.91	45.09	36.52	31.62
C1-Naphthalenes	13.4	37.55	43.61	37.49
C2-Naphthalenes	31.08	106.15	88.04	77.21
C3-Naphthalenes	17.89	45.92	63.73	58.44
C4-Naphthalenes	12.6	33.91	35.36	31.7
Biphenyl	8.26	18.85	13.14	11.49
Acenaphthylene	52.99	171.97	285.68	257.41
Acenaphthene	7.73	22.87	37.73	29.73
Dibenzofuran	10.89	26.7	37.46	32.37
Fluorene	14.45	39.43	74.23	62.11
C1-Fluorenes	11.85	25.74	51.01	44.52
C2-Fluorenes	21.59	57.98	82.82	75.31
C3-Fluorenes	37.41	124.57	203.48	185.72
Anthracene	78.59	208.38	314.15	283.67
Phenanthrene	157.03	497.5	1193.18	1072.51
C1-Phenanthrenes/Anthracenes	112.03	348.35	755.53	683.72
C2-Phenanthrenes/Anthracenes	121.43	330.82	521.04	474.52
C3-Phenanthrenes/Anthracenes	48.03	149.17	212.72	197.77
C4-Phenanthrenes/Anthracenes	20.52	56.2	61.34	59.21
Dibenzothiophene	11.92	35.48	81.59	71.48
C1-Dibenzothiophenes	15.95	47.33	96.72	87.13
C2-Dibenzothiophenes	18.32	55.58	87.73	77.52
C3-Dibenzothiophenes	16.67	45.13	51.52	44.89
C4-Dibenzothiophenes	10.29	21.52	22.62	18.53
Benzo(b)fluorene	51.91	117.15	120.13	110.87
Fluoranthene	335.13	1083.67	1519.36	1384.92
Pyrene	368.78	1049.11	1533.21	1408.29
C1-Fluoranthenes/Pyrenes	221.75	614.31	966.84	889.77
C2-Fluoranthenes/Pyrenes	137.15	429.24	688.93	632.78
C3-Fluoranthenes/Pyrenes	71.27	197.51	277.97	252.3
Benzo(a)anthracene	154.97	380.61	535.47	470.18
Chrysene	252.47	626.91	871.45	802.05
C1-Chrysenes	112.91	307.52	484.29	439.22
C2-Chrysenes	58.97	163.32	240.83	219.55
C3-Chrysenes	34.54	87.26	106.39	95.03
C4-Chrysenes	24.64	66.15	58.94	50.78
Benzo(b)fluoranthene	254.02	641.86	789.32	730.45
Benzo(j/k)fluoranthene	244.66	617.11	709.63	644.63
Benzo(a)fluoranthene	52.49	141.77	190.53	171.31
Benzo(e)pyrene	206.29	540.16	660.69	604.38
Benzo(a)pyrene	194.69	497.2	664.35	593.03
Perylene	64.98	137.33	150.63	134.77
Indeno(1,2,3-cd)pyrene	179.39	462.31	572.98	522.87
Dibenz(a,h)anthracene	39.27	100.55	137.19	120.86
Benzo(g,h,i)perylene	152.79	411.55	498.24	451.22
Benzo(b)naphtho(1,2-d)thiophene	8.64	23.72	34.2	30.57
Benzo(b)naphtho(2,1-d)thiophene	33.62	81.16	132.47	118.7
Benzo(b)naphtho(2,3-d)thiophene	10.35	24.84	37.78	33.58
2-Methylnaphthalene	8.24	21.51	21.2	18.56
1-Methynaphthalene	4.56	13.13	21.37	17.73
2-Ethylnaphthalene	1.16 J	3.04 J	3.34	2.95

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06 (DUP-03)	AH-17	AH-26	AH-26
Battelle ID	S1430-P	S1435-P	S1505-P	S1505DUP-P
Sample Type	SA	SA	SA	QADU
Collection Date		03/23/04	03/27/04	3/27/2004
Extraction Date	04/06/04	04/06/04	04/06/04	4/6/2004
Analysis Date	04/20/04	04/21/04	04/22/04	4/22/2004
Analytical Instrument	MS	MS	MS	MS
% Moisture	59.17	73.33	55.9	55.9
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	12.43	8.12	13.52	13.28
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
1-Ethylnaphthalene	0.32 J	0.99 J	1.22 J	1.05 J
2,6-dimethylnaphthalene	16.2	64.12	27.87	25.86
1,5-Dimethylnaphthalene	1.1 J	3.03 J	3.87	3.42
2-Methylfluorene	2.72	6.55	14.73	13.14
1-Methylfluorene	3.17	7.71	12.99	11.55
4-Methyldibenzothiophene	5.43	17.14	35.68	31.91
2/3-Methyldibenzothiophene	5	14.73	30.87	28.79
1-Methyldibenzothiophene	1.87	5.96	10.05	9.24
3-Methylphenanthrene	26.54	83.7	206.62	184.21
2/4-Methylphenanthrene	5	14.73	30.87	28.79
2-Methylanthracene	12.03	30.86	48.35	43.77
9-Methylphenanthrene/1-Methylanthracene	24.45	75.94	151.47	139.19
1-Methylphenanthrene	16.55	50.54	115.64	107.26
2,7-Dimethylphenanthrene	5.62	16.32	34.83	32.57
1,7-Dimethylphenanthrene	6.73	19.22	37.41	35.8
Cadalene	2.24	4.07 J	2.25	1.89
Dehydroabietin(e)	U	U	U	U
Retene	6.29	10.06	9.44	10.42
C1-benzo(b)naphthothiophenes	37.47	101.56	138.18	124.83
C2-benzo(b)naphthothiophenes	29.61	76.2	91.24	81.95
C3-benzo(b)naphthothiophenes	24.86	63.34	65.94	56.12
C4-benzo(b)naphthothiophenes	13.57	32.5	27.73	24.99
Hopane	199.68	408.43	205.02	195.99

Surrogate Recoveries (%)

Naphthalene-d8	68	82	60	54
Phenanthrene-d10	91	94	75	69
Chrysene-d12	83	85	69	65
5b(H)-Cholane	99	101	102	103

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-28	AH-29	AH-40	AH-45
Battelle ID	S1468-P	S1491-P	S1509-P	S1474-P
Sample Type	SA	SA	SA	SA
Collection Date	03/25/04	03/26/04	03/27/04	03/26/04
Extraction Date	04/07/04	04/06/04	04/06/04	04/06/04
Analysis Date	04/21/04	04/22/04	04/22/04	04/21/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	30.8	65.24	19.95	70.94
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	21.08	10.51	24.30	8.87
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
Naphthalene	67.83	128.42	45.59	30.46
C1-Naphthalenes	84.41	359.89	37.98	27.69
C2-Naphthalenes	162.24	845.43	39.39	75.11
C3-Naphthalenes	157.35	736.59	33.28	38.54
C4-Naphthalenes	82.25	388.6	72.27	26.51
Biphenyl	25.2	39.55	9.83	15.23
Acenaphthylene	785.17	534.97	27.95	143.74
Acenaphthene	56.46	97.39	115.8	36.64
Dibenzofuran	80.77	83.66	57.28	27.07
Fluorene	145.02	136.72	89.67	43.69
C1-Fluorenes	124.93	103.96	25.44	27.85
C2-Fluorenes	215.13	169.45	52.27	49.54
C3-Fluorenes	533.15	476.32	105.39	108.61
Anthracene	792.27	758.28	203.32	197.53
Phenanthrene	3316.29	1486.2	763.05	526.04
C1-Phenanthrenes/Anthracenes	2260.21	986.45	249.62	334.03
C2-Phenanthrenes/Anthracenes	1495.1	816.38	160.18	338.1
C3-Phenanthrenes/Anthracenes	605.31	408.55	71.92	109.85
C4-Phenanthrenes/Anthracenes	167.18	140.81	26.14	39.45
Dibenzothiophene	216.67	114.68	52.32	37.14
C1-Dibenzothiophenes	274.57	141.61	49.67	47.22
C2-Dibenzothiophenes	240.35	147.63	60.17	48.09
C3-Dibenzothiophenes	122.21	117.69	45.09	35.29
C4-Dibenzothiophenes	40.18	68.53	22.67	17.66
Benzo(b)fluorene	192.21	695.17	78.31	106.37
Fluoranthene	4081.99	4751.11 D	1100.26	1018.6
Pyrene	4143.47	4322.01	904.73	933.27
C1-Fluoranthenes/Pyrenes	2572.09	2382.02	396.41	544.67
C2-Fluoranthenes/Pyrenes	1950.53	1249.43	264.45	382.74
C3-Fluoranthenes/Pyrenes	752.61	531.46	110.4	164.54
Benzo(a)anthracene	1339.47	1187.49	441.24	362.69
Chrysene	2227.35	1974.39	501.01	583.33
C1-Chrysenes	1307.45	931.17	182.94	270.47
C2-Chrysenes	634.67	419.6	80.76	137.21
C3-Chrysenes	239.56	205.54	51.75	69.8
C4-Chrysenes	115.96	132.72	30.15	46.84
Benzo(b)fluoranthene	1745.9	2195.47	420.58	592.35
Benzo(j/k)fluoranthene	1725.11	2033.61	433.61	532.37
Benzo(a)fluoranthene	460.61	455.4	85.47	126.95
Benzo(e)pyrene	1596.66	1617.9	321.82	471.59
Benzo(a)pyrene	1623.42	1503.46	389.82	452.96
Perylene	334.32	385.48	103.75	122.5
Indeno(1,2,3-cd)pyrene	1361.12	1294.8	306.66	422.35
Dibenz(a,h)anthracene	317.72	288.39	75.76	94.77
Benzo(g,h,i)perylene	1243.88	1067.85	244.5	359.63
Benzo(b)naphtho(1,2-d)thiophene	88.41	106.29	17.7	21.33
Benzo(b)naphtho(2,1-d)thiophene	364.48	347.92	70.3	81.01
Benzo(b)naphtho(2,3-d)thiophene	105.26	120.73	23.13	22.74
2-Methylnaphthalene	39.74	213.46	22.22	15.76
1-Methynaphthalene	42.83	142.23	14.94	10.5
2-Ethylnaphthalene	5.74	32.18	2.94	2.74

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-28	AH-29	AH-40	AH-45
Battelle ID	S1468-P	S1491-P	S1509-P	S1474-P
Sample Type	SA	SA	SA	SA
Collection Date	03/25/04	03/26/04	03/27/04	03/26/04
Extraction Date	04/07/04	04/06/04	04/06/04	04/06/04
Analysis Date	04/21/04	04/22/04	04/22/04	04/21/04
Analytical Instrument	MS	MS	MS	MS
% Moisture	30.8	65.24	19.95	70.94
Matrix	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Sample Size	21.08	10.51	24.30	8.87
Size Unit-Basis	G_DRY	G_DRY	G_DRY	G_DRY
Units	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY	UG/KG_DRY
1-Ethylnaphthalene	2.99 J	11.45	0.79 J	0.91 J
2,6-dimethylnaphthalene	31.72	269.12	8.77	41.05
1,5-Dimethylnaphthalene	8.6	31.46	1.79	2.45
2-Methylfluorene	38.62	26.17	8.4	6.35
1-Methylfluorene	33.38	30.67	6.9	7.22
4-Methyldibenzothiophene	97.88	146.41	17.3	17.25
2/3-Methyldibenzothiophene	93.09	43.21	15.3	14.37
1-Methyldibenzothiophene	29.61	15.74	7.38	5.69
3-Methylphenanthrene	601.11	247.84	60.88	82.23
2/4-Methylphenanthrene	93.09	43.21	15.3	14.37
2-Methylanthracene	126.82	99.23	23.88	28.31
9-Methylphenanthrene/1-Methylanthracene	462.85	217.28	49.74	70.18
1-Methylphenanthrene	358.71	139.28	38.52	49.76
2,7-Dimethylphenanthrene	108.63	48.16	14.25	15.58
1,7-Dimethylphenanthrene	112.99	51.42	11.99	17.66
Cadalene	1.74 J	7.9	4.74	4.51
Dehydroabietin(e)	U	U	U	U
Retene	10.32	35.77	6.93	9.32
C1-benzo(b)naphthothiophenes	373.13	315.05	63.61	86.58
C2-benzo(b)naphthothiophenes	229.74	200.98	44.5	63.28
C3-benzo(b)naphthothiophenes	144.69	141.53	40.41	48.76
C4-benzo(b)naphthothiophenes	68.68	52.16	25.02	23.46
Hopane	178.63	617.01	249.46	326.91

Surrogate Recoveries (%)

Naphthalene-d8	99	87	85	60
Phenanthrene-d10	108	100	98	79
Chrysene-d12	101	97	91	73
5b(H)-Cholane	111	98	108	95

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-49	
Battelle ID	S1471-P	
Sample Type	SA	
Collection Date	03/25/04	
Extraction Date	04/06/04	
Analysis Date	04/21/04	
Analytical Instrument	MS	
% Moisture	22.42	
Matrix	SEDIMENT	
Sample Size	23.62	
Size Unit-Basis	G_DRY	
Units	UG/KG_DRY	
Naphthalene	78.46	
C1-Naphthalenes	115.82	
C2-Naphthalenes	225.79	
C3-Naphthalenes	201.81	
C4-Naphthalenes	92.61	
Biphenyl	30.52	
Acenaphthylene	791.31	
Acenaphthene	70.16	
Dibenzofuran	114.81	
Fluorene	230.36	
C1-Fluorenes	165.82	
C2-Fluorenes	246.86	
C3-Fluorenes	587.47	
Anthracene	814.22	
Phenanthrene	4493.7	D
C1-Phenanthrenes/Anthracenes	2728.34	
C2-Phenanthrenes/Anthracenes	1702.7	
C3-Phenanthrenes/Anthracenes	660.03	
C4-Phenanthrenes/Anthracenes	188.86	
Dibenzothiophene	308.96	
C1-Dibenzothiophenes	347.86	
C2-Dibenzothiophenes	277.01	
C3-Dibenzothiophenes	132.34	
C4-Dibenzothiophenes	43.84	
Benzo(b)fluorene	210.07	
Fluoranthene	4872.56	D
Pyrene	4721	D
C1-Fluoranthenes/Pyrenes	2791.52	
C2-Fluoranthenes/Pyrenes	2032.57	
C3-Fluoranthenes/Pyrenes	770.07	
Benzo(a)anthracene	1502.3	
Chrysene	2416.21	
C1-Chrysenes	1402.83	
C2-Chrysenes	661.03	
C3-Chrysenes	257.01	
C4-Chrysenes	111.01	
Benzo(b)fluoranthene	1724.54	
Benzo(j/k)fluoranthene	1799.07	
Benzo(a)fluoranthene	448.56	
Benzo(e)pyrene	1580.66	
Benzo(a)pyrene	1654.23	
Perylene	340.04	
Indeno(1,2,3-cd)pyrene	1349.72	
Dibenz(a,h)anthracene	331.17	
Benzo(g,h,i)perylene	1241.54	
Benzo(b)naphtho(1,2-d)thiophene	98.78	
Benzo(b)naphtho(2,1-d)thiophene	419.05	
Benzo(b)naphtho(2,3-d)thiophene	125.27	
2-Methylnaphthalene	51.56	
1-Methynaphthalene	61.89	
2-Ethylnaphthalene	6.19	

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-49	
Battelle ID	S1471-P	
Sample Type	SA	
Collection Date	03/25/04	
Extraction Date	04/06/04	
Analysis Date	04/21/04	
Analytical Instrument	MS	
% Moisture	22.42	
Matrix	SEDIMENT	
Sample Size	23.62	
Size Unit-Basis	G_DRY	
Units	UG/KG_DRY	
1-Ethylnaphthalene	3.5	J
2,6-dimethylnaphthalene	44.15	
1,5-Dimethylnaphthalene	11.93	
2-Methylfluorene	55.06	
1-Methylfluorene	45.67	
4-Methyldibenzothiophene	124.46	
2/3-Methyldibenzothiophene	120.93	
1-Methyldibenzothiophene	35.34	
3-Methylphenanthrene	748.55	
2/4-Methylphenanthrene	120.93	
2-Methylanthracene	134.48	
9-Methylphenanthrene/1-Methylanthracene	530.41	
1-Methylphenanthrene	440.04	
2,7-Dimethylphenanthrene	127.6	
1,7-Dimethylphenanthrene	131.27	
Cadalene	2.14	J
Dehydroabietin(e)		U
Retene	14.05	
C1-benzo(b)naphthothiophenes	418.38	
C2-benzo(b)naphthothiophenes	244.75	
C3-benzo(b)naphthothiophenes	153.92	
C4-benzo(b)naphthothiophenes	67.25	
Hopane	198.44	

Surrogate Recoveries (%)

Naphthalene-d8	94
Phenanthrene-d10	98
Chrysene-d12	93
5b(H)-Cholane	112

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Procedural Blank
Battelle ID	BE161PB-P
Sample Type	PB
Collection Date	04/06/04
Extraction Date	04/06/04
Analysis Date	04/20/04
Analytical Instrument	MS
% Moisture	37.21
Matrix	SEDIMENT
Sample Size	18.44
Size Unit-Basis	G_DRY
Units	UG/KG_DRY
Naphthalene	0.2 J
C1-Naphthalenes	0.36 J
C2-Naphthalenes	U
C3-Naphthalenes	U
C4-Naphthalenes	U
Biphenyl	0.22 J
Acenaphthylene	0.09 J
Acenaphthene	U
Dibenzofuran	U
Fluorene	0.16 J
C1-Fluorenes	U
C2-Fluorenes	U
C3-Fluorenes	U
Anthracene	U
Phenanthrene	0.2 J
C1-Phenanthrenes/Anthracenes	U
C2-Phenanthrenes/Anthracenes	U
C3-Phenanthrenes/Anthracenes	U
C4-Phenanthrenes/Anthracenes	U
Dibenzothiophene	U
C1-Dibenzothiophenes	U
C2-Dibenzothiophenes	U
C3-Dibenzothiophenes	U
C4-Dibenzothiophenes	U
Benzo(b)fluorene	0.12 J
Fluoranthene	0.07 J
Pyrene	0.1 J
C1-Fluoranthenes/Pyrenes	0.5 J
C2-Fluoranthenes/Pyrenes	U
C3-Fluoranthenes/Pyrenes	U
Benzo(a)anthracene	0.08 J
Chrysene	0.11 J
C1-Chrysenes	U
C2-Chrysenes	U
C3-Chrysenes	U
C4-Chrysenes	U
Benzo(b)fluoranthene	U
Benzo(j/k)fluoranthene	U
Benzo(a)fluoranthene	U
Benzo(e)pyrene	U
Benzo(a)pyrene	U
Perylene	U
Indeno(1,2,3-cd)pyrene	0.6 N
Dibenz(a,h)anthracene	0.86 N
Benzo(g,h,i)perylene	0.52 N
Benzo(b)naphtho(1,2-d)thiophene	U
Benzo(b)naphtho(2,1-d)thiophene	U
Benzo(b)naphtho(2,3-d)thiophene	U
2-Methylnaphthalene	0.18 N
1-Methynaphthalene	0.17 J
2-Ethylnaphthalene	U

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Procedural Blank
Battelle ID	BE161PB-P
Sample Type	PB
Collection Date	04/06/04
Extraction Date	04/06/04
Analysis Date	04/20/04
Analytical Instrument	MS
% Moisture	37.21
Matrix	SEDIMENT
Sample Size	18.44
Size Unit-Basis	G_DRY
Units	UG/KG_DRY
1-Ethylnaphthalene	U
2,6-dimethylnaphthalene	U
1,5-Dimethylnaphthalene	U
2-Methylfluorene	U
1-Methylfluorene	U
4-Methyldibenzothiophene	U
2/3-Methyldibenzothiophene	U
1-Methyldibenzothiophene	U
3-Methylphenanthrene	U
2/4-Methylphenanthrene	U
2-Methylanthracene	U
9-Methylphenanthrene/1-Methylanthracene	U
1-Methylphenanthrene	U
2,7-Dimethylphenanthrene	U
1,7-Dimethylphenanthrene	U
Cadalene	U
Dehydroabietin(e)	U
Retene	U
C1-benzo(b)naphthothiophenes	U
C2-benzo(b)naphthothiophenes	U
C3-benzo(b)naphthothiophenes	U
C4-benzo(b)naphthothiophenes	U
Hopane	U

Surrogate Recoveries (%)

Naphthalene-d8	81
Phenanthrene-d10	89
Chrysene-d12	83
5b(H)-Cholane	98

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Laboratory Control Sample				
Battelle ID	BE162LCS-P				
Sample Type	LCS				
Collection Date	04/06/04				
Extraction Date	04/06/04				
Analysis Date	04/20/04				
Analytical Instrument	MS				
% Moisture	NA				
Matrix	SEDIMENT				
Sample Size	NA				
Size Unit-Basis	NA				
Units	NG		Target	% Recovery	Qualifier
Naphthalene	50.64		1000.55	5	N
C1-Naphthalenes		U			
C2-Naphthalenes		U			
C3-Naphthalenes		U			
C4-Naphthalenes		U			
Biphenyl	262.23		1003.00	26	N
Acenaphthylene	361.63		1000.40	36	N
Acenaphthene	423.8		1000.40	42	
Dibenzofuran		U			
Fluorene	619.43		1000.50	62	
C1-Fluorenes		U			
C2-Fluorenes		U			
C3-Fluorenes		U			
Anthracene	803.61		1000.40	80	
Phenanthrene	775.6		1000.45	78	
C1-Phenanthrenes/Anthracenes		U			
C2-Phenanthrenes/Anthracenes		U			
C3-Phenanthrenes/Anthracenes		U			
C4-Phenanthrenes/Anthracenes		U			
Dibenzothiophene		U			
C1-Dibenzothiophenes		U			
C2-Dibenzothiophenes		U			
C3-Dibenzothiophenes		U			
C4-Dibenzothiophenes		U			
Benzo(b)fluorene		U			
Fluoranthene	888.51		1000.40	89	
Pyrene	897.93		1000.40	90	
C1-Fluoranthenes/Pyrenes		U			
C2-Fluoranthenes/Pyrenes		U			
C3-Fluoranthenes/Pyrenes		U			
Benzo(a)anthracene	855.24		1000.55	85	
Chrysene	870.23		1000.50	87	
C1-Chrysenes		U			
C2-Chrysenes		U			
C3-Chrysenes		U			
C4-Chrysenes		U			
Benzo(b)fluoranthene	835		1000.50	83	
Benzo(j/k)fluoranthene	882.79		1000.35	88	
Benzo(a)fluoranthene		U			
Benzo(e)pyrene	815.41		997.60	82	
Benzo(a)pyrene	758.8		1000.55	76	
Perylene	698.89		1000.20	70	
Indeno(1,2,3-cd)pyrene	710.37		1000.60	71	
Dibenz(a,h)anthracene	725.53		1000.40	73	
Benzo(g,h,i)perylene	729.92		1000.50	73	
Benzo(b)naphtho(1,2-d)thiophene		U			
Benzo(b)naphtho(2,1-d)thiophene		U			
Benzo(b)naphtho(2,3-d)thiophene		U			
2-Methylnaphthalene	78.18		1000.50	8	N
1-Methynaphthalene	83.1		1002.50	8	N

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

LCS: S04-0117MS-Forensics_Master-Final

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	Laboratory Control Sample				
Battelle ID	BE162LCS-P				
Sample Type	LCS				
Collection Date	04/06/04				
Extraction Date	04/06/04				
Analysis Date	04/20/04				
Analytical Instrument	MS				
% Moisture	NA				
Matrix	SEDIMENT				
Sample Size	NA				
Size Unit-Basis	NA				
Units	NG		Target	% Recovery	Qualifier
2-Ethylnaphthalene		U			
1-Ethylnaphthalene		U			
2,6-dimethylnaphthalene	151.56		1001.00	15	N
1,5-Dimethylnaphthalene		U			
2-Methylfluorene		U			
1-Methylfluorene		U			
4-Methyldibenzothiophene		U			
2/3-Methyldibenzothiophene		U			
1-Methyldibenzothiophene		U			
3-Methylphenanthrene		U			
2/4-Methylphenanthrene		U			
2-Methylanthracene		U			
9-Methylphenanthrene/1-Methylanthracene		U			
1-Methylphenanthrene	583.42		1000.30	58	
2,7-Dimethylphenanthrene		U			
1,7-Dimethylphenanthrene		U			
Cadalene		U			
Dehydroabietin(e)		U			
Retene		U			
C1-benzo(b)naphthothiophenes		U			
C2-benzo(b)naphthothiophenes		U			
C3-benzo(b)naphthothiophenes		U			
C4-benzo(b)naphthothiophenes		U			
Hopane		U			

Surrogate Recoveries (%)

Naphthalene-d8	7	N
Phenanthrene-d10	78	
Chrysene-d12	79	
5b(H)-Cholane		NS

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	020326-01: SRM 1944			
Battelle ID	BE163SRM-P			
Sample Type	SRM			
Collection Date	04/06/04			
Extraction Date	04/06/04			
Analysis Date	04/20/04			
Analytical Instrument	MS			
% Moisture	1.25			
Matrix	SEDIMENT			
Sample Size	1.03			
Size Unit-Basis	G_DRY			
Units	UG/KG_DRY	Target	% Difference	Qualifier
Naphthalene	1153.35	1650.00	30.1	
C1-Naphthalenes	1008.02			
C2-Naphthalenes	1029.14			
C3-Naphthalenes	1405.37			
C4-Naphthalenes	1645.9			
Biphenyl	181.31			
Acenaphthylene	915.66			
Acenaphthene	262.47			
Dibenzofuran	283.94			
Fluorene	372.41			
C1-Fluorenes	461.37			
C2-Fluorenes	1120.3			
C3-Fluorenes	2138.4			
Anthracene	1346.21	1770.00	23.9	
Phenanthrene	4463.6	5270.00	15.3	
C1-Phenanthrenes/Anthracenes	4606.09			
C2-Phenanthrenes/Anthracenes	5372.44			
C3-Phenanthrenes/Anthracenes	3622.29			
C4-Phenanthrenes/Anthracenes	1723.3			
Dibenzothiophene	629.16			
C1-Dibenzothiophenes	1438.62			
C2-Dibenzothiophenes	2431.69			
C3-Dibenzothiophenes	2139.36			
C4-Dibenzothiophenes	1122.59			
Benzo(b)fluorene	589.36			
Fluoranthene	7320.72	8920.00	17.9	
Pyrene	7575.54	9700.00	21.9	
C1-Fluoranthenes/Pyrenes	5724.29			
C2-Fluoranthenes/Pyrenes	4197.25			
C3-Fluoranthenes/Pyrenes	2301.73			
Benzo(a)anthracene	4119.35	4720.00	12.7	
Chrysene	5297.43	5900.00	10.2	
C1-Chrysenes	3720.89			
C2-Chrysenes	2198.68			
C3-Chrysenes	1197.9			
C4-Chrysenes	596.54			
Benzo(b)fluoranthene	3920.89	3870.00	1.3	
Benzo(j/k)fluoranthene	3921.23	4390.00	10.7	
Benzo(a)fluoranthene	928.69	780.00	19.1	
Benzo(e)pyrene	3494.57	3280.00	6.5	
Benzo(a)pyrene	2984.05	4300.00	30.6	
Perylene	891.22	1170.00	23.8	
Indeno(1,2,3-cd)pyrene	2964.15	2780.00	6.6	
Dibenz(a,h)anthracene	812.37	759.00	7.0	
Benzo(g,h,i)perylene	2674.63	2840.00	5.8	
Benzo(b)naphtho(1,2-d)thiophene	233.7			
Benzo(b)naphtho(2,1-d)thiophene	984.15			
Benzo(b)naphtho(2,3-d)thiophene	310.53			
2-Methylnaphthalene	627.89			
1-Methynaphthalene	371.73			
2-Ethylnaphthalene	78.67			

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	020326-01: SRM 1944			
Battelle ID	BE163SRM-P			
Sample Type	SRM			
Collection Date	04/06/04			
Extraction Date	04/06/04			
Analysis Date	04/20/04			
Analytical Instrument	MS			
% Moisture	1.25			
Matrix	SEDIMENT			
Sample Size	1.03			
Size Unit-Basis	G_DRY			
Units	UG/KG_DRY		Target % Difference	Qualifier
1-Ethylnaphthalene	19.8			
2,6-dimethylnaphthalene	287.28			
1,5-Dimethylnaphthalene	47.43			
2-Methylfluorene	130.23			
1-Methylfluorene	158.72			
4-Methyldibenzothiophene	635.74			
2/3-Methyldibenzothiophene	407.06			
1-Methyldibenzothiophene	147.22			
3-Methylphenanthrene	1336.61			
2/4-Methylphenanthrene	407.06			
2-Methylanthracene	271.27			
9-Methylphenanthrene/1-Methylanthracene	1094.56			
1-Methylphenanthrene	761.72			
2,7-Dimethylphenanthrene	389.64			
1,7-Dimethylphenanthrene	377.67			
Cadalene	116.82			
Dehydroabietin(e)	704.8			
Retene	1024.73			
C1-benzo(b)naphthothiophenes	1502.38			
C2-benzo(b)naphthothiophenes	1277.48			
C3-benzo(b)naphthothiophenes	875.4			
C4-benzo(b)naphthothiophenes	418.67			
Hopane		U		

Surrogate Recoveries (%)

Naphthalene-d8	41	
Phenanthrene-d10	91	
Chrysene-d12	84	
5b(H)-Cholane		NS

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	GD81: North Slope Crude				
Battelle ID	BE212NSC-P				
Sample Type	NSC				
Collection Date	04/19/04				
Extraction Date	04/19/04				
Analysis Date	04/20/04				
Analytical Instrument	MS				
% Moisture	NA				
Matrix	SEDIMENT				
Sample Size	5.28				
Size Unit-Basis	MG_OIL				
Units	MG/KG_OIL		Target	% Difference	Qualifier
Naphthalene	689.11		714.43	3.5	
C1-Naphthalenes	1467.49		1534.53	4.4	
C2-Naphthalenes	1815.49		1897.27	4.3	
C3-Naphthalenes	1378.4		1436.53	4.0	
C4-Naphthalenes	762.91		773.42	1.4	
Biphenyl	201.68		216.49	6.8	
Acenaphthylene	3.23				
Acenaphthene	13.69				
Dibenzofuran	69.94		71.98	2.8	
Fluorene	81.09		87.56	7.4	
C1-Fluorenes	205.22		219.89	6.7	
C2-Fluorenes	327.06		341.20	4.1	
C3-Fluorenes	285.81		299.61	4.6	
Anthracene		U			
Phenanthrene	265.52		272.58	2.6	
C1-Phenanthrenes/Anthracenes	551.51		564.81	2.4	
C2-Phenanthrenes/Anthracenes	638.08		660.43	3.4	
C3-Phenanthrenes/Anthracenes	419.37		448.76	6.5	
C4-Phenanthrenes/Anthracenes	165.47		223.35	25.9	
Dibenzothiophene	222.03		218.80	1.5	
C1-Dibenzothiophenes	444.46		434.54	2.3	
C2-Dibenzothiophenes	563.7		551.44	2.2	
C3-Dibenzothiophenes	461.92		460.96	0.2	
C4-Dibenzothiophenes	253.5		236.77	7.1	
Benzo(b)fluorene	6.43				
Fluoranthene	4.07				
Pyrene	13.89				
C1-Fluoranthenes/Pyrenes	73.05		78.43	6.9	
C2-Fluoranthenes/Pyrenes	121.69		132.93	8.5	
C3-Fluoranthenes/Pyrenes	146.65		151.73	3.3	
Benzo(a)anthracene	5.19				
Chrysene	49.07		50.99	3.8	
C1-Chrysenes	78.85		81.69	3.5	
C2-Chrysenes	107.81		95.93	12.4	
C3-Chrysenes	89.84		89.87	0.0	
C4-Chrysenes	64.76		76.33	15.2	
Benzo(b)fluoranthene	6.42				
Benzo(j/k)fluoranthene		U			
Benzo(a)fluoranthene		U			
Benzo(e)pyrene	12.65				
Benzo(a)pyrene		U			
Perylene		U			
Indeno(1,2,3-cd)pyrene		U			
Dibenz(a,h)anthracene	1.24	J			
Benzo(g,h,i)perylene	3.41				
Benzo(b)naphtho(1,2-d)thiophene	10.64				
Benzo(b)naphtho(2,1-d)thiophene	40.72				
Benzo(b)naphtho(2,3-d)thiophene	4.61				
2-Methylnaphthalene	848.08				
1-Methynaphthalene	609.71				

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	GD81: North Slope Crude				
Battelle ID	BE212NSC-P				
Sample Type	NSC				
Collection Date	04/19/04				
Extraction Date	04/19/04				
Analysis Date	04/20/04				
Analytical Instrument	MS				
% Moisture	NA				
Matrix	SEDIMENT				
Sample Size	5.28				
Size Unit-Basis	MG_OIL				
Units	MG/KG_OIL		Target	% Difference	Qualifier
2-Ethylnaphthalene	84.81				
1-Ethylnaphthalene	37.6				
2,6-dimethylnaphthalene	448.36				
1,5-Dimethylnaphthalene	91.35				
2-Methylfluorene	30.96				
1-Methylfluorene	108.71				
4-Methyldibenzothiophene	209.21				
2/3-Methyldibenzothiophene	134.15				
1-Methyldibenzothiophene	60.26				
3-Methylphenanthrene	113.75				
2/4-Methylphenanthrene	134.15				
2-Methylanthracene		U			
9-Methylphenanthrene/1-Methylanthracene	171.91				
1-Methylphenanthrene	119.63				
2,7-Dimethylphenanthrene	20.72				
1,7-Dimethylphenanthrene	72.74				
Cadalene		U			
Dehydroabietin(e)		U			
Retene	30.02				
C1-benzo(b)naphthothiophenes	149.66				
C2-benzo(b)naphthothiophenes	197.39				
C3-benzo(b)naphthothiophenes	158.51				
C4-benzo(b)naphthothiophenes	79.08				
Hopane		U	171.67	100.0	N

Surrogate Recoveries (%)

Naphthalene-d8	99	
Phenanthrene-d10	103	
Chrysene-d12	91	
5b(H)-Cholane		NS

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	GD81: North Slope Crude				
Battelle ID	BE279NSC-P				
Sample Type	NSC				
Collection Date	4/30/2004				
Extraction Date	4/30/2004				
Analysis Date	5/1/2004				
Analytical Instrument	MS				
% Moisture	NA				
Matrix	OIL				
Sample Size	5.276				
Size Unit-Basis	MG_OIL				
Units	MG/KG_OIL		Target	% Difference	Qualifier
Naphthalene		U	714.43	100.0	N
C1-Naphthalenes		U	1534.53	100.0	N
C2-Naphthalenes		U	1897.27	100.0	N
C3-Naphthalenes		U	1436.53	100.0	N
C4-Naphthalenes		U	773.42	100.0	N
Biphenyl		U	216.49	100.0	N
Acenaphthylene		U			
Acenaphthene		U			
Dibenzofuran		U	71.98	100.0	N
Fluorene		U	87.56	100.0	N
C1-Fluorenes		U	219.89	100.0	N
C2-Fluorenes		U	341.20	100.0	N
C3-Fluorenes		U	299.61	100.0	N
Anthracene		U			
Phenanthrene		U	272.58	100.0	N
C1-Phenanthrenes/Anthra		U	564.81	100.0	N
C2-Phenanthrenes/Anthra		U	660.43	100.0	N
C3-Phenanthrenes/Anthra		U	448.76	100.0	N
C4-Phenanthrenes/Anthra		U	223.35	100.0	N
Dibenzothiophene		U	218.80	100.0	N
C1-Dibenzothiophenes		U	434.54	100.0	N
C2-Dibenzothiophenes		U	551.44	100.0	N
C3-Dibenzothiophenes		U	460.96	100.0	N
C4-Dibenzothiophenes		U	236.77	100.0	N
Benzo(b)fluorene		U			
Fluoranthene		U			
Pyrene		U			
C1-Fluoranthenes/Pyrenes		U	78.43	100.0	N
C2-Fluoranthenes/Pyrenes		U	132.93	100.0	N
C3-Fluoranthenes/Pyrenes		U	151.73	100.0	N
Benzo(a)anthracene		U			
Chrysene		U	50.99	100.0	N
C1-Chrysenes		U	81.69	100.0	N
C2-Chrysenes		U	95.93	100.0	N
C3-Chrysenes		U	89.87	100.0	N
C4-Chrysenes		U	76.33	100.0	N
Benzo(b)fluoranthene		U			
Benzo(j/k)fluoranthene		U			
Benzo(a)fluoranthene		U			
Benzo(e)pyrene		U			
Benzo(a)pyrene		U			
Perylene		U			
Indeno(1,2,3-cd)pyrene		U			
Dibenz(a,h)anthracene		U			
Benzo(g,h,i)perylene		U			
Benzo(b)naphtho(1,2-d)thi		U			
Benzo(b)naphtho(2,1-d)thi		U			
Benzo(b)naphtho(2,3-d)thi		U			
2-Methylnaphthalene		U			
1-Methynaphthalene		U			

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

NSC: S04-0117MS-Forensics_Master-Final

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	GD81: North Slope Crude			
Battelle ID	BE279NSC-P			
Sample Type	NSC			
Collection Date	4/30/2004			
Extraction Date	4/30/2004			
Analysis Date	5/1/2004			
Analytical Instrument	MS			
% Moisture	NA			
Matrix	OIL			
Sample Size	5.276			
Size Unit-Basis	MG_OIL			
Units	MG/KG_OIL		Target % Difference	Qualifier
2-Ethylnaphthalene		U		
1-Ethylnaphthalene		U		
2,6-dimethylnaphthalene		U		
1,5-Dimethylnaphthalene		U		
2-Methylfluorene		U		
1-Methylfluorene		U		
4-Methyldibenzothiophene		U		
2/3-Methyldibenzothiopher		U		
1-Methyldibenzothiophene		U		
3-Methylphenanthrene		U		
2/4-Methylphenanthrene		U		
2-Methylanthracene		U		
9-Methylphenanthrene/1-M		U		
1-Methylphenanthrene		U		
2,7-Dimethylphenanthrene		U		
1,7-Dimethylphenanthrene		U		
Cadalene		U		
Dehydroabietin(e)		U		
Retene		U		
C1-benzo(b)naphthothiopt		U		
C2-benzo(b)naphthothiopt		U		
C3-benzo(b)naphthothiopt		U		
C4-benzo(b)naphthothiopt		U		
Hopane	147.6		171.67	14.0

Surrogate Recoveries (%

Naphthalene-d8	0	N
Phenanthrene-d10	0	N
Chrysene-d12	0	N
5b(H)-Cholane	108	

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

NSC: S04-0117MS-Forensics_Master-Final

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06	AH-06			
Battelle ID	S1432-P	S1432MS-P			
Sample Type	SA	MS			
Collection Date	03/23/04	3/23/2004			
Extraction Date	04/06/04	4/6/2004			
Analysis Date	04/20/04	4/20/2004			
Analytical Instrument	MS	MS			
% Moisture	61.05	60.22			
Matrix	SEDIMENT	SEDIMENT			
Sample Size	11.82	6.13			
Size Unit-Basis	G_DRY	G_DRY			
Units	UG/KG_DRY	UG/KG_DRY	Target	% Recovery	Qualifier
Naphthalene	18.32	116.09	163.22	60	
C1-Naphthalenes	15.08	151.04			
C2-Naphthalenes	33.08	95.22			
C3-Naphthalenes	19.61	90.34			
C4-Naphthalenes	13.84	14.53			
Biphenyl	9.3	125.65	163.62	71	
Acenaphthylene	58.74	183.07	163.20	76	
Acenaphthene	8.62	136.76	163.20	79	
Dibenzofuran	12.24	12.42			
Fluorene	16.83	151.72	163.21	83	
C1-Fluorenes	12.08	11.45			
C2-Fluorenes	21.9	19.76			
C3-Fluorenes	44.07	43.96			
Anthracene	93.37	238.69	163.20	89	
Phenanthrene	177.09	318.75	163.21	87	
C1-Phenanthrenes/Anthracenes	126.92	224.58			
C2-Phenanthrenes/Anthracenes	133.7	126.89			
C3-Phenanthrenes/Anthracenes	49.58	51.28			
C4-Phenanthrenes/Anthracenes	21.08	20.58			
Dibenzothiophene	13.46	15.66			
C1-Dibenzothiophenes	17.93	18.32			
C2-Dibenzothiophenes	22.67	22.22			
C3-Dibenzothiophenes	19.97	18.04			
C4-Dibenzothiophenes	11.01	11.04			
Benzo(b)fluorene	58.93	59.41			
Fluoranthene	376.06	504.16	163.20	78	
Pyrene	406.32	535.44	163.20	79	
C1-Fluoranthenes/Pyrenes	252.12	242.74			
C2-Fluoranthenes/Pyrenes	159.08	152.39			
C3-Fluoranthenes/Pyrenes	80.01	73.85			
Benzo(a)anthracene	167.23	325.67	163.22	97	
Chrysene	292.35	420.73	163.21	79	
C1-Chrysenes	124.12	120.67			
C2-Chrysenes	64.94	63			
C3-Chrysenes	36.63	36.12			
C4-Chrysenes	28.36	26.61			
Benzo(b)fluoranthene	280.68	441.38	163.21	98	
Benzo(j/k)fluoranthene	270.95	410.93	163.19	86	
Benzo(a)fluoranthene	58.17	56.28			
Benzo(e)pyrene	230.03	373.94	162.74	88	
Benzo(a)pyrene	213.6	362.01	163.22	91	
Perylene	71.44	234.31	163.16	100	
Indeno(1,2,3-cd)pyrene	204.58	365.22	163.23	98	
Dibenz(a,h)anthracene	43.37	204.07	163.20	98	
Benzo(g,h,i)perylene	173.03	317.81	163.21	89	
Benzo(b)naphtho(1,2-d)thiophene	9.74	9.85			
Benzo(b)naphtho(2,1-d)thiophene	38.16	37.99			
Benzo(b)naphtho(2,3-d)thiophene	11.73	12.25			
2-Methylnaphthalene	9.24	79.32	163.21	43	
1-Methynaphthalene	4.98	70.66	163.54	40	
2-Ethylnaphthalene	1.31 J	1.64 J			

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06		AH-06				
Battelle ID	S1432-P		S1432MS-P				
Sample Type	SA		MS				
Collection Date	03/23/04		3/23/2004				
Extraction Date	04/06/04		4/6/2004				
Analysis Date	04/20/04		4/20/2004				
Analytical Instrument	MS		MS				
% Moisture	61.05		60.22				
Matrix	SEDIMENT		SEDIMENT				
Sample Size	11.82		6.13				
Size Unit-Basis	G_DRY		G_DRY				
Units	UG/KG_DRY		UG/KG_DRY		Target	% Recovery	Qualifier
1-Ethylnaphthalene	0.4	J	0.39	J			
2,6-dimethylnaphthalene	16.53		78.57		163.30	38	N
1,5-Dimethylnaphthalene	1.15	J	1.03	J			
2-Methylfluorene	3.03		3.03				
1-Methylfluorene	3.23		3.27				
4-Methyldibenzothiophene	6.26		5.95				
2/3-Methyldibenzothiophene	5.87		6.2				
1-Methyldibenzothiophene	2.15		2.02				
3-Methylphenanthrene	30.26		28.74				
2/4-Methylphenanthrene	5.87		6.2				
2-Methylanthracene	14.12		13.57				
9-Methylphenanthrene/1-Methylanthracene	27.2		33.74				
1-Methylphenanthrene	18.66		113.78		163.18	58	
2,7-Dimethylphenanthrene	6.11		6.16				
1,7-Dimethylphenanthrene	7.21		6.74				
Cadalene	2.54		2.7				
Dehydroabietin(e)		U		U			
Retene	5.76		5.52				
C1-benzo(b)naphthothiophenes	41.93		41.38				
C2-benzo(b)naphthothiophenes	31.79		32.99				
C3-benzo(b)naphthothiophenes	27.8		26.81				
C4-benzo(b)naphthothiophenes	10.7		14.06				
Hopane	213.13			U			

Surrogate Recoveries (%)

Naphthalene-d8	70	63	
Phenanthrene-d10	94	87	
Chrysene-d12	85	81	
5b(H)-Cholane	100		NS

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06						
Battelle ID	S1432MSD-P						
Sample Type	MSD						
Collection Date	3/23/2004						
Extraction Date	4/6/2004						
Analysis Date	4/21/2004						
Analytical Instrument	MS						
% Moisture	62.24						
Matrix	SEDIMENT						
Sample Size	5.81						
Size Unit-Basis	G_DRY						
Units	UG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
Naphthalene	115.1		172.21	56		6.9	
C1-Naphthalenes	152.71						
C2-Naphthalenes	98.37						
C3-Naphthalenes	94.01						
C4-Naphthalenes	14.33						
Biphenyl	132.05		172.63	71		0.0	
Acenaphthylene	187.52		172.19	75		1.3	
Acenaphthene	141.79		172.19	77		2.6	
Dibenzofuran	12.66						
Fluorene	160.44		172.20	83		0.0	
C1-Fluorenes	11.22						
C2-Fluorenes	22.5						
C3-Fluorenes	49.27						
Anthracene	242.36		172.19	87		2.3	
Phenanthrene	331.98		172.19	90		3.4	
C1-Phenanthrenes/Anthra	234.56						
C2-Phenanthrenes/Anthra	127.54						
C3-Phenanthrenes/Anthra	51.18						
C4-Phenanthrenes/Anthra	21.16						
Dibenzothiophene	16.14						
C1-Dibenzothiophenes	19.31						
C2-Dibenzothiophenes	21.55						
C3-Dibenzothiophenes	17.71						
C4-Dibenzothiophenes	10.03						
Benzo(b)fluorene	52.27						
Fluoranthene	532.39		172.19	91		15.4	
Pyrene	551.96		172.19	85		7.3	
C1-Fluoranthenes/Pyrenes	235.3						
C2-Fluoranthenes/Pyrenes	156.11						
C3-Fluoranthenes/Pyrenes	77.06						
Benzo(a)anthracene	327.85		172.21	93		4.2	
Chrysene	415.78		172.20	72		9.3	
C1-Chrysenes	120.81						
C2-Chrysenes	62.47						
C3-Chrysenes	36.81						
C4-Chrysenes	26.09						
Benzo(b)fluoranthene	461.7		172.20	105		6.9	
Benzo(j/k)fluoranthene	415.76		172.18	84		2.4	
Benzo(a)fluoranthene	55.68						
Benzo(e)pyrene	383.02		171.70	89		1.1	
Benzo(a)pyrene	366.55		172.21	89		2.2	
Perylene	240.11		172.15	98		2.0	
Indeno(1,2,3-cd)pyrene	377.7		172.22	101		3.0	
Dibenz(a,h)anthracene	215.61		172.19	100		2.0	
Benzo(g,h,i)perylene	327.68		172.20	90		1.1	
Benzo(b)naphtho(1,2-d)thi	9.71						
Benzo(b)naphtho(2,1-d)thi	37.1						
Benzo(b)naphtho(2,3-d)thi	12.15						
2-Methylnaphthalene	80.13		172.20	41		4.8	
1-Methynaphthalene	71.84		172.55	39	N	2.5	
2-Ethylnaphthalene	1.24	J					

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

MS: S04-0117MS-Forensics_Master-Final

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-06						
Battelle ID	S1432MSD-P						
Sample Type	MSD						
Collection Date	3/23/2004						
Extraction Date	4/6/2004						
Analysis Date	4/21/2004						
Analytical Instrument	MS						
% Moisture	62.24						
Matrix	SEDIMENT						
Sample Size	5.81						
Size Unit-Basis	G_DRY						
Units	UG/KG_DRY		Target	% Recovery	Qualifier	RPD (%)	Qualifier
1-Ethylnaphthalene	0.38	J					
2,6-dimethylnaphthalene	82.13		172.29	38	N	0.0	
1,5-Dimethylnaphthalene	0.9	J					
2-Methylfluorene	2.94						
1-Methylfluorene	3.4						
4-Methyldibenzothiophene	6.12						
2/3-Methyldibenzothiopher	6.37						
1-Methyldibenzothiophene	1.97						
3-Methylphenanthrene	30.41						
2/4-Methylphenanthrene	6.37						
2-Methylanthracene	12.45						
9-Methylphenanthrene/1-M	37.65						
1-Methylphenanthrene	118.69		172.17	58		0.0	
2,7-Dimethylphenanthrene	6.02						
1,7-Dimethylphenanthrene	7.02						
Cadalene	2.34						
Dehydroabietin(e)		U					
Retene	6.54						
C1-benzo(b)naphthothiopl	41.07						
C2-benzo(b)naphthothiopl	32.9						
C3-benzo(b)naphthothiopl	24.88						
C4-benzo(b)naphthothiopl	12.58						
Hopane		U					

Surrogate Recoveries (%

Naphthalene-d8	60	
Phenanthrene-d10	88	
Chrysene-d12	81	
5b(H)-Cholane		NS

Not Surrogate Corrected

Analyzed by Roush, James
6/3/2004

MS: S04-0117MS-Forensics_Master-Final

Battelle
The Business of Innovation

Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-26	AH-26		
Battelle ID	S1505-P	S1505DUP-P		
Sample Type	SA	QADU		
Collection Date	03/27/04	3/27/2004		
Extraction Date	04/06/04	4/6/2004		
Analysis Date	04/22/04	4/22/2004		
Analytical Instrument	MS	MS		
% Moisture	55.9	55.9		
Matrix	SEDIMENT	SEDIMENT		
Sample Size	13.52	13.28		
Size Unit-Basis	G_DRY	G_DRY		
Units	UG/KG_DRY	UG/KG_DRY	RPD	Qualifier
Naphthalene	36.52	31.62	14.4	
C1-Naphthalenes	43.61	37.49	15.1	
C2-Naphthalenes	88.04	77.21	13.1	
C3-Naphthalenes	63.73	58.44	8.7	
C4-Naphthalenes	35.36	31.7	10.9	
Biphenyl	13.14	11.49	13.4	
Acenaphthylene	285.68	257.41	10.4	
Acenaphthene	37.73	29.73	23.7	
Dibenzofuran	37.46	32.37	14.6	
Fluorene	74.23	62.11	17.8	
C1-Fluorenes	51.01	44.52	13.6	
C2-Fluorenes	82.82	75.31	9.5	
C3-Fluorenes	203.48	185.72	9.1	
Anthracene	314.15	283.67	10.2	
Phenanthrene	1193.18	1072.51	10.7	
C1-Phenanthrenes/Anthracenes	755.53	683.72	10.0	
C2-Phenanthrenes/Anthracenes	521.04	474.52	9.3	
C3-Phenanthrenes/Anthracenes	212.72	197.77	7.3	
C4-Phenanthrenes/Anthracenes	61.34	59.21	3.5	
Dibenzothiophene	81.59	71.48	13.2	
C1-Dibenzothiophenes	96.72	87.13	10.4	
C2-Dibenzothiophenes	87.73	77.52	12.4	
C3-Dibenzothiophenes	51.52	44.89	13.8	
C4-Dibenzothiophenes	22.62	18.53	19.9	
Benzo(b)fluorene	120.13	110.87	8.0	
Fluoranthene	1519.36	1384.92	9.3	
Pyrene	1533.21	1408.29	8.5	
C1-Fluoranthenes/Pyrenes	966.84	889.77	8.3	
C2-Fluoranthenes/Pyrenes	688.93	632.78	8.5	
C3-Fluoranthenes/Pyrenes	277.97	252.3	9.7	
Benzo(a)anthracene	535.47	470.18	13.0	
Chrysene	871.45	802.05	8.3	
C1-Chrysenes	484.29	439.22	9.8	
C2-Chrysenes	240.83	219.55	9.2	
C3-Chrysenes	106.39	95.03	11.3	
C4-Chrysenes	58.94	50.78	14.9	
Benzo(b)fluoranthene	789.32	730.45	7.7	
Benzo(j/k)fluoranthene	709.63	644.63	9.6	
Benzo(a)fluoranthene	190.53	171.31	10.6	
Benzo(e)pyrene	660.69	604.38	8.9	
Benzo(a)pyrene	664.35	593.03	11.3	
Perylene	150.63	134.77	11.1	
Indeno(1,2,3-cd)pyrene	572.98	522.87	9.1	
Dibenz(a,h)anthracene	137.19	120.86	12.7	
Benzo(g,h,i)perylene	498.24	451.22	9.9	
Benzo(b)naphtho(1,2-d)thiophene	34.2	30.57	11.2	
Benzo(b)naphtho(2,1-d)thiophene	132.47	118.7	11.0	
Benzo(b)naphtho(2,3-d)thiophene	37.78	33.58	11.8	
2-Methylnaphthalene	21.2	18.56	13.3	
1-Methynaphthalene	21.37	17.73	18.6	
2-Ethylnaphthalene	3.34	2.95	12.4	

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Project Client: EA Engineering
Project Name: Davisville Naval Sediment Study
Project Number: G004976-0001

Client ID	AH-26		AH-26			
Battelle ID	S1505-P		S1505DUP-P			
Sample Type	SA		QADU			
Collection Date	03/27/04		3/27/2004			
Extraction Date	04/06/04		4/6/2004			
Analysis Date	04/22/04		4/22/2004			
Analytical Instrument	MS		MS			
% Moisture	55.9		55.9			
Matrix	SEDIMENT		SEDIMENT			
Sample Size	13.52		13.28			
Size Unit-Basis	G_DRY		G_DRY			
Units	UG/KG_DRY		UG/KG_DRY		RPD	Qualifier
1-Ethylnaphthalene	1.22	J	1.05	J	NA	
2,6-dimethylnaphthalene	27.87		25.86		7.5	
1,5-Dimethylnaphthalene	3.87		3.42		12.3	
2-Methylfluorene	14.73		13.14		11.4	
1-Methylfluorene	12.99		11.55		11.7	
4-Methyldibenzothiophene	35.68		31.91		11.2	
2/3-Methyldibenzothiophene	30.87		28.79		7.0	
1-Methyldibenzothiophene	10.05		9.24		8.4	
3-Methylphenanthrene	206.62		184.21		11.5	
2/4-Methylphenanthrene	30.87		28.79		7.0	
2-Methylanthracene	48.35		43.77		9.9	
9-Methylphenanthrene/1-Methylanthracene	151.47		139.19		8.4	
1-Methylphenanthrene	115.64		107.26		7.5	
2,7-Dimethylphenanthrene	34.83		32.57		6.7	
1,7-Dimethylphenanthrene	37.41		35.8		4.4	
Cadalene	2.25		1.89		17.4	
Dehydroabietin(e)		U		U	NA	
Retene	9.44		10.42		9.9	
C1-benzo(b)naphthothiophenes	138.18		124.83		10.2	
C2-benzo(b)naphthothiophenes	91.24		81.95		10.7	
C3-benzo(b)naphthothiophenes	65.94		56.12		16.1	
C4-benzo(b)naphthothiophenes	27.73		24.99		10.4	
Hopane	205.02		195.99		4.5	

Surrogate Recoveries (%)

Naphthalene-d8	60	54
Phenanthrene-d10	75	69
Chrysene-d12	69	65
5b(H)-Cholane	102	103

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Concentrations of Semivolatile Organic Compounds

Project Name: Cutler Fire Training Area
Project Number: G469125-41

Client ID:	Diesel Unaltered	Diesel 50% Combusted	Diesel 100% Combusted
Battelle ID:	ZM25IC3	W7747-C50-D	W7747-C100-D
Matrix:	NA	Product	Product
Batch ID:	01-562	01-562	01-562
Analytical Method:	8270M	8270M	8270M
Data File:	D0949.D	D1014.D	D1015.D
Sample Collection Date:	10/9/01	10/9/01	10/9/01
Sample Receipt Date:	10/9/01	10/9/01	10/9/01
Sample Extraction Date:	10/12/01	10/18/01	10/18/01
Sample Analysis Date:	11/9/01	11/13/01	11/13/01
Sample Size (g dry weight or L):	50.60 mg	1476.28 mg	164.56 mg
Percent Solids:	100	NA	NA
Dilution Factor:	10	200	27
Secondary Dilution Factor:	2	1	1
Units:	mg/kg	mg/kg	mg/kg
Naphthalene	1020	103	4.16
C1-Naphthalenes	5450	732	11.3
C2-Naphthalenes	6450	1610	18.6
C3-Naphthalenes	5970	2510	4.07
C4-Naphthalenes	3460	2310	106
Biphenyl	834	113	1.43
Acenaphthylene	21.8	139	41.4
Acenaphthene	171	63.3	2.52
Dibenzofuran	155	61.4	2.95
Fluorene	452	289	26.9
C1-Fluorenes	1390	1100	12.2
C2-Fluorenes	1950	2110	56.3
C3-Fluorenes	1520	2120	128
Dibenzothiophene	406	438	12.7
C1-Dibenzothiophenes	2130	2270	85.7
C2-Dibenzothiophenes	3460	4520	370
C3-Dibenzothiophenes	2660	3210	582
C4-Dibenzothiophenes	960	1580	388
Anthracene	65.8	0.676 U	119
Phenanthrene	844	900	411
C1-Phenanthrenes/Anthracenes	1950	2530	433
C2-Phenanthrenes/Anthracenes	2410	3570	422
C3-Phenanthrenes/Anthracenes	1140	2240	440
C4-Phenanthrenes/Anthracenes	429	815	239
Fluoranthene	22.8	106	405
Pyrene	121	327	883
C1-Fluoranthenes/Pyrenes	2200	4800	980
C2-Fluoranthenes/Pyrenes	1410	3010	681
C3-Fluoranthenes/Pyrenes	512	1180	307
Benzo(a)anthracene	1.59	22.5	254
Chrysene	8.22	32.8	267
C1-Chrysenes	109	31	256
C2-Chrysenes	47.9	14.7	116
C3-Chrysenes	0.988 U	8.36	50.3
C4-Chrysenes	0.988 U	0.676 U	16.7
Benzo(b)fluoranthene	0.988 U	8.58	120
Benzo(j/k)fluoranthene	0.988 U	13.6	181
Benzo(e)pyrene	1.98 U	6.92	106
Benzo(a)pyrene	0.988 U	17.6	248
Perylene	1.98 U	3.52	46.3
Indeno(1,2,3-c,d)pyrene	1.98 U	9.66	147
Dibenz(a,h)anthracene	1.98 U	1.03	17.8
Benzo(g,h,i)perylene	1.98 U	9.09	150
Total PAH	49500	44900	9150
Project-Specific PAH Isomers			
2-Methylnaphthalene	3440	441	5.65
1-Methylnaphthalene	2000	290	5.68
2,6-Dimethylnaphthalene	3560	820	4.83
2,3,5-Trimethylnaphthalene	1420	672	8.78
1-Methylphenanthrene	430	815	371
Surrogate Recoveries (%R)			
d8-Naphthalene	NA	NA	NA
d10-Phenanthrene	NA	NA	NA
d12-Chrysene	NA	NA	NA

Data Qualifiers
& - Exceeds QC criteria
B - Analyte detected < 5x PB.
D - Result from higher dilution.
DO - Surrogates diluted out.
E - Result above calibration curve.
J - Result less than reporting limit.
ME - Matrix effect.
NA - Not applicable.
U - Undetected.

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Concentrations of Semivolatile Organic Compounds

Project Name: Cutler Fire Training Area
Project Number: G469125-41

Client ID:	Diesel Unaltered	Diesel 50% Evaporated	Diesel 100% Evaporated
Battelle ID:	ZM25IC3	W7747-E50-D	W7747-E100-D
Matrix:	NA	Product	Product
Batch ID:	01-562	01-562	01-562
Analytical Method:	8270M	8270M	8270M
Data File:	D0949.D	D0987.D	D1013.D
Sample Collection Date:	10/9/01	10/9/01	10/9/01
Sample Receipt Date:	10/9/01	10/9/01	10/9/01
Sample Extraction Date:	10/12/01	10/18/01	10/18/01
Sample Analysis Date:	11/9/01	11/13/01	11/13/01
Sample Size (g dry weight or L):	50.60 mg	6841.80 mg	319.92 mg
Percent Solids:	100	NA	NA
Dilution Factor:	10	1000	50
Secondary Dilution Factor:	2	1	1
Units:	mg/kg	mg/kg	mg/kg
Naphthalene	1020	1.13	336
C1-Naphthalenes	5450	177	2370
C2-Naphthalenes	6450	1060	3170
C3-Naphthalenes	5970	2140	2960
C4-Naphthalenes	3460	1820	1840
Biphenyl	634	58.5	298
Acenaphthylene	21.8	2.01	8.49
Acenaphthene	171	45.8	85.1
Dibenzofuran	155	53.8	75.5
Fluorene	452	232	235
C1-Fluorenes	1390	688	733
C2-Fluorenes	1950	1100	1010
C3-Fluorenes	1520	949	886
Dibenzothiophene	406	266	272
C1-Dibenzothiophenes	2130	1440	1130
C2-Dibenzothiophenes	3480	2420	1880
C3-Dibenzothiophenes	2660	1430	2380
C4-Dibenzothiophenes	960	631	1650
Anthracene	65.8	60	0.781 U
Phenanthrene	844	547	434
C1-Phenanthrenes/Anthracenes	1950	1310	1240
C2-Phenanthrenes/Anthracenes	2410	1600	1710
C3-Phenanthrenes/Anthracenes	1140	879	1750
C4-Phenanthrenes/Anthracenes	429	307	1020
Fluoranthene	22.8	19	16.9
Pyrene	121	112	116
C1-Fluoranthenes/Pyrenes	2200	1710	4550
C2-Fluoranthenes/Pyrenes	1410	1000	5080
C3-Fluoranthenes/Pyrenes	512	374	2890
Benzo(a)anthracene	1.59	1.29	7
Chrysene	8.22	8.57	38.6
C1-Chrysenes	109	82.9	657
C2-Chrysenes	47.9	41.1	447
C3-Chrysenes	0.988 U	13.9	213
C4-Chrysenes	0.988 U	0.731 U	71.6
Benzo(b)fluoranthene	0.988 U	0.731 U	1.48
Benzo(j/k)fluoranthene	0.988 U	0.731 U	0.811
Benzo(e)pyrene	1.98 U	0.731 U	2.16
Benzo(a)pyrene	0.988 U	0.731 U	0.781 U
Perylene	1.98 U	1.46 U	1.56 U
Indeno(1,2,3-c,d)pyrene	1.98 U	1.46 U	1.56 U
Dibenz(a,h)anthracene	1.98 U	1.46 U	1.56 U
Benzo(g,h,i)perylene	1.98 U	1.46 U	1.56 U
Total PAH	49500	22600	41600
Project-Specific PAH Isomers			
2-Methylnaphthalene	3440	100	1490
1-Methylnaphthalene	2000	76.6	877
2,6-Dimethylnaphthalene	3560	575	1710
2,3,5-Trimethylnaphthalene	1420	643	735
1-Methylphenanthrene	430	339	240
Surrogate Recoveries (%R)			
d8-Naphthalene	NA	NA	NA
d10-Phenanthrene	NA	NA	NA
d12-Chrysene	NA	NA	NA

Data Qualifiers
& - Exceeds QC criteria
B - Analyte detected < 5x PB.
D - Result from higher dilution.
DO - Surrogates diluted out.
E - Result above calibration curve.
J - Result less than reporting limit.
ME - Matrix effect.
NA - Not applicable.
U - Undetected.

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Concentrations of Semivolatile Organic Compounds

Project Name: Cutler Fire Training Area
Project Number: G469125-41

Client ID:	Kerosene Unaltered	Kerosene 50% Combusted	Kerosene 100% Combusted
Battelle ID:	ZR36IC	W7748-C50-D	W7748-C100-D
Matrix:	Product	Product	Product
Batch ID:	02-004	01-562	01-562
Analytical Method:	8270M	8270M	8270M
Data File:	B7877.D	D1018.D	D1019.D
Sample Collection Date:	10/9/01	10/9/01	10/9/01
Sample Receipt Date:	10/9/01	10/9/01	10/9/01
Sample Extraction Date:	1/7/02	10/18/01	10/18/01
Sample Analysis Date:	1/8/02	11/14/01	11/14/01
Sample Size (g dry weight or L):	10.12 mg	718.40 mg	1791.00 mg
Percent Solids:	NA	NA	NA
Dilution Factor:	1	100	250
Secondary Dilution Factor:	1	5000	1
Units:	mg/kg	mg/kg	mg/kg
Naphthalene	1200	836 D	0.514
C1-Naphthalenes	4280	4670	2.41
C2-Naphthalenes	2690	2280	3.78
C3-Naphthalenes	1110	1890	3.42
C4-Naphthalenes	114	314	1.56
Biphenyl	292	1140	0.0014 U
Acenaphthylene	9.12	314	0.386
Acenaphthene	22	225	0.0014 U
Dibenzofuran	43.7	232	0.0014 U
Fluorene	32.1	234	0.153
C1-Fluorenes	8.72	0.696 U	0.698 U
C2-Fluorenes	0.494 U	0.896 U	0.698 U
C3-Fluorenes	0.494 U	0.696 U	0.698 U
Dibenzothiophene	0.494 U	34.1	0.698 U
C1-Dibenzothiophenes	0.494 U	87.6	0.698 U
C2-Dibenzothiophenes	0.494 U	117	0.698 U
C3-Dibenzothiophenes	0.494 U	93.7	0.698 U
C4-Dibenzothiophenes	0.494 U	41.3	0.698 U
Anthracene	0.0141 U	10.7	0.0014 U
Phenanthrene	2.53	41.8	0.612
C1-Phenanthrenes/Anthracenes	0.494 U	91.9	0.698 U
C2-Phenanthrenes/Anthracenes	0.494 U	93.1	0.698 U
C3-Phenanthrenes/Anthracenes	0.494 U	46.7	0.698 U
C4-Phenanthrenes/Anthracenes	0.494 U	1.93	0.698 U
Fluoranthene	4.24	2.14	2.16
Pyrene	20.3	64.3	4.5
C1-Fluoranthenes/Pyrenes	0.494 U	34.8	6.07
C2-Fluoranthenes/Pyrenes	0.494 U	14.6	3.12
C3-Fluoranthenes/Pyrenes	0.494 U	4.59	1.7
Benzo(a)anthracene	1.41	8.72	9.52
Chrysene	1.17	8.66	8.9
C1-Chrysenes	0.494 U	3.14	6.44
C2-Chrysenes	0.494 U	0.817	4.66
C3-Chrysenes	0.494 U	0.696 U	0.698 U
C4-Chrysenes	0.494 U	0.696 U	0.696 U
Benzo(b)fluoranthene	0.494 U	3.03	9.87
Benzo(j/k)fluoranthene	0.494 U	8.03	17.2
Benzo(e)pyrene	0.988 U	6.96	8.91
Benzo(a)pyrene	0.494 U	6.94	24.2
Perylene	0.988 U	1.18	4.2
Indeno(1,2,3-c,d)pyrene	0.988 U	3.35	13.4
Dibenz(a,h)anthracene	0.988 U	0.0508	0.882
Benzo(g,h,i)perylene	0.988 U	0.327	15.6
Total PAH	9830	13000	154
Project-Specific PAH Isomers			
2-Methylnaphthalene	2350	2560 D	1.21
1-Methylnaphthalene	1920	2110 D	1.19
2,6-Dimethylnaphthalene	1190	1790 D	1.14
2,3,5-Trimethylnaphthalene	178	925	0.0014 U
1-Methylphenanthrene	0.0141 U	60.4	0.451
Surrogate Recoveries (%R)			
d8-Naphthalene	NA	NA	NA
d10-Phenanthrene	NA	NA	NA
d12-Chrysene	NA	NA	NA

Data Qualifiers
& - Exceeds QC criteria
B - Analyte detected < 5x PB.
D - Result from higher dilution.
DO - Surrogates diluted out.
E - Result above calibration curve.
J - Result less than reporting limit.
ME - Matrix effect.
NA - Not applicable.
U - Undetected.

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Concentrations of Semivolatile Organic Compounds

Project Name: Cutler Fire Training Area
Project Number: G469125-41

Client ID:	Kerosene Unaltered	Kerosene 50% Evaporated	Kerosene 100% Evaporated
Battelle ID:	ZR36IC	W7748-E50-D	W7748-E100-D
Matrix:	Product	Product	Product
Batch ID:	02-004	01-562	01-562
Analytical Method:	8270M	8270M	8270M
Data File:	B7877.D	D1017.D	D0993.D
Sample Collection Date:	10/9/01	10/9/01	10/9/01
Sample Receipt Date:	10/9/01	10/9/01	10/9/01
Sample Extraction Date:	1/7/02	10/18/01	10/18/01
Sample Analysis Date:	1/8/02	11/14/01	11/14/01
Sample Size (g dry weight or L):	10.12 mg	132.00 mg	3.56 mg
Percent Solids:	NA	NA	NA
Dilution Factor:	1	20	2
Secondary Dilution Factor:	1	2000	2000
Units:	mg/kg	mg/kg	mg/kg
Naphthalene	1200	1110 D	11400 D
C1-Naphthalenes	4280	9680	49900
C2-Naphthalenes	2690	6600	46900
C3-Naphthalenes	1110	3090	30900
C4-Naphthalenes	114	523	7080
Biphenyl	292	37300	366
Acenaphthylene	9.12	379	55.4
Acenaphthene	22	5210	1520
Dibenzofuran	43.7	6940	1340
Fluorene	32.1	5270	992
C1-Fluorenes	8.72	65.3	702
C2-Fluorenes	0.494 U	75	936
C3-Fluorenes	0.494 U	57.7	864
Dibenzothiophene	0.494 U	47.2	932
C1-Dibenzothiophenes	0.494 U	10.1	16.1
C2-Dibenzothiophenes	0.494 U	140	2810
C3-Dibenzothiophenes	0.494 U	96.7	1930
C4-Dibenzothiophenes	0.494 U	40.6	885
Anthracene	0.0141 U	178	35.4
Phenanthrene	2.53	1900	34.3
C1-Phenanthrenes/Anthracenes	0.494 U	91.9	96
C2-Phenanthrenes/Anthracenes	0.494 U	95.6	1140
C3-Phenanthrenes/Anthracenes	0.494 U	53	782
C4-Phenanthrenes/Anthracenes	0.494 U	16.6	259
Fluoranthene	4.24	49.3	3.09
Pyrene	20.3	313	29.3
C1-Fluoranthenes/Pyrenes	0.494 U	94.5	1370
C2-Fluoranthenes/Pyrenes	0.494 U	55.3	878
C3-Fluoranthenes/Pyrenes	0.494 U	23	334
Benzo(a)anthracene	1.41	23.1	6.54
Chrysene	1.17	23.1	74.1
C1-Chrysenes	0.494 U	3.99	66.4
C2-Chrysenes	0.494 U	4.68	38
C3-Chrysenes	0.494 U	0.758 U	2.81 U
C4-Chrysenes	0.494 U	0.758 U	2.81 U
Benzo(b)fluoranthene	0.494 U	2.12	2.81 U
Benzo(j/k)fluoranthene	0.494 U	1.97	2.81 U
Benzo(e)pyrene	0.988 U	7.3	5.62 U
Benzo(a)pyrene	0.494 U	7.38	2.81 U
Perylene	0.988 U	1.52 U	5.62 U
Indeno(1,2,3-c,d)pyrene	0.988 U	1.52 U	5.62 U
Dibenz(a,h)anthracene	0.988 U	1.52 U	5.62 U
Benzo(g,h,i)perylene	0.988 U	1.52 U	5.62 U
Total PAH	9830	79600	165000
Project-Specific PAH Isomers			
2-Methylnaphthalene	2350	5310 D	26800 D
1-Methylnaphthalene	1920	4360 D	23000 D
2,6-Dimethylnaphthalene	1190	3760 D	15900 D
2,3,5-Trimethylnaphthalene	178	25900	4140
1-Methylphenanthrene	0.0141 U	1000	16.7
Surrogate Recoveries (%R)			
d8-Naphthalene	NA	NA	NA
d10-Phenanthrene	NA	NA	NA
d12-Chrysene	NA	NA	NA

Data Qualifiers
& - Exceeds QC criteria
B - Analyte detected < 5x PB.
D - Result from higher dilution.
DO - Surrogates diluted out.
E - Result above calibration curve.
J - Result less than reporting limit.
ME - Matrix effect.
NA - Not applicable.
U - Undetected.

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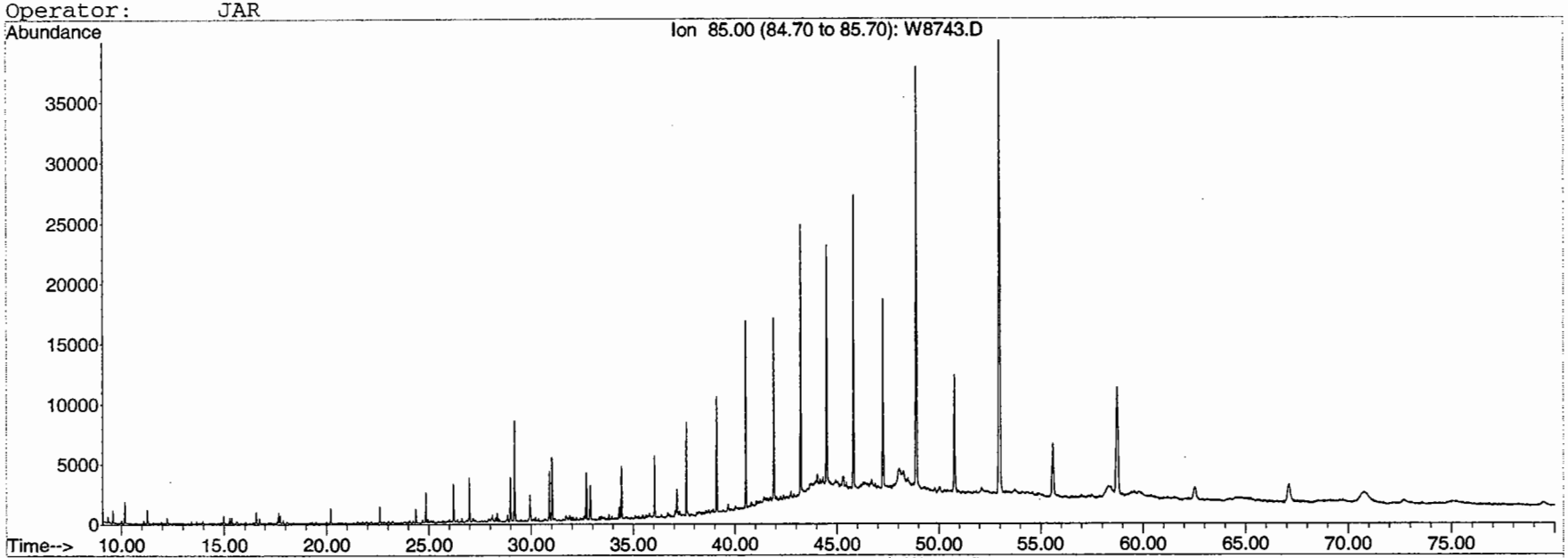
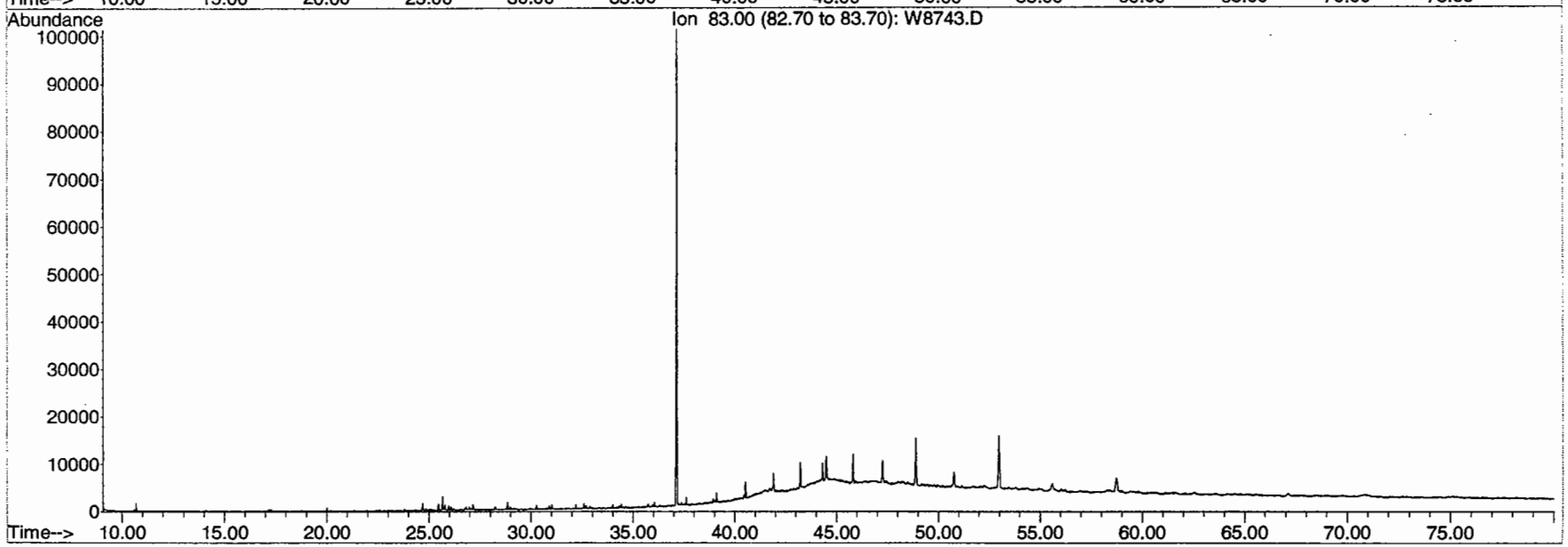
GC/MS EXTRACTED ION CHROMATOGRAM

Source 1-1
S1483

File: H:\E\DATA\SE0044\W8743.D
Date Acquired: 2 May 2004 8:37 am
Method File: BIOSIM0
Sample Name: S1483-P-A-F1(8)
Misc Info: Source 1-1
Operator: JAR





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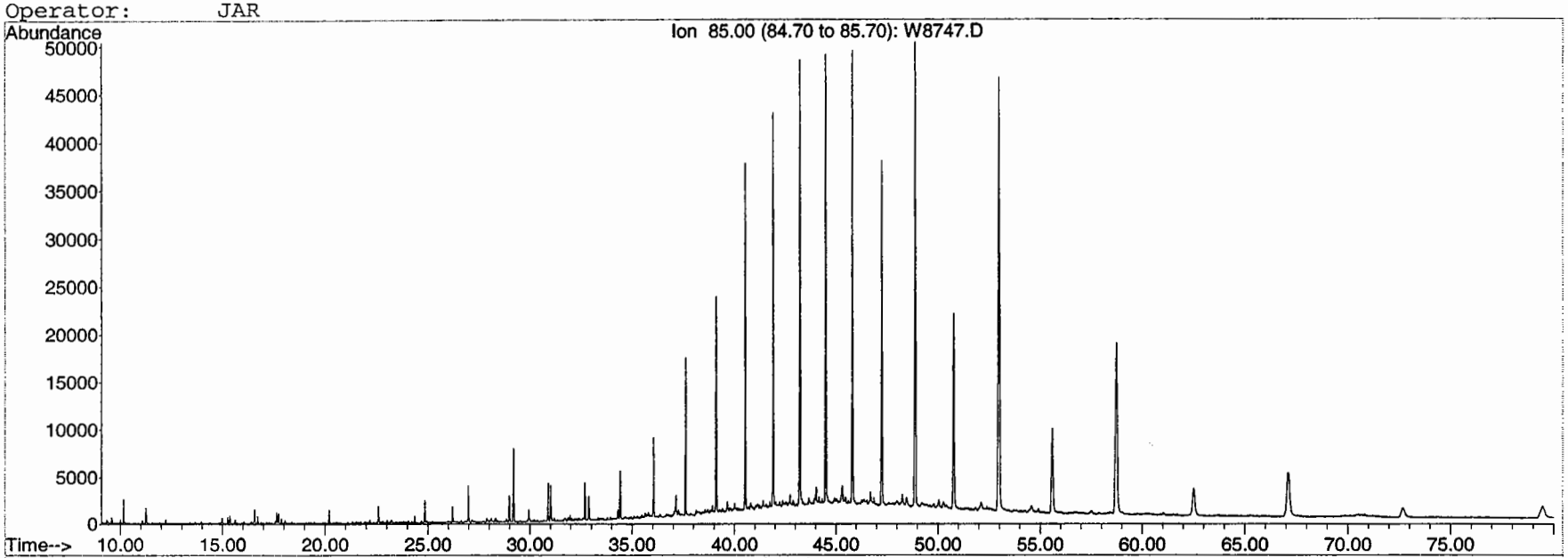
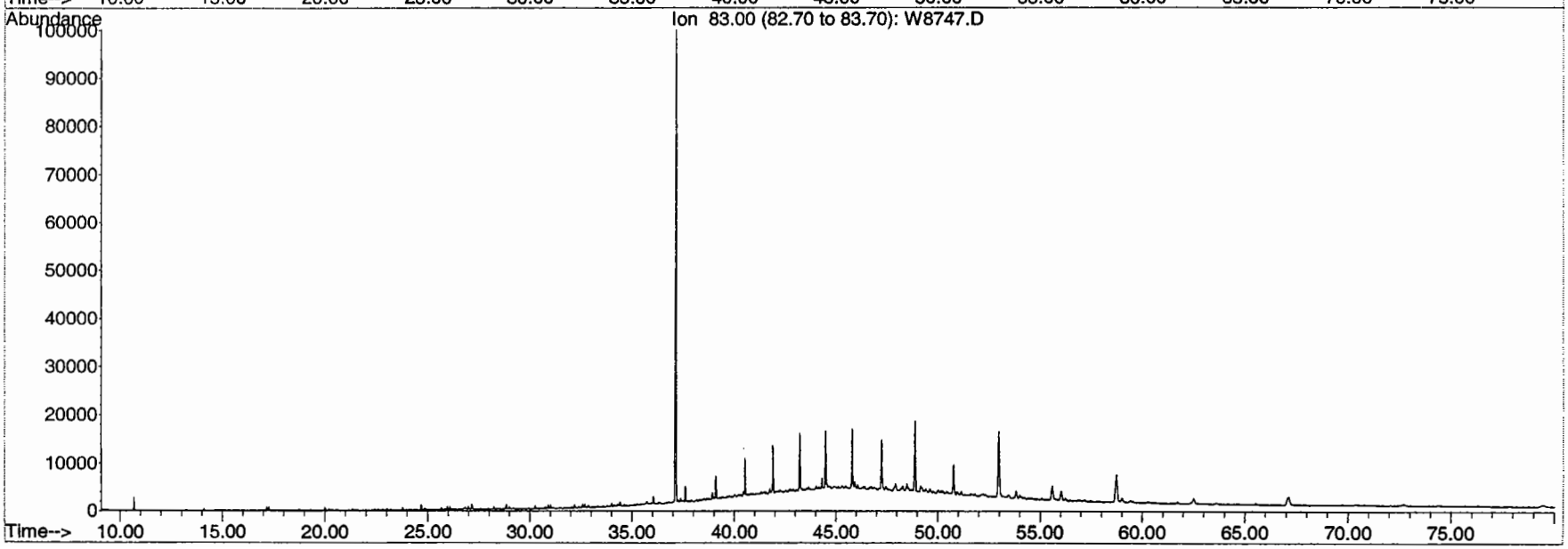
GC/MS EXTRACTED ION CHROMATOGRAM

Source 1-2
S1485

File: H:\E\DATA\SE0044\W8747.D
Date Acquired: 2 May 2004 2:35 pm
Method File: BIOSIM0
Sample Name: S1485-P-A-F1(10)
Misc Info: Source 1-2
Operator: JAR





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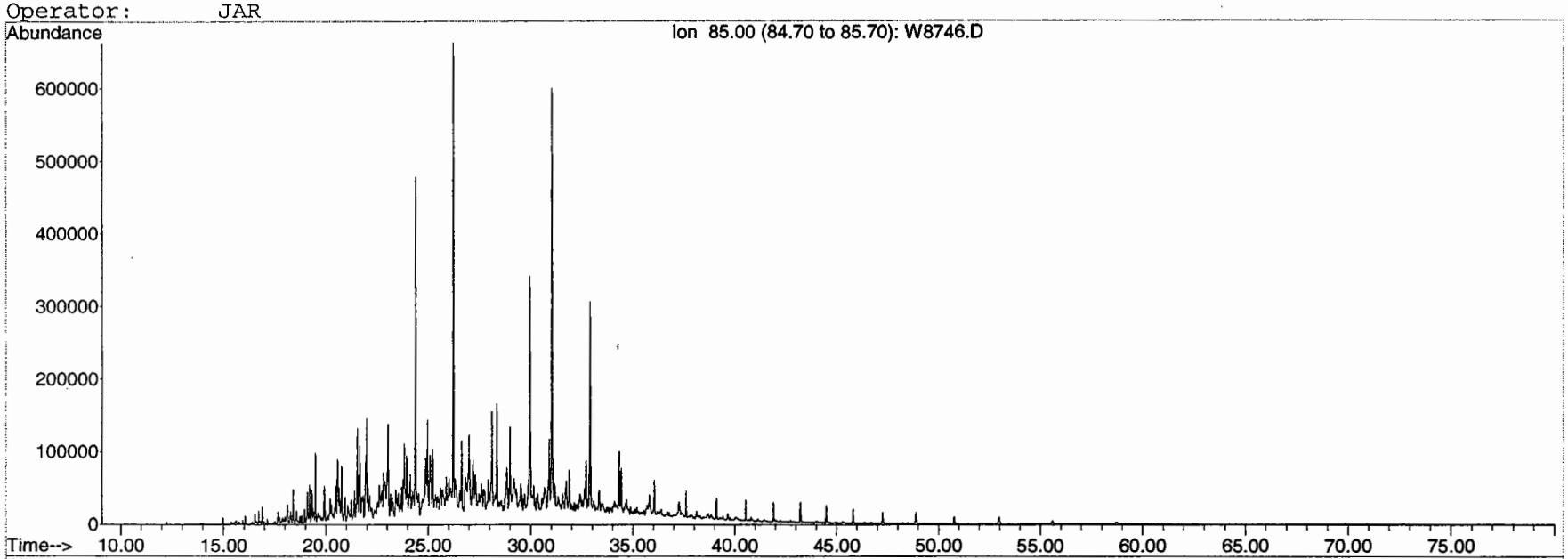
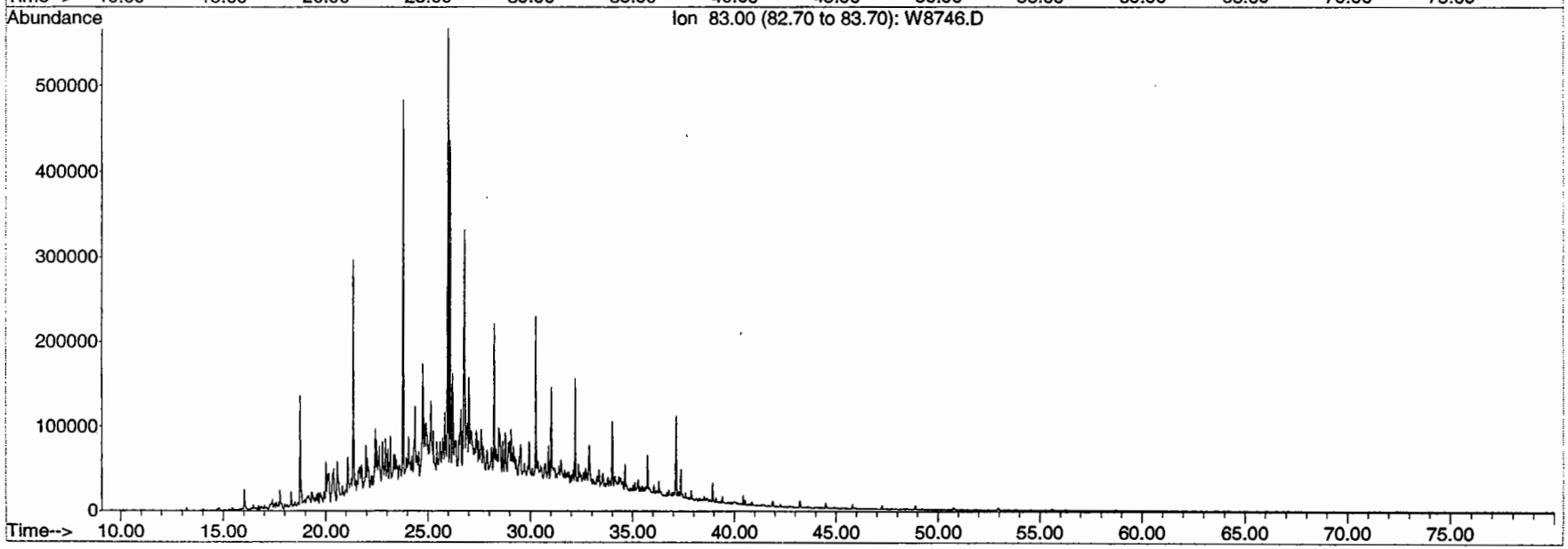
GC/MS EXTRACTED ION CHROMATOGRAM

Source 2-1
S1484

File: H:\E\DATA\SE0044\W8746.D
Date Acquired: 2 May 2004 1:05 pm
Method File: BIOSIM0
Sample Name: S1484-P-A-F1(10)
Misc Info: Source 2-1
Operator: JAR



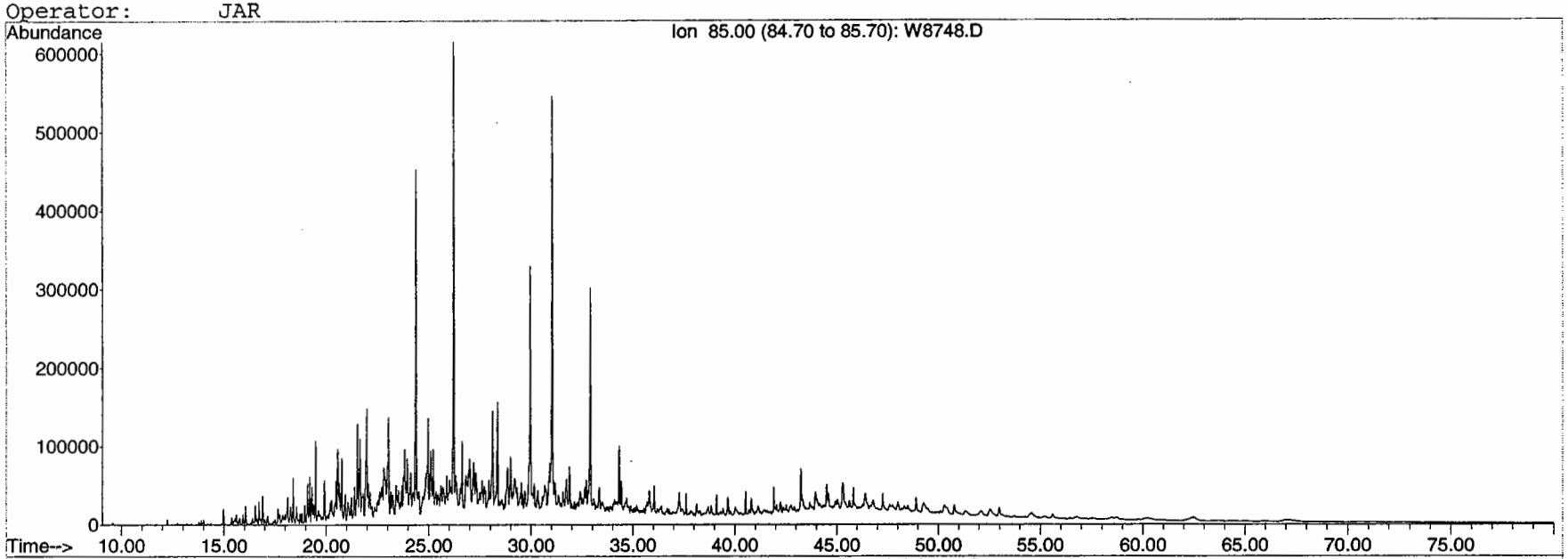


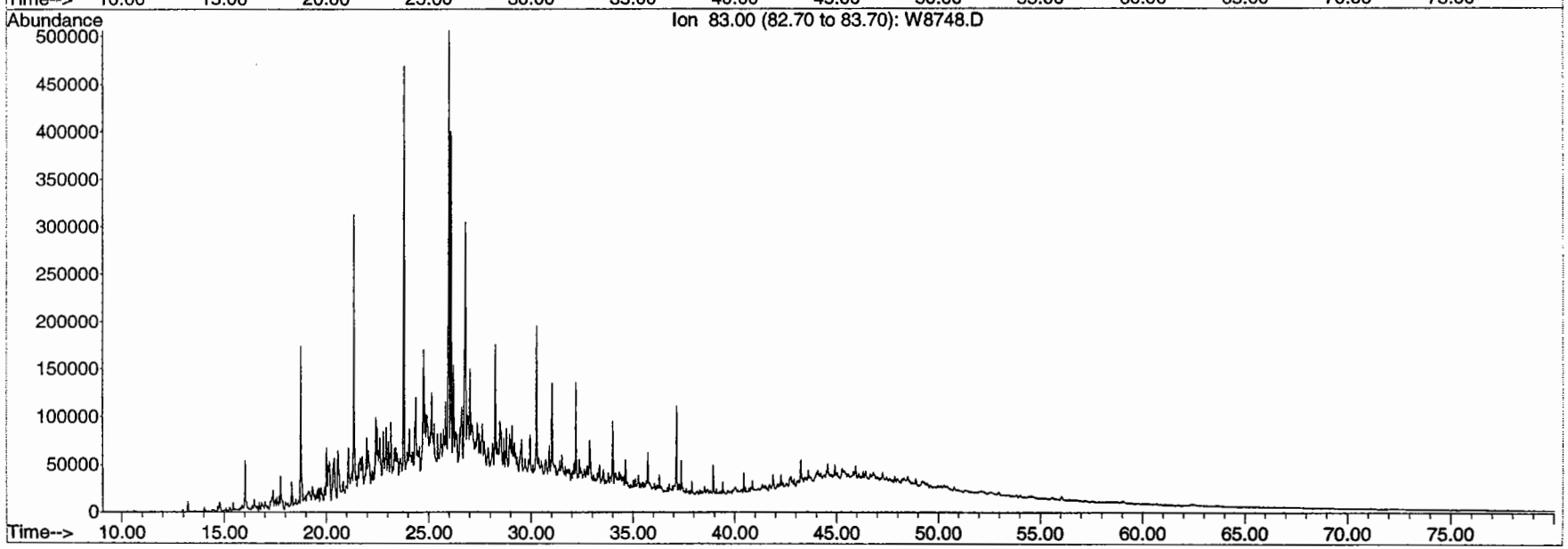
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

Source 2-2
S1486

File: H:\E\DATA\SE0044\W8748.D
Date Acquired: 2 May 2004 4:04 pm
Method File: BIOSIM0
Sample Name: S1486-P-A-F1(10)
Misc Info: Source 2-2
Operator: JAR



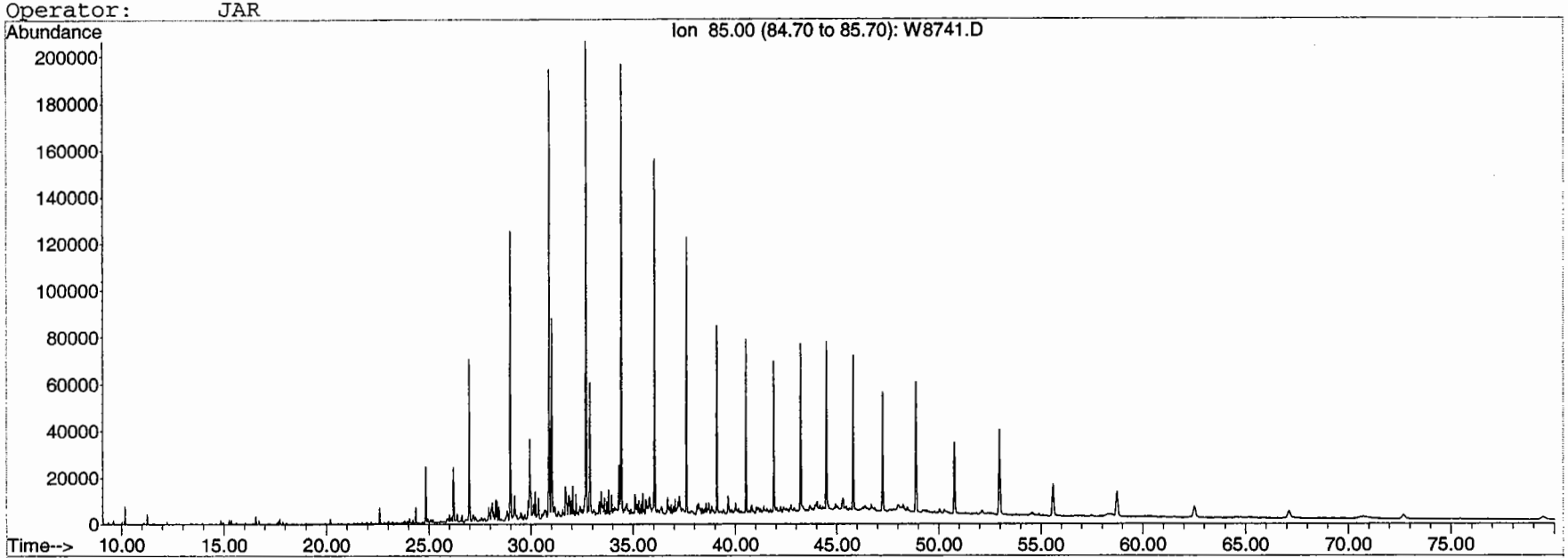


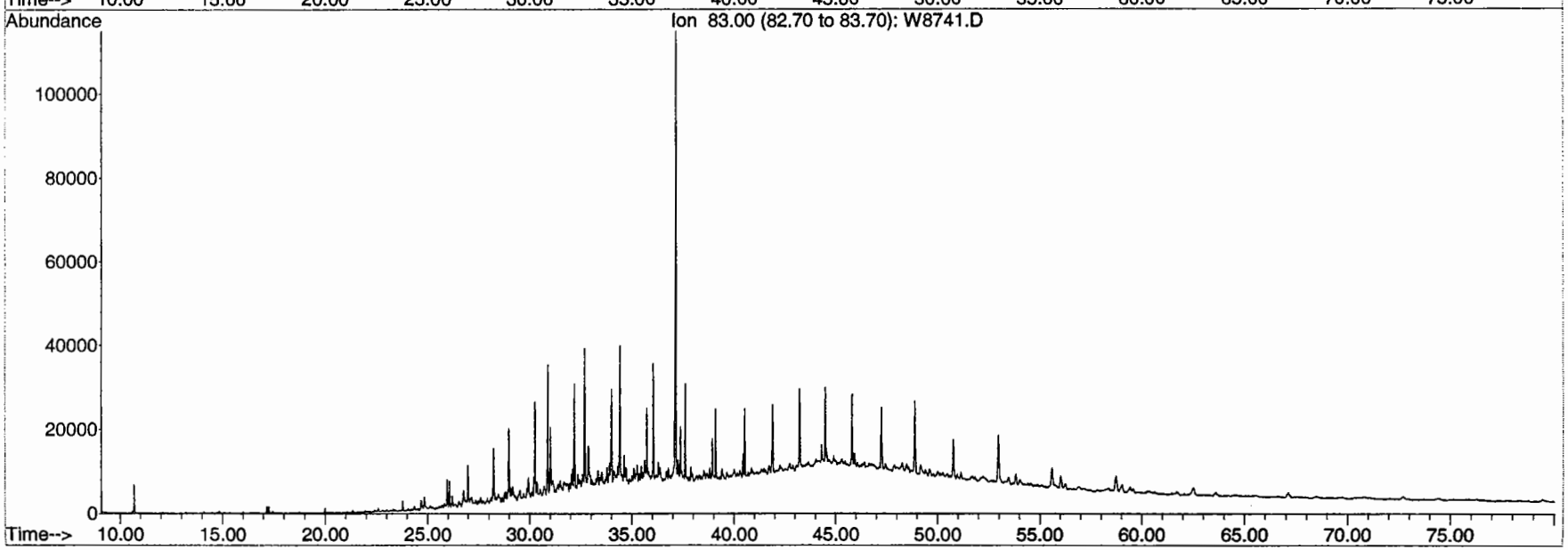
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

Source 3-1
S1481

File: H:\E\DATA\SE0044\W8741.D
Date Acquired: 2 May 2004 5:38 am
Method File: BIOSIM0
Sample Name: S1481-P-A-F1(8)
Misc Info: Source 3-1
Operator: JAR



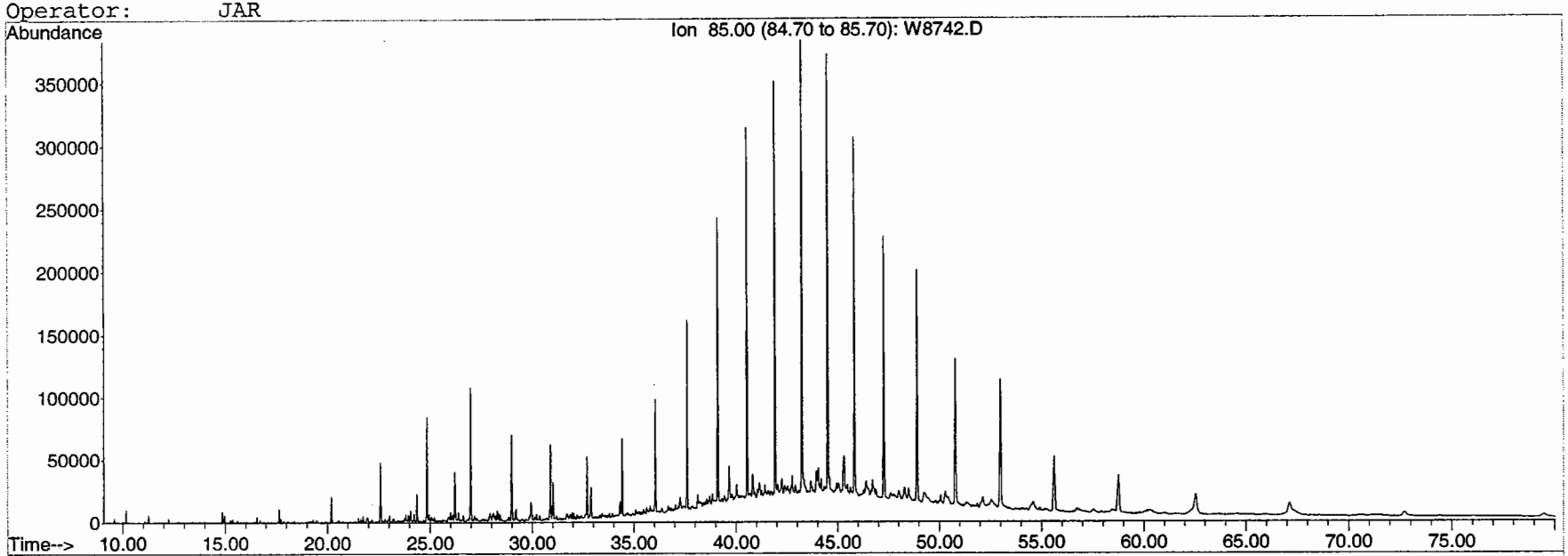


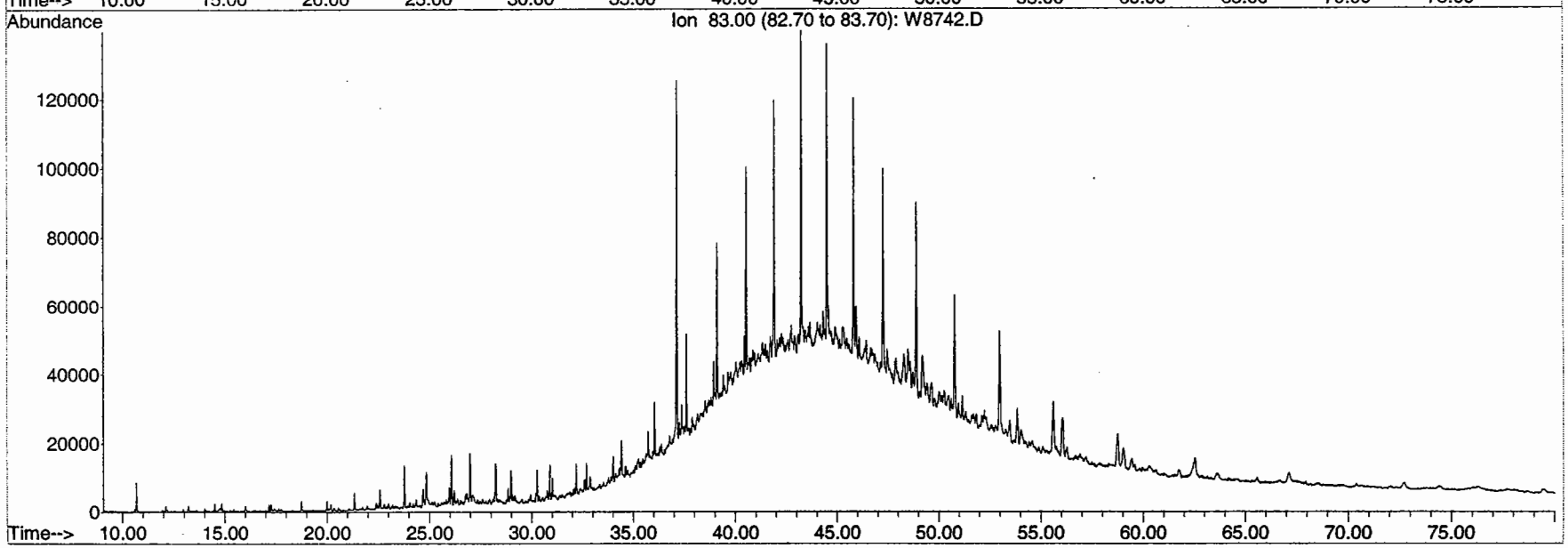
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

Source 3-2
S1482

File: H:\E\DATA\SE0044\W8742.D
Date Acquired: 2 May 2004 7:08 am
Method File: BIOSIM0
Sample Name: S1482-P-A-F1(8)
Misc Info: Source 3-2
Operator: JAR



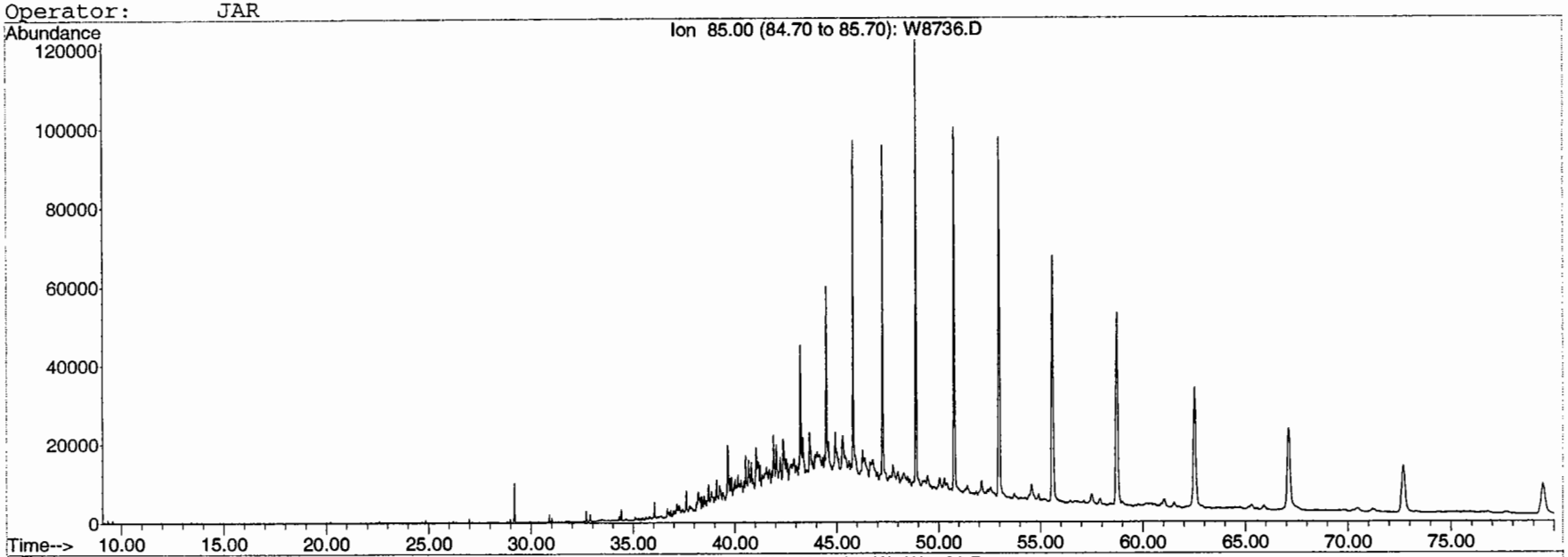


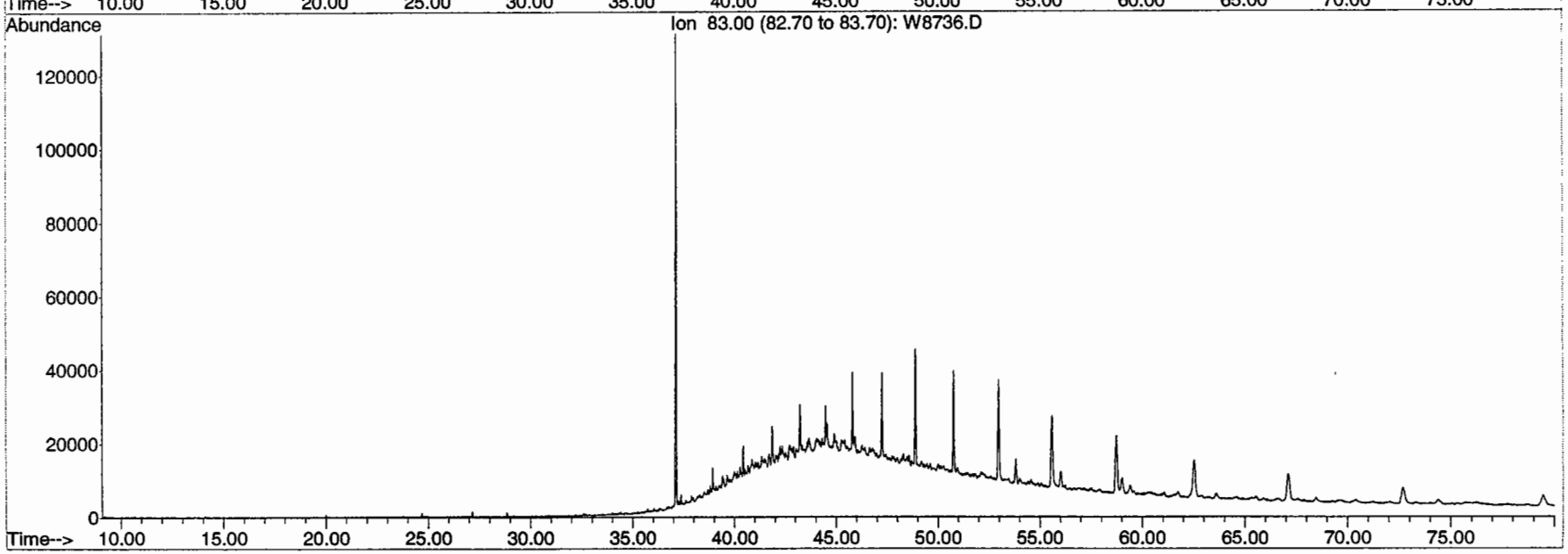
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

Source 4-1
S1457

File: H:\E\DATA\SE0044\W8736.D
Date Acquired: 1 May 2004 10:10 pm
Method File: BIOSIM0
Sample Name: S1457-P-F1(14)
Misc Info: SID Source 4-1
Operator: JAR



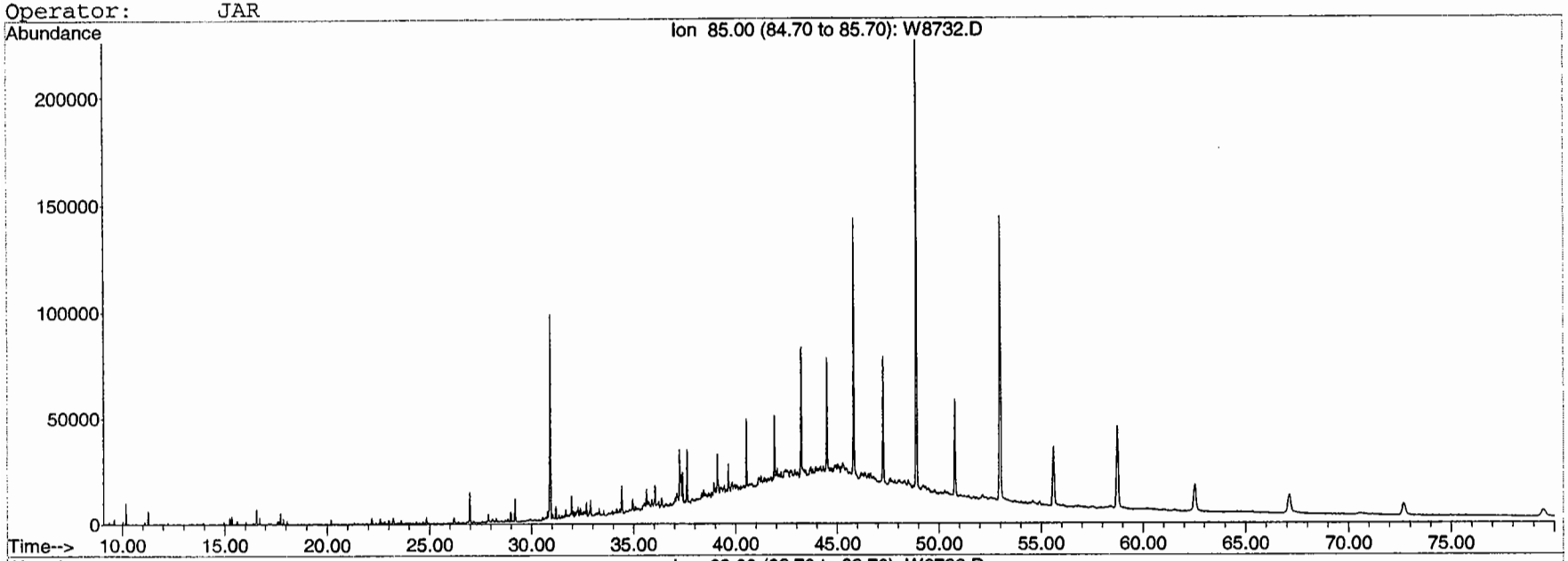


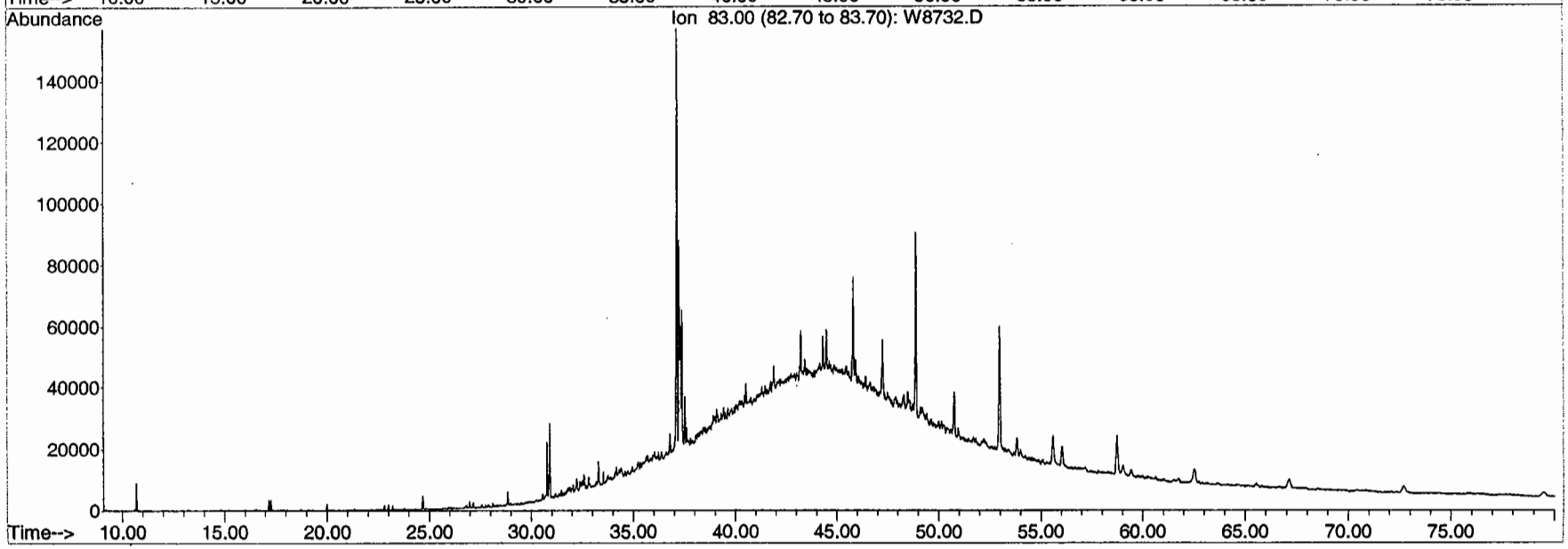
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

REF 1-4
S1445

File: H:\E\DATA\SE0044\W8732.D
Date Acquired: 1 May 2004 4:13 pm
Method File: BIOSIM0
Sample Name: S1445-P-A-F1(8)
Misc Info: REF 1-4
Operator: JAR



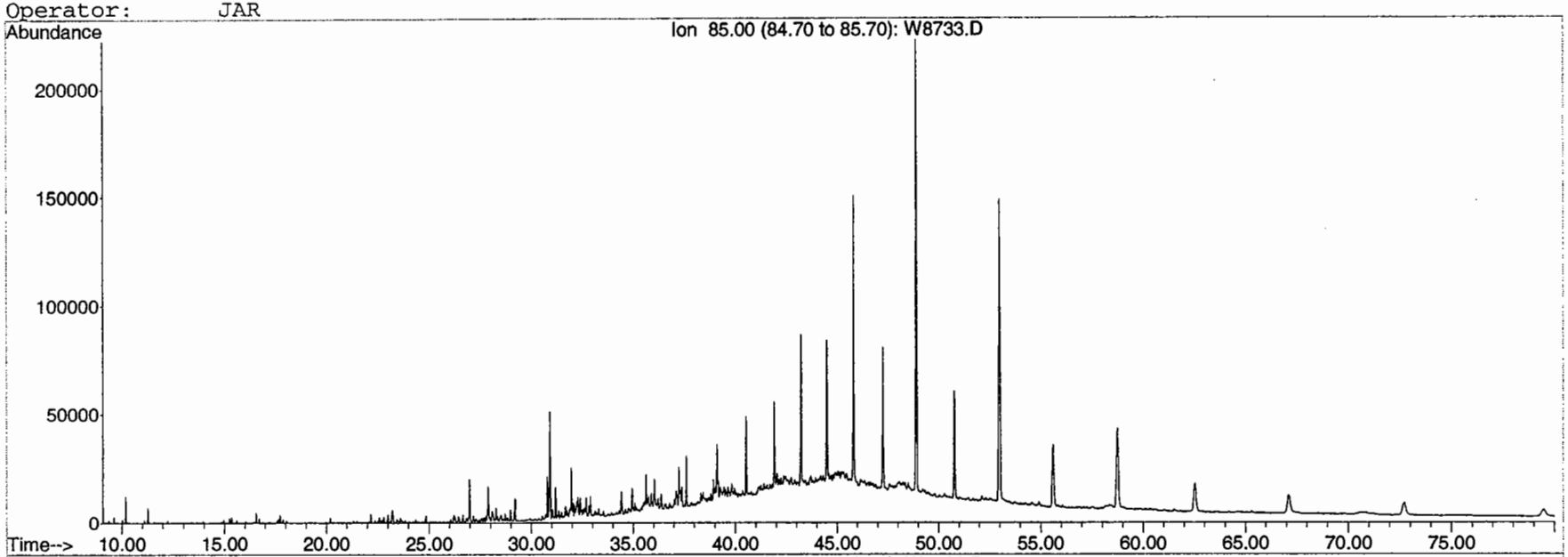


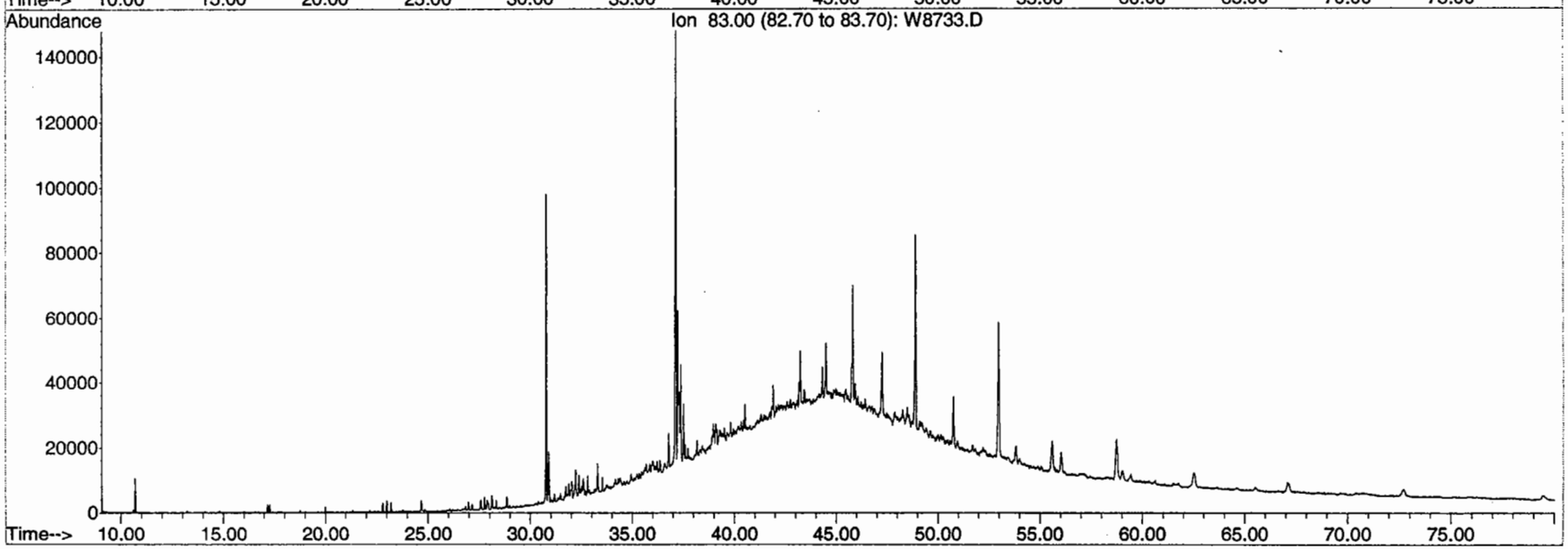
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

REF 2-1
S1447

File: H:\E\DATA\SE0044\W8733.D
Date Acquired: 1 May 2004 5:42 pm
Method File: BIOSIM0
Sample Name: S1447-P-A-F1(8)
Misc Info: REF 2-1
Operator: JAR



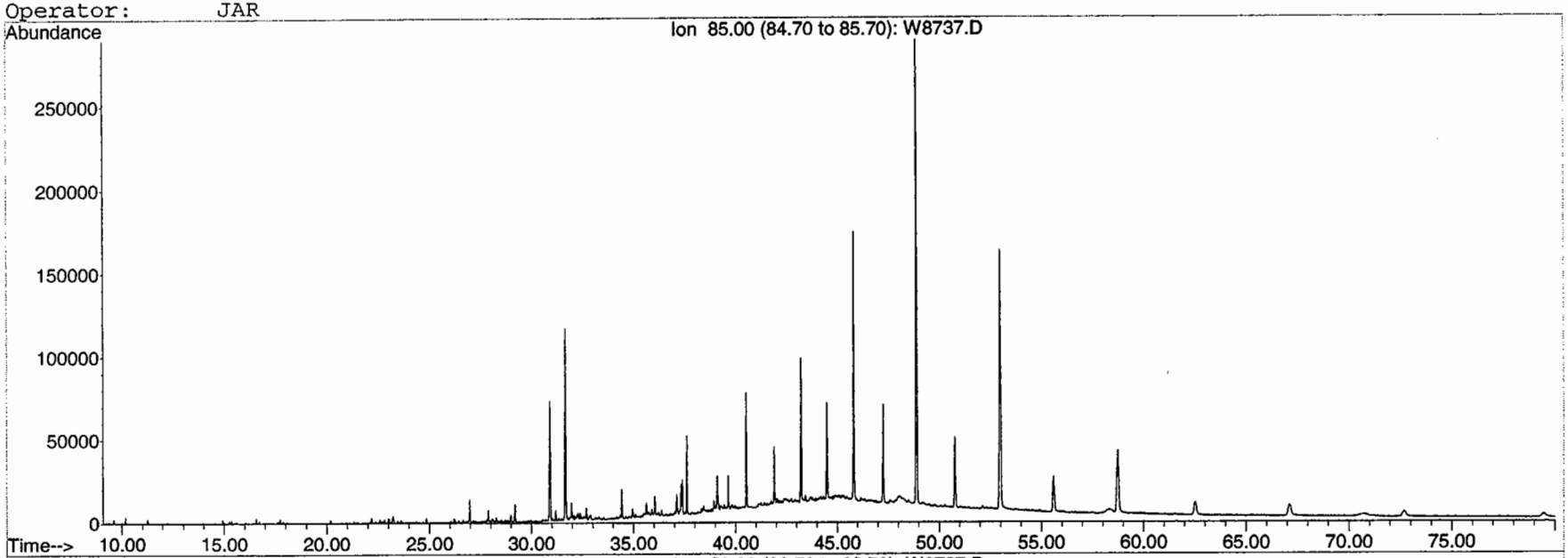


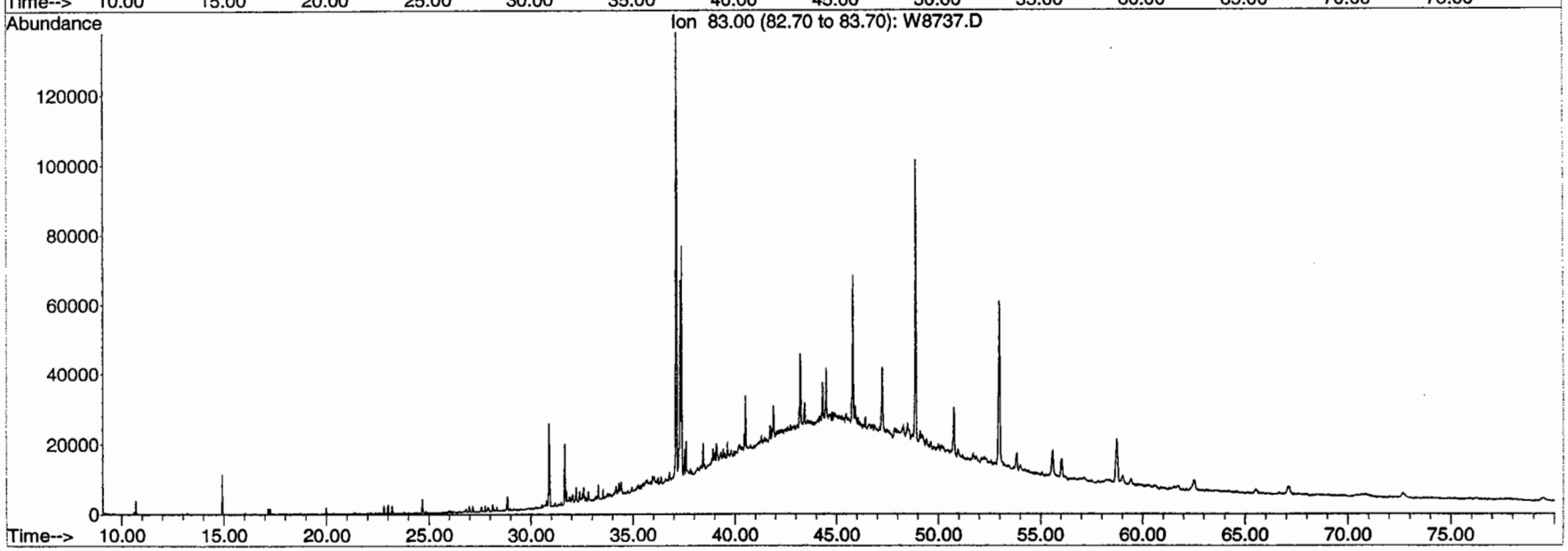
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

REF 3-2
S1466

File: H:\E\DATA\SE0044\W8737.D
Date Acquired: 1 May 2004 11:39 pm
Method File: BIOSIM0
Sample Name: S1466-P-A-F1(8)
Misc Info: REF 3-2
Operator: JAR



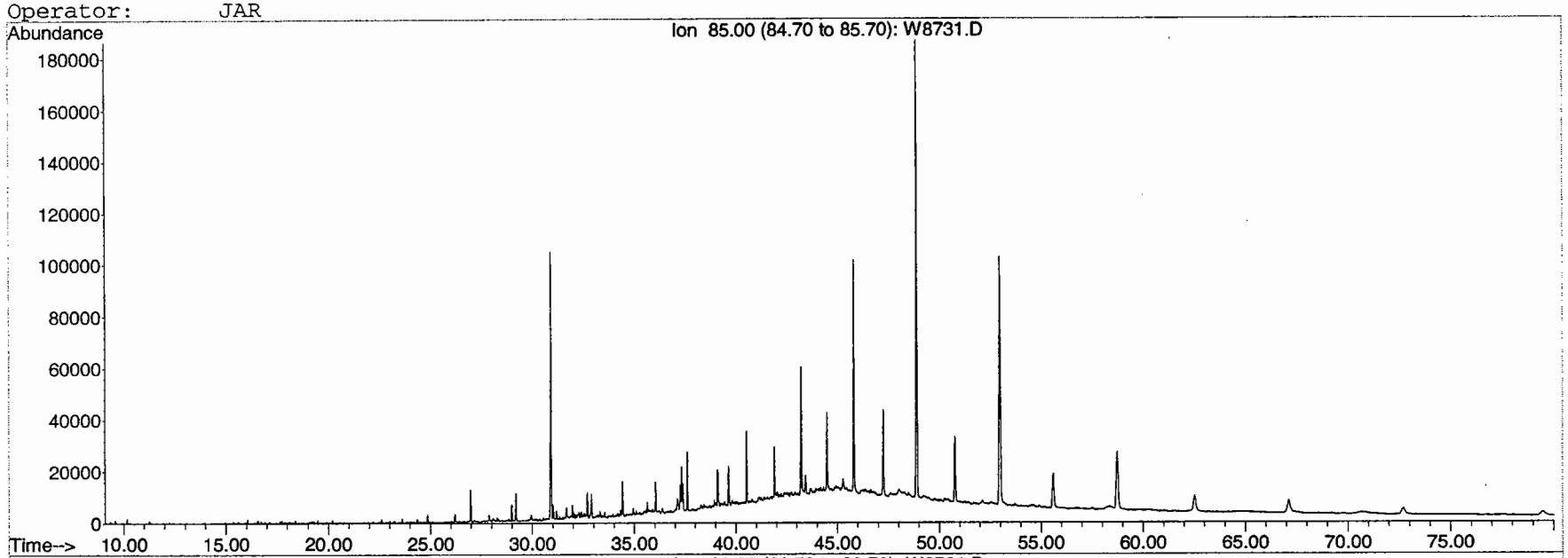


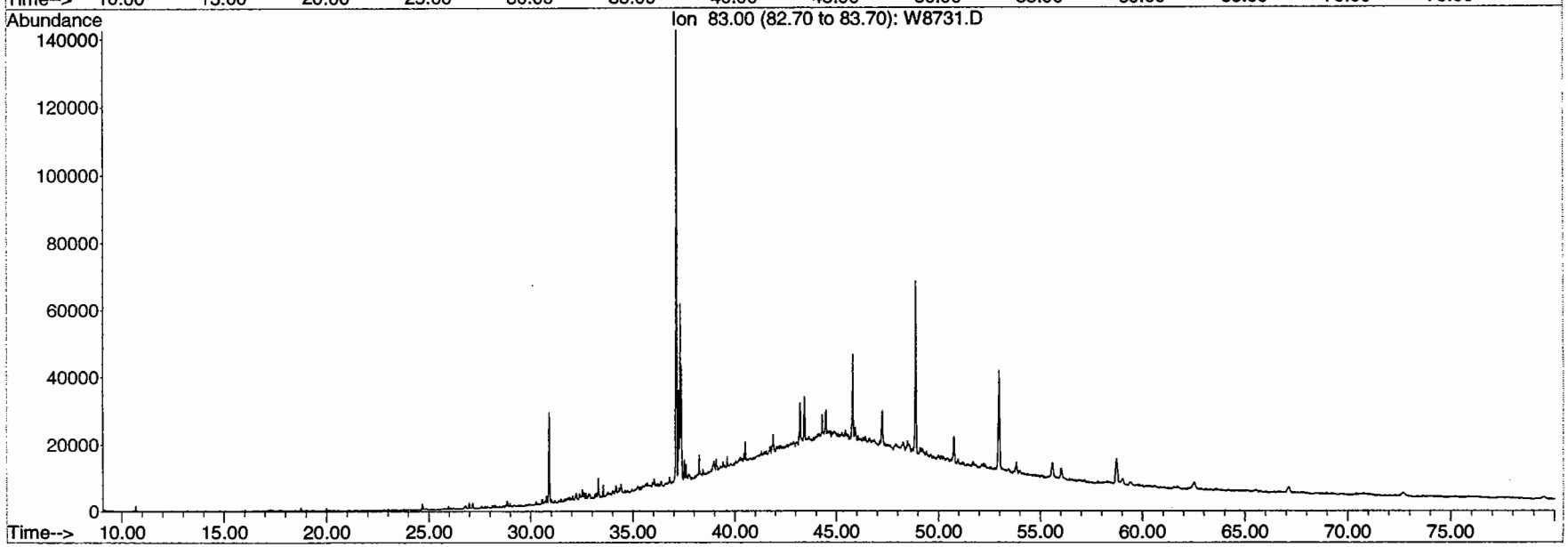
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-03
S1438

File: H:\E\DATA\SE0044\W8731.D
Date Acquired: 1 May 2004 2:43 pm
Method File: BIOSIM0
Sample Name: S1438-P-A-F1(8)
Misc Info: AH-03
Operator: JAR



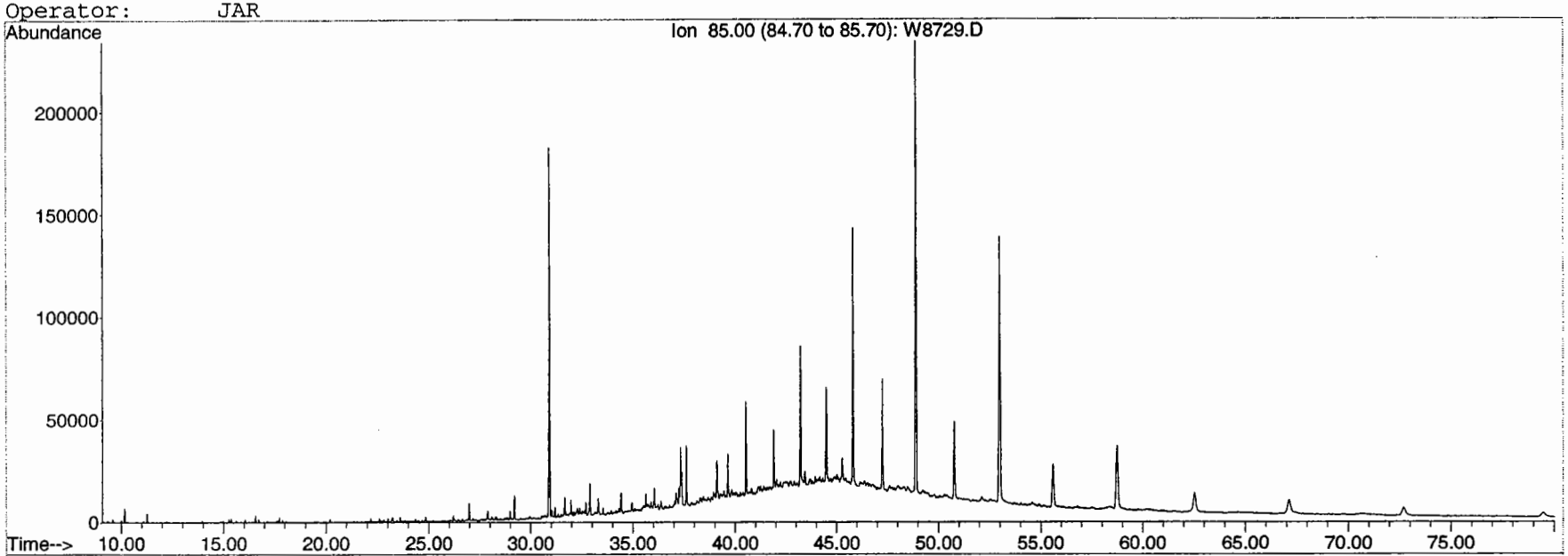


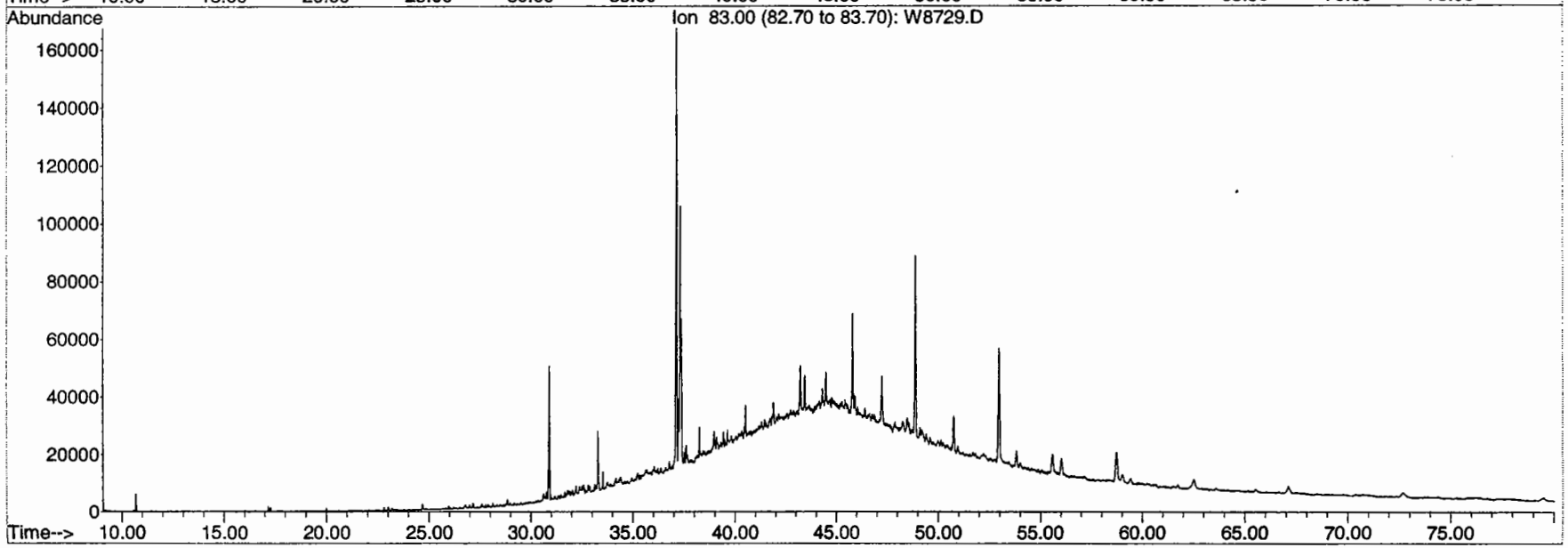
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-06
S1432

File: H:\E\DATA\SE0044\W8729.D
Date Acquired: 1 May 2004 11:45 am
Method File: BIOSIM0
Sample Name: S1432-P-A-F1(8)
Misc Info: AH-06
Operator: JAR



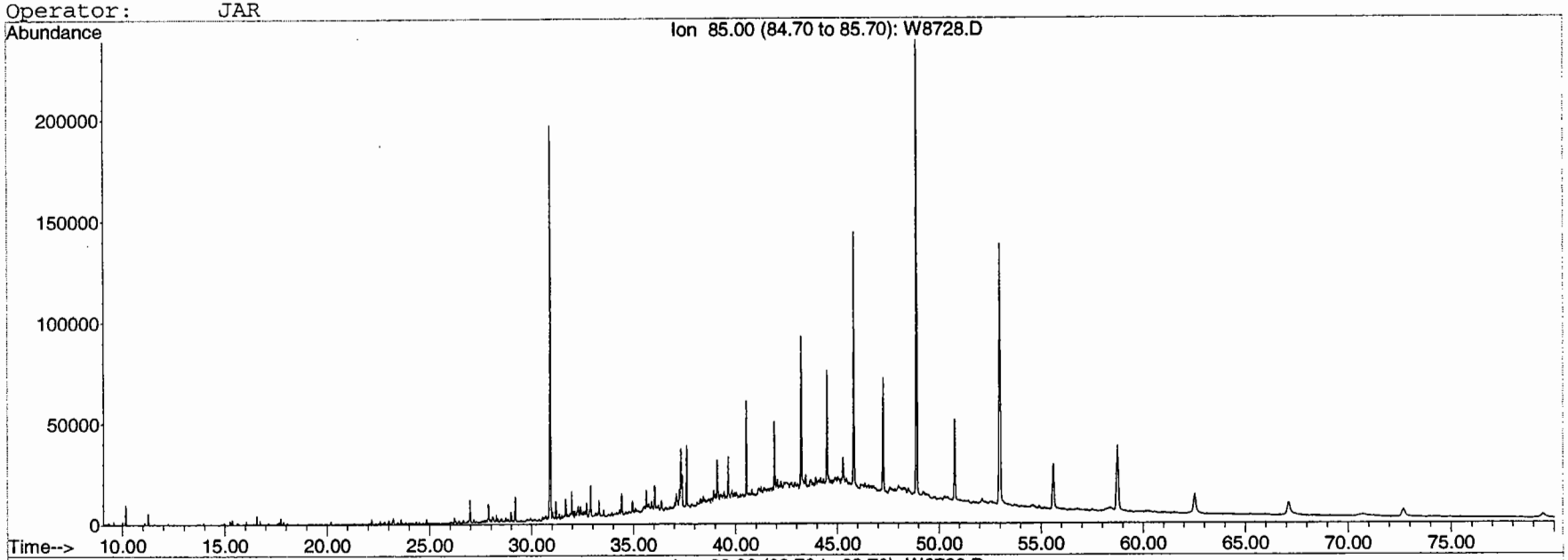


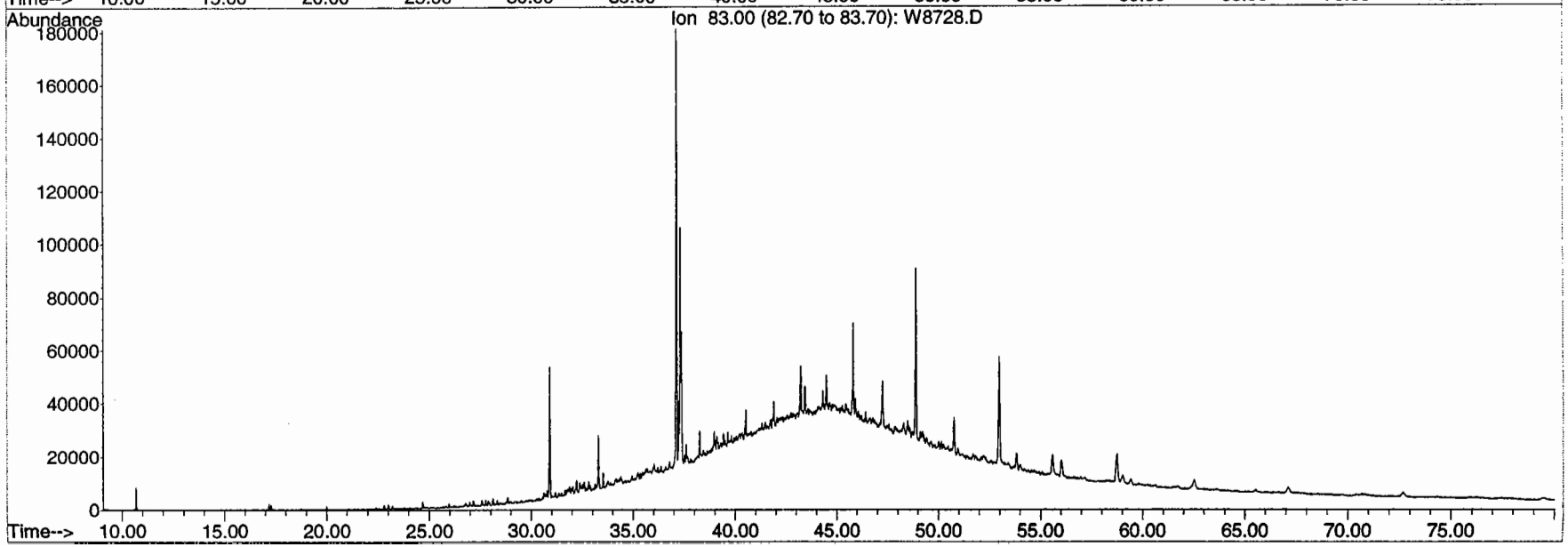
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-06 (DUP-03)
S1430

File: H:\E\DATA\SE0044\W8728.D
Date Acquired: 1 May 2004 10:15 am
Method File: BIOSIM0
Sample Name: S1430-P-A-F1(8)
Misc Info: Dup3
Operator: JAR



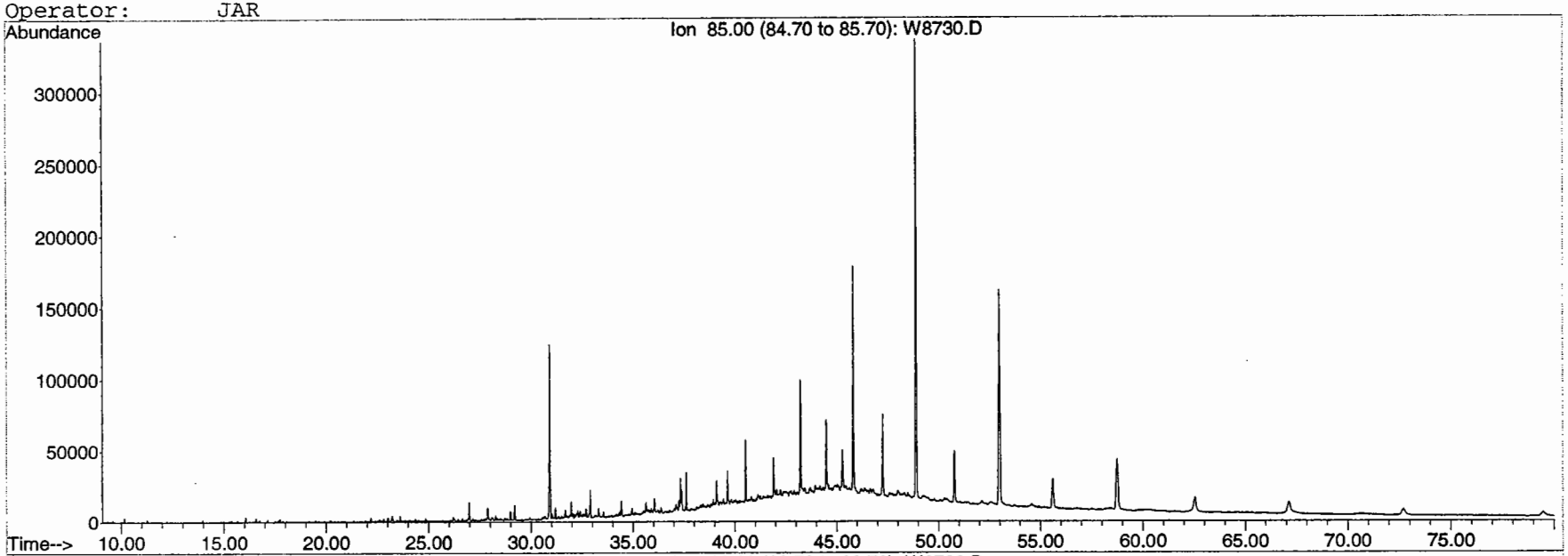


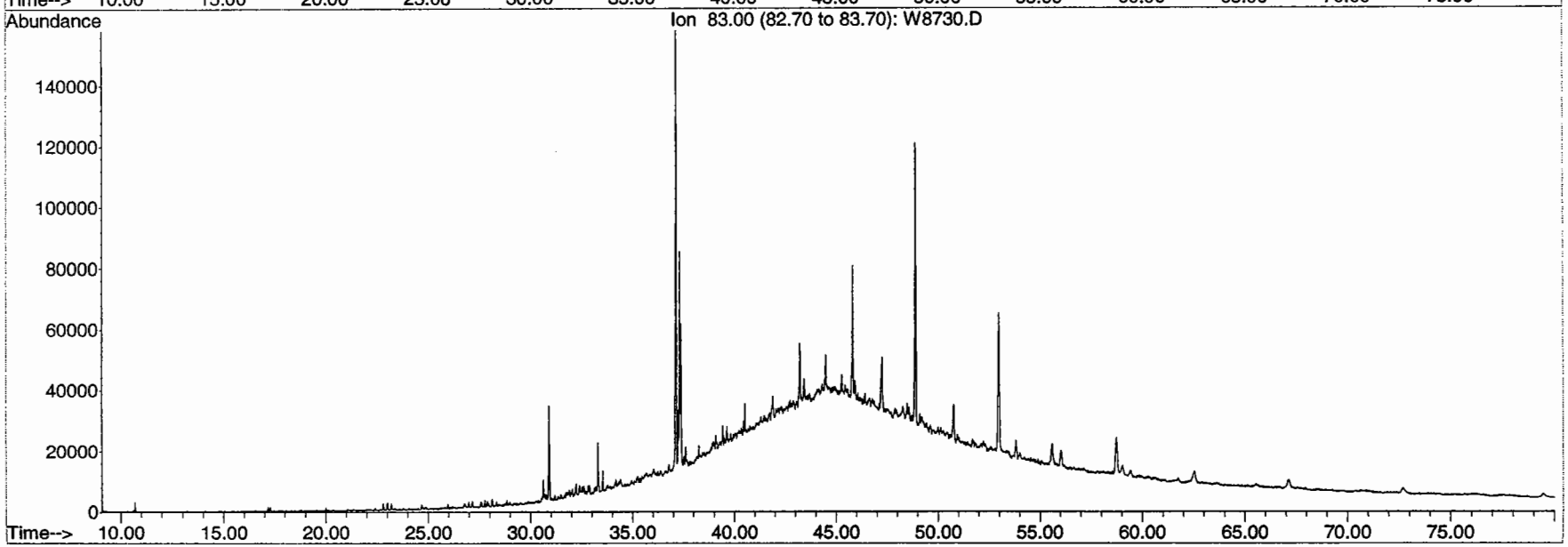
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-17
S1435

File: H:\E\DATA\SE0044\W8730.D
Date Acquired: 1 May 2004 1:14 pm
Method File: BIOSIM0
Sample Name: S1435-P-A-F1(10)
Misc Info: AH-17
Operator: JAR



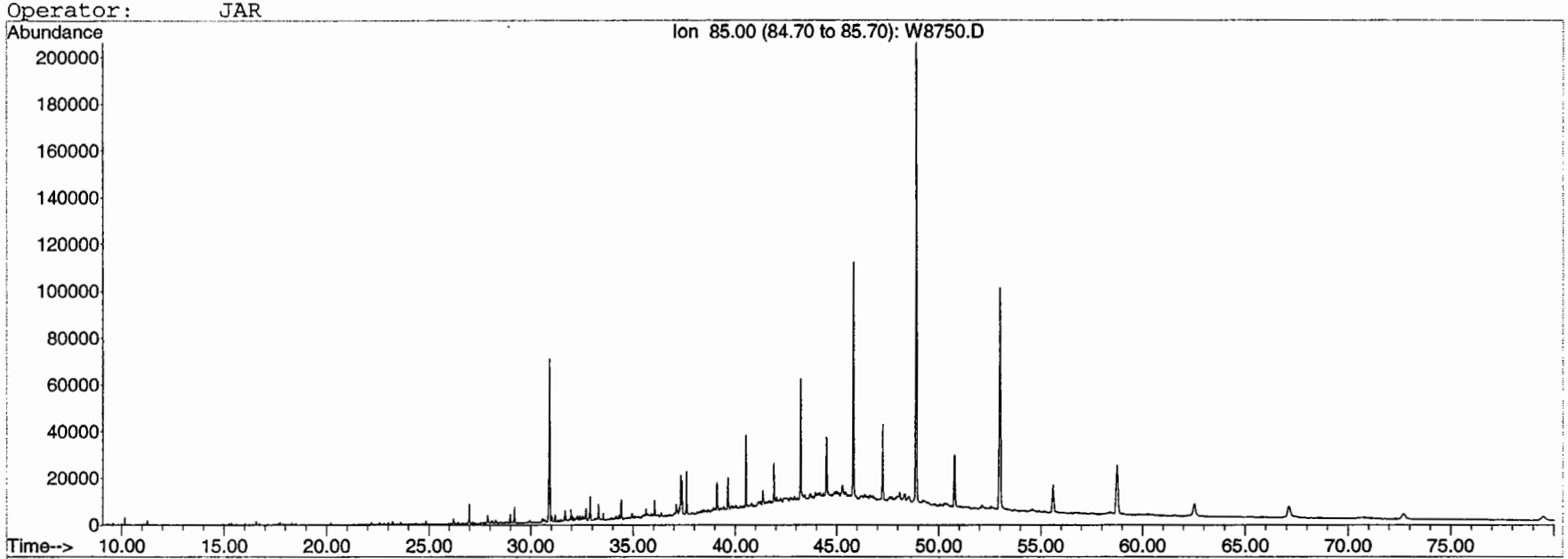


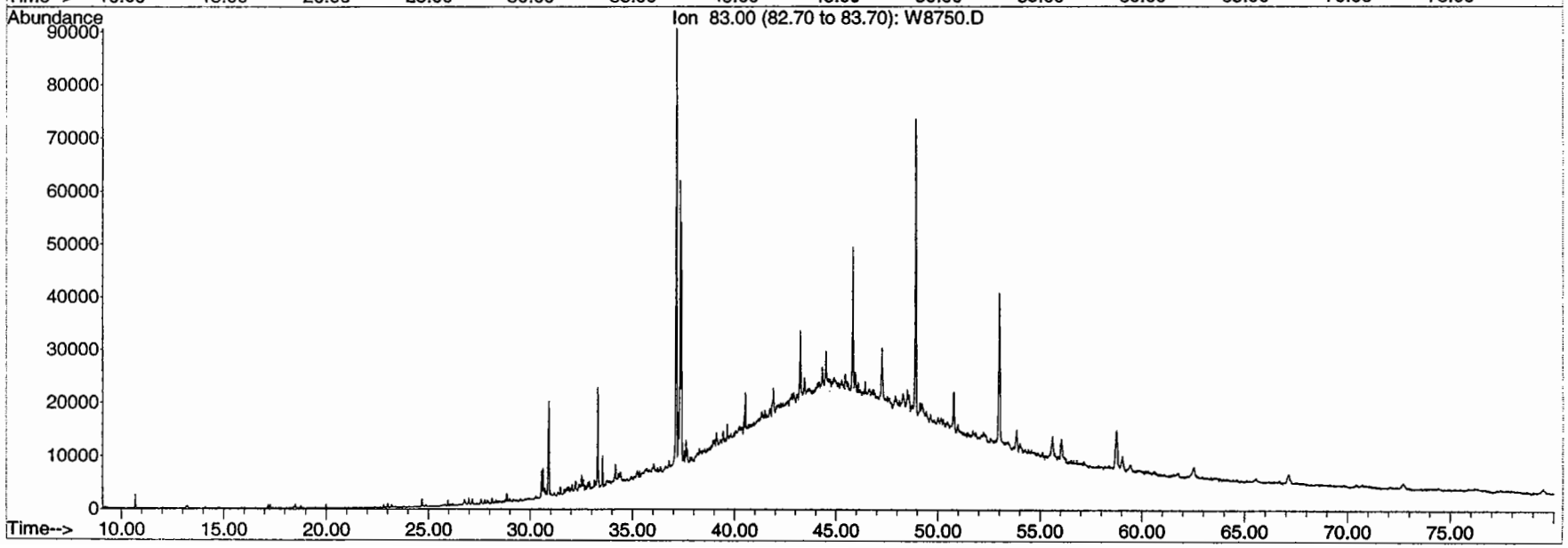
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-26
S1505

File: H:\E\DATA\SE0044\W8750.D
Date Acquired: 2 May 2004 7:03 pm
Method File: BIOSIM0
Sample Name: S1505-P-A-F1(8)
Misc Info: AH-26
Operator: JAR



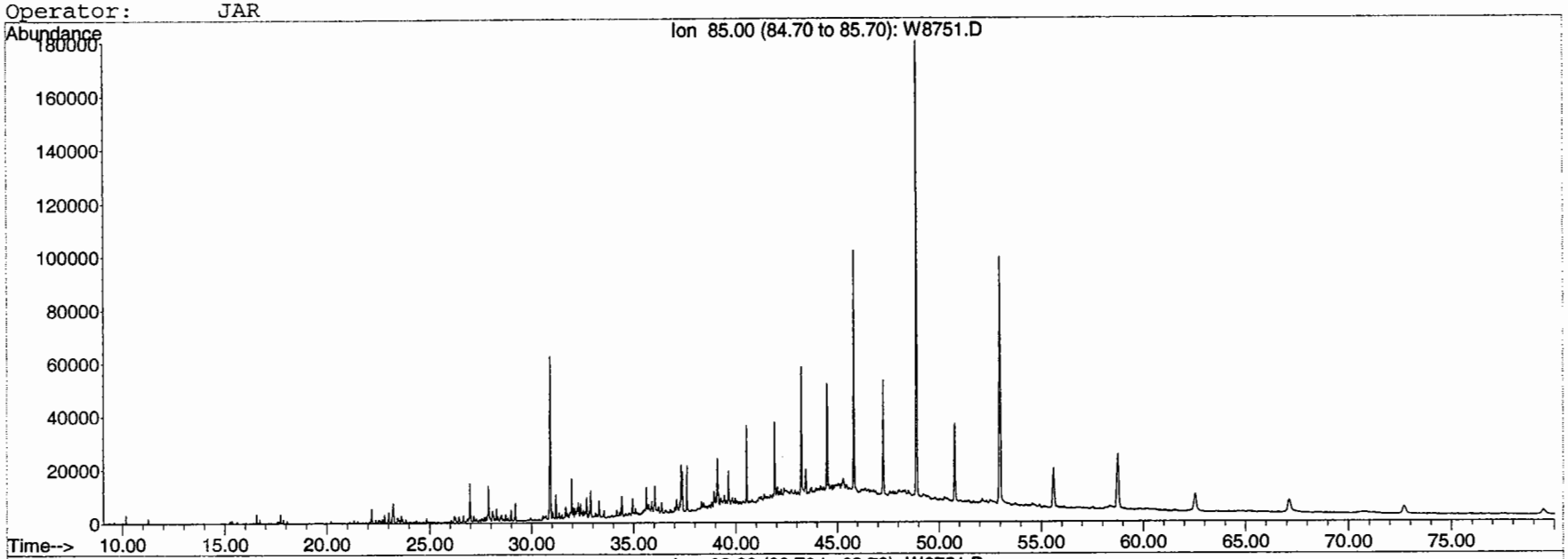


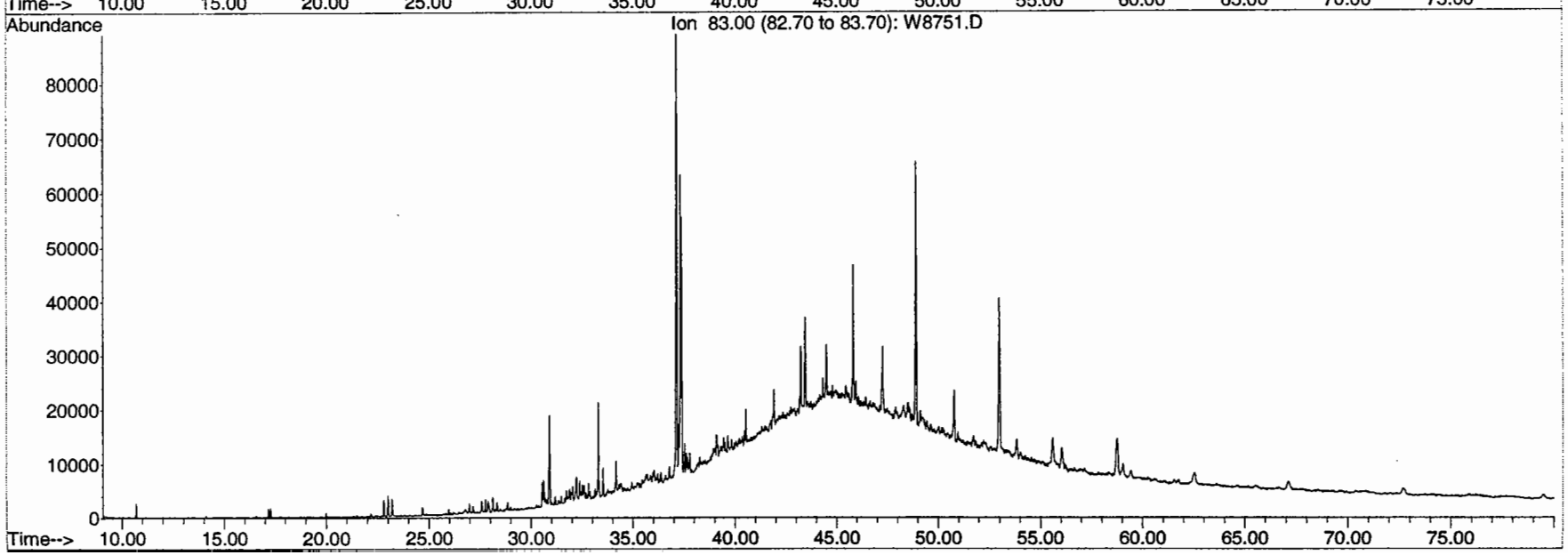
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-26
S1505DUP

File: H:\E\DATA\SE0044\W8751.D
Date Acquired: 2 May 2004 8:32 pm
Method File: BIOSIM0
Sample Name: S1505DUP-P-A-F1(8)
Misc Info: AH-26
Operator: JAR



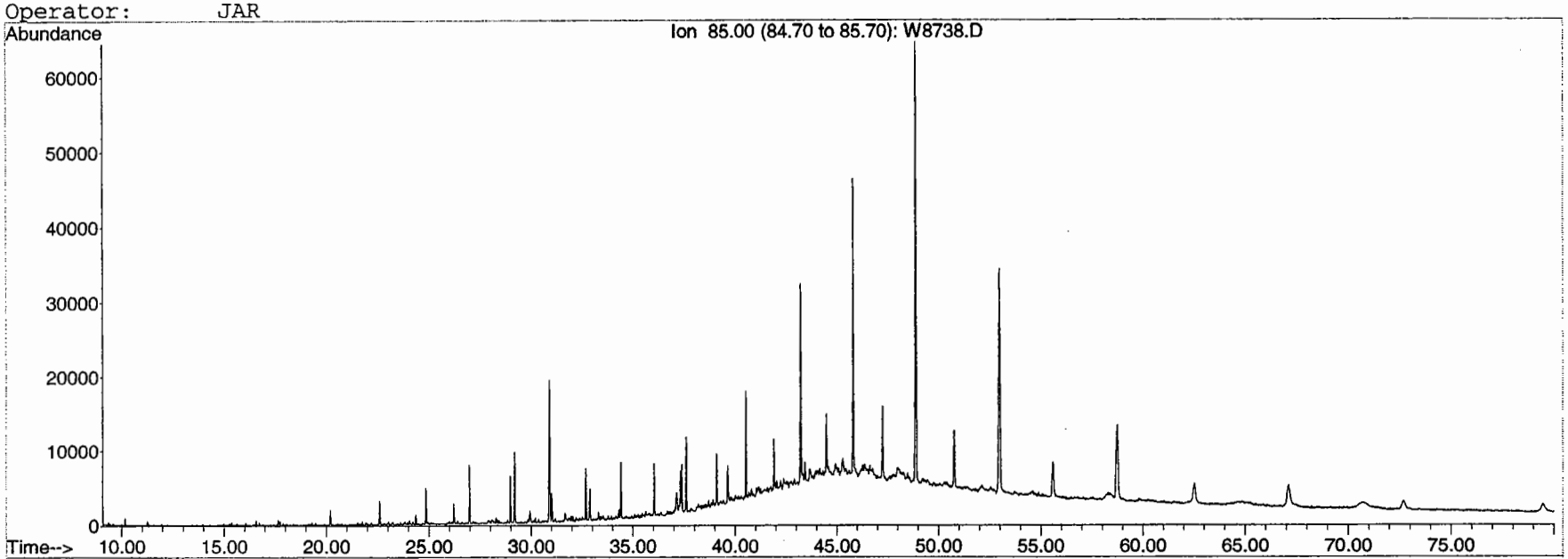


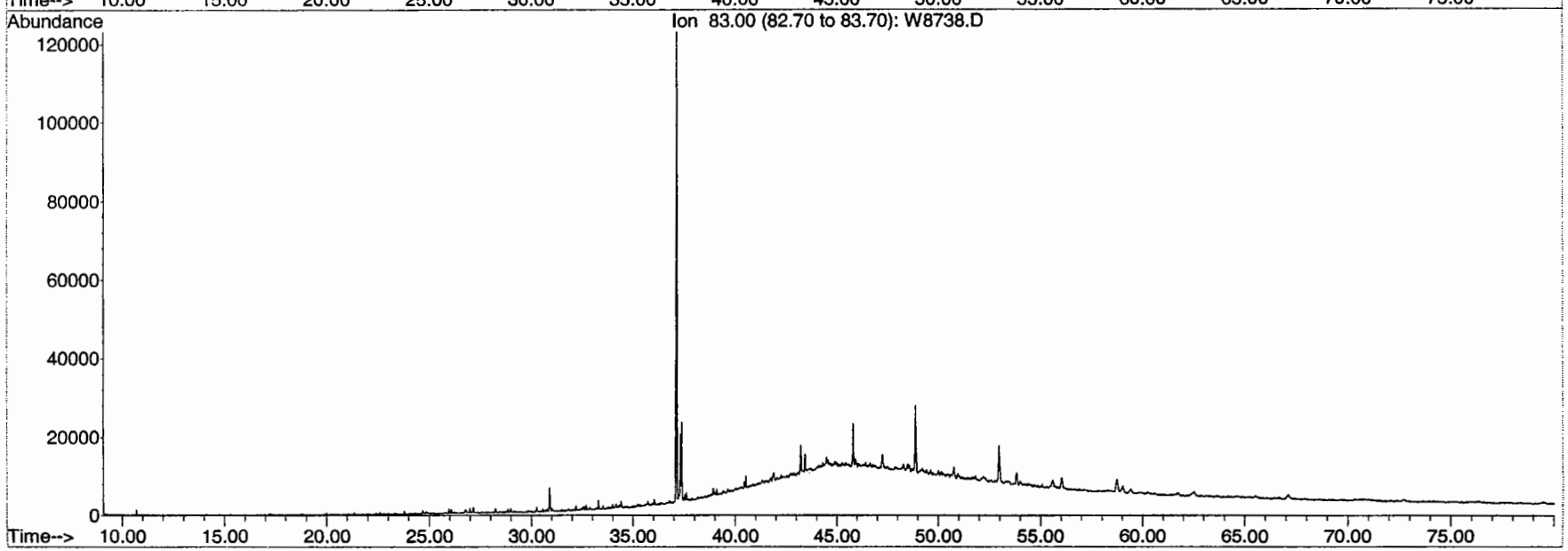
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-28
S1468

File: H:\E\DATA\SE0044\W8738.D
Date Acquired: 2 May 2004 1:09 am
Method File: BIOSIM0
Sample Name: S1468-P-A-F1(10)
Misc Info: AH-28
Operator: JAR



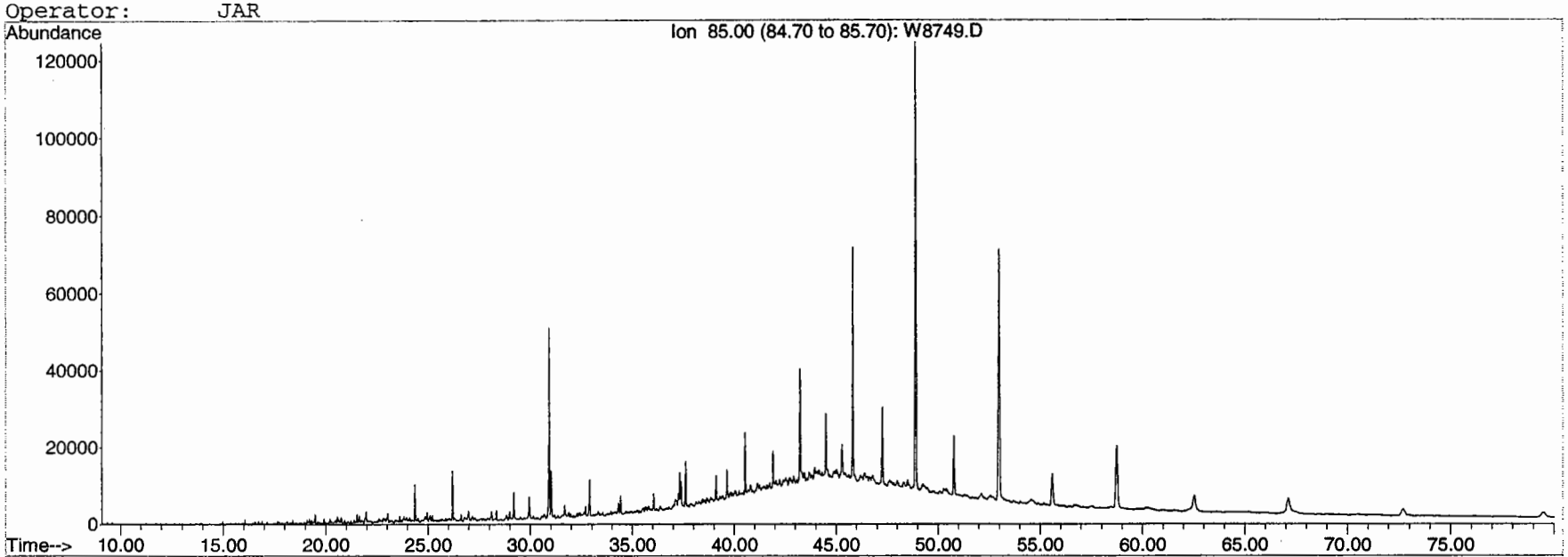


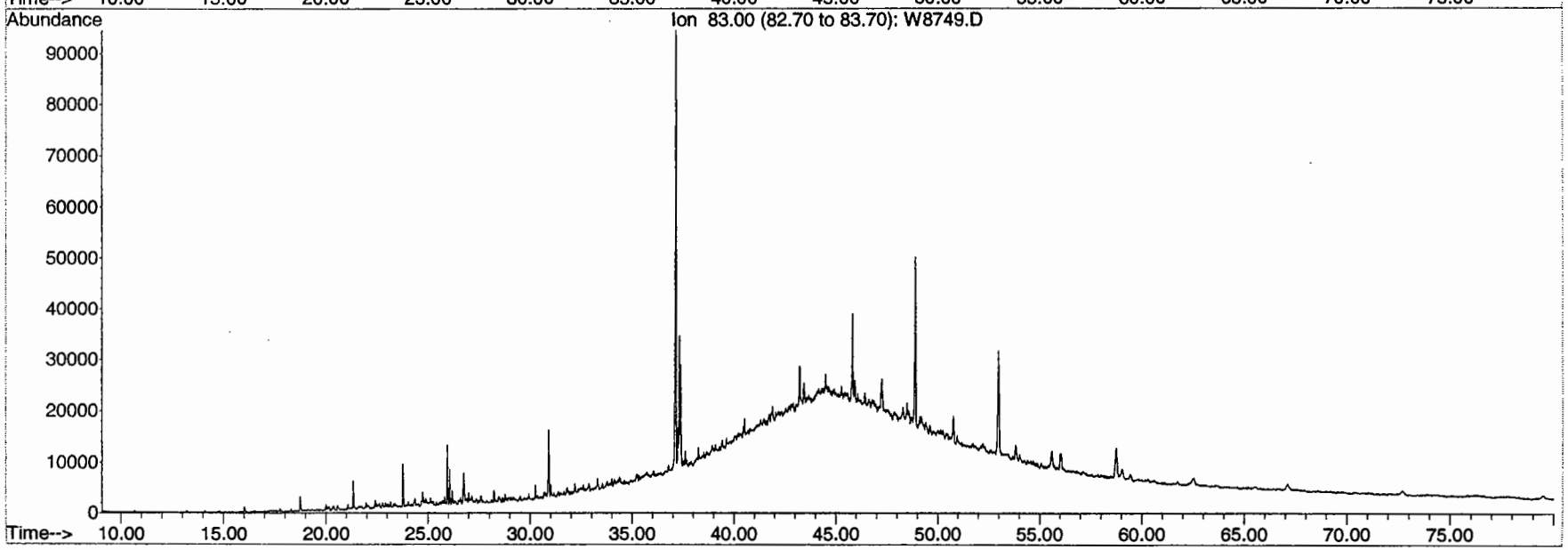
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-29
S1491

File: H:\E\DATA\SE0044\W8749.D
Date Acquired: 2 May 2004 5:33 pm
Method File: BIOSIM0
Sample Name: S1491-P-A-F1(10)
Misc Info: AH-29
Operator: JAR



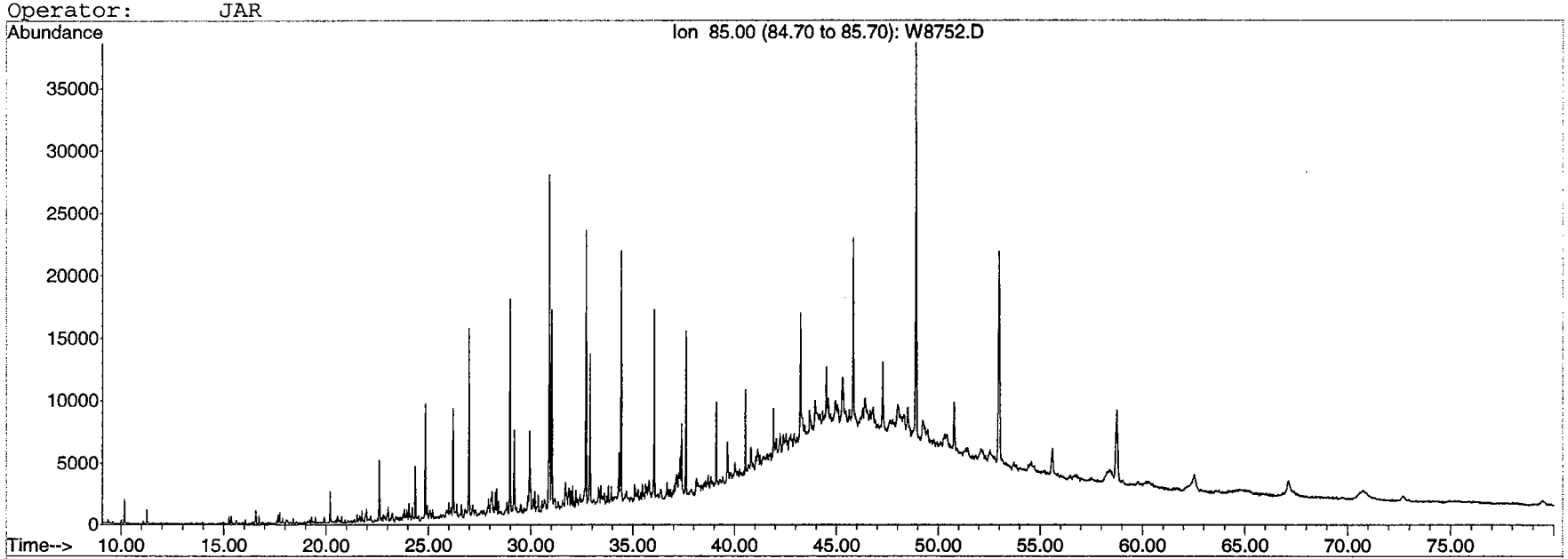


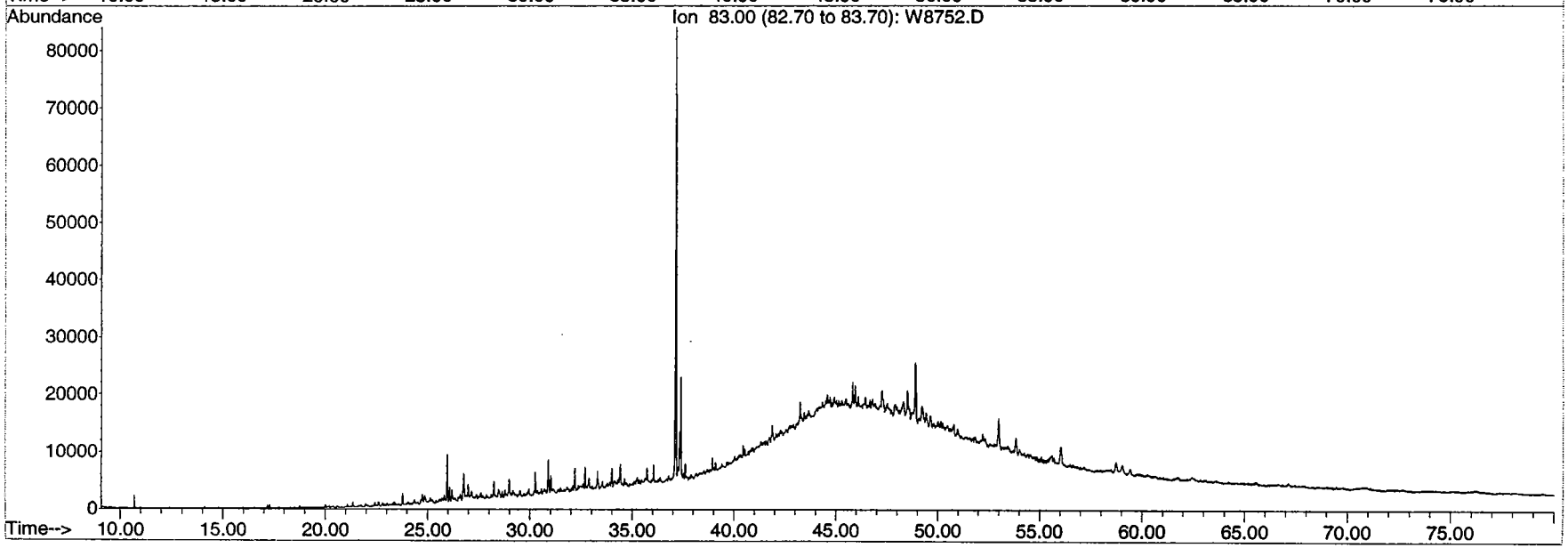
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-40
S1509

File: H:\E\DATA\SE0044\W8752.D
Date Acquired: 2 May 2004 10:02 pm
Method File: BIOSIM0
Sample Name: S1509-P-A-F1(10)
Misc Info: AH-40
Operator: JAR



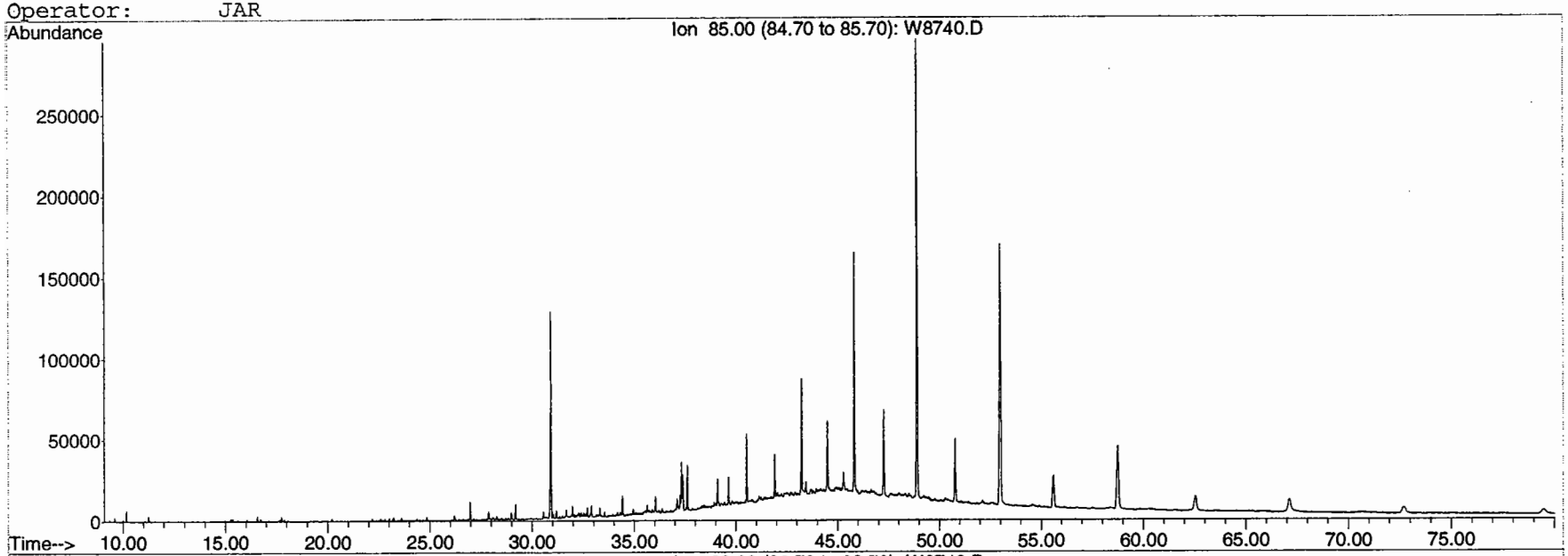


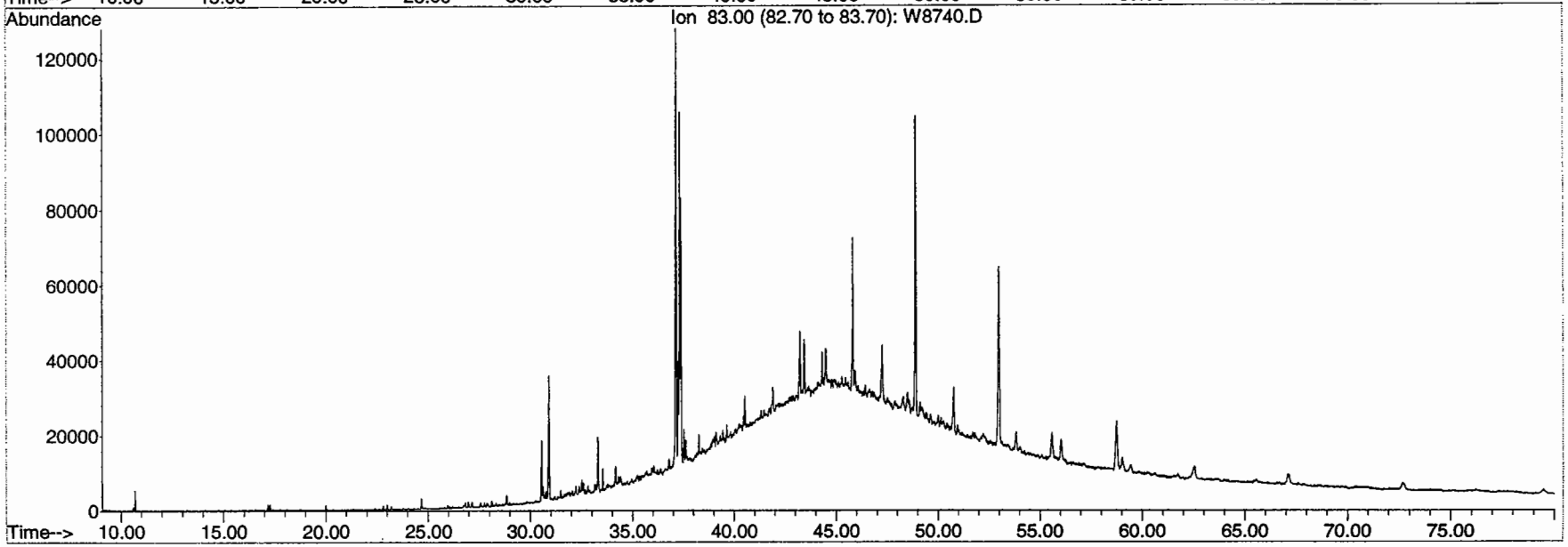
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-45
S1474

File: H:\E\DATA\SE0044\W8740.D
Date Acquired: 2 May 2004 4:08 am
Method File: BIOSIM0
Sample Name: S1474-P-A-F1(10)
Misc Info: AH-45
Operator: JAR



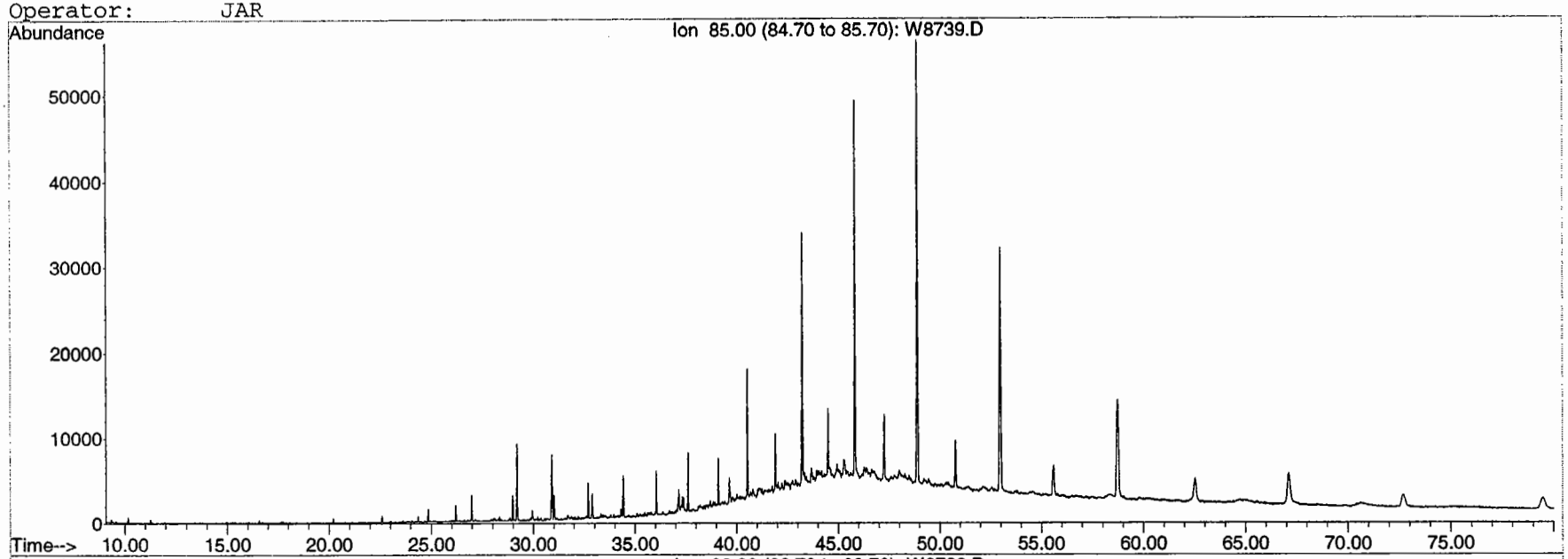


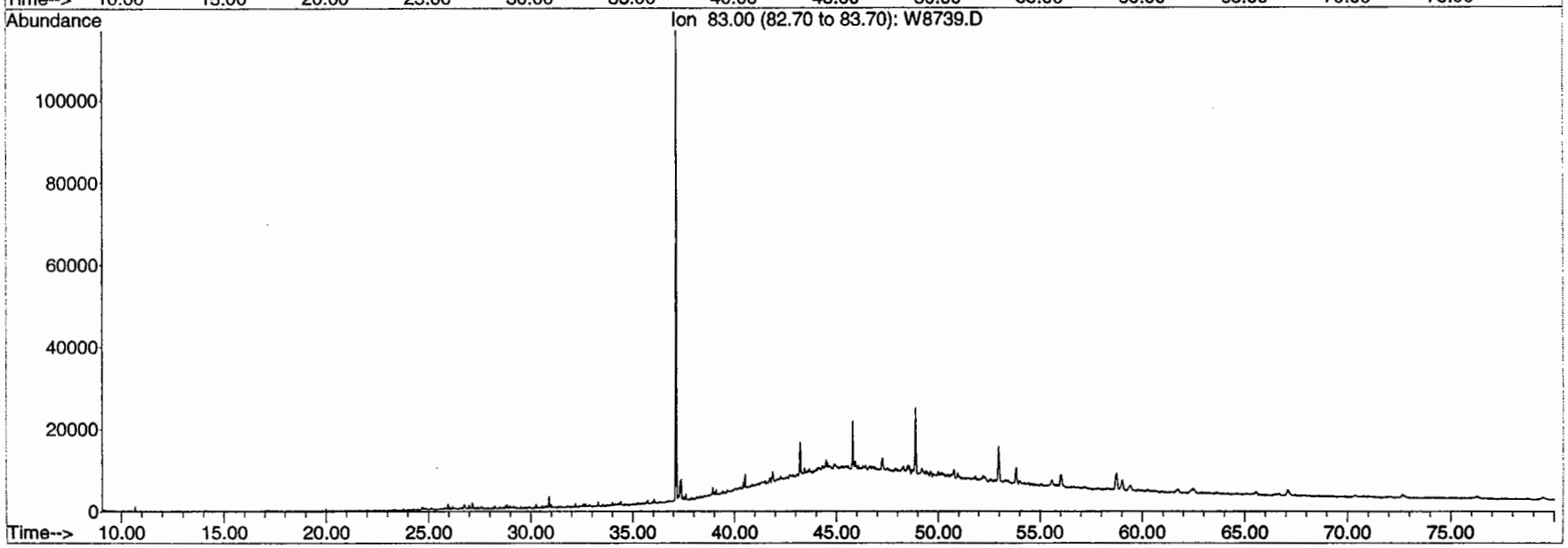
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

AH-49
S1471

File: H:\E\DATA\SE0044\W8739.D
Date Acquired: 2 May 2004 2:39 am
Method File: BIOSIM0
Sample Name: S1471-P-A-F1(10)
Misc Info: AH-49
Operator: JAR



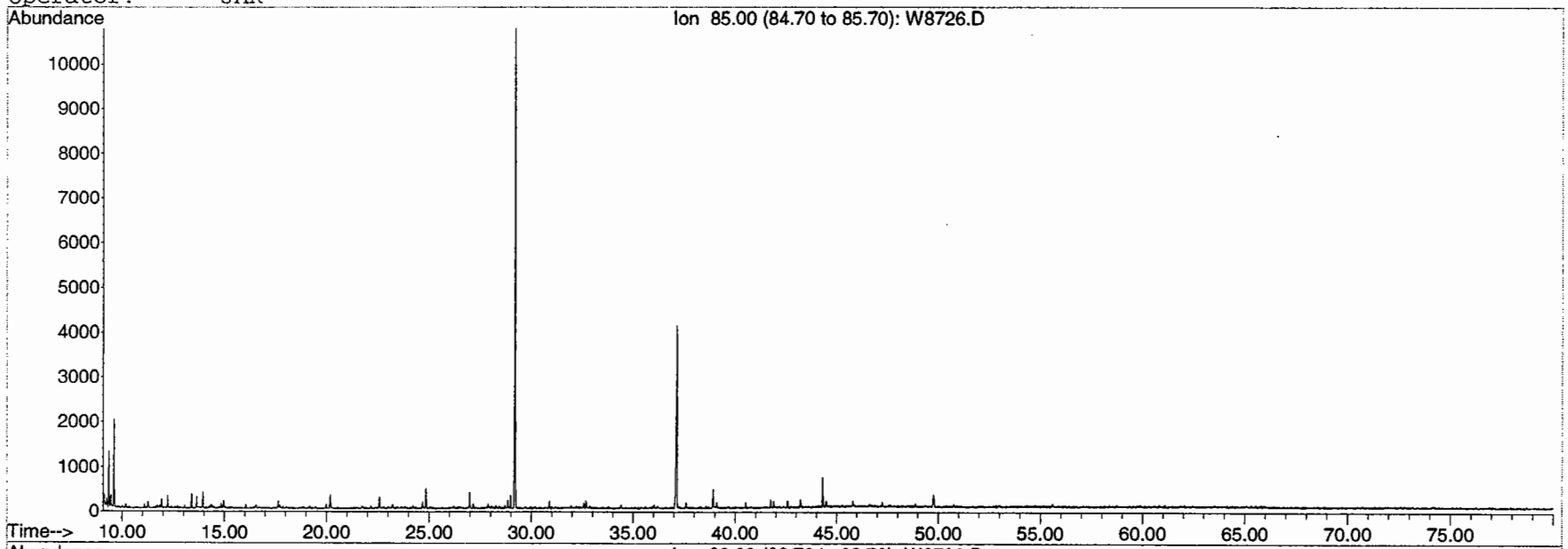


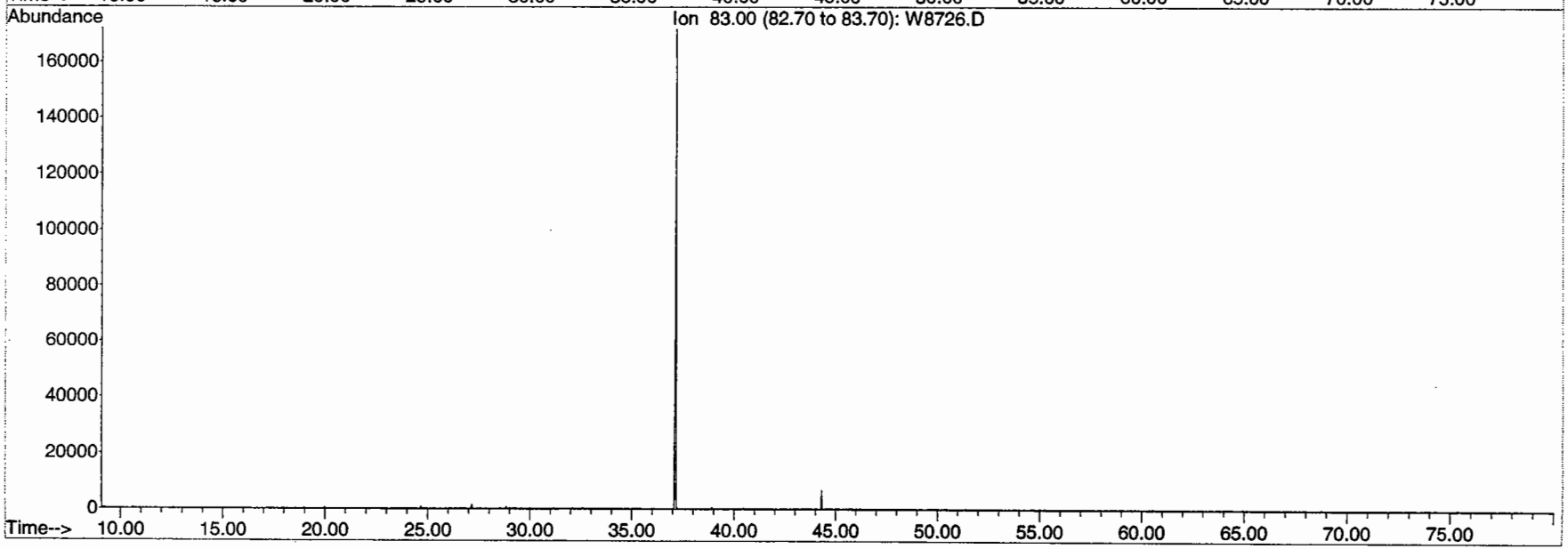
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

Procedural Blank
BE161PB

File: H:\E\DATA\SE0044\W8726.D
Date Acquired: 1 May 2004 7:16 am
Method File: BIOSIM0
Sample Name: BE161PB-P-A-F1(4)
Misc Info: 04-0117 Procedural Blank
Operator: JAR



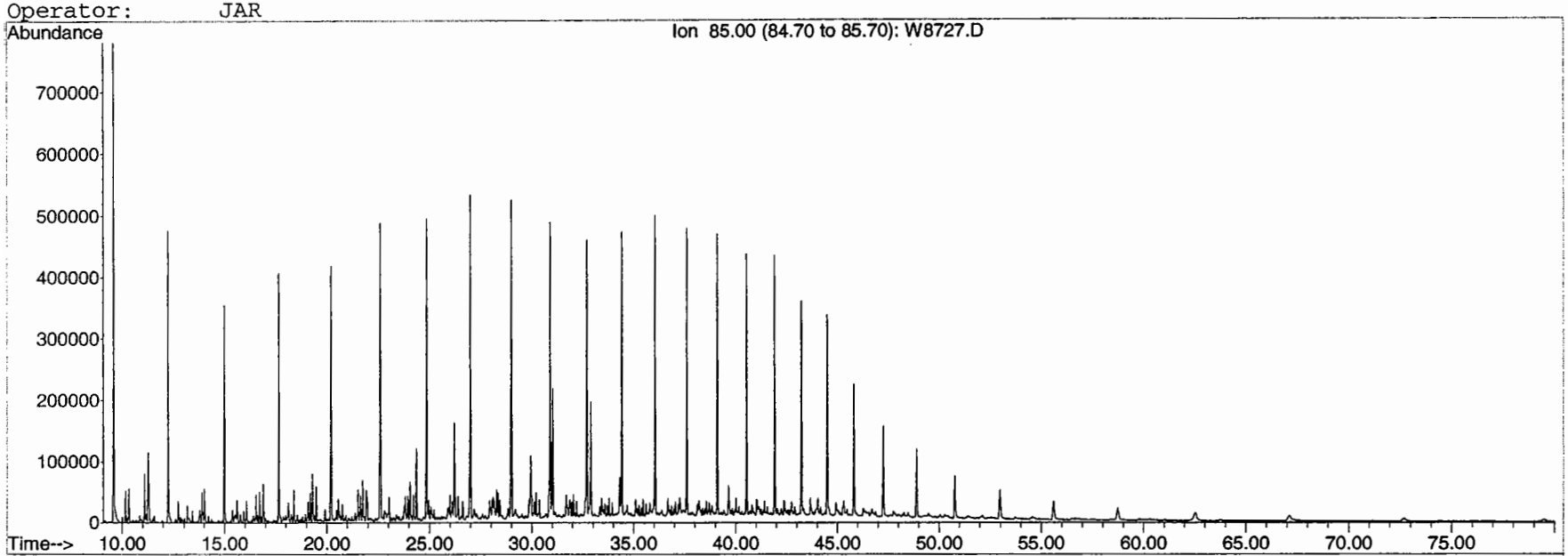


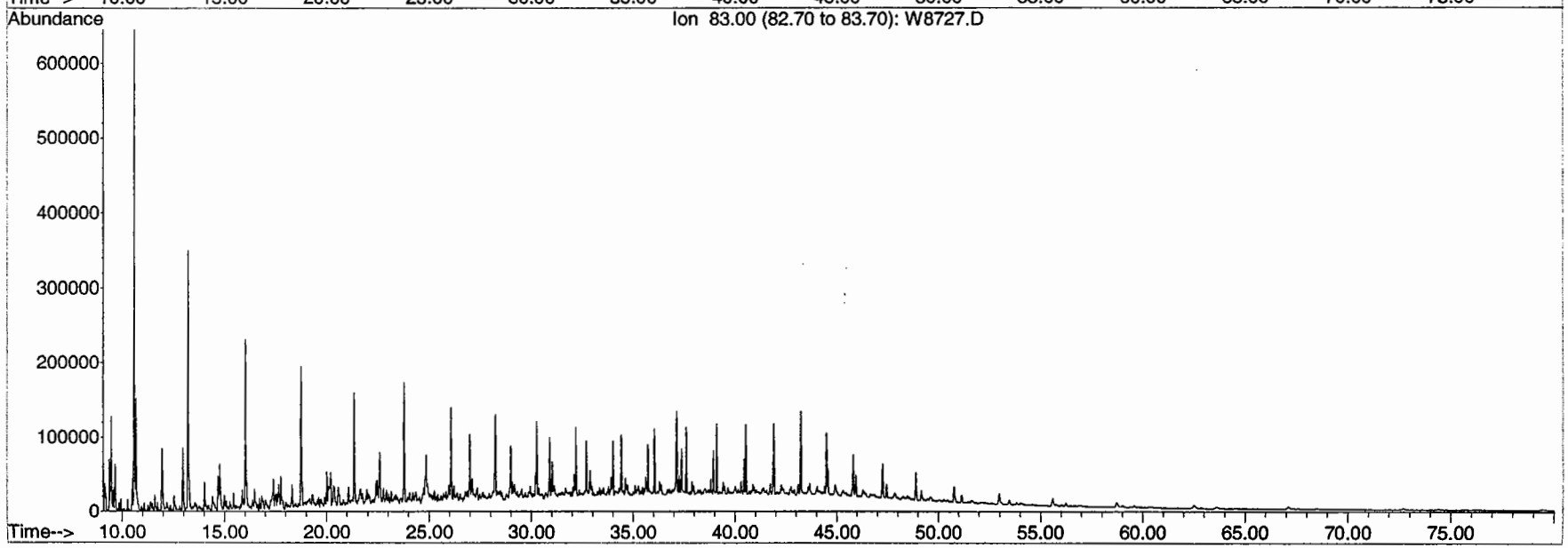
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

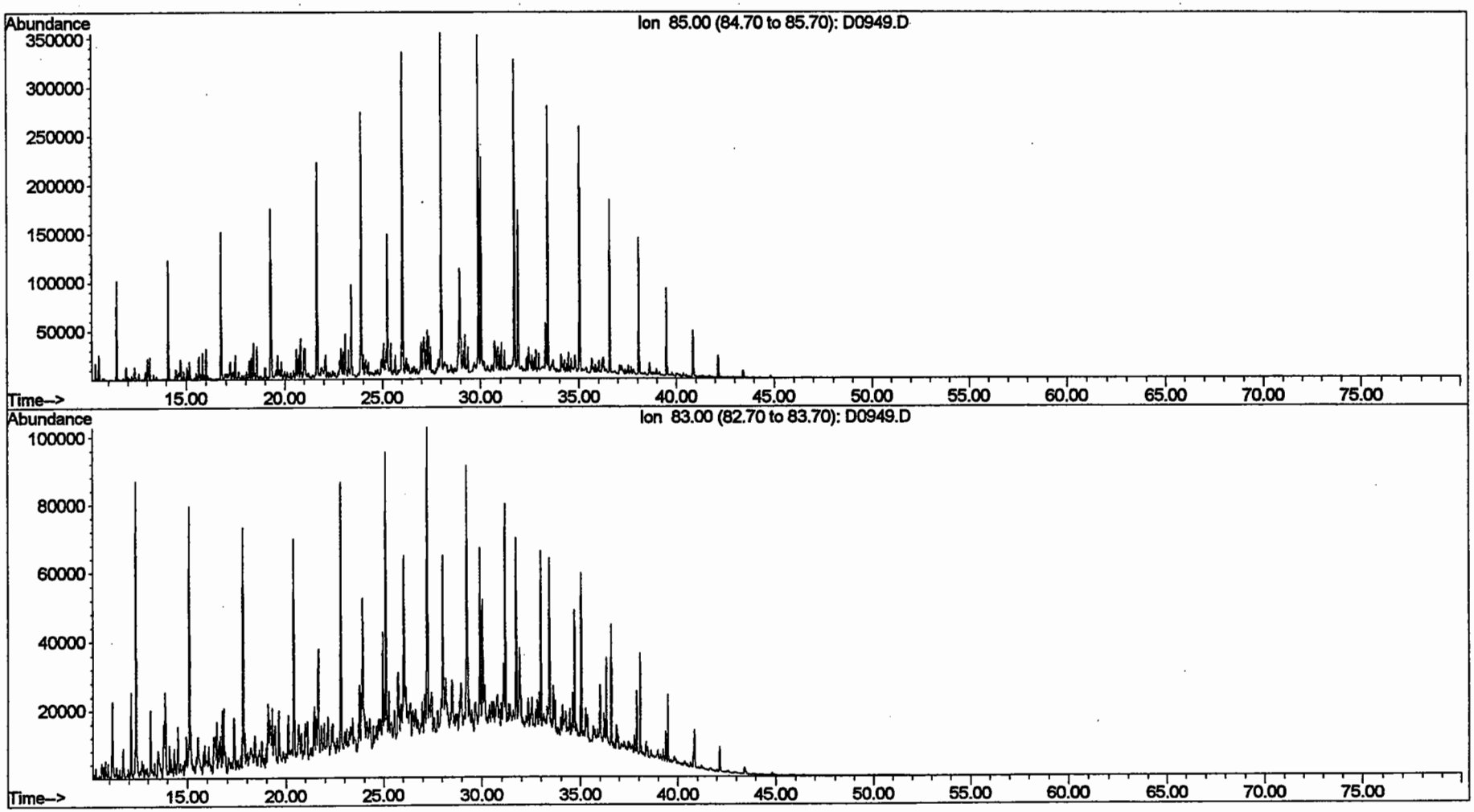
File: H:\E\DATA\SE0044\W8727.D
Date Acquired: 1 May 2004 8:46 am
Method File: BIOSIM0
Sample Name: BE279NSC-P(0)
Misc Info: North Slope Crude
Operator: JAR

North Slope Crude
BE279NSC

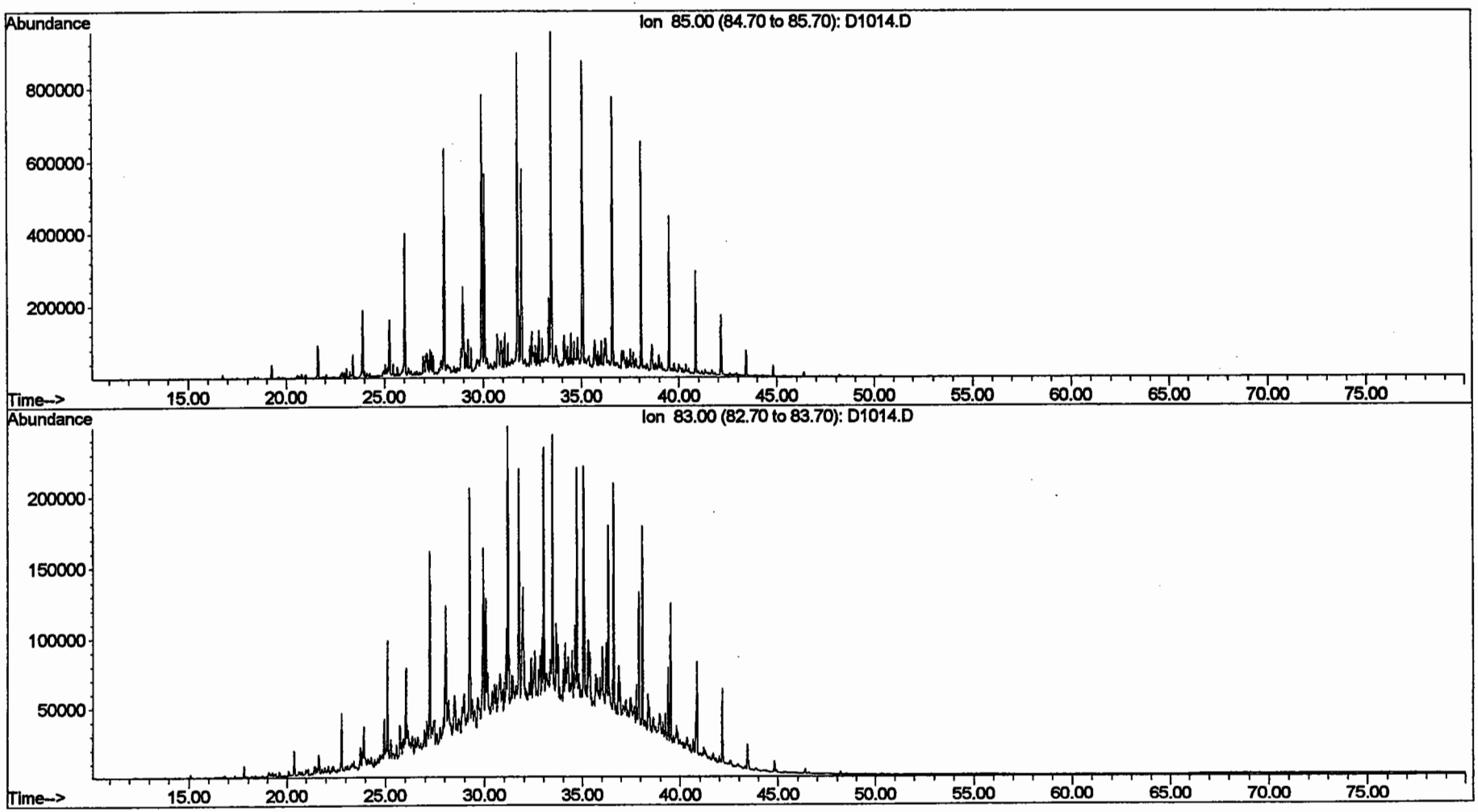




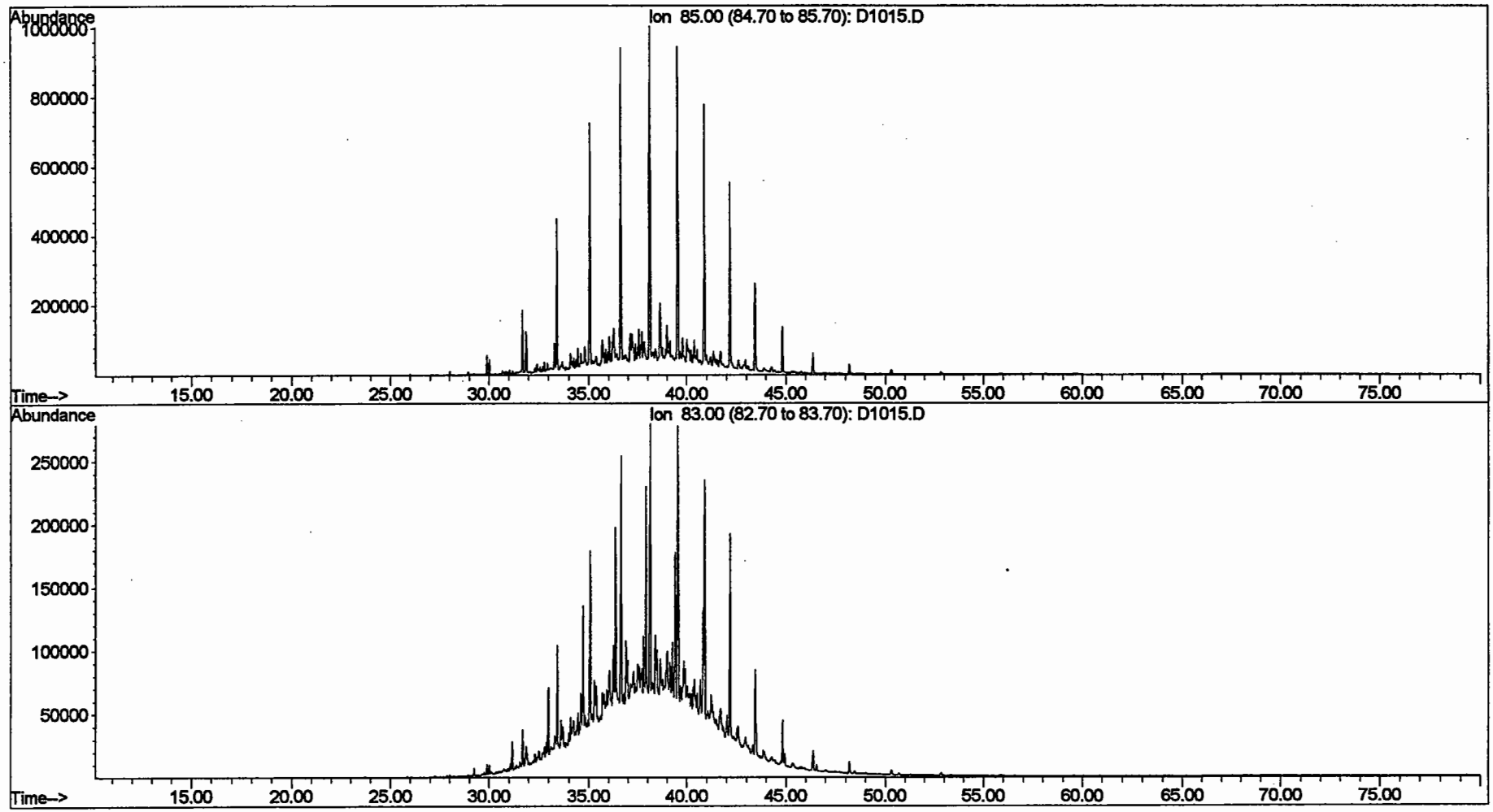
File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQD300\D0949 Diesel Unaltered
Operator : TH
Acquired : 9 Nov 2001 4:40 pm using AcqMethod SINTEF1C
Instrument : GC/MS Ins
Sample Name: ZM25IC3
Misc Info : SOP 5-157
Vial Number: 14



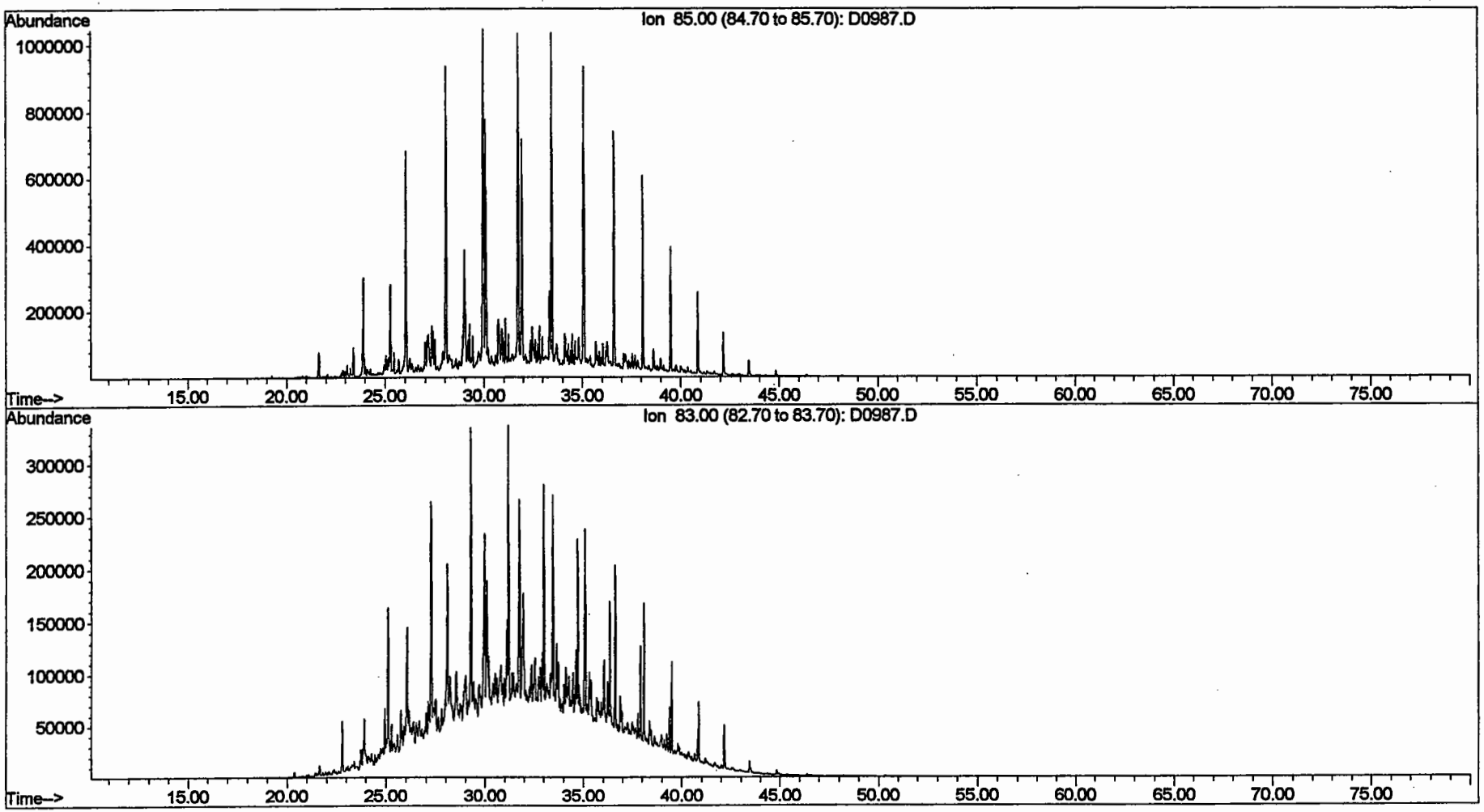
File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQD300\D1014 Diesel 50% Combusted
Operator : TH
Acquired : 13 Nov 2001 8:04 pm using AcqMethod SINTEF1C
Instrument : GC/MS Ins
Sample Name: W7747C50-D
Misc Info : SOP 5-157
Vial Number: 79



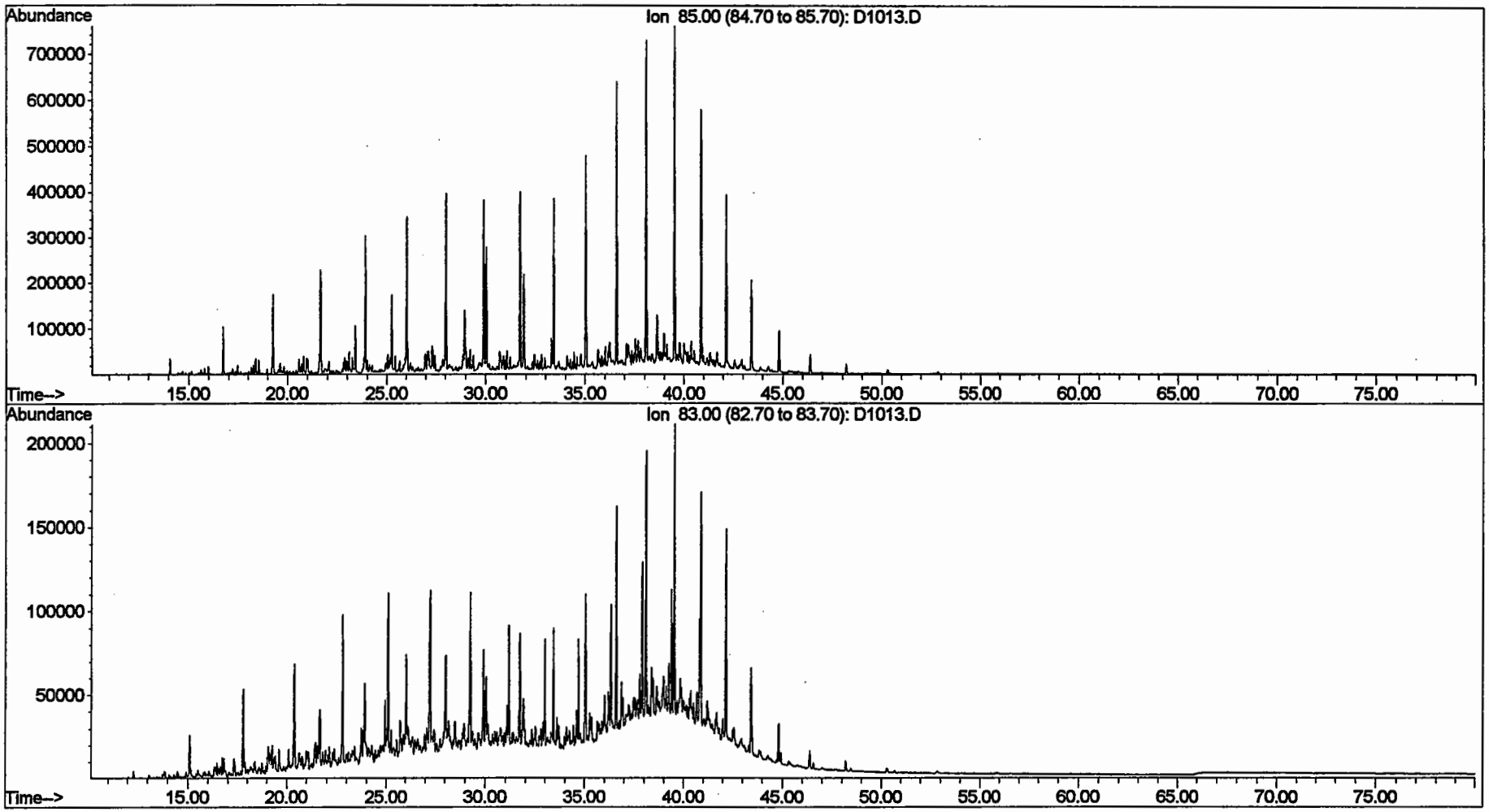
File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQD300\D1015 Diesel 100% Combusted
Operator : TH
Acquired : 13 Nov 2001 9:34 pm using AcqMethod SINTEF1C
Instrument : GC/MS Ins
Sample Name: W7747C100-D
Misc Info : SOP 5-157
Vial Number: 80



File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQD300\D0987 Diesel 50% Evaporated
Operator : TH
Acquired : 12 Nov 2001 2:44 am using AcqMethod SINTEF1C
Instrument : GC/MS Ins
Sample Name: W7747-E50-D
Misc Info : SOP 5-157
Vial Number: 52

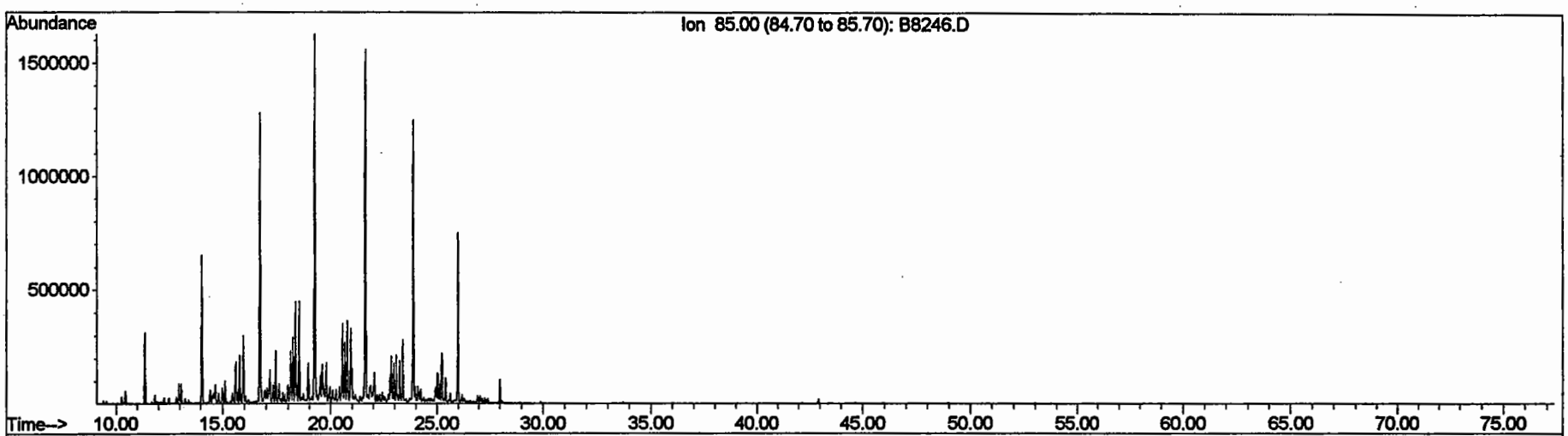


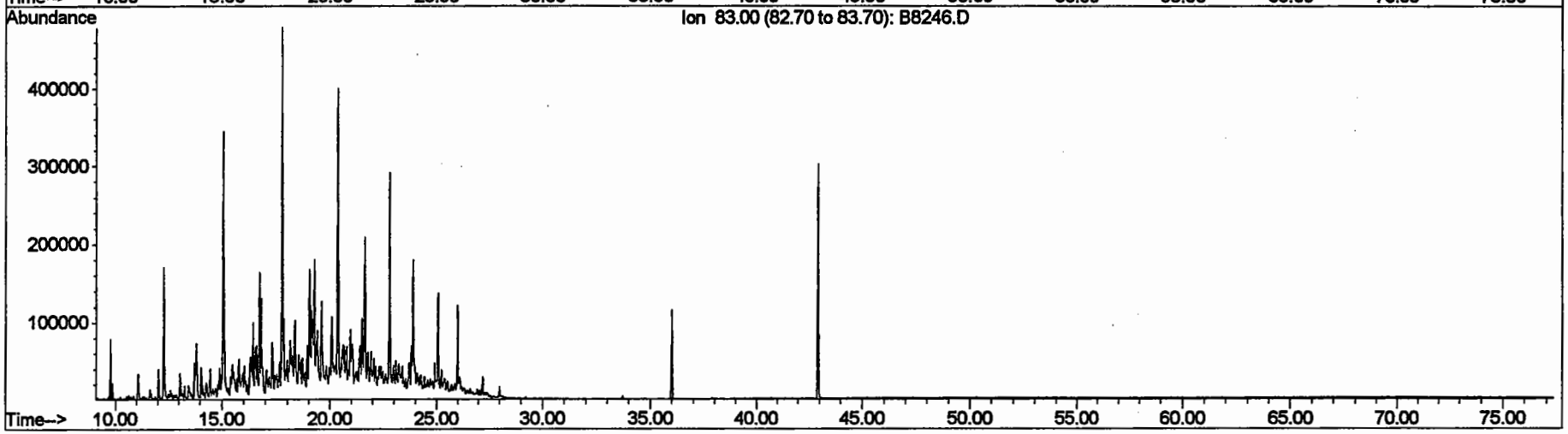
File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQD300\D1013 Diesel 100% Evaporated
Operator : TH
Acquired : 13 Nov 2001 6:33 pm using AcqMethod SINTEF1C
Instrument : GC/MS Ins
Sample Name: W7747E100-D
Misc Info : SOP 5-157
Vial Number: 78



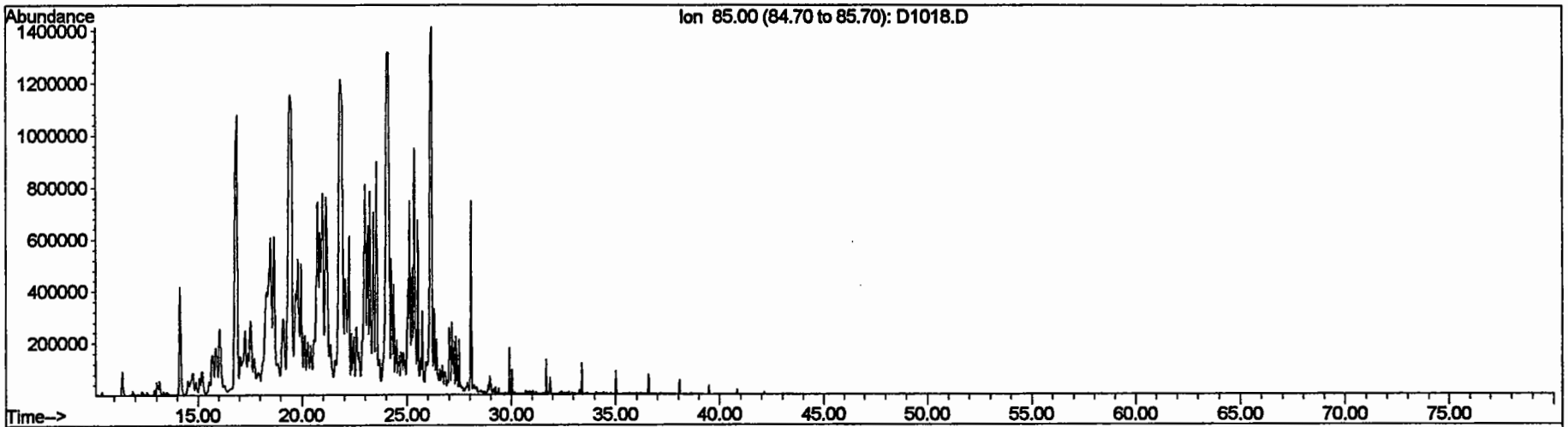
File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQB833\B8246
Operator : JS
Acquired : 11 Feb 2002 12:20 pm using AcqMethod ACQ2CUTL
Instrument : GCMS2
Sample Name: ZR36IC
Misc Info : 02-040 PE
Vial Number: 13

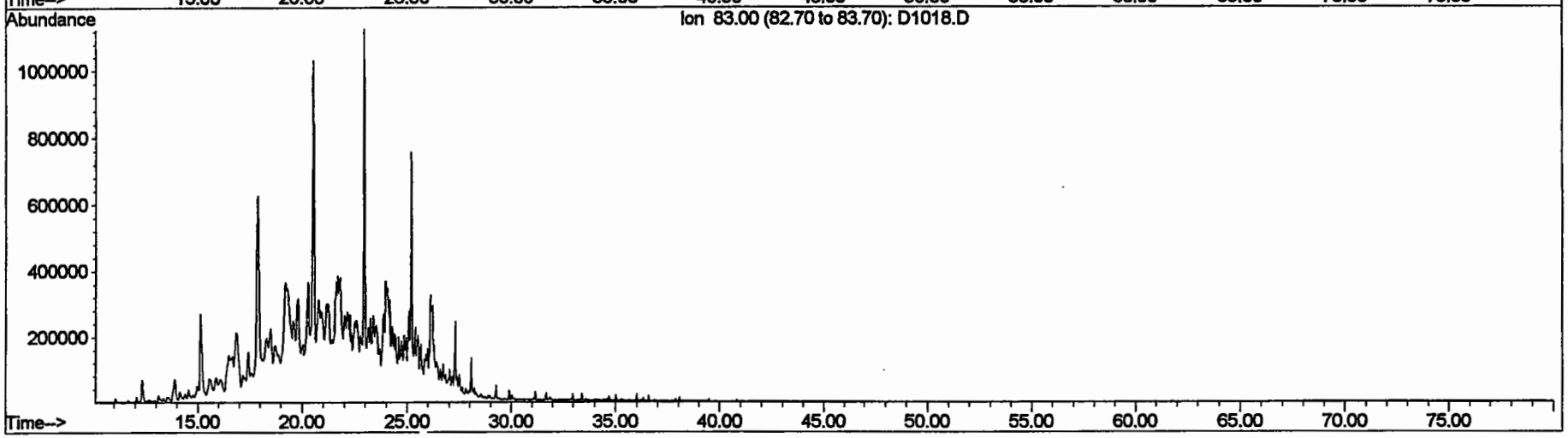
Kerosene Unaltered



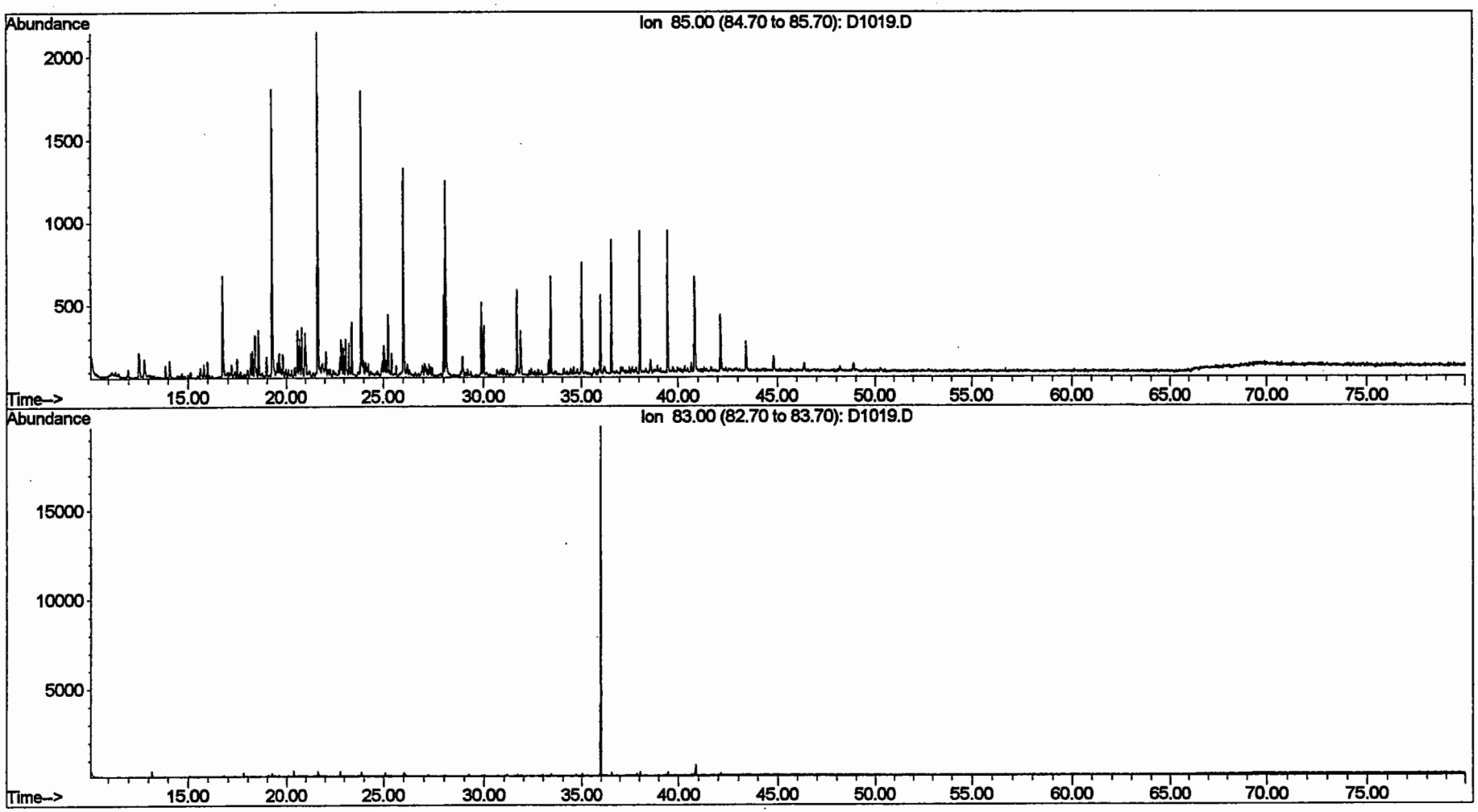


File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQD300\D1018 Kerosene 50% Combusted
Operator : TH
Acquired : 14 Nov 2001 2:09 am using AcqMethod SINTEF1C
Instrument : GC/MS Ins
Sample Name: W7748C50-D
Misc Info : SOP 5-157
Vial Number: 83

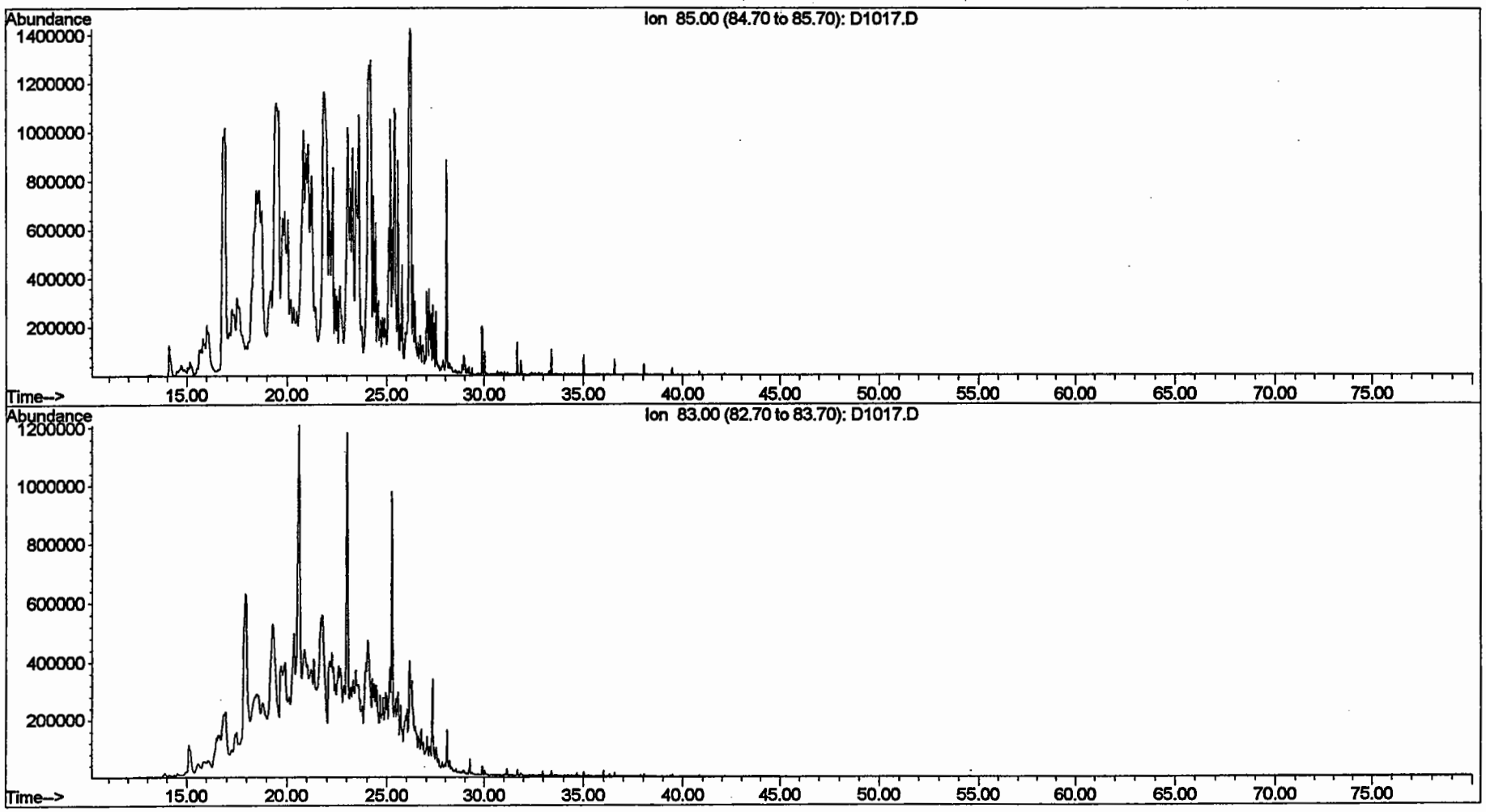




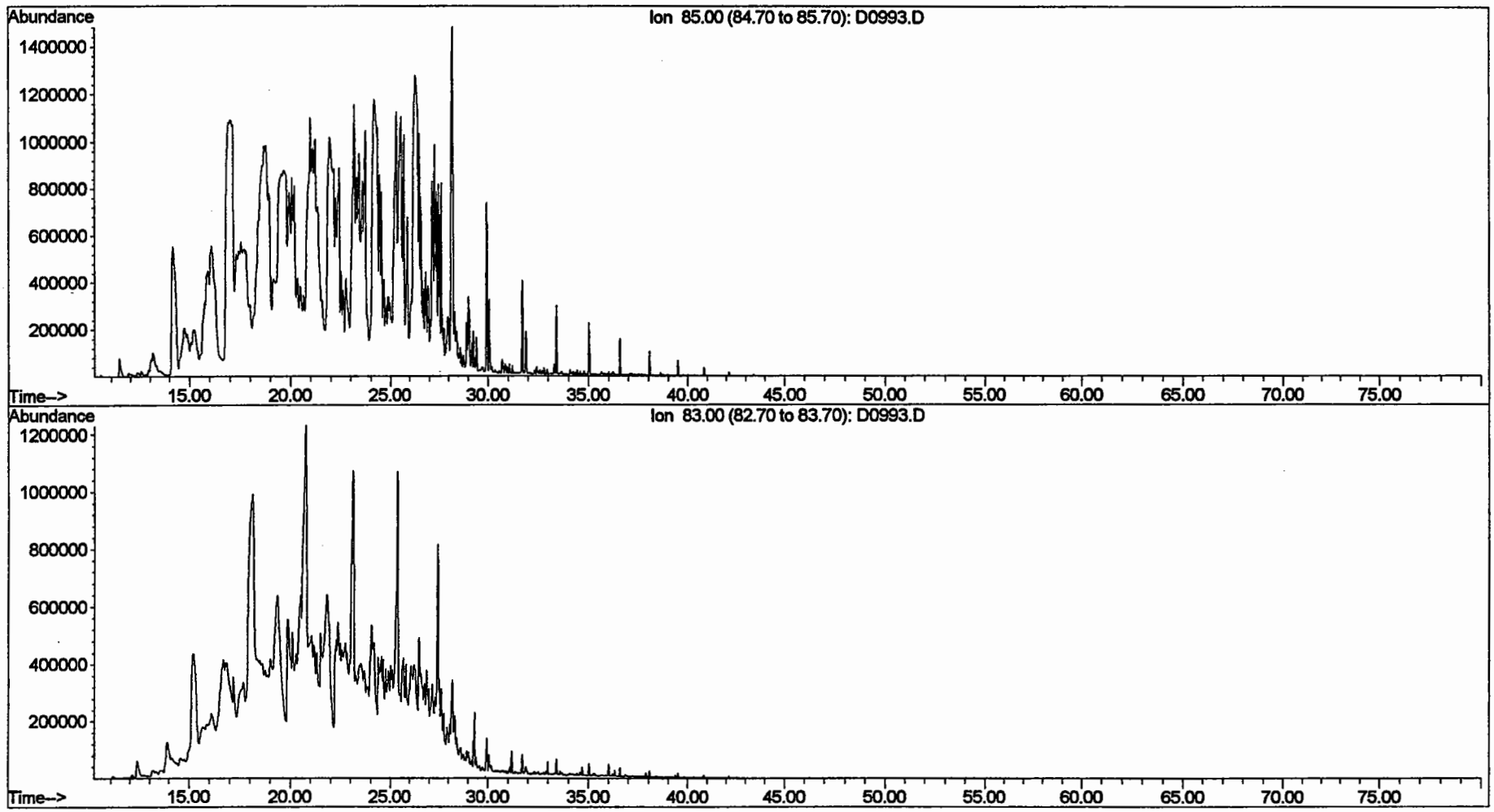
File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQD300\D1019 Kerosene 100% Combusted
Operator : TH
Acquired : 14 Nov 2001 3:41 am using AcqMethod SINTEF1C
Instrument : GC/MS Ins
Sample Name: W7748C100-D
Misc Info : SOP 5-157
Vial Number: 84



File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQD300\D1017 Kerosene 50% Evaporated
Operator : TH
Acquired : 14 Nov 2001 12:38 am using AcqMethod SINTEF1C
Instrument : GC/MS Ins
Sample Name: W7748E50-D
Misc Info : SOP 5-157
Vial Number: 82



File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQD300\D0993 Kerosene 100% Evaporated
Operator : TH
Acquired : 12 Nov 2001 11:49 am using AcqMethod SINTEF1C
Instrument : GC/MS Ins
Sample Name: W7748-E100-D
Misc Info : SOP 5-157
Vial Number: 58

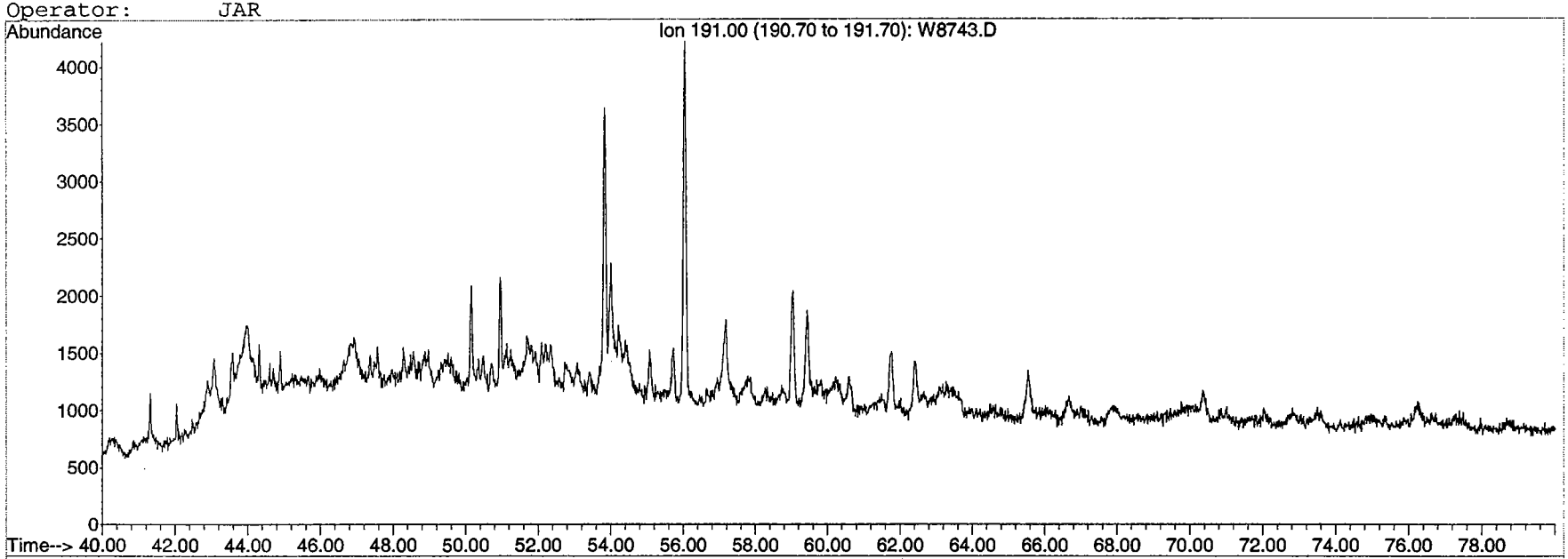


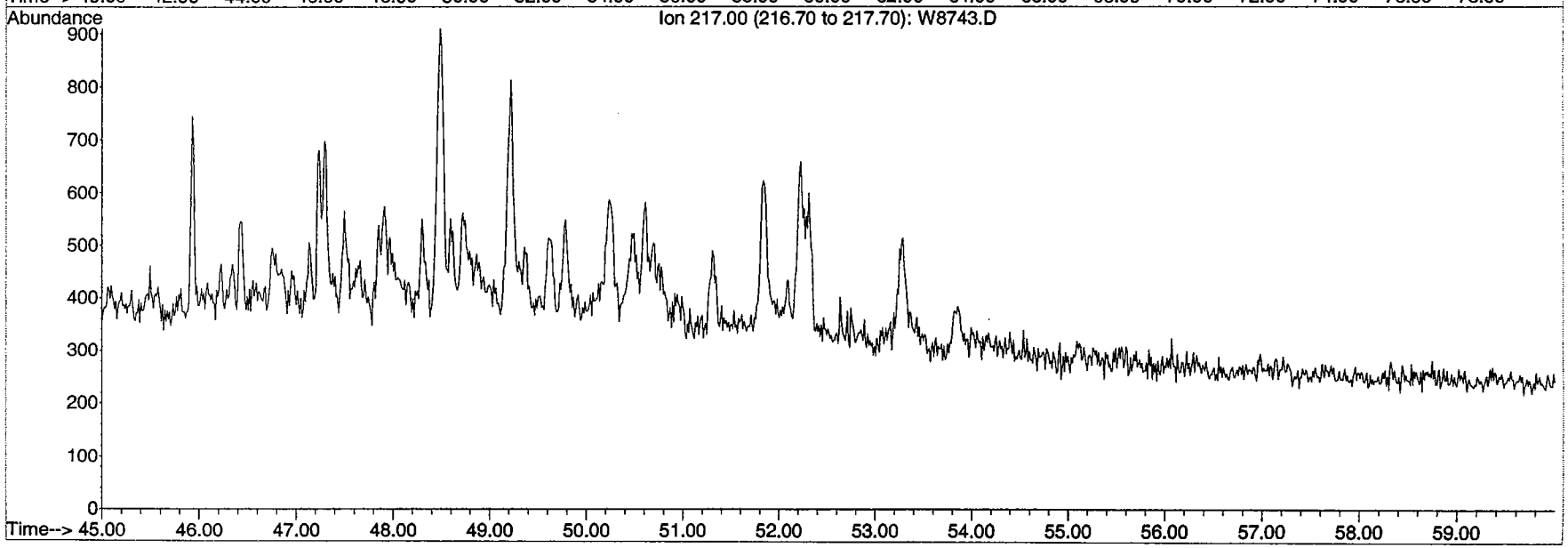
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8743.D
Date Acquired: 2 May 2004 8:37 am
Method File: BIOSIM0
Sample Name: S1483-P-A-F1(8)
Misc Info: Source 1-1
Operator: JAR

Source 1-1
S1483



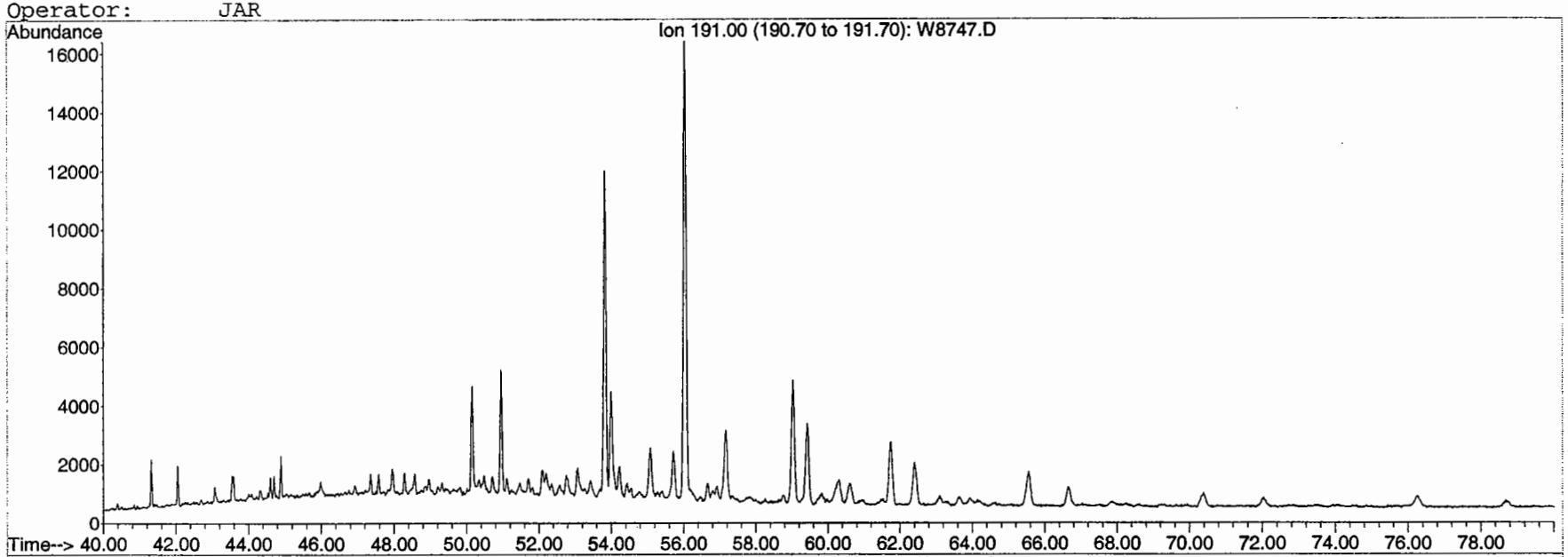


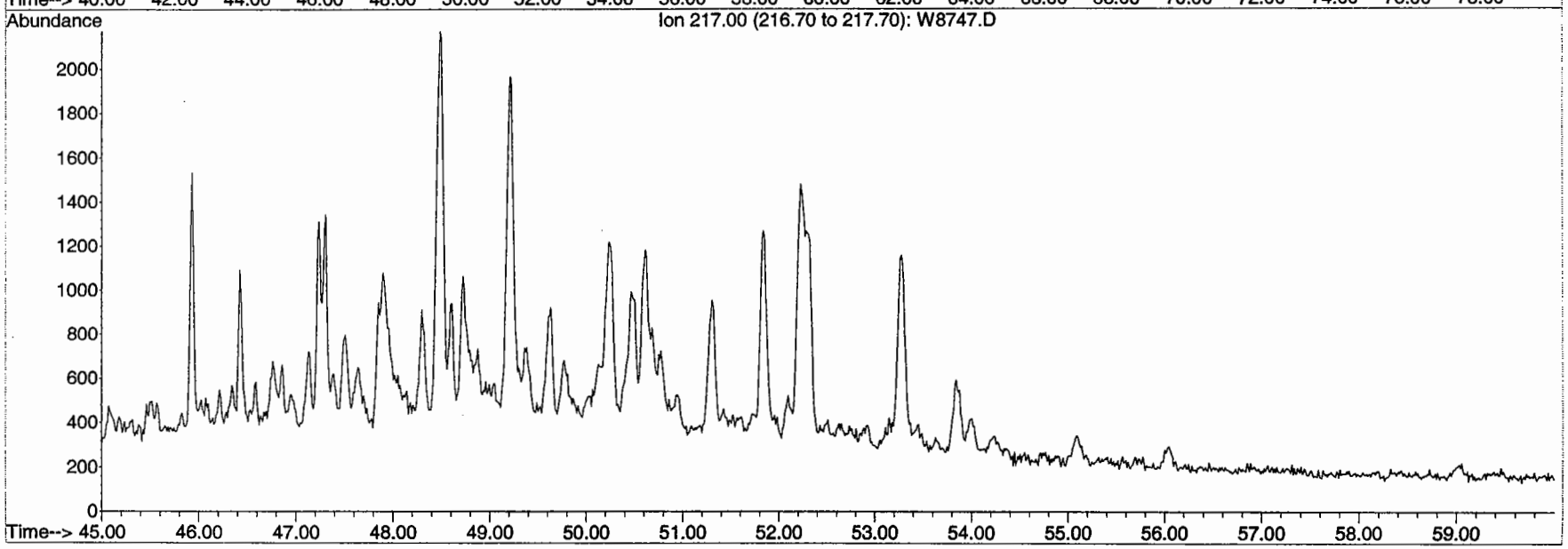
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8747.D
Date Acquired: 2 May 2004 2:35 pm
Method File: BIOSIM0
Sample Name: S1485-P-A-F1(10)
Misc Info: Source 1-2
Operator: JAR

Source 1-2
S1485



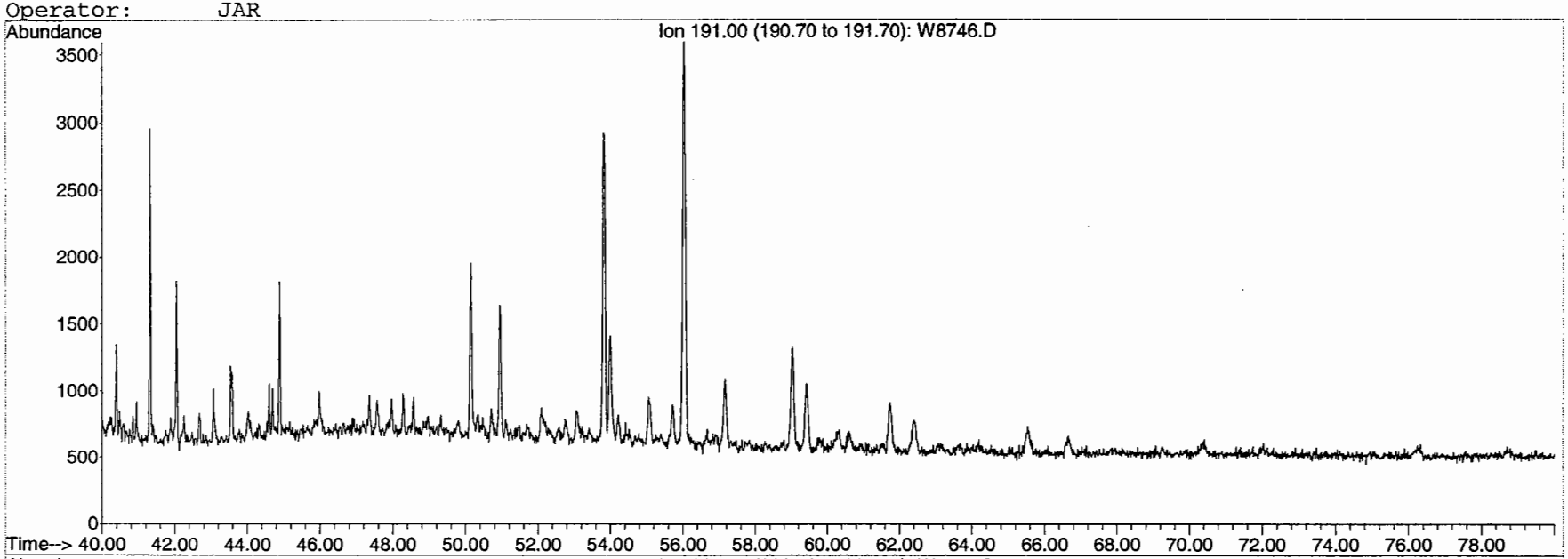


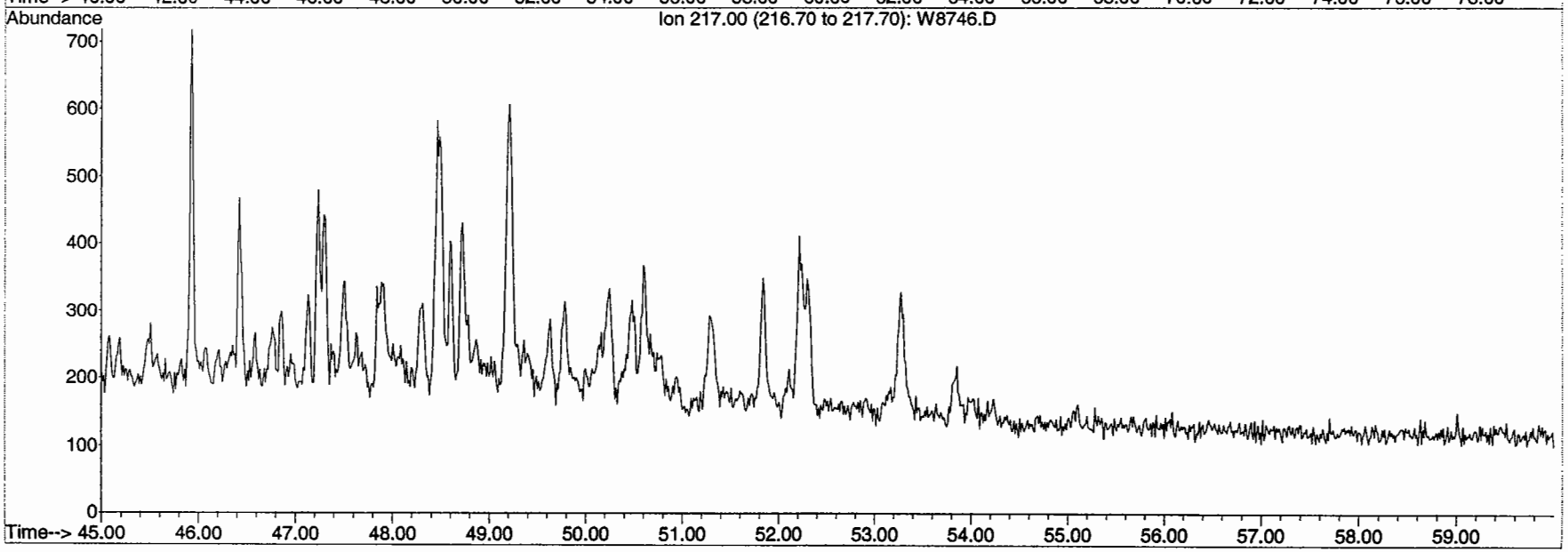
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8746.D
Date Acquired: 2 May 2004 1:05 pm
Method File: BIOSIM0
Sample Name: S1484-P-A-F1(10)
Misc Info: Source 2-1
Operator: JAR

Source 2-1
S1484



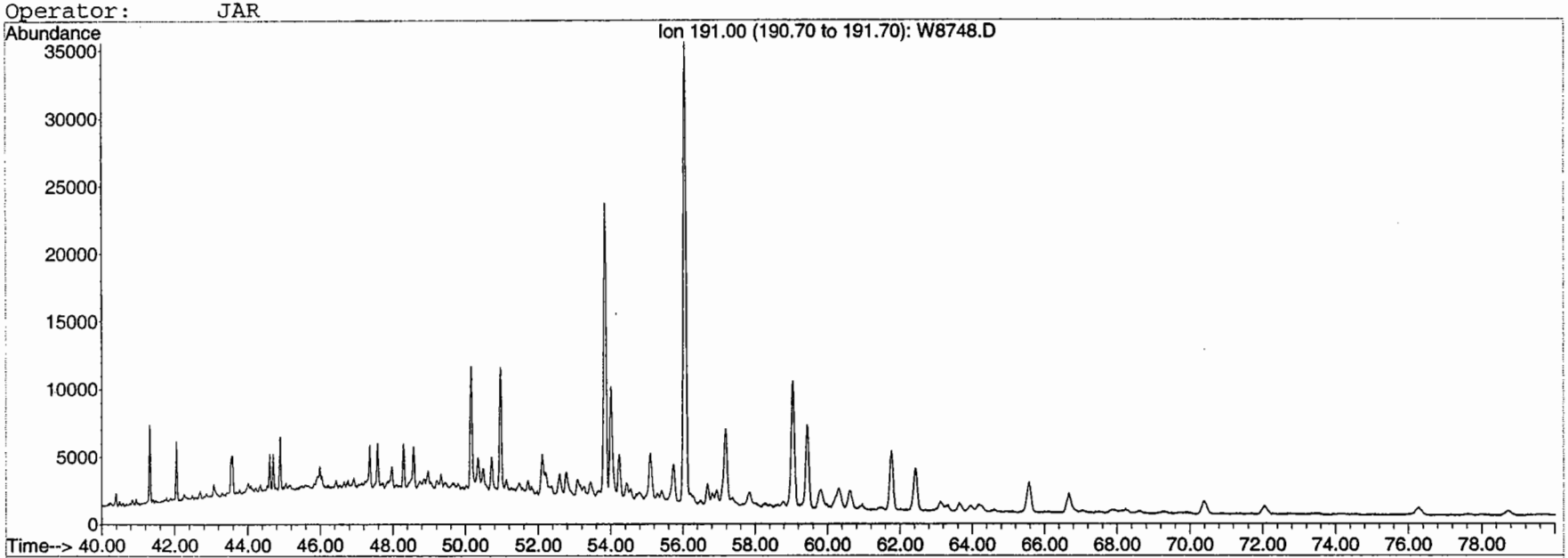


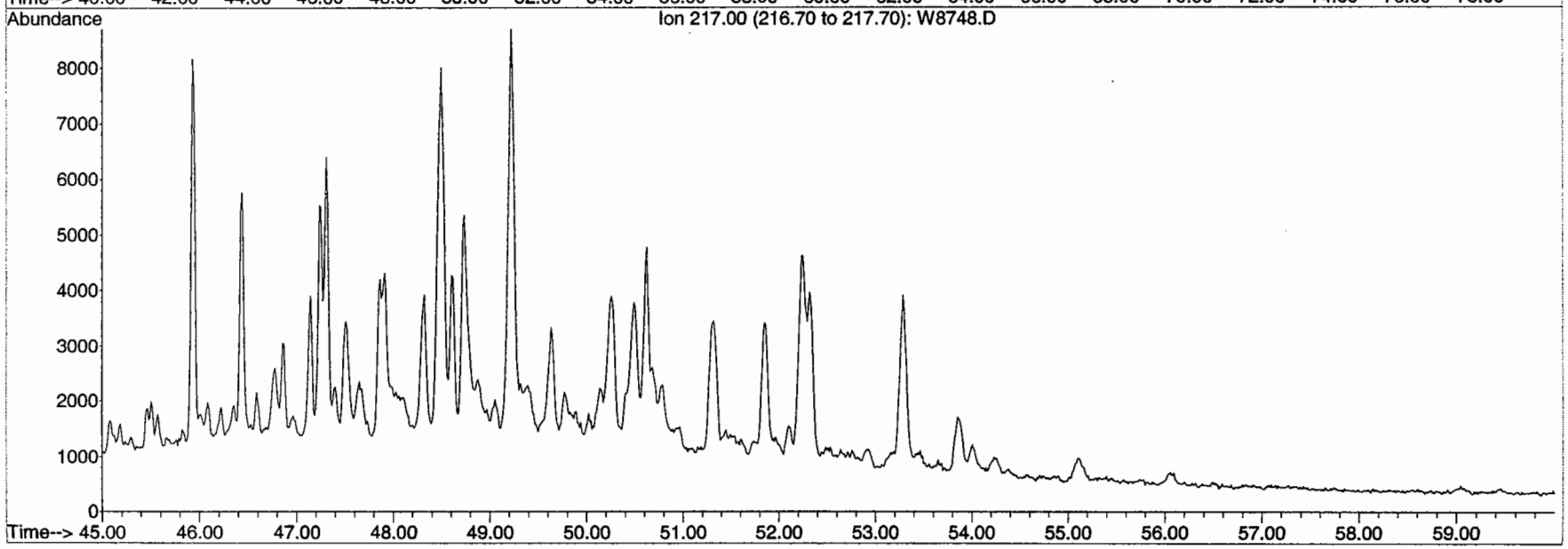
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8748.D
Date Acquired: 2 May 2004 4:04 pm
Method File: BIOSIM0
Sample Name: S1486-P-A-F1(10)
Misc Info: Source 2-2
Operator: JAR

Source 2-2
S1486



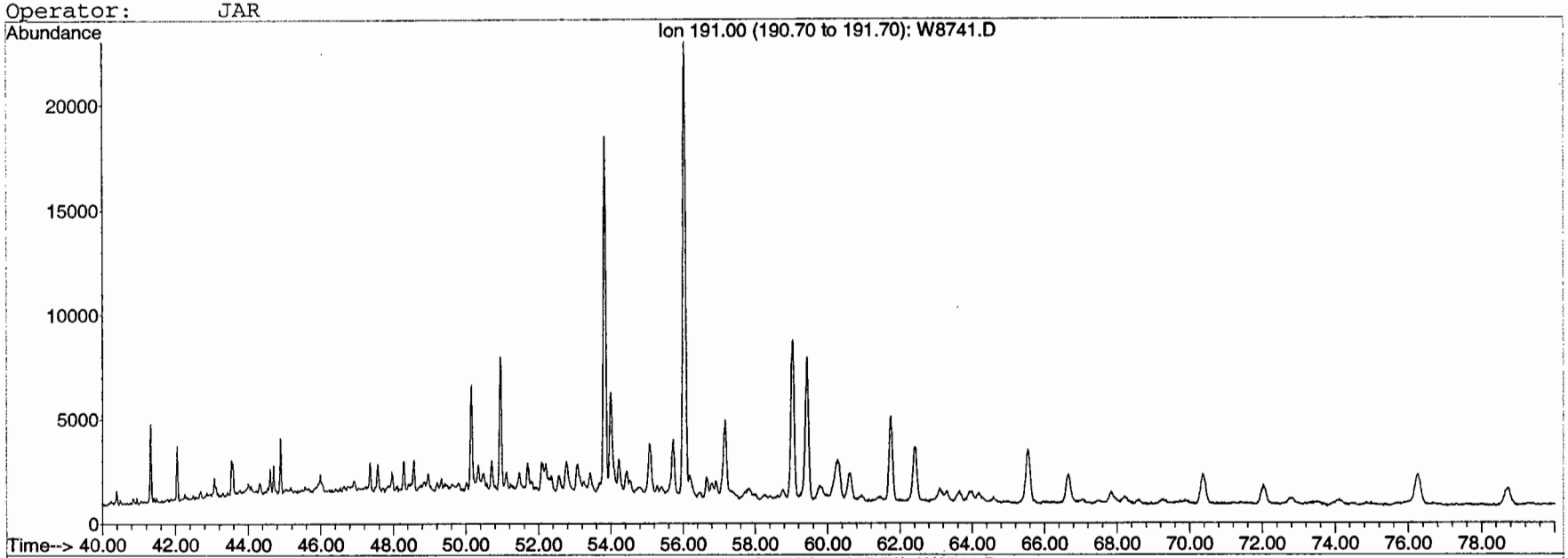


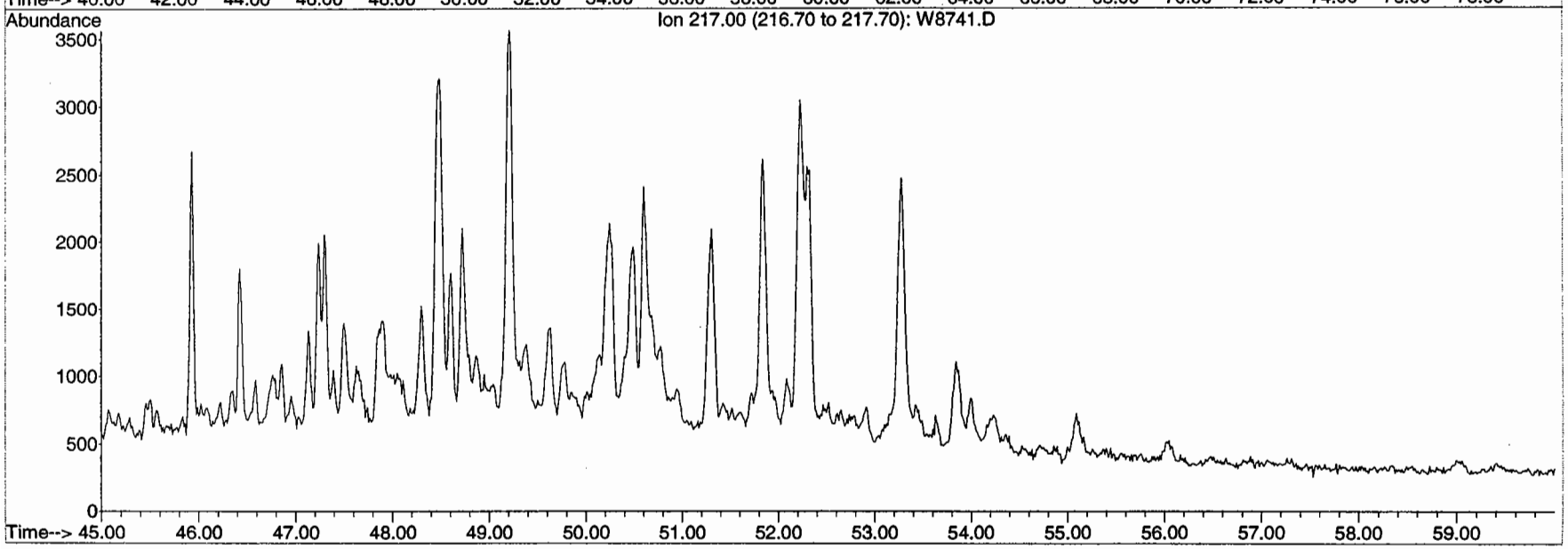
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8741.D
Date Acquired: 2 May 2004 5:38 am
Method File: BIOSIM0
Sample Name: S1481-P-A-F1(8)
Misc Info: Source 3-1
Operator: JAR

Source 3-1
S1481



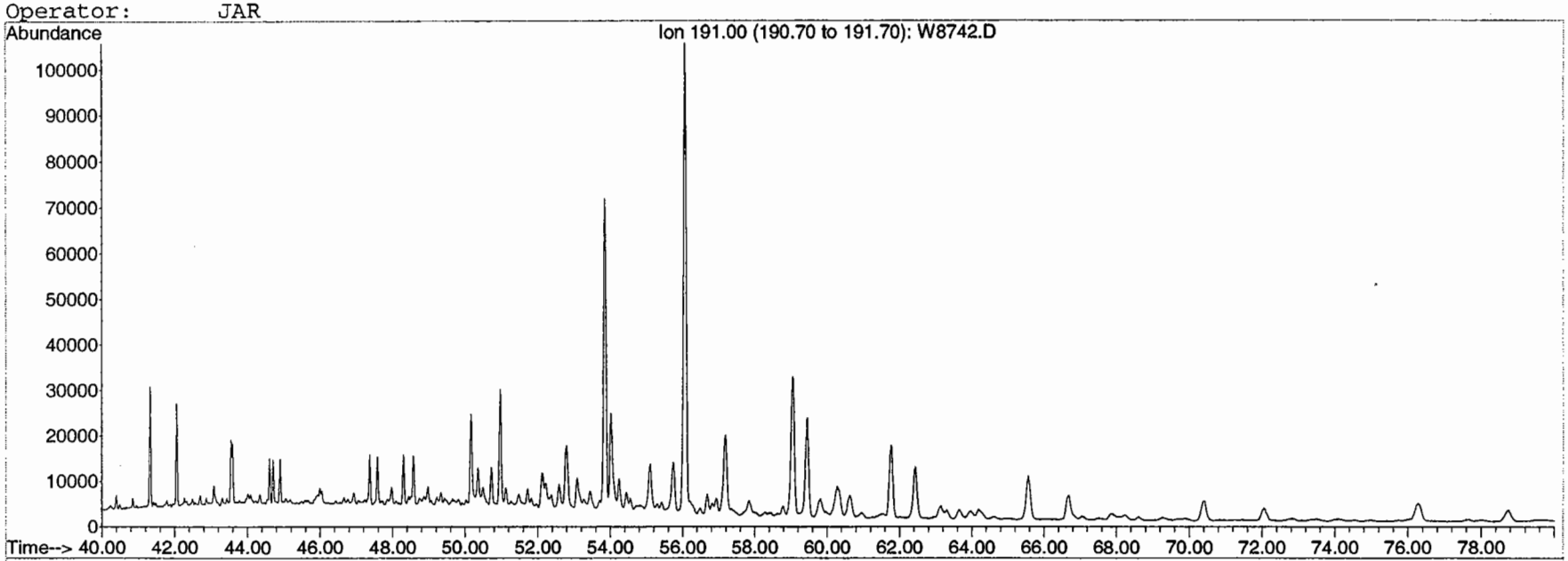


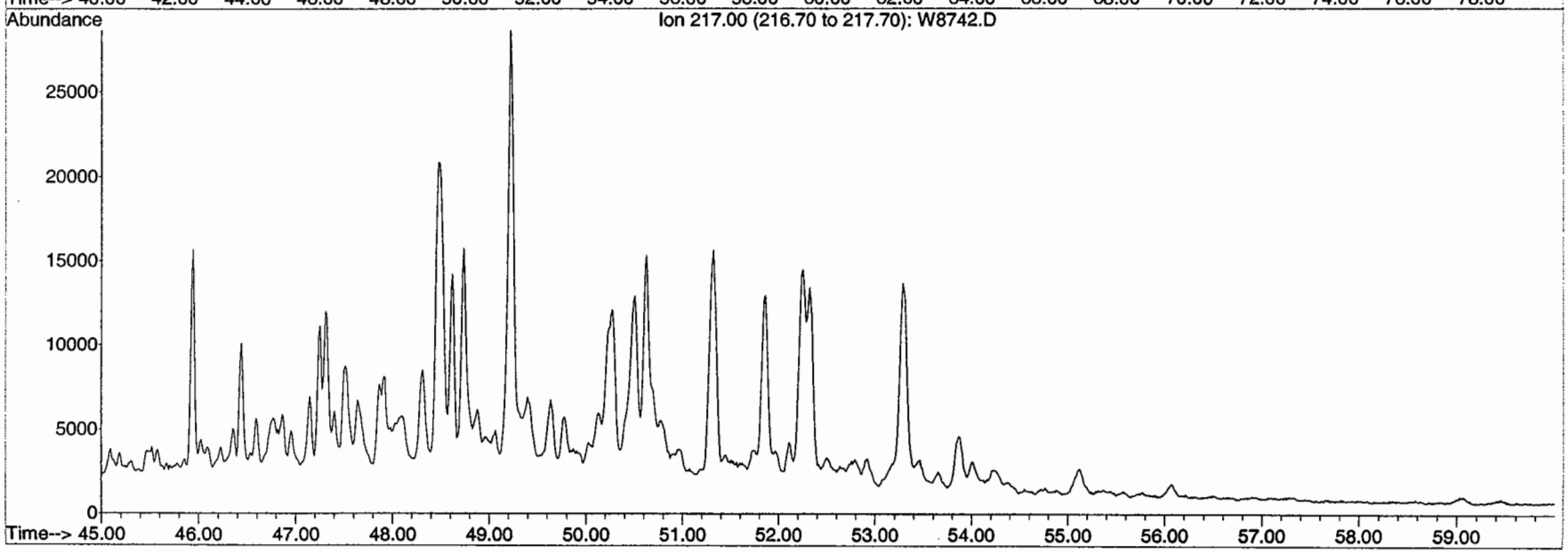
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8742.D
Date Acquired: 2 May 2004 7:08 am
Method File: BIOSIM0
Sample Name: S1482-P-A-F1(8)
Misc Info: Source 3-2
Operator: JAR

Source 3-2
S1482



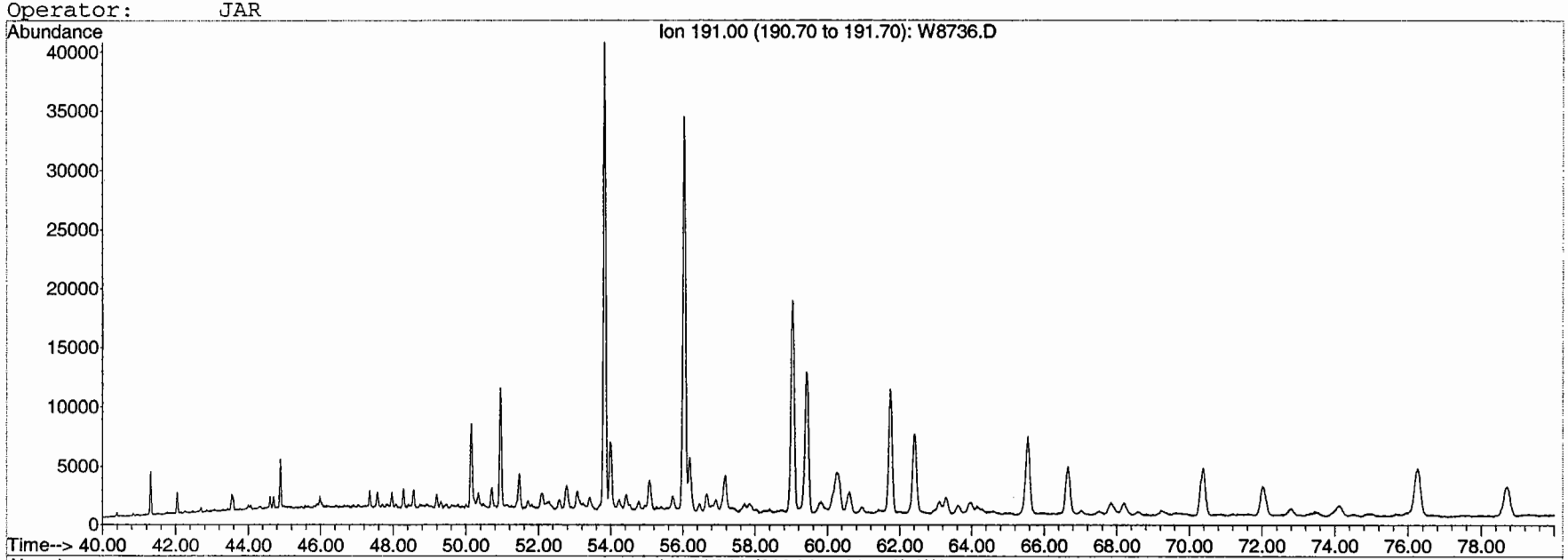


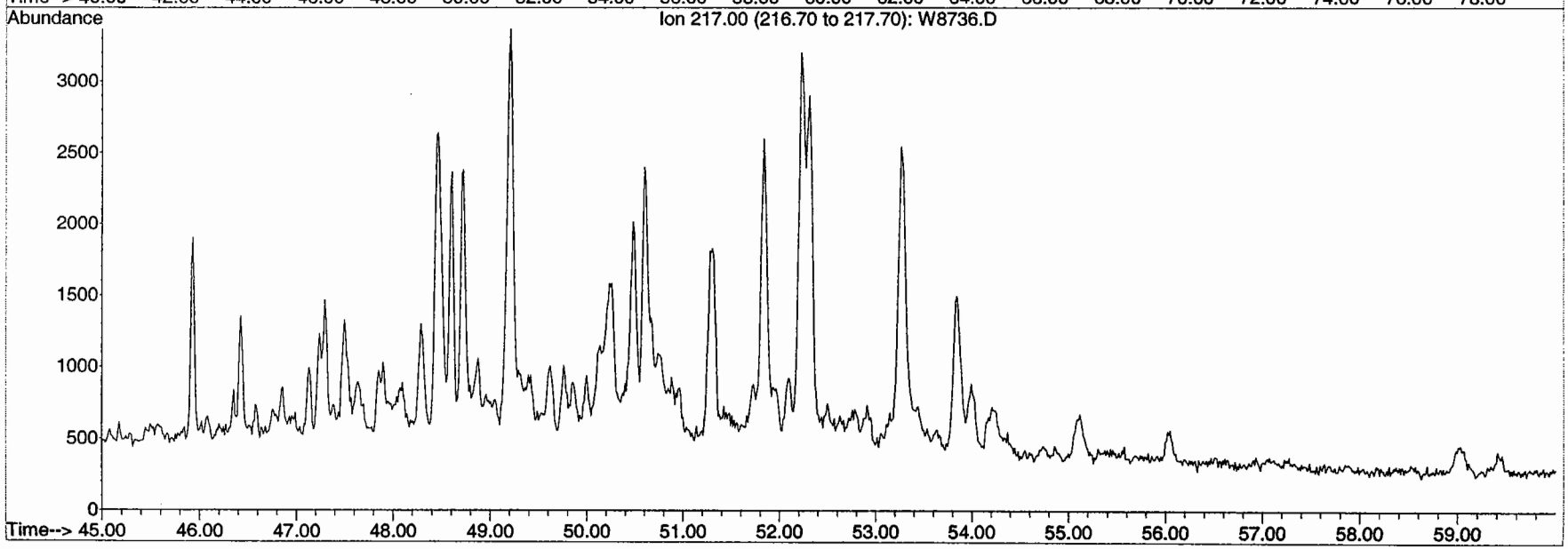
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8736.D
Date Acquired: 1 May 2004 10:10 pm
Method File: BIOSIM0
Sample Name: S1457-P-F1(14)
Misc Info: SID Source 4-1
Operator: JAR

Source 4-1
S1457



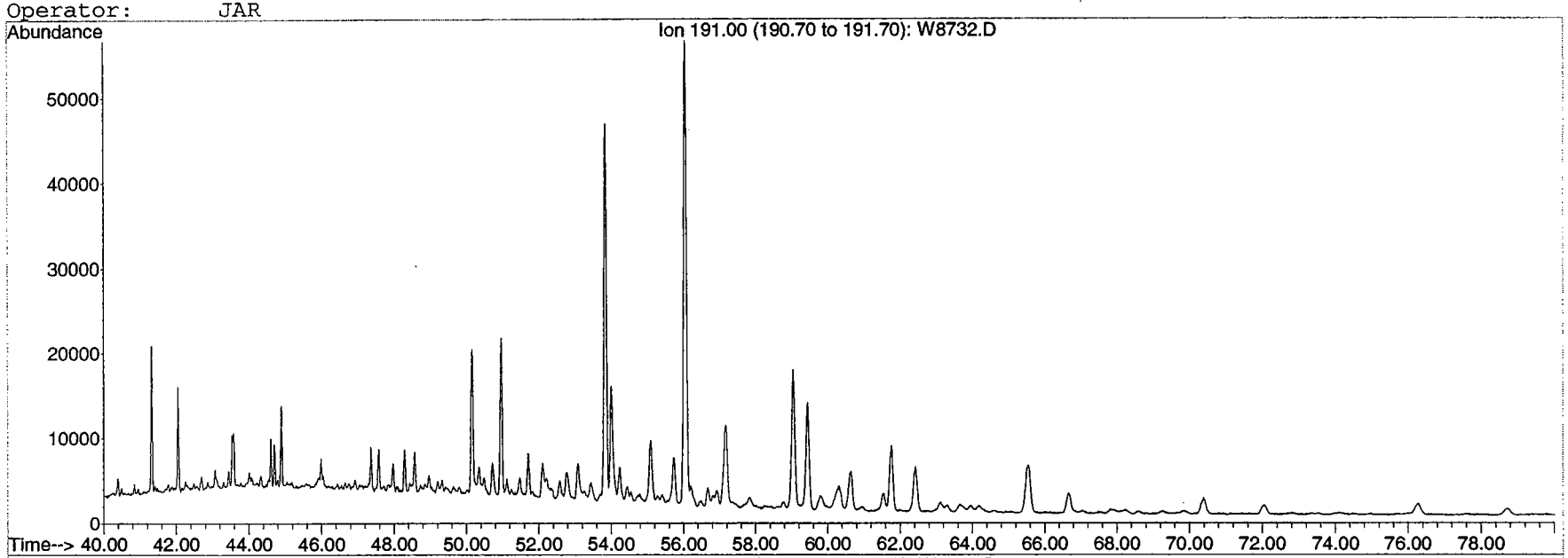


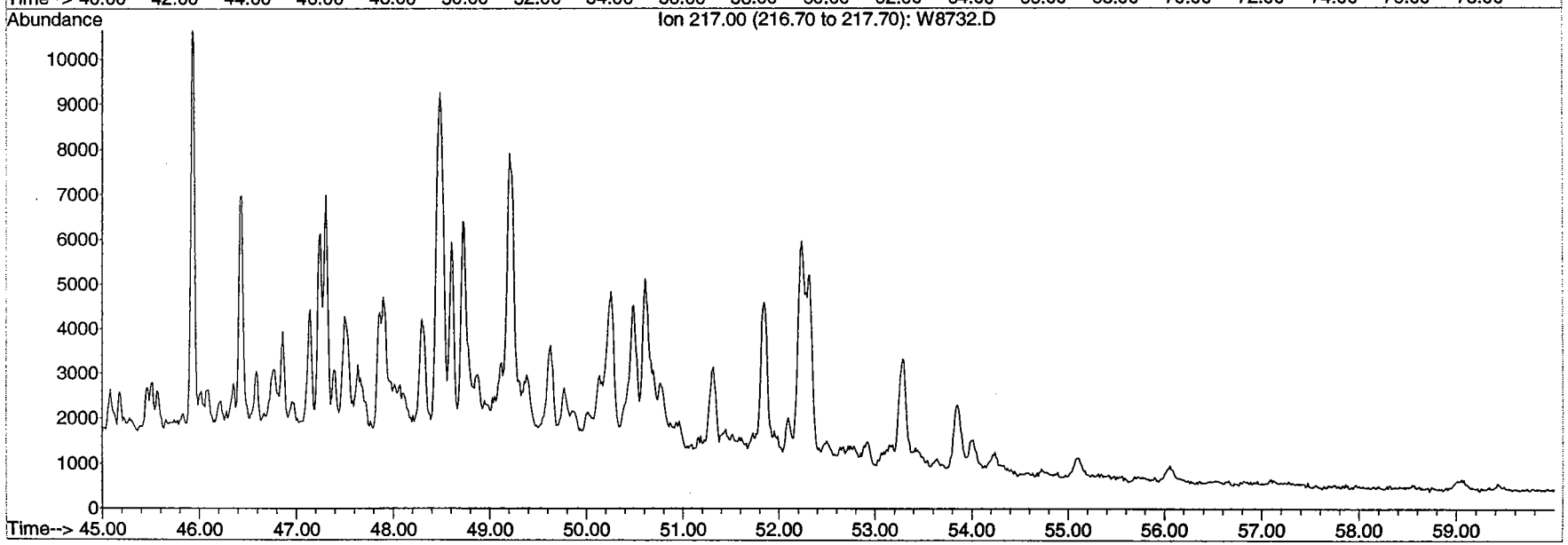
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8732.D
Date Acquired: 1 May 2004 4:13 pm
Method File: BIOSIM0
Sample Name: S1445-P-A-F1(8)
Misc Info: REF 1-4
Operator: JAR

REF 1-4
S1445



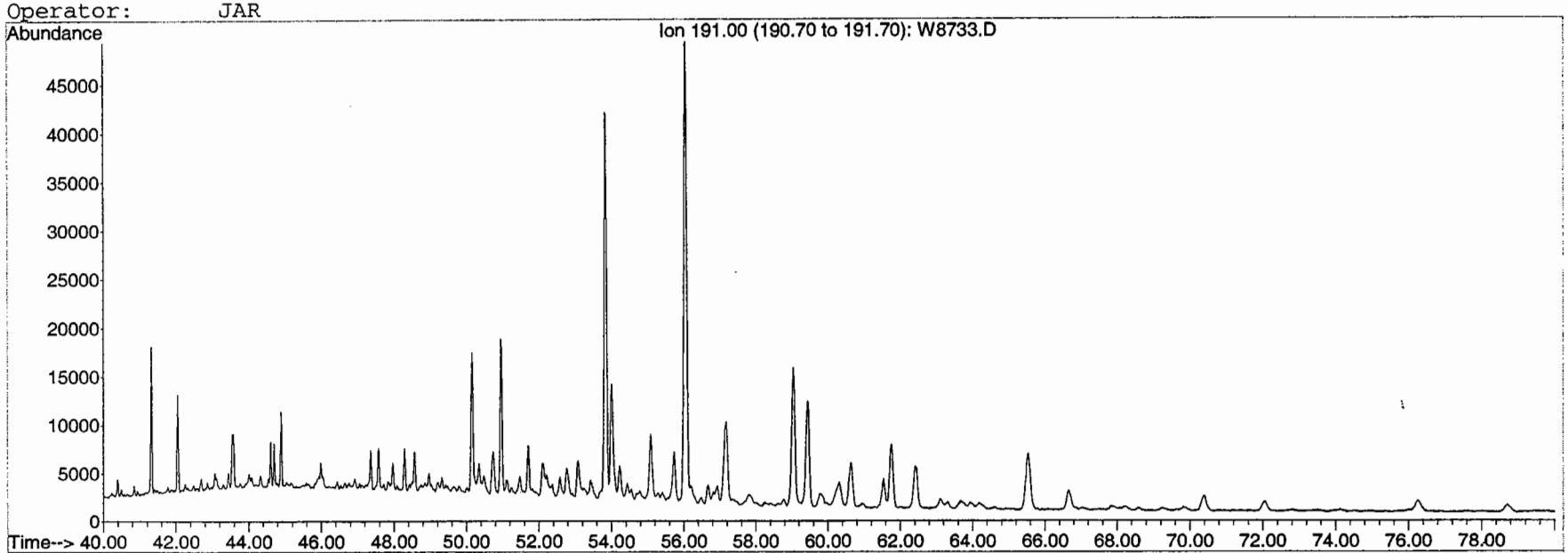


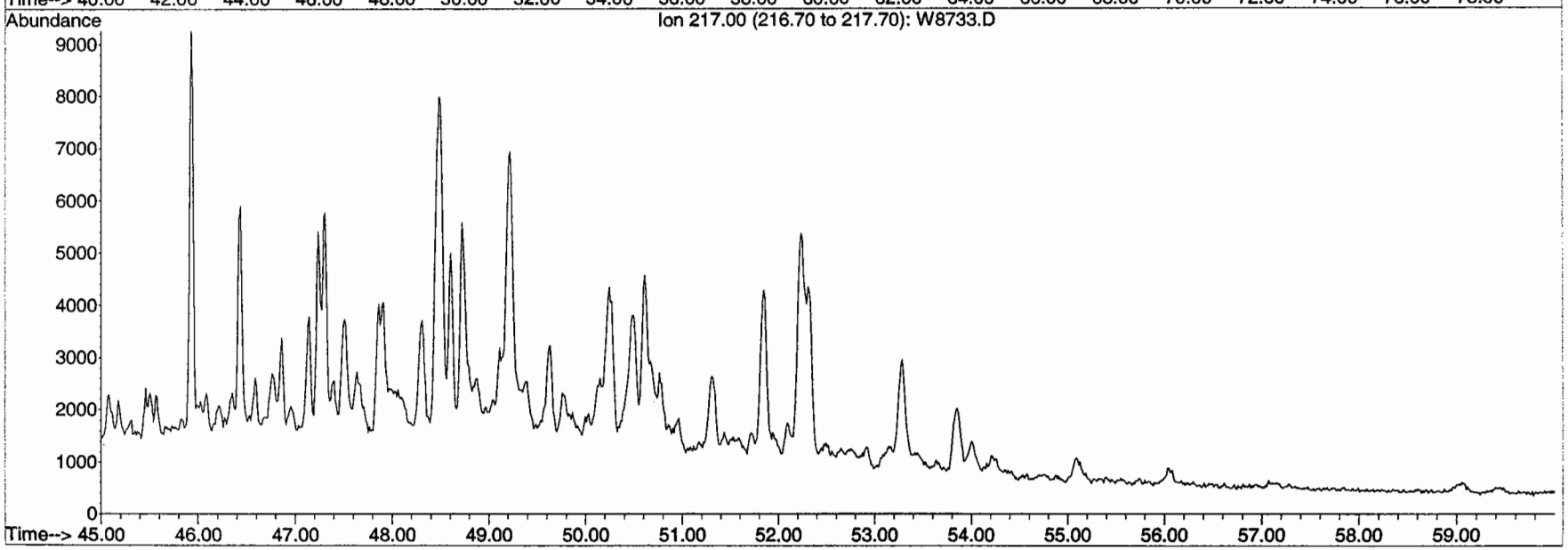
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8733.D
Date Acquired: 1 May 2004 5:42 pm
Method File: BIOSIM0
Sample Name: S1447-P-A-F1(8)
Misc Info: REF 2-1
Operator: JAR

REF 2-1
S1447



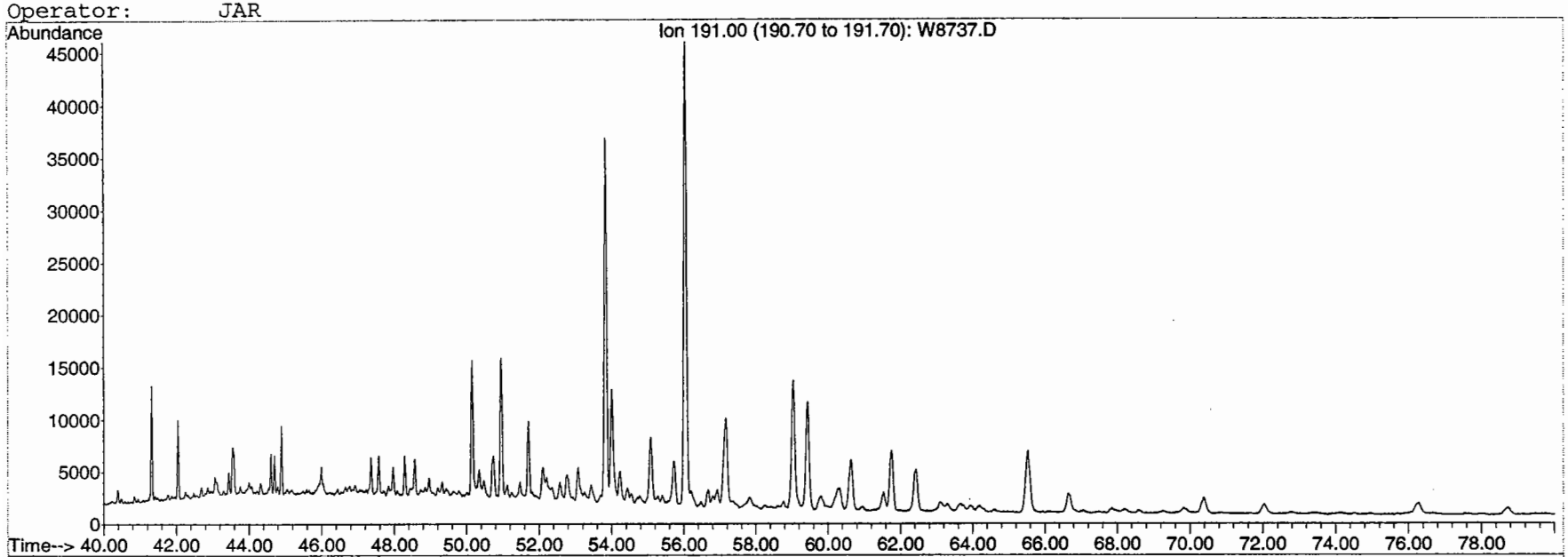


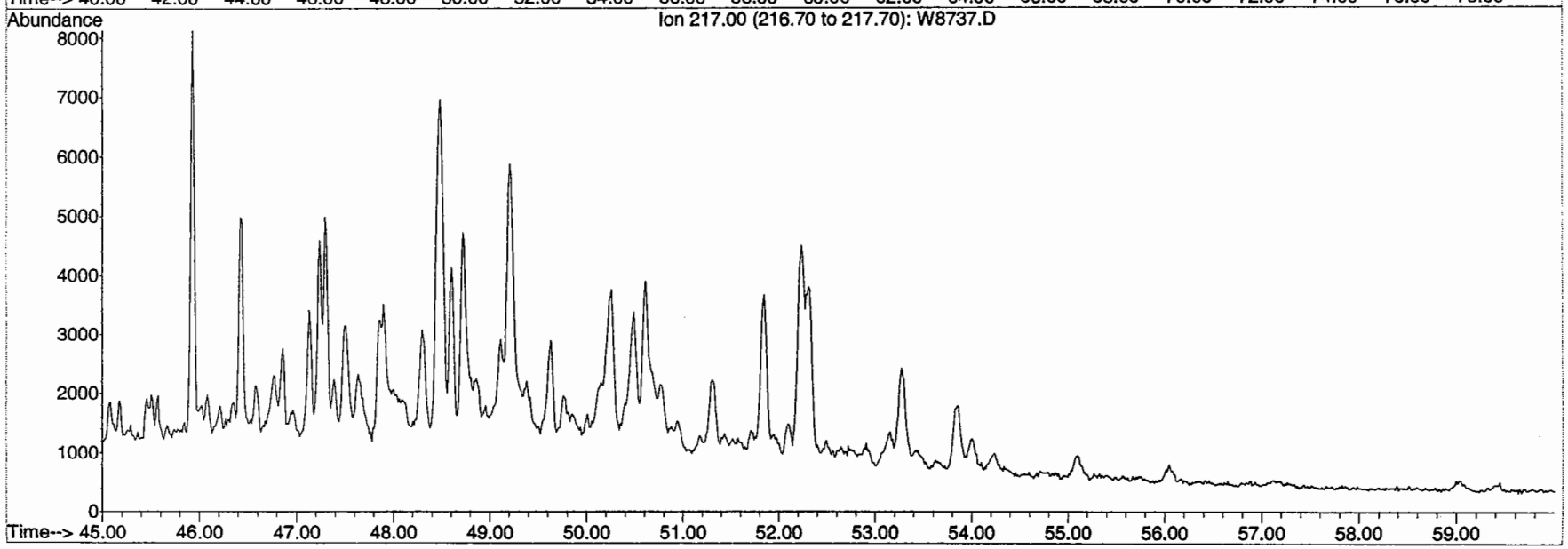
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8737.D
Date Acquired: 1 May 2004 11:39 pm
Method File: BIOSIM0
Sample Name: S1466-P-A-F1(8)
Misc Info: REF 3-2
Operator: JAR

REF 3-2
S1466



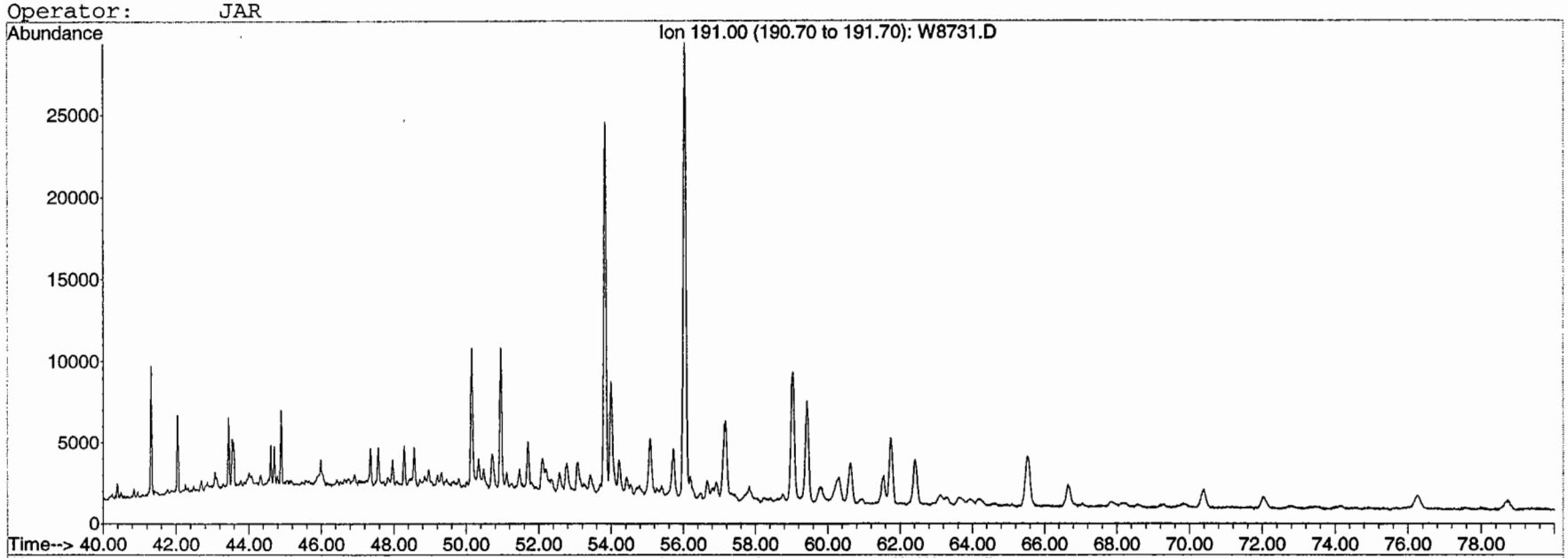


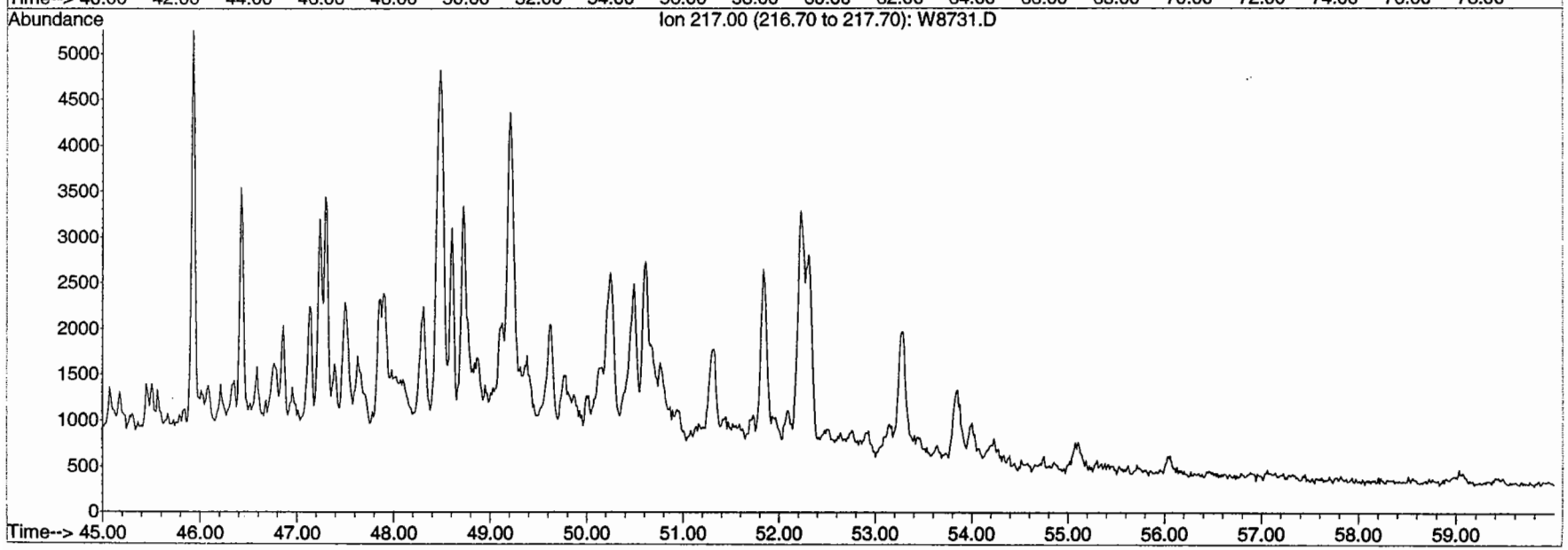
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8731.D
Date Acquired: 1 May 2004 2:43 pm
Method File: BIOSIM0
Sample Name: S1438-P-A-F1(8)
Misc Info: AH-03
Operator: JAR

AH-03
S1438



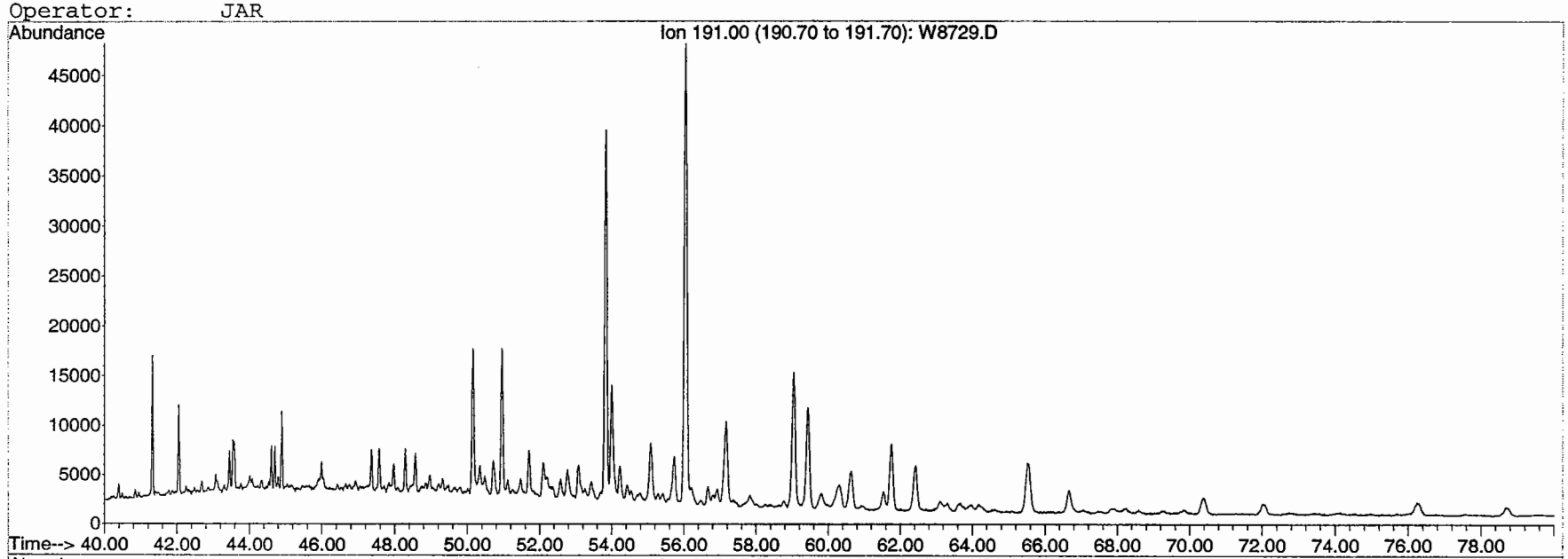


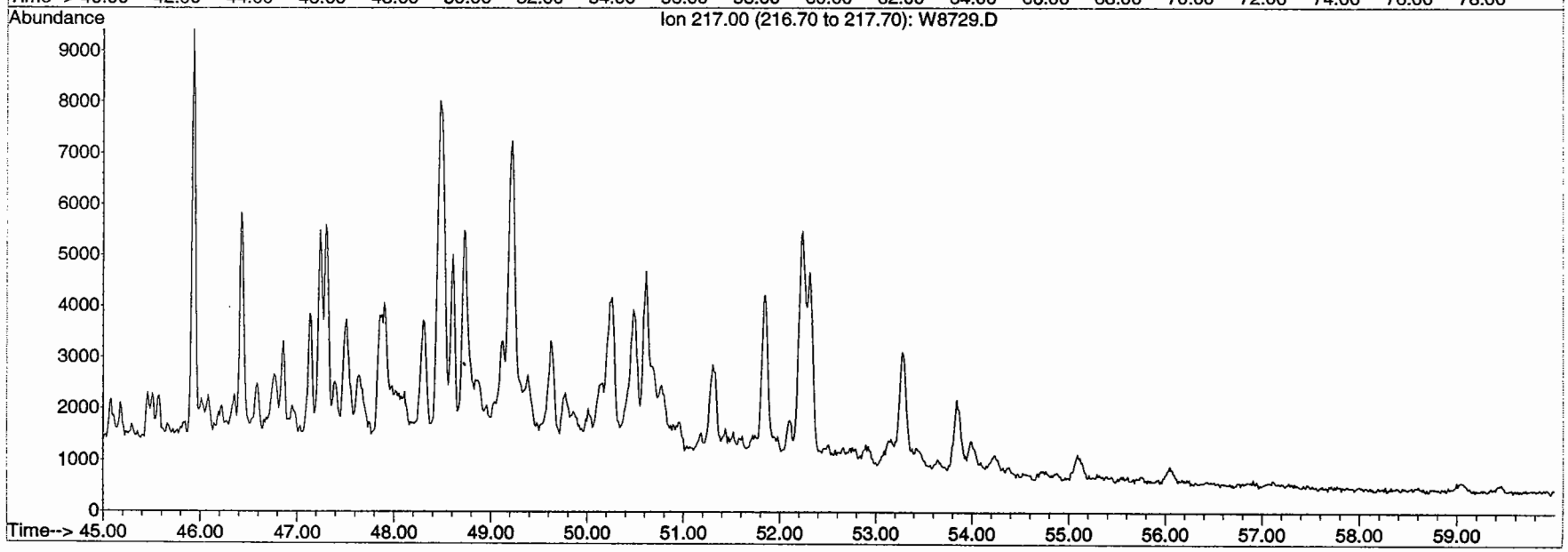
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8729.D
Date Acquired: 1 May 2004 11:45 am
Method File: BIOSIM0
Sample Name: S1432-P-A-F1(8)
Misc Info: AH-06
Operator: JAR

AH-06
S1432



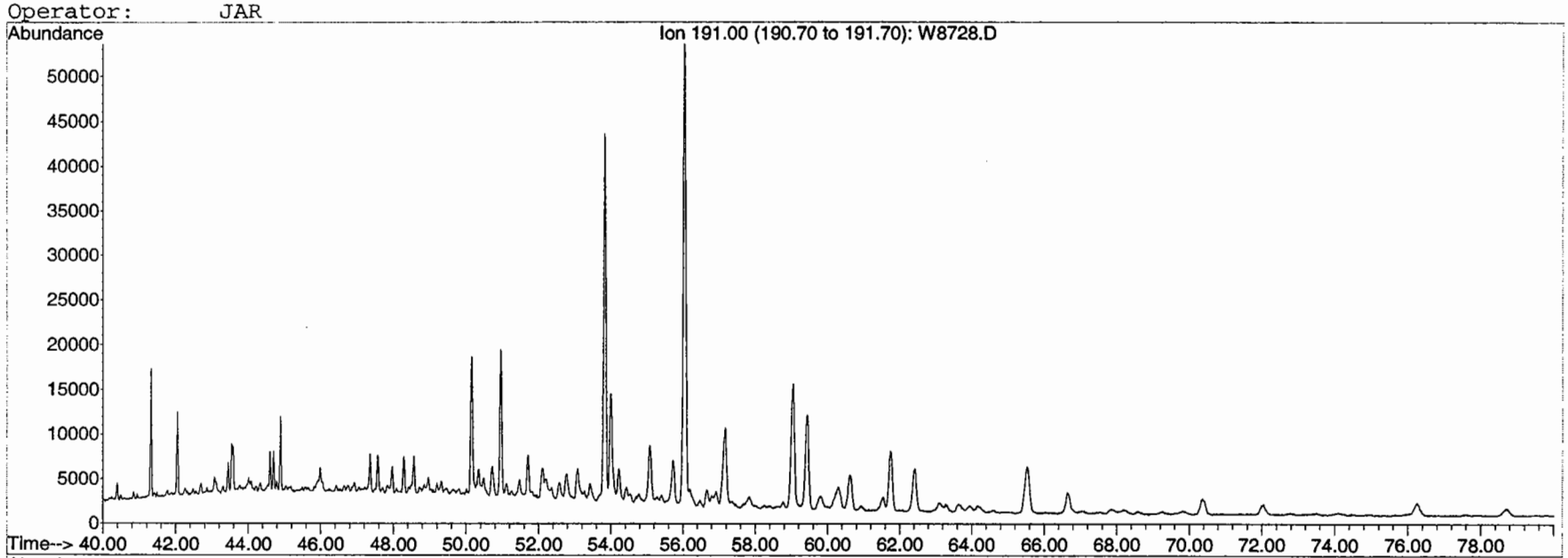


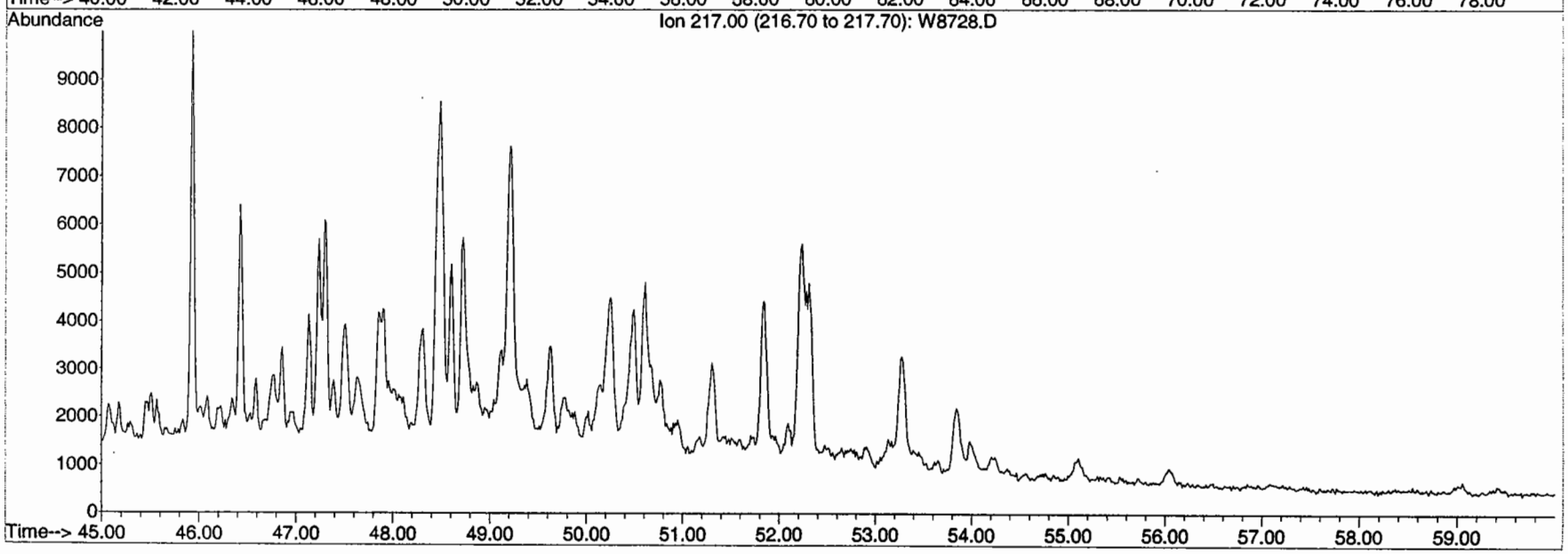
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8728.D
Date Acquired: 1 May 2004 10:15 am
Method File: BIOSIM0
Sample Name: S1430-P-A-F1(8)
Misc Info: Dup3
Operator: JAR

AH-06 (DUP-03)
S1430



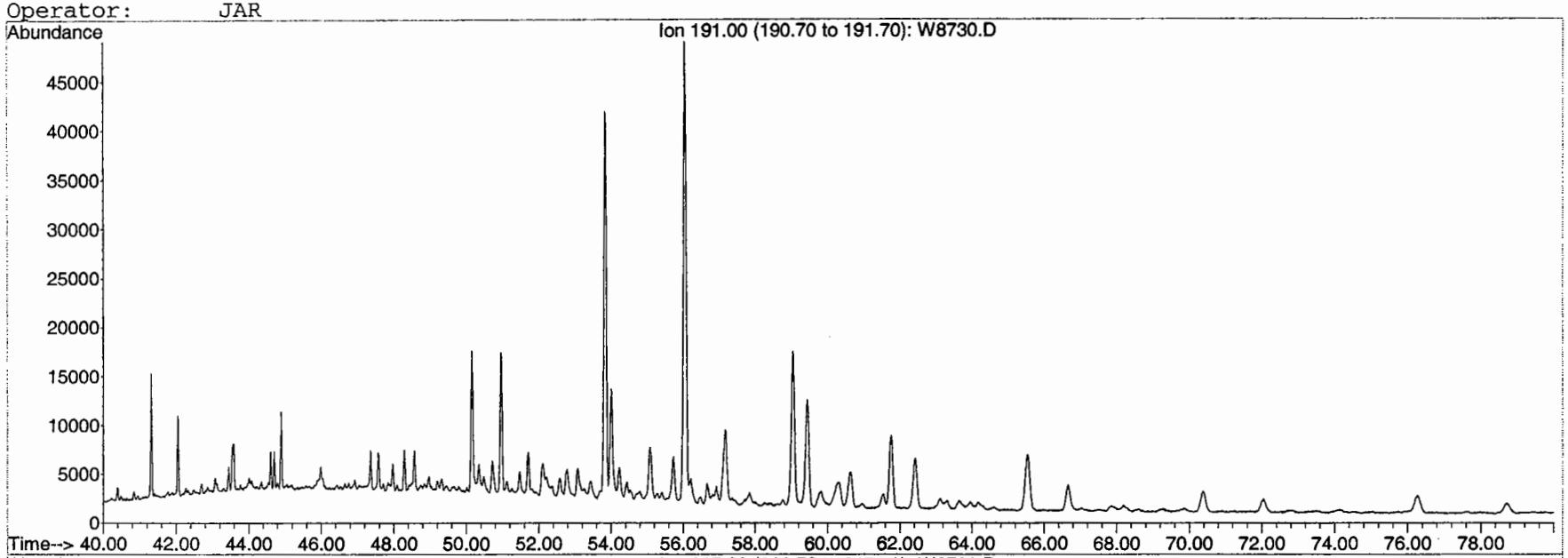


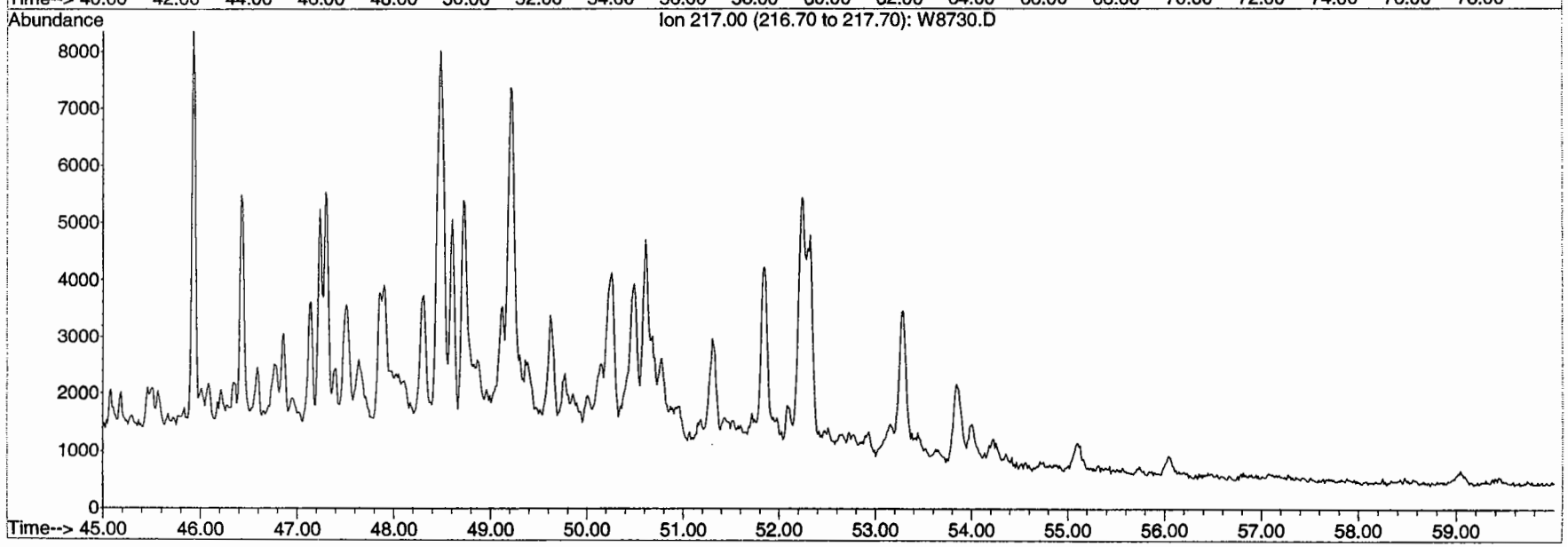
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8730.D
Date Acquired: 1 May 2004 1:14 pm
Method File: BIOSIM0
Sample Name: S1435-P-A-F1(10)
Misc Info: AH-17
Operator: JAR

AH-17
S1435



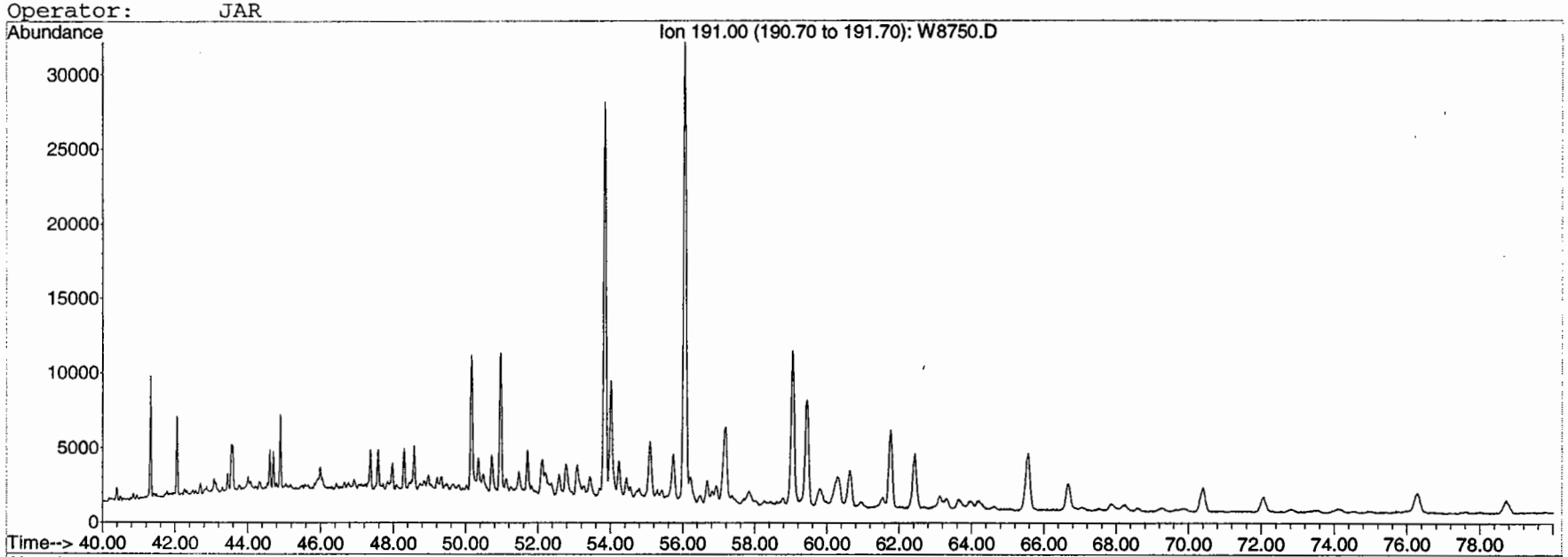


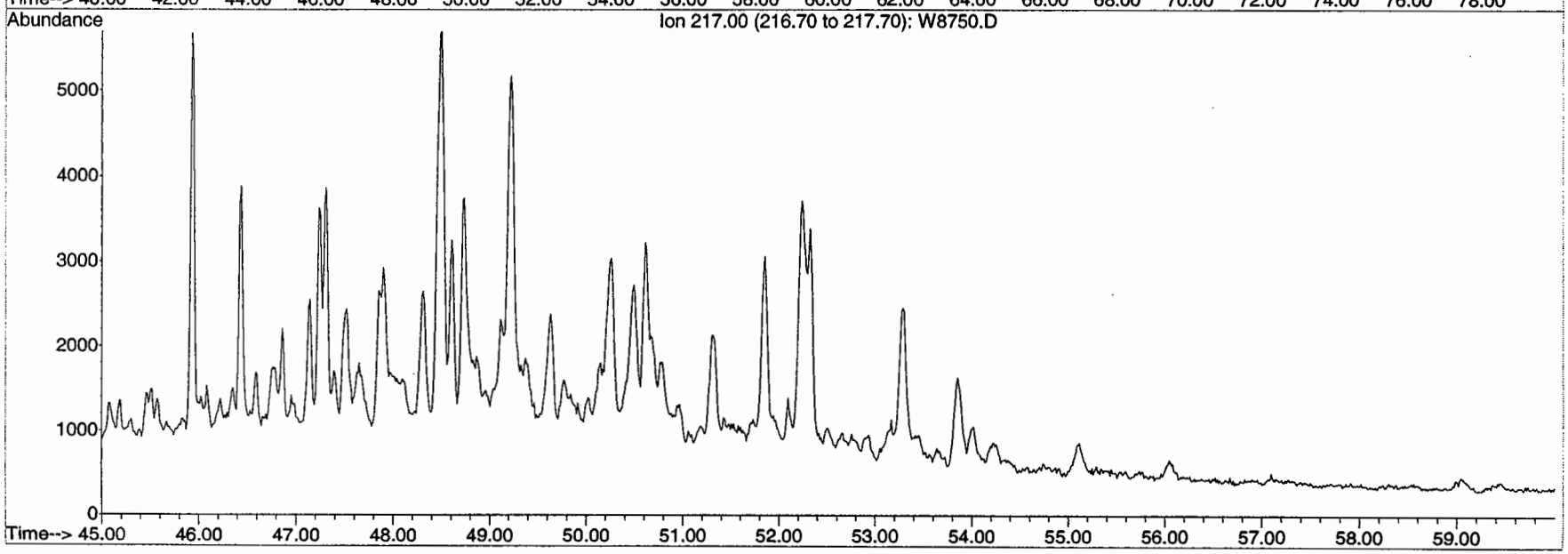
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8750.D
Date Acquired: 2 May 2004 7:03 pm
Method File: BIOSIM0
Sample Name: S1505-P-A-F1(8)
Misc Info: AH-26
Operator: JAR

AH-26
S1505



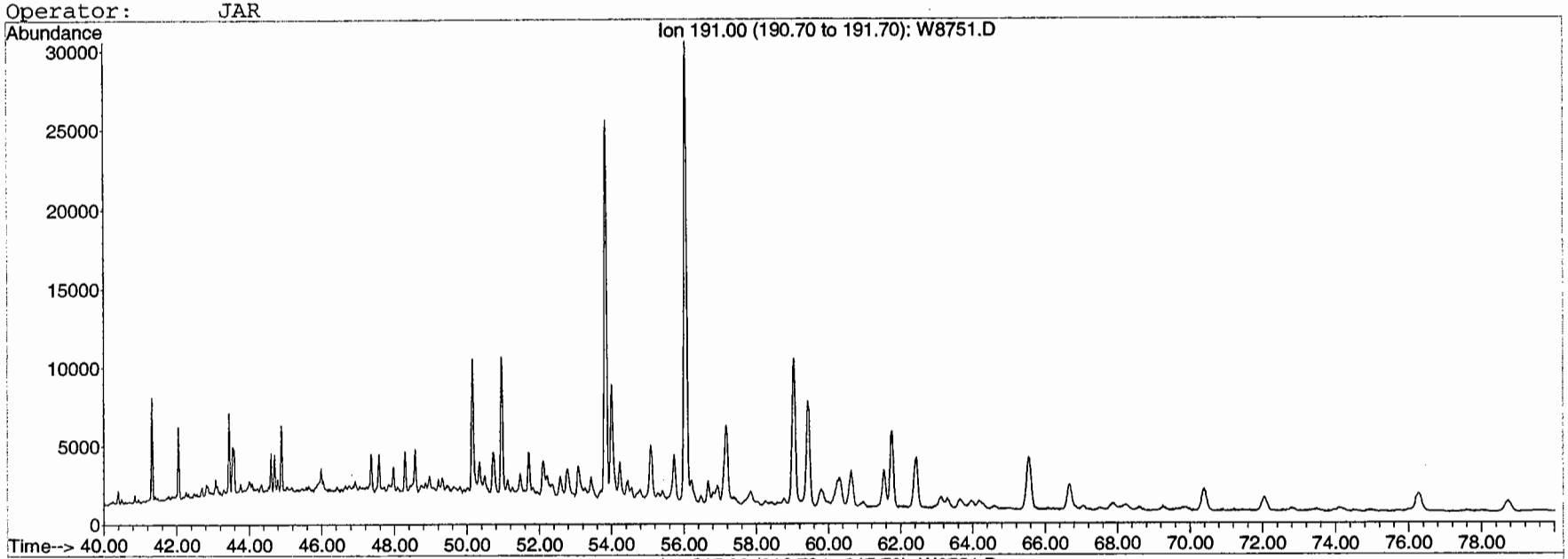


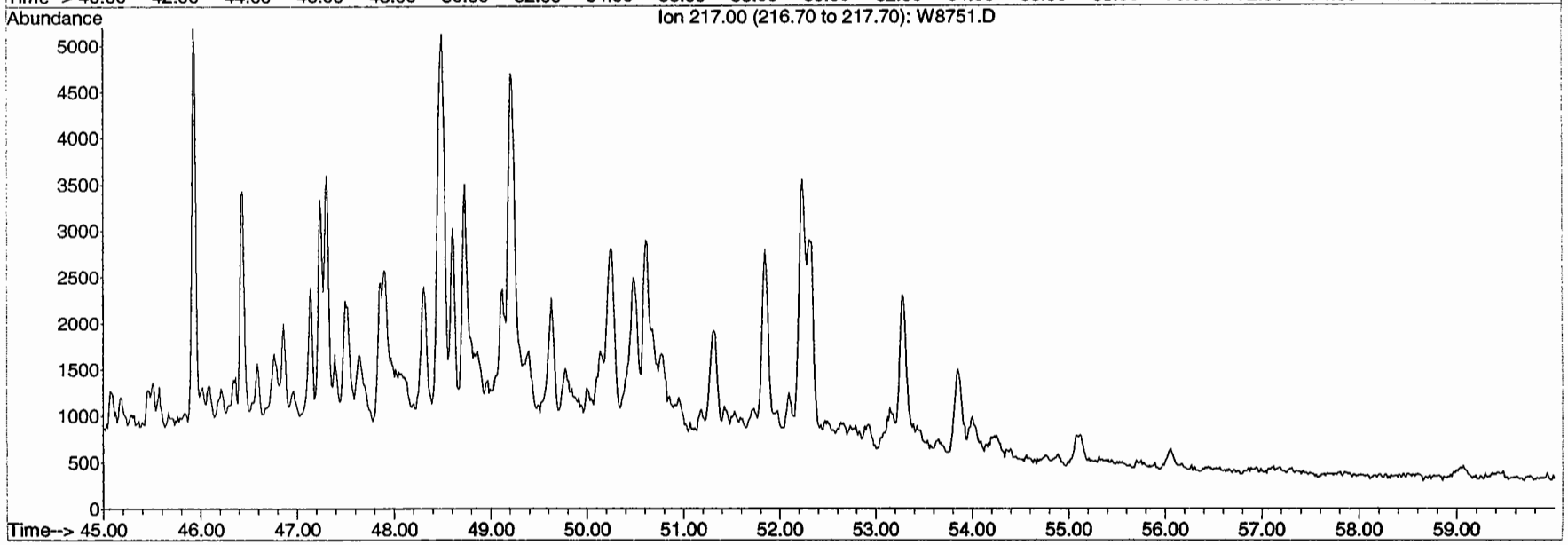
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8751.D
Date Acquired: 2 May 2004 8:32 pm
Method File: BIOSIM0
Sample Name: S1505DUP-P-A-F1(8)
Misc Info: AH-26
Operator: JAR

AH-26
S1505DUP



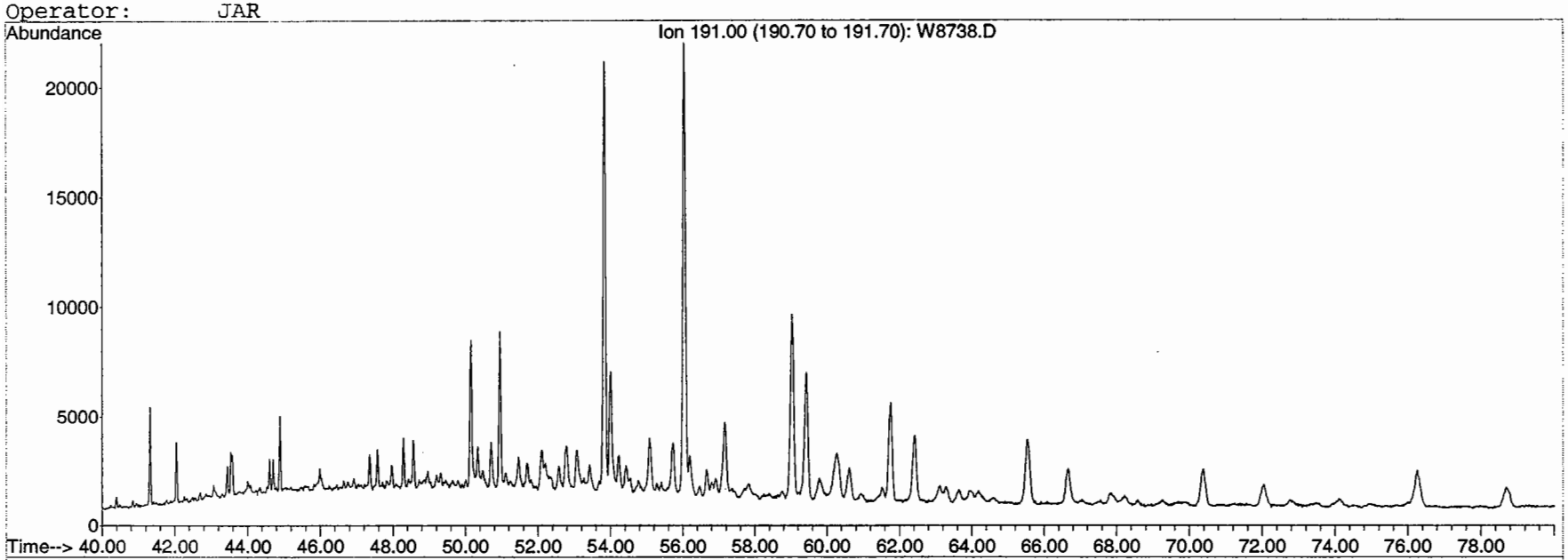


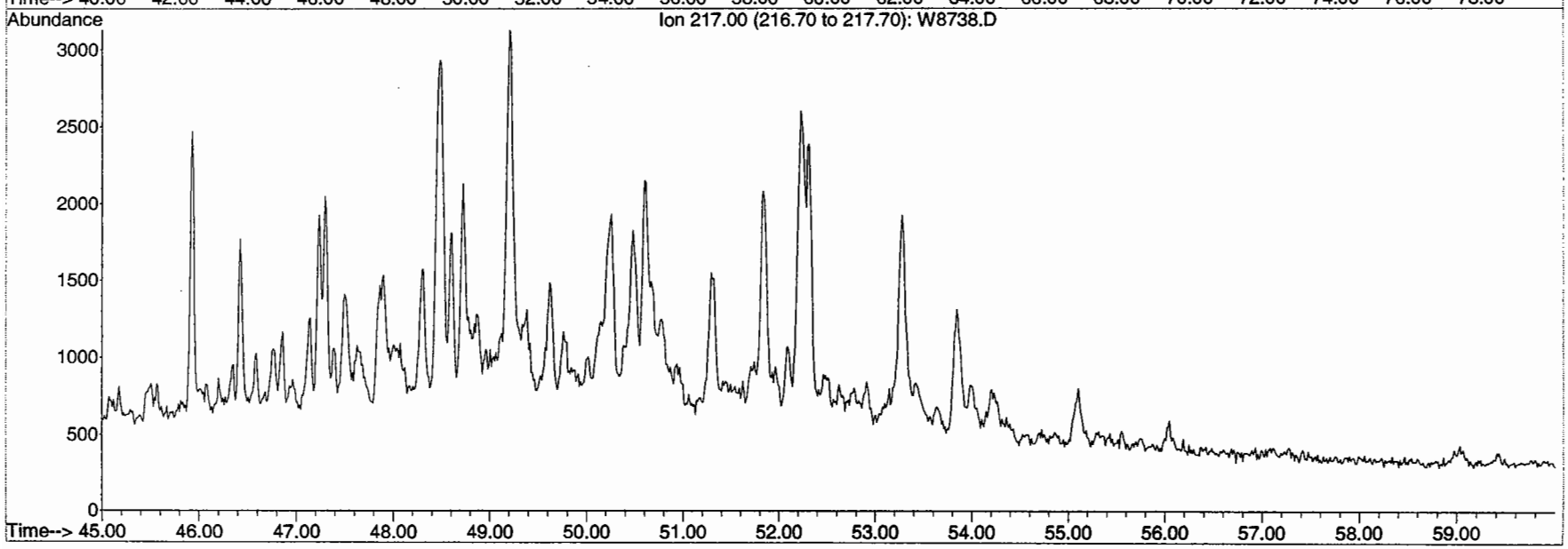
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8738.D
Date Acquired: 2 May 2004 1:09 am
Method File: BIOSIM0
Sample Name: S1468-P-A-F1(10)
Misc Info: AH-28
Operator: JAR

AH-28
S1468



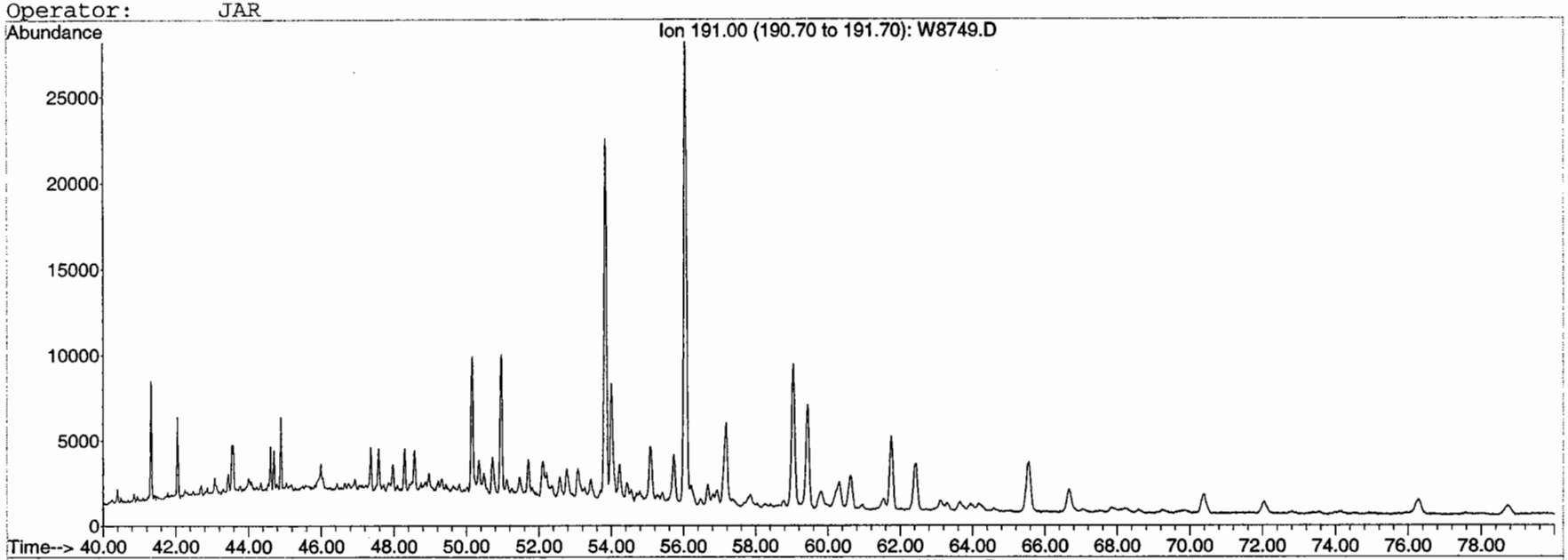


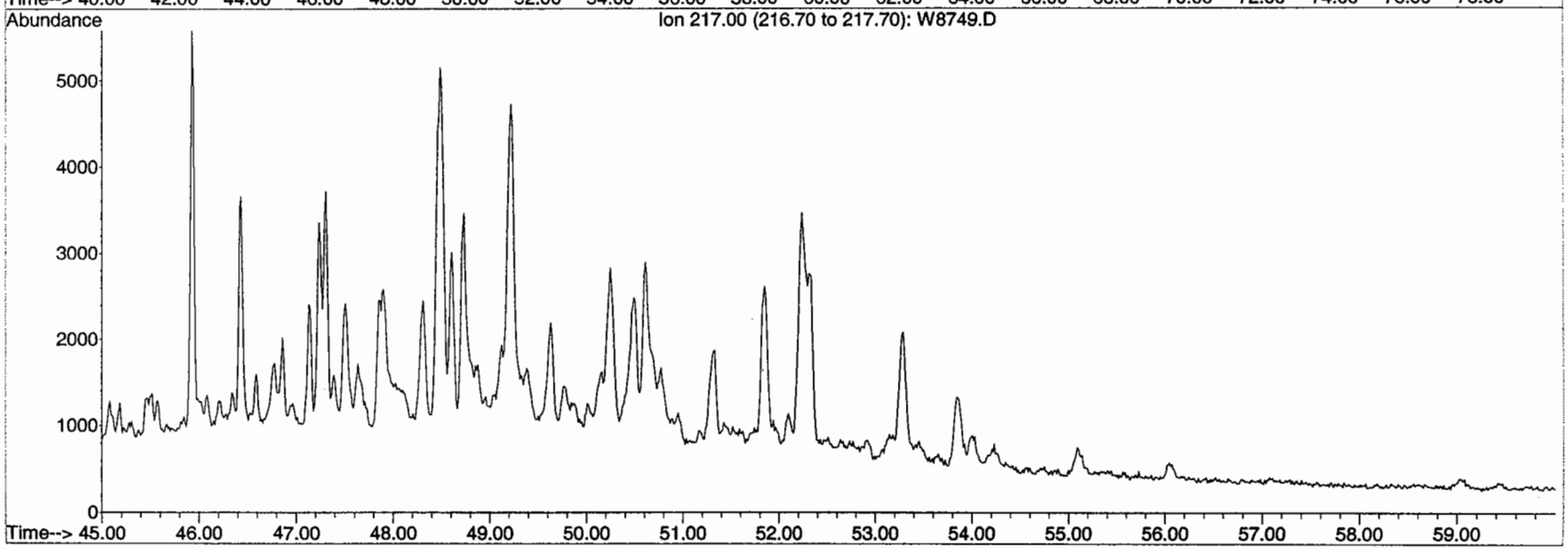
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8749.D
Date Acquired: 2 May 2004 5:33 pm
Method File: BIOSIM0
Sample Name: S1491-P-A-F1(10)
Misc Info: AH-29
Operator: JAR

AH-29
S1491



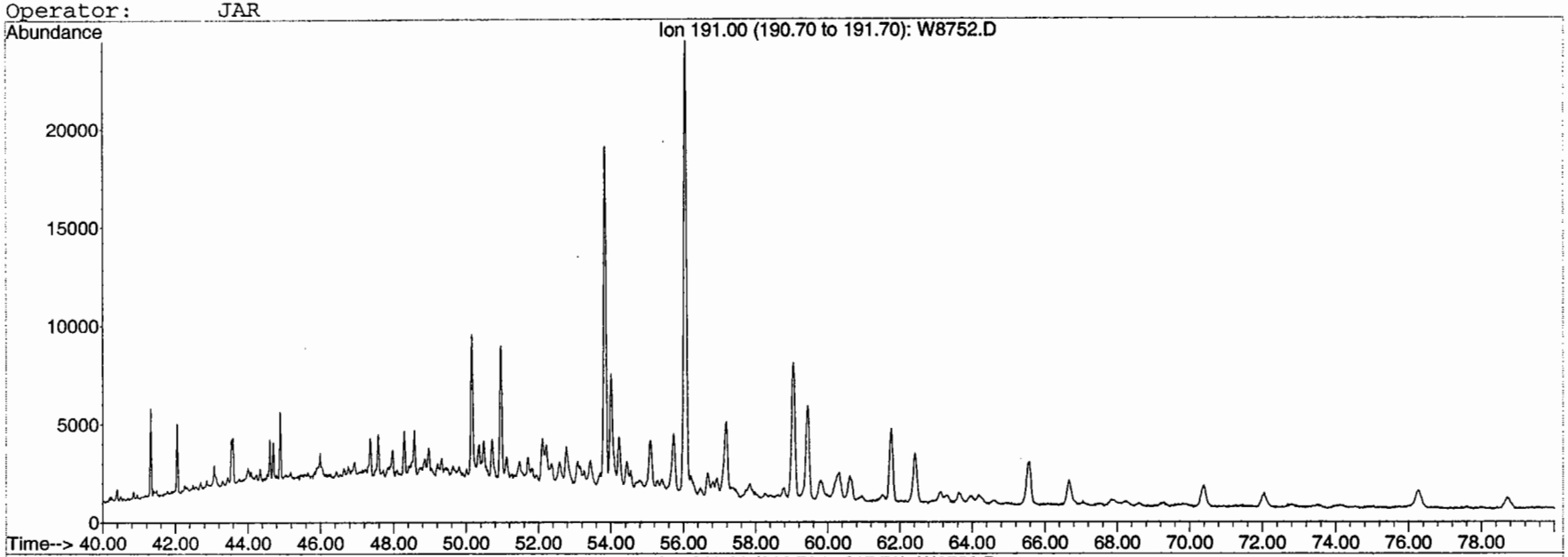


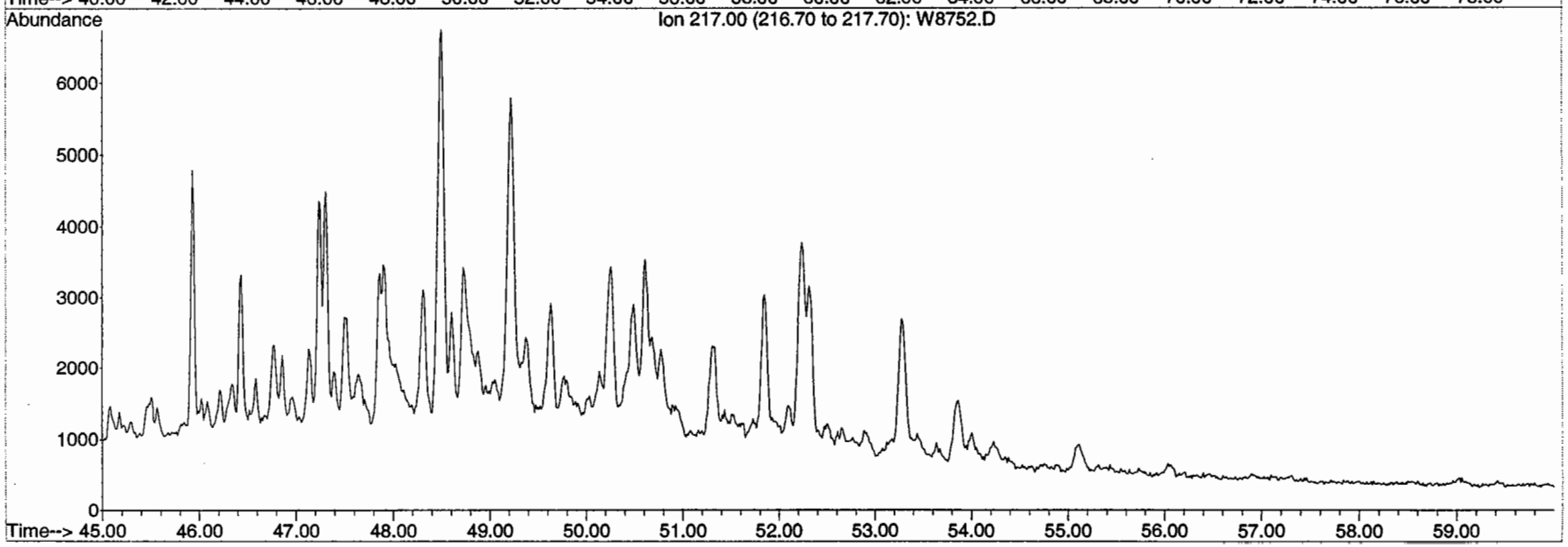
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8752.D
Date Acquired: 2 May 2004 10:02 pm
Method File: BIOSIM0
Sample Name: S1509-P-A-F1(10)
Misc Info: AH-40
Operator: JAR

AH-40
S1509



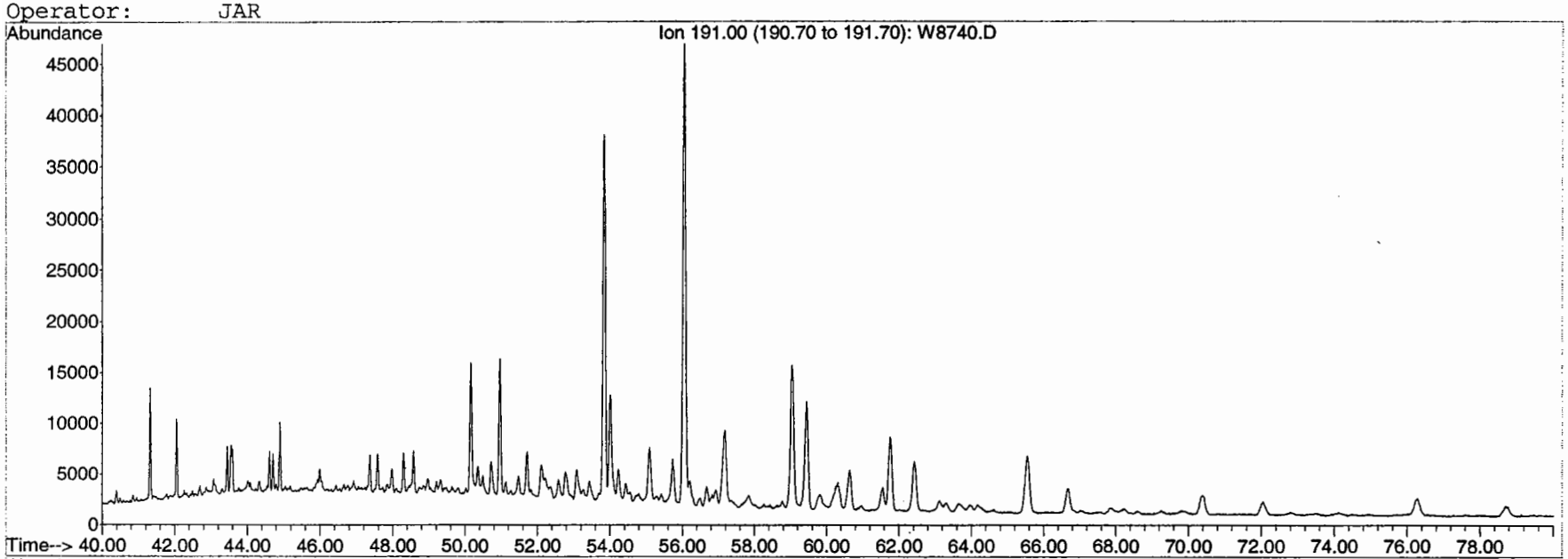


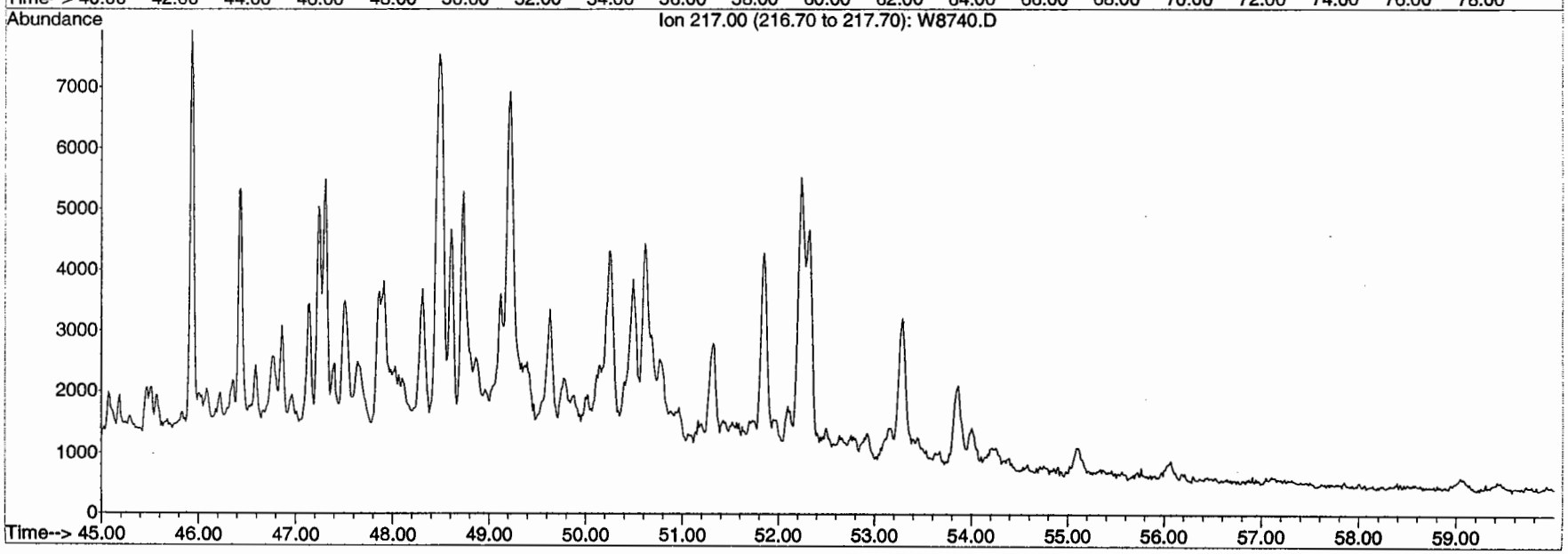
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8740.D
Date Acquired: 2 May 2004 4:08 am
Method File: BIOSIM0
Sample Name: S1474-P-A-F1(10)
Misc Info: AH-45
Operator: JAR

AH-45
S1474



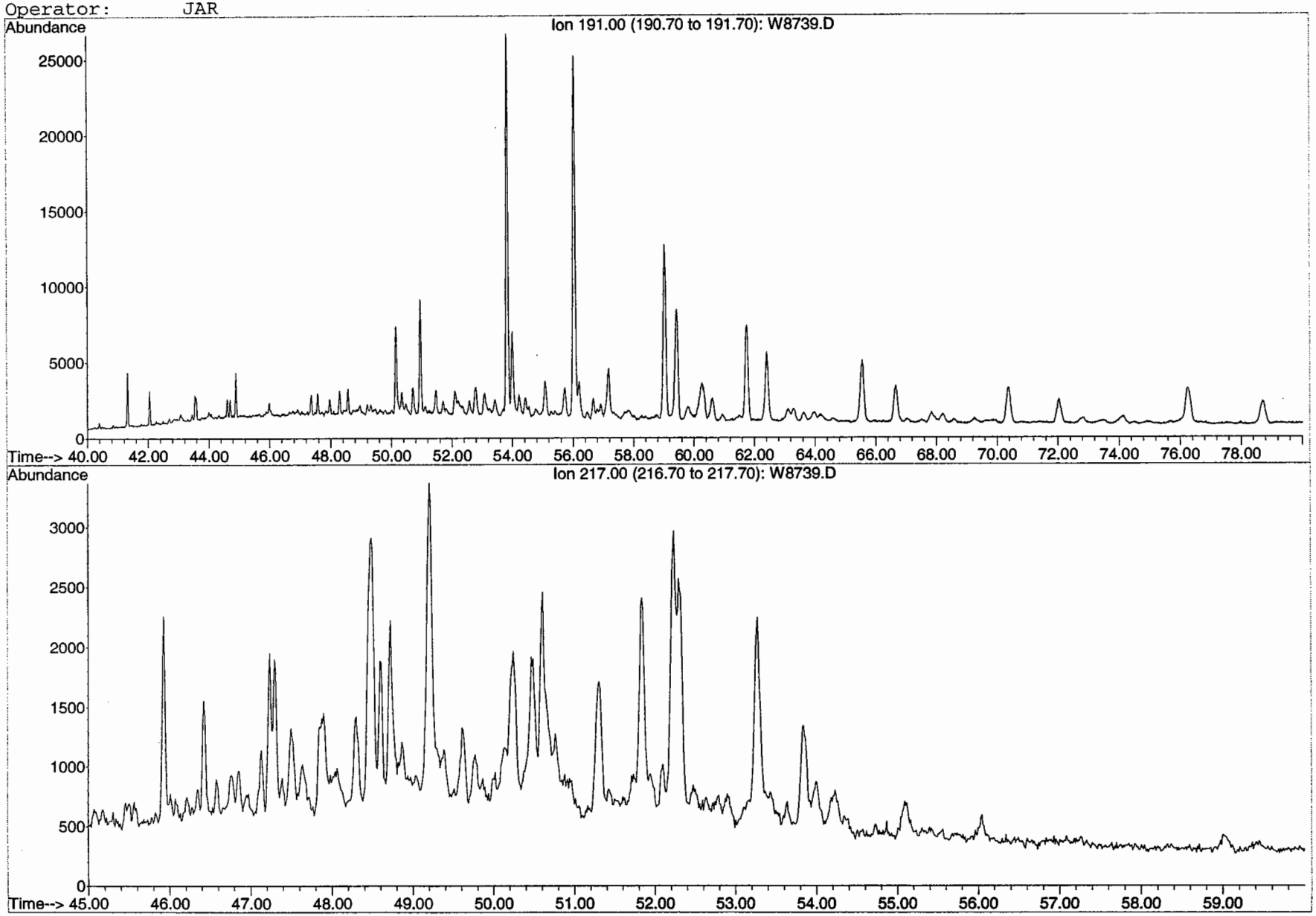


BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8739.D
Date Acquired: 2 May 2004 2:39 am
Method File: BIOSIM0
Sample Name: S1471-P-A-F1(10)
Misc Info: AH-49
Operator: JAR

AH-49
S1471

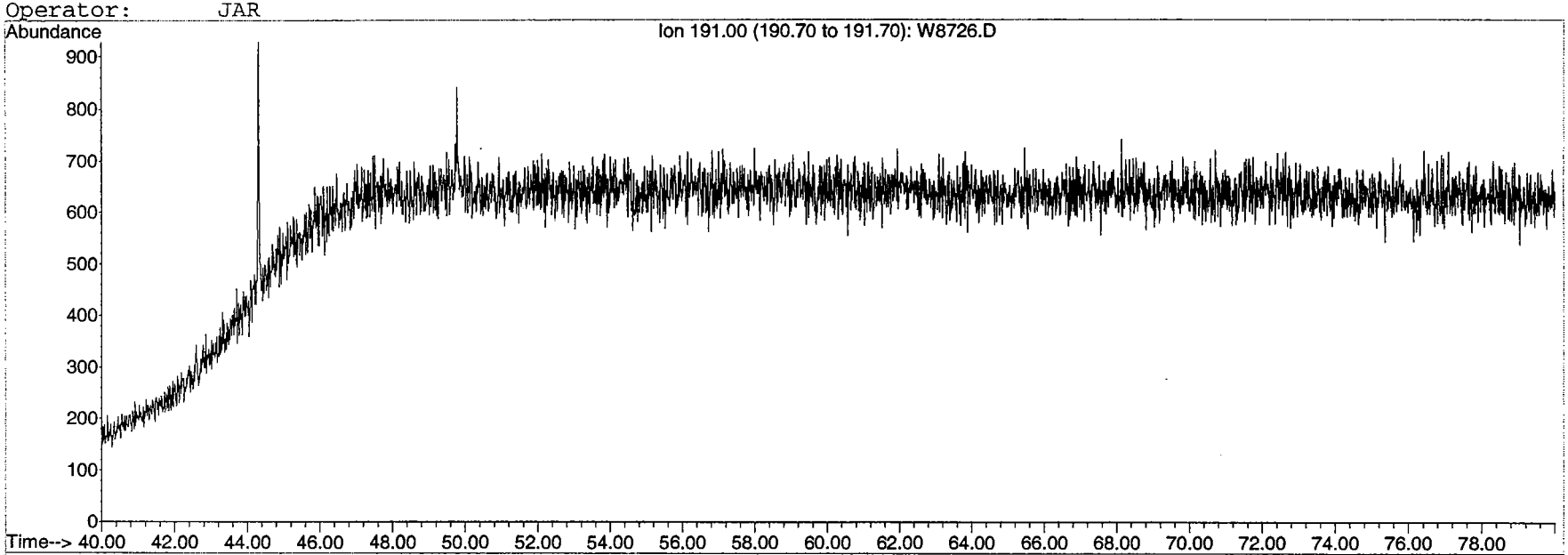


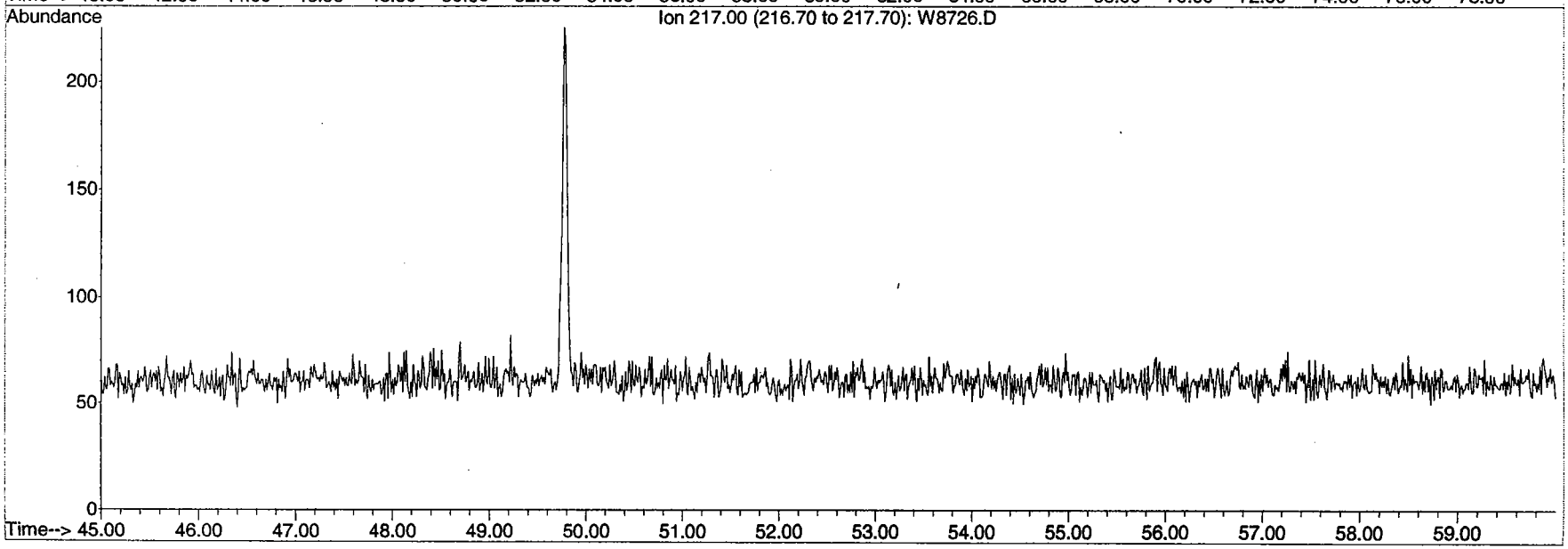
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

File: H:\E\DATA\SE0044\W8726.D
Date Acquired: 1 May 2004 7:16 am
Method File: BIOSIM0
Sample Name: BE161PB-P-A-F1(4)
Misc Info: 04-0117 Procedural Blank
Operator: JAR

Procedural Blank
BE161PB



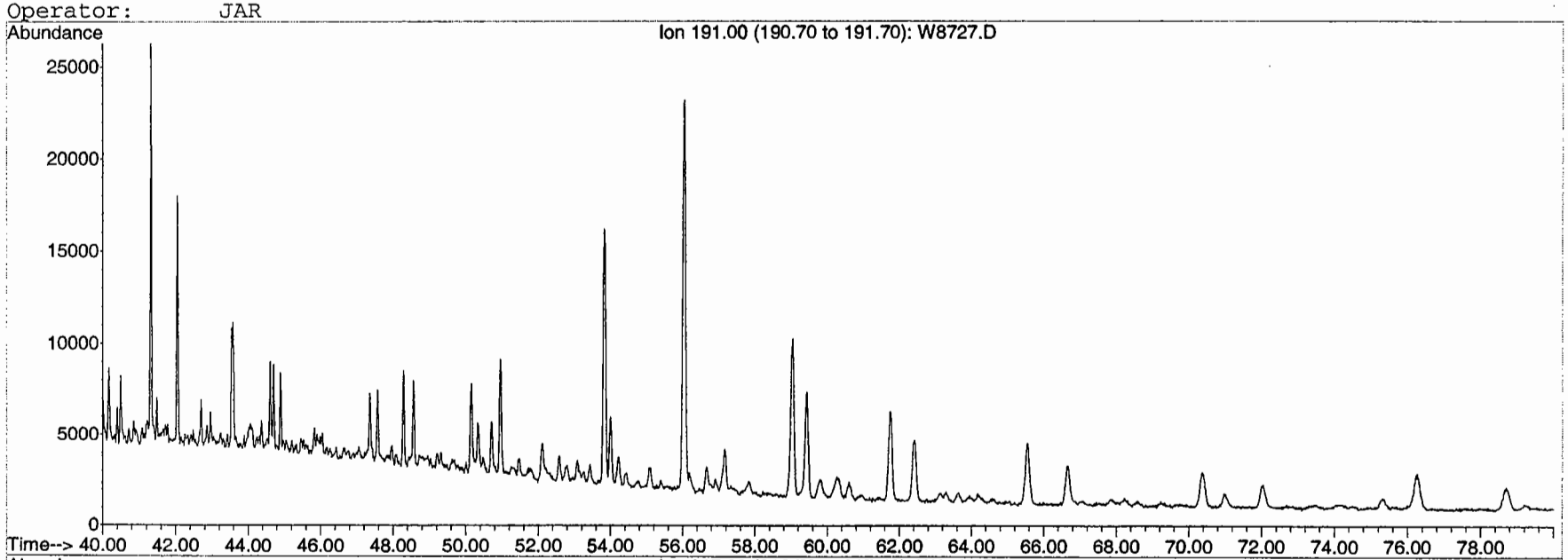


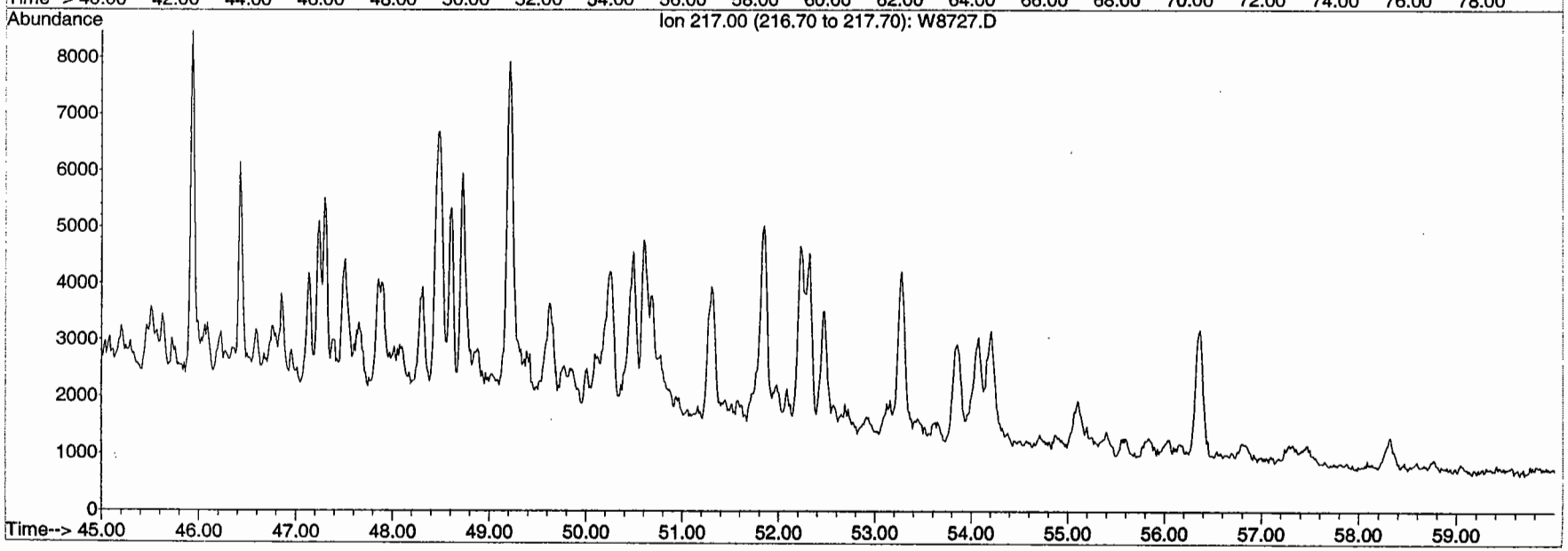
BATTELLE

GC/MS EXTRACTED ION CHROMATOGRAM

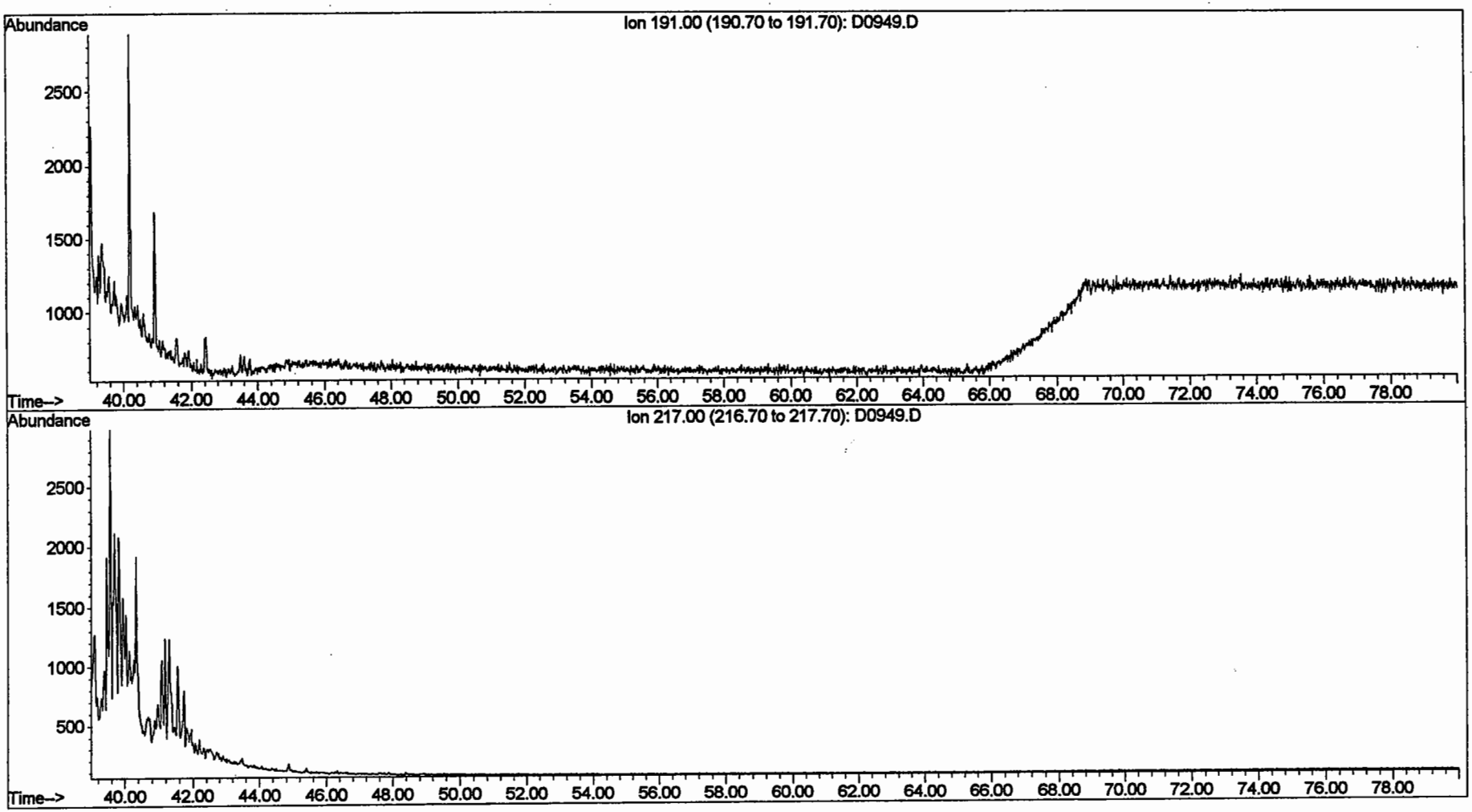
File: H:\E\DATA\SE0044\W8727.D
Date Acquired: 1 May 2004 8:46 am
Method File: BIOSIM0
Sample Name: BE279NSC-P(0)
Misc Info: North Slope Crude
Operator: JAR

North Slope Crude
BE279NSC

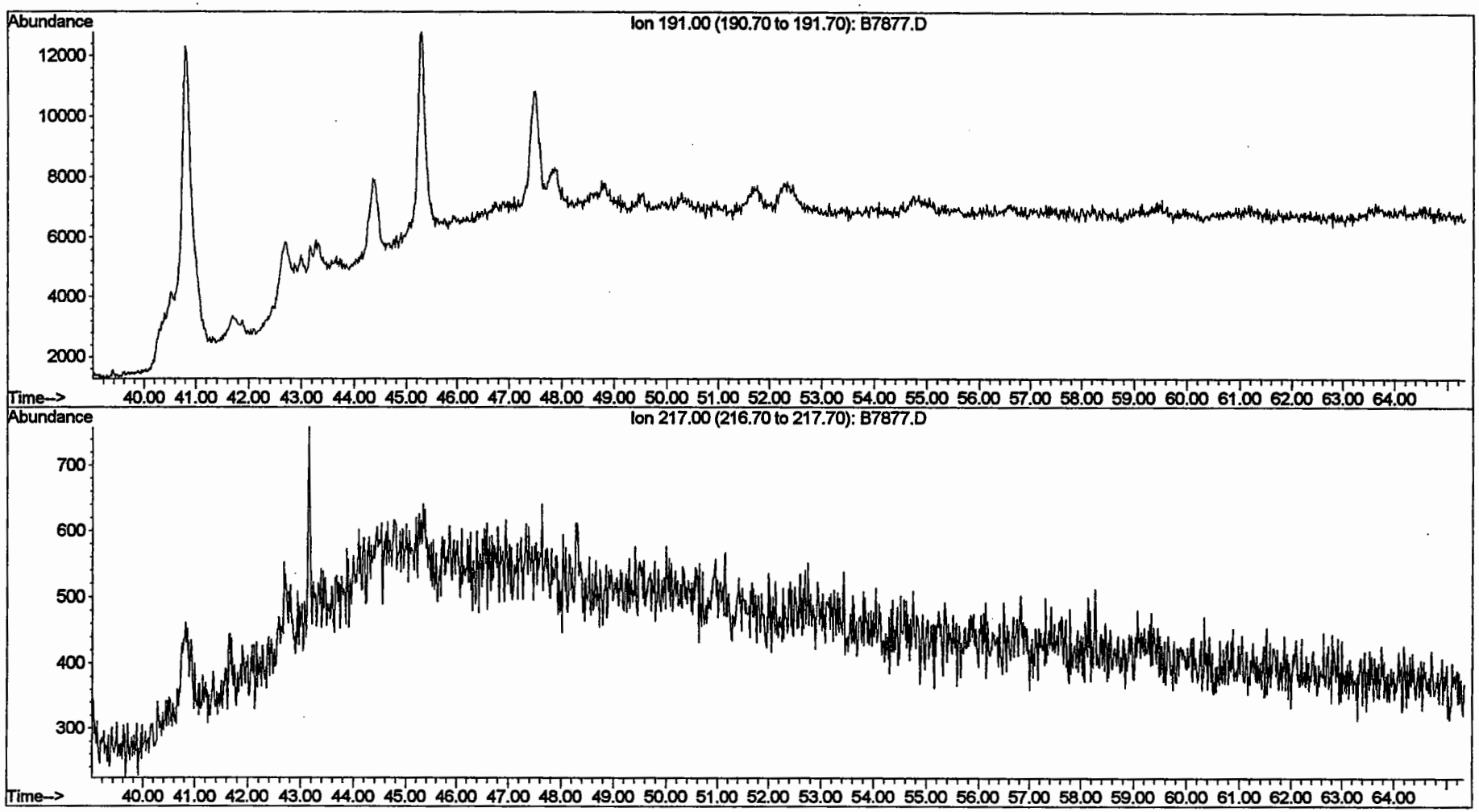




File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQD300\D0949 Diesel Unaltered
Operator : TH
Acquired : 9 Nov 2001 4:40 pm using AcqMethod SINTEF1C
Instrument : GC/MS Ins
Sample Name: ZM25IC3
Misc Info : SOP 5-157
Vial Number: 14



File : C:\ACTIVE\SM2002\PROJECTS\NAVYNC~1\RAWDAT~1\SVOC-G~1\SQB825\B7877 Kerosene Unaltered
Operator : JS
Acquired : 9 Jan 2002 9:13 am using AcqMethod ACQ4LAB
Instrument : GCMS2
Sample Name: ZR36IC
Misc Info : BHE 01-645
Vial Number: 14



TOTAL ORGANIC CARBON-SEDIMENT QA/QC SUMMARY

PROJECT	Davisville Naval Sediment Study
PARAMETER	TOC Analysis
LABORATORY	Applied Marine Sciences, Inc. (AMS)
BATCH IDS	041504-01, and 041504-02
MATRIX	Sediment
SAMPLE CUSTODY	Sample collection dates for this batch were 3/22/04-3/27/04. Samples were received at AMS labs on 4/06/04 and 4/08/04. After sample receipt and check-in all samples were placed in refrigerated storage at 4°C.

QA/QC DATA QUALITY OBJECTIVES:

Reference Method	Blank	LCS/MS Recovery	SRM % Diff.	Surrogate Recovery	Relative Precision	Achieved Detection Limit (% DW)	Target Detection Limit (% DW)
EPA 9060	S:N<10:1	N/A	≤5% RPD of certified values	N/A	≤25%RPD	0.01	0.01

METHOD: Sediment Total Organic Carbon: A subsample was collected and dried at 70°C overnight. After drying, those samples that were visibly oiled were selected for extraction. Samples were ground to a fine powder using a mortar and pestle. The sample was split into TOC and insoluble residue analysis fractions. TOC fractions were acidified with 5% HCl acid, rinsed with RO/DI water, dried at 70°C, and analyzed.

HOLDING TIMES: TOC samples stored at 4°C have holding times of 28 days.

AMS Batch	Prep Date	Analysis Date
041504-01	4/06/2004	04/15/2004
041504-02	4/06/2004 and 4/08/2004	04/15/2004

DETECTION LIMITS: Achieved detection limits were less than the Target Detection Limits provided in the QAPP. Achieved detection limit for TOC is based on a 7 replicate MDL study.

Corrective Action – None

BLANKS: A blank (CB) was prepared with the analytical batch. The blank was analyzed to ensure the sample preparation and analysis method was free of contamination.

041504-01-Total Organic Carbon was undetected in the procedural blank at the detection limit of 0.01%.
041504-02-Total Organic Carbon was undetected in the procedural blank at the detection limit of 0.01%.

Corrective Action – None

TOTAL ORGANIC CARBON-SEDIMENT QA/QC SUMMARY

LABORATORY CONTROL SAMPLE

N/A

Corrective Action – None

MATRIX SPIKES:

N/A

Corrective Action – None

REPLICATES:

A sample duplicate was prepared with the analytical batch. The RPD between replicate analyses for TOC was calculated to measure data quality in terms of precision.

Total Organic Carbon

041504-01–RPD was 3.64%, which is within the control limit for TOC (≤25%).
041504-02–RPD was 8.96%, which is within the control limit for TOC (≤25%).

Corrective Action – None

SRM:

A standard reference material (SRM, NIST 1944) was prepared with the analytical batch. The relative percent difference (RPD) between the measured value and the certified range was calculated to measure data quality in terms of accuracy.

041504-01-SRM RPD was within the control limits (≤5% from certified range). The RPD was 1.89%.
041504-02-SRM RPD was within the control limits (≤5% from certified range). The RPD was 0.63%.

Corrective Action – None

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1421
Client Sample ID: AH-08
AMS Sample ID: 19464

AMS Project Number: 2004-03-17
Date Sampled: 3/22/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.68	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSD

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1424
Client Sample ID: AH-11
AMS Sample ID: 19465

AMS Project Number: 2004-03-17
Date Sampled: 3/22/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.99	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSN

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1426
Client Sample ID: AH-DUP 01
AMS Sample ID: 19466

AMS Project Number: 2004-03-17
Date Sampled: 3/22/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.80	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1430
Client Sample ID: Dup3
AMS Sample ID: 19467

AMS Project Number: 2004-03-17
Date Sampled: N/A
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.22	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1432
Client Sample ID: AH-06
AMS Sample ID: 19468

AMS Project Number: 2004-03-17
Date Sampled: 3/23/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.17	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSL

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1435
Client Sample ID: AH-17
AMS Sample ID: 19469

AMS Project Number: 2004-03-17
Date Sampled: 3/23/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	5.25	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1438
Client Sample ID: AH-03
AMS Sample ID: 19470

AMS Project Number: 2004-03-17
Date Sampled: 3/23/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.77	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1442
Client Sample ID: REF 1-1
AMS Sample ID: 19471

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.18	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSN

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1443
Client Sample ID: REF 1-2
AMS Sample ID: 19472

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.31	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1445
Client Sample ID: REF 1-4
AMS Sample ID: 19473

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.97	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1447
Client Sample ID: REF 2-1
AMS Sample ID: 19474

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.85	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1449
Client Sample ID: REF 2-3
AMS Sample ID: 19475

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.51	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1451
Client Sample ID: REF 2-5
AMS Sample ID: 19476

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.03	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1452
Client Sample ID: AH-23
AMS Sample ID: 19477

AMS Project Number: 2004-03-17
Date Sampled: 3/24/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.73	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSL

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1464
Client Sample ID: REF 3-4
AMS Sample ID: 19478

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.89	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1467
Client Sample ID: REF 3-1
AMS Sample ID: 19479

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.86	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1471
Client Sample ID: AH-49
AMS Sample ID: 19480

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.36	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1473
Client Sample ID: DUP 07
AMS Sample ID: 19481

AMS Project Number: 2004-03-17
Date Sampled: N/A
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.73	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSR

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1474
Client Sample ID: AH-45
AMS Sample ID: 19482

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.97	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

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Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1476
Client Sample ID: AH-33
AMS Sample ID: 19483

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.05	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1479
Client Sample ID: AH-35
AMS Sample ID: 19484

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.55	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1481
Client Sample ID: Source 3-1
AMS Sample ID: 19485

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.80	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1490
Client Sample ID: AH-32
AMS Sample ID: 19486

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	4.29	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1491
Client Sample ID: AH-29
AMS Sample ID: 19487

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	5.01	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSR

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1494
Client Sample ID: AH-47
AMS Sample ID: 19488

AMS Project Number: 2004-03-17
Date Sampled: 3/26/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.60	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSD

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1502
Client Sample ID: AH-51
AMS Sample ID: 19489

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	5.05	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1505
Client Sample ID: AH-26
AMS Sample ID: 19490

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	3.10	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1507
Client Sample ID: AH-42
AMS Sample ID: 19491

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.13	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSB

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1509
Client Sample ID: AH-40
AMS Sample ID: 19492

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	0.78	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1510
Client Sample ID: Core 1-Top
AMS Sample ID: 19493

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.27	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSh

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1511
Client Sample ID: Core 1-Bot
AMS Sample ID: 19494

AMS Project Number: 2004-03-17
Date Sampled: 3/27/2004
Date Received: 4/6/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	1.18	%		0.01	EPA 9060	Sediment	4/15/2004
Total Organic Carbon	2	1.25	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project Number: EA Davisville
Battelle Sample ID: S1468
Client Sample ID: AH-28
AMS Sample ID: 19500

AMS Project Number: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/8/2004

Parameter	Replicate	Result	Unit	Flag	MDL	Method	Matrix	Date Analyzed
Total Organic Carbon	1	2.10	%		0.01	EPA 9060	Sediment	4/15/2004
Total Organic Carbon	2	1.92	%		0.01	EPA 9060	Sediment	4/15/2004

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSA

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Quality Control Report

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project No.: EA Davisville
Client ID: S1464

AMS Project No.: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/6/2004
Date Analyzed: 4/15/2004
Matrix: Sediment
Method: EPA 9060

Continuing Calibration Data

AMS Sample ID	Parameter	SRM Result %	SRM Theoretical %	RPD %	QC Limits % RPD
CC01	TOC	4.71	4.80	1.89	<5

TOC Method Blank

AMS Sample ID	Weight (g)	Result (µg C)	TOC (%)	MDL (%)
CB01	0.4791	0.83	ND	0.01

Replicate Analysis

AMS Sample ID	Parameter	Sample Result %	Replicate Result %	RPD %	QC Limits % RPD
19478	TOC	1.89	1.96	3.64	<25

Samples in Batch (AMS ID): 19464 19467 19470 19473 19476
19465 19468 19471 19474 19477
19466 19469 19472 19475 19478

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

KSM

AMS, Inc. Project Manager

Applied Marine Sciences, Inc.

502 N. Highway 3, Suite B • League City, TX 77573 • (281) 554-7272 • Fax (281) 554-6356

Quality Control Report

Client: Battelle-Duxbury Operations
Project Title: Davisville Naval Sediment Study
Project No.: EA Davisville
Client ID: S1468

AMS Project No.: 2004-03-17
Date Sampled: 3/25/2004
Date Received: 4/8/2004
Date Analyzed: 4/15/2004
Matrix: Sediment
Method: EPA 9060

Continuing Calibration Data

AMS Sample ID	Parameter	SRM Result %	SRM Theoretical %	RPD %	QC Limits % RPD
CC02	TOC	4.77	4.80	0.63	<5

TOC Method Blank

AMS Sample ID	Weight (g)	Result (µg C)	TOC (%)	MDL (%)
CB02	0.4978	2.88	ND	0.01

Replicate Analysis

AMS Sample ID	Parameter	Sample Result %	Replicate Result %	RPD %	QC Limits % RPD
19500	TOC	2.10	1.92	8.96	<25

Samples in Batch (AMS ID): 19479 19482 19485 19488 19491 19494
19480 19483 19486 19489 19492 19500
19481 19484 19487 19490 19493

Quality Assurance: These analyses were performed in accordance with EPA guidelines for quality assurance.

AMS, Inc. Project Manager

Battelle
The Business of Innovation

Chain of Custody

Shipment No: SHP-040405-01

Proj. No:	Proj. Name:
EA Davisville	Davisville Naval Sediment Study

SAMPLERS: Singature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE/TIME	BATTELLE ID	CLIENT ID	FIELD LOC	MATRIX	OIL CODE	TOC Analysis										Total No of Containers
03/22/04 15:40	S1421	AH-08		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/22/04 12:15	S1424	AH-11		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/22/04 0:00	S1426	AH-DUP 01		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
	S1430	Dup3		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/23/04 10:05	S1432	AH-06		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/23/04 16:25	S1435	AH-17		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/23/04 13:50	S1438	AH-03		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 8:40	S1442	REF 1-1		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 9:00	S1443	REF 1-2		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 10:05	S1445	REF 1-4		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 11:50	S1447	REF 2-1		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 12:35	S1449	REF 2-3		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 13:25	S1451	REF 2-5		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/24/04 15:30	S1452	AH-23		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/25/04 9:40	S1464	REF 3-4		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/25/04 8:25	S1467	REF 3-1		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/25/04 16:45	S1471	AH-49		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
	S1473	DUP 07		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/26/04 11:40	S1474	AH-45		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/26/04 11:05	S1476	AH-33		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1

Relinquished by:	Date/Time:		Received by:	Date/Time:	
Jessica Fahey	4/5/2004	1:27 PM	KSD	4/6/04	0930
Relinquished by:	Date/Time:		Received by:	Date/Time:	

Comments:
Please contact Jeff Hardenstine at 781.952.5269 if you have any questions or comments. Thank you!

Battelle
The Business of Innovation

Chain of Custody

Shipment No: SHP-040405-01

Proj. No:	Proj. Name:
EA Davisville	Davisville Naval Sediment Study

SAMPLERS: Singature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE/TIME	BATTELLE ID	CLIENT ID	FIELD LOC	MATRIX	OIL CODE	TOC analysis										Total No of Containers
03/26/04 9:40	S1479	AH-35		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/26/04 12:20	S1481	Source 3-1		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/26/04 15:15	S1490	AH-32		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/26/04 14:45	S1491	AH-29		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/26/04 13:50	S1494	AH-47		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/27/04 13:45	S1502	AH-51		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/27/04 8:20	S1505	AH-26		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/27/04 9:20	S1507	AH-42		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/27/04 10:30	S1509	AH-40		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/27/04 12:00	S1510	Core 1-Top		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1
03/27/04 12:00	S1511	Core 1-Bot		SEDIMENT		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	1

Relinquished by:	Date/Time:		Received by:	Date/Time:	
Jessica Fahey	4/5/2004	1:27 PM	KSA	4/6/04	0930
Relinquished by:	Date/Time:		Received by:	Date/Time:	

Comments:
Please contact Jeff Hardenstine at 781.952.5269 if you have any questions or comments. Thank you!

Battelle
The Business of Innovation

Chain of Custody

Shipment No: SHP-040407-01

Proj. No:	Proj. Name:
EA Davisville	Davisville Naval Sediment Study

SAMPLERS: Singature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE/TIME	BATTELLE ID	CLIENT ID	FIELD LOC	MATRIX	OIL CODE											Total No of Containers
03/25/04 15:00	S1468	AH-28		SEDIMENT		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	1

Relinquished by:	Date/Time:		Received by:	Date/Time:	
Jessica Fahey	4/7/2004	2:57 PM		4/8/04	1000
Relinquished by:	Date/Time:		Received by:	Date/Time:	

Comments:
Please contact Jeff Hardenstine at 781.952.5269 if you have any comments or questions. Thank you!

Applied Marine Sciences, Inc.
Sample Receipt Checklist

Date: 4/6/04 Client No. Battelle
Time: 0930 Contract No. EA Dawsville

Client Sample Nos. _____

AMS Sample Nos. 19464-19494

		YES	NO
1.	Is a Chain-of-Custody form present?	✓	
2.	Is the COC properly completed?	✓	
	If no, please provide details:		
3.	Is airbill/packing list/bill of laden present?	✓	
	If yes, ID#: 6592 0692 3762		
4.	Are custody seals present on package?		✓
	If yes, were they intact upon receipt?		
5.	Are all samples tagged or labeled?	✓	
6.	Do the sample tags/labels match the COC?	✓	
	If no, has the client been contacted?		
	(Attach subsequent documentation from client regarding this matter.)		
7.	Do all shipping documents agree?	✓	
	If no, describe the nonconformity:		
8.	Condition/temperature of shipping container:	Good -0.2°C	
9.	Condition/temperature of sample containers:	Good + 2.3°C	
10.	Sample Disposal?: AMS ✓	Return to client	

Notes: _____

Attest: KSD Date: 4/6/04
Corrective Action: _____ Date: _____
Resolved: _____ Date: _____

AMS 1301:02: Revised 1/01

ORIGIN ID: XPUA (781) 934-0571
SAMPLE CUSTODY
BATTELLE
397 WASHINGTON STREET

DUXBURY, MA 02332

SHIP DATE: 05APR04
SYSTEM #348589 / CAFE2208
ACTUAL WGT: 48 LBS MAN-WGT
ACCOUNT #: 100000458

FedEx

FedEx Revenue Barcode

TO:

KENNETH DAVIS (281) 554-7272
APPLIED MARINE SCIENCES, INC.
502 N. HIGHWAY 3
SUITE B
LEAGUE CITY, TX 77573

REF: 3181

Delivery Address Barcode (FedEx-EDR)

PRIORITY OVERNIGHT

TRK# 6592 0692 3762 FORM 0201

TUE
Deliver by:
06APR04
A2

IAH

77573 —TX—US NC BBCA

Part # 156148-434 NRIT 8-03

Applied Marine Sciences, Inc.
Sample Receipt Checklist

Date: 4/8/04 Client No. Davisville
Time: 1000 Contract No.

Client Sample Nos.

AMS Sample Nos. 19500

		YES	NO
1.	Is a Chain-of-Custody form present?	✓	
2.	Is the COC properly completed?	✓	
	If no, please provide details:		
3.	Is airbill/packing list/bill of laden present?	✓	
	If yes, ID#: 6592 0692 4004		
4.	Are custody seals present on package?		✓
	If yes, were they intact upon receipt?		
5.	Are all samples tagged or labeled?	✓	
6.	Do the sample tags/labels match the COC?	✓	
	If no, has the client been contacted?		
	(Attach subsequent documentation from client regarding this matter.)		
7.	Do all shipping documents agree?	✓	
	If no, describe the nonconformity:		
8.	Condition/temperature of shipping container:	Good 3.1°C	
9.	Condition/temperature of sample containers:	Good 4.5°C	
10.	Sample Disposal?: AMS ✓	Return to client	

Notes:

Attest: KSD Date: 4/8/04
Corrective Action: Date:
Resolved: Date:

AMS 1301:02: Revised 1/01

ORIGIN ID: XPUA (781) 934-0571
SAMPLE CUSTODY
BATTELLE
397 WASHINGTON STREET

DUXBURY, MA 02332

SHIP DATE: 07APR04
SYSTEM #348589 / CAFE2208
ACTUAL WGT: 4 LBS MAN-WGT
ACCOUNT #: 100000458

FedEx

FedEx Revenue Barcode

TO:

KENNETH DAVIS (281) 554-7272
APPLIED MARINE SCIENCES, INC.
502 N. HIGHWAY 3
SUITE B
LEAGUE CITY, TX 77573

REF: 3181

Delivery Address Barcode (FedEx-EDR)

PRIORITY OVERNIGHT

TRK# 6592 0692 4004 FORM 0201

THU
Deliver by:
08APR04
A2

IAH

77573 —TX—US NC BBCA

Part # 156148-434 NRIT 8-03

IX UUU

Date	AMS ID	Sample Wt. (g)	Result (ug C)	Blank (ug C)	TOC (%)	Comments
4/13/04	CB01	0.4975	3.53	3.22	ND	
	19430	0.0046	2301.99	3.53	49.97	
	19430	0.0036	1858.69	3.53	51.53	
	19431	0.0059	3062.79	3.53	51.85	
	19431	0.0046	2496.08	3.53	54.19	
	19432	0.0026	1499.77	3.53	57.55	
	19432	0.0018	905.14	3.53	50.09	
	19433	0.0029	1323.62	3.53	45.52	
	19433	0.0029	1413.02	3.53	48.60	
	19434	0.0030	1523.81	3.53	50.68	
	19434	0.0036	1744.60	3.53	48.36	
	19435	0.0085	4158.39	3.53	48.88	
	19435	0.0081	4019.56	3.53	49.58	
	19436	0.0029	1526.40	3.53	52.57	
	19436	0.0032	1533.98	3.53	47.83	
	19437	0.0021	982.74	3.53	46.63	
	19437	0.0029	1362.44	3.53	46.86	
	19437	0.0026	1239.14	3.53	47.52	= 1.40
	19419	0.1118	438.18	3.53	0.39	
	19497	0.0392	535.94	3.53	1.36	
	19498	0.0325	423.00	3.53	1.29	
	19499	0.0360	483.52	3.53	1.33	
	19419	0.1021	409.94	3.53	0.40	= 2.53
	19499	0.0492	654.54	3.53	1.32	= 0.75
	CC02	0.0175	827.77	3.53	4.71	= 1.89
	CB02	0.5801	4.62	3.53	ND	
4/15/04	Blank	–	–	2.35	–	
	IB01	0.5102	3.27	2.35	ND	
	IC01	0.0184	876.06	2.35	4.76	= 1.05
	IC02	0.0086	1000.00	2.35	11.60	= 3.39
	IC03	0.0029	1209.61	2.35	41.63	= 1.12

Date	AMS ID	Sample Wt. (g)	Result (ug C)	Blank (ug C)	TOC (%)	Comments
4/15/04	19464	0.0259	1213.96	2.35	4.68	
	19465	0.0283	1130.15	2.35	3.99	
	19466	0.0219	835.18	2.35	3.80	
	19467	0.0204	665.41	2.35	3.22	
	19468	0.0285	906.50	2.35	3.17	
	19469	0.0277	1456.68	2.35	5.25	
	19470	0.0276	766.61	2.35	2.77	
	19471	0.1034	190.16	2.35	0.18	
	19472	0.1043	326.87	2.35	0.31	
	19473	0.0468	926.11	2.35	1.97	
	19474	0.0290	828.89	2.35	2.85	
	19475	0.0320	804.28	2.35	2.51	
	19476	0.1038	1070.90	2.35	1.03	
	19477	0.0210	784.76	2.35	3.73	
	19478	0.0467	885.21	2.35	1.89	
	19478-2	0.0401	789.76	2.35	1.96	= 3.64
	CC01	0.0181	855.74	2.35	4.71	= 1.89
	CB01	0.4791	0.83	2.35	ND	
	19479	0.0396	1134.27	0.83	2.68	
	19480	0.0940	1277.17	0.83	1.36	
	19481	0.0310	1157.63	0.83	3.73	
	19482	0.0255	1268.70	0.83	4.97	
	19483	0.0244	988.87	0.83	4.05	
	19484	0.0283	1289.59	0.83	4.55	
	19485	0.0911	731.12	0.83	0.80	
	19486	0.0341	1462.47	0.83	4.29	
	19487	0.0239	1199.23	0.83	5.01	
	19488	0.0905	1448.62	0.83	1.60	
	19489	0.0381	1924.32	0.83	5.05	
	19490	0.0319	988.39	0.83	3.10	
	19491	0.1183	1333.48	0.83	1.13	

Date	AMS ID	Sample Wt. (g)	Result (ug C)	Blank (ug C)	TOC (%)	Comments
4/15/04	19492	0.1213	950.07	0.83	0.78	
	19493	0.0753	960.56	0.83	1.27	
	19494	0.0736	868.54	0.83	1.18	
	19494-2	0.0681	853.08	0.83	1.25	= 5.76
	19500	0.0564	1184.53	0.83	2.10	
	19500-2	0.0448	859.20	0.83	1.92	= 8.96
	CC02	0.0189	902.61	0.83	4.77	= 0.63
	CB02	0.4978	2.88	0.83	ND	
	19438	0.0635	1465.39	KSD ~~0.83~~ 2.88	2.30	
	19439	0.0403	770.30	KSD ~~0.83~~ 2.88	1.90	
	19440	0.0854	450.02	KSD ~~0.83~~ 2.88	0.52	
	19441	0.1350	348.50	2.88	0.26	
	19442	0.0976	1068.95	2.88	1.09	
	19443	0.0854	2020.24	2.88	2.36	
	19444	0.0869	1227.40	2.88	1.41	
	19445	0.0369	803.05	2.88	2.17	
	19446	0.0426	966.24	2.88	2.26	
	19447	0.0590	2368.77	2.88	4.01	
	19448	0.0696	983.16	2.88	1.41	
	19449	0.0469	772.05	2.88	1.64	
	19450	0.0760	403.31	2.88	0.53	
	19451	0.1155	492.72	2.88	0.42	
	19452	0.0632	686.10	2.88	1.08	
	19453	0.0709	1042.96	2.88	1.47	
	19453-2	0.0853	1245.19	2.88	1.46	= 0.68
	CC03	0.0186	866.11	2.88	4.64	= 3.39
	CB03	0.4842	3.10	2.88	ND	
	19454	0.1079	559.49	3.10	0.52	
	19455	0.1063	592.79	3.10	0.55	
	19456	0.0701	724.86	3.10	1.03	
	19457	0.0645	1069.48	3.10	1.65	

COULOMETER ANALYSIS REPORT

Sample #: 19464 Analysis Type: C Date: 04-15-2004
Sample Weight: .0259 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.51
3	1.0	309.91
4	1.5	911.54
5	2.0	1193.61
6	2.5	1207.66
7	3.0	1210.90
8	3.5	1212.41
9	4.0	1213.29
10	4.5	1213.96

Final Results: 4.68%C Analyst: KSD Time: 10:39:28

COULOMETER ANALYSIS REPORT

Sample #: 19465 Analysis Type: C Date: 04-15-2004
Sample Weight: .0283 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.93
3	1.0	356.85
4	1.5	959.53
5	2.0	1114.36
6	2.5	1124.78
7	3.0	1127.25
8	3.5	1128.57
9	4.0	1129.45
10	4.5	1130.15

Final Results: 3.99%C Analyst: KSD Time: 10:44:45

COULOMETER ANALYSIS REPORT

Sample #: 19466 Analysis Type: C Date: 04-15-2004
Sample Weight: .0219 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.92
3	1.0	298.54
4	1.5	751.48
5	2.0	822.87
6	2.5	830.92
7	3.0	832.89
8	3.5	833.93
9	4.0	834.67
10	4.5	835.18

Final Results: 3.80%C Analyst: KSD Time: 10:49:57

COULOMETER ANALYSIS REPORT

Sample #: 19467 Analysis Type: C Date: 04-15-2004
Sample Weight: .0206 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.59
3	1.0	249.22
4	1.5	590.36
5	2.0	653.03
6	2.5	661.77
7	3.0	663.51
8	3.5	664.38
9	4.0	664.95
10	4.5	665.41

Final Results: 3.22%C Analyst: KSD Time: 10:55:11

COULOMETER ANALYSIS REPORT

Sample #: 19468 Analysis Type: C Date: 04-15-2004
Sample Weight: .0285 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.59
3	1.0	319.90
4	1.5	789.68
5	2.0	890.02
6	2.5	901.67
7	3.0	904.18
8	3.5	905.23
9	4.0	905.96
10	4.5	906.50

Final Results: 3.17%C Analyst: KSD Time: 11:00:23

COULOMETER ANALYSIS REPORT

Sample #: 19469 Analysis Type: C Date: 04-15-2004
Sample Weight: .0277 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.39
3	1.0	330.70
4	1.5	993.67
5	2.0	1420.25
6	2.5	1449.22
7	3.0	1453.20
8	3.5	1454.83
9	4.0	1455.97
10	4.5	1456.68

Final Results: 5.25%C Analyst: KSD Time: 11:06:22

COULOMETER ANALYSIS REPORT

Sample #: 19470 Analysis Type: C Date: 04-15-2004
Sample Weight: .0276 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.66
3	1.0	208.73
4	1.5	614.32
5	2.0	733.32
6	2.5	758.90
7	3.0	763.80
8	3.5	765.42
9	4.0	766.04
10	4.5	766.61

Final Results: 2.77%C Analyst: KSD Time: 11:11:40

COULOMETER ANALYSIS REPORT

Sample #: 19471 Analysis Type: C Date: 04-15-2004
Sample Weight: .1034 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.37
3	1.0	50.13
4	1.5	136.15
5	2.0	180.79
6	2.5	188.16
7	3.0	189.06
8	3.5	189.59
9	4.0	189.89
10	4.5	190.16

Final Results: 0.18%C Analyst: KSD Time: 11:16:55

COULOMETER ANALYSIS REPORT

Sample #: 19472 Analysis Type: C Date: 04-15-2004
Sample Weight: .1043 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.18
3	1.0	74.56
4	1.5	227.26
5	2.0	305.29
6	2.5	322.99
7	3.0	325.28
8	3.5	326.09
9	4.0	326.53
10	4.5	326.87

Final Results: 0.31%C Analyst: KSD Time: 11:22:10

COULOMETER ANALYSIS REPORT

Sample #: 19473 Analysis Type: C Date: 04-15-2004
Sample Weight: .0468 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.27
3	1.0	220.71
4	1.5	752.29
5	2.0	901.47
6	2.5	920.56
7	3.0	923.65
8	3.5	924.83
9	4.0	925.55
10	4.5	926.11

Final Results: 1.97%C Analyst: KSD Time: 11:27:25

COULOMETER ANALYSIS REPORT

Sample #: 19474 Analysis Type: C Date: 04-15-2004
Sample Weight: .029 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.50
3	1.0	244.51
4	1.5	678.14
5	2.0	800.21
6	2.5	822.02
7	3.0	825.73
8	3.5	827.24
9	4.0	828.11
10	4.5	828.89

Final Results: 2.85%C Analyst: KSD Time: 11:32:37

COULOMETER ANALYSIS REPORT

Sample #: 19475 Analysis Type: C Date: 04-15-2004
Sample Weight: .032 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.42
3	1.0	198.28
4	1.5	583.28
5	2.0	748.20
6	2.5	792.89
7	3.0	800.68
8	3.5	802.55
9	4.0	803.54
10	4.5	804.28

Final Results: 2.51%C Analyst: KSD Time: 11:37:50

COULOMETER ANALYSIS REPORT

Sample #: 19476 Analysis Type: C Date: 04-15-2004
Sample Weight: .1038 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.42
3	1.0	121.10
4	1.5	401.38
5	2.0	833.22
6	2.5	1023.31
7	3.0	1061.09
8	3.5	1067.76
9	4.0	1069.71
10	4.5	1070.90

Final Results: 1.03%C Analyst: KSD Time: 11:43:03

COULOMETER ANALYSIS REPORT

Sample #: 19477 Analysis Type: C Date: 04-15-2004
Sample Weight: .021 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.22
3	1.0	235.86
4	1.5	664.31
5	2.0	765.56
6	2.5	780.72
7	3.0	782.81
8	3.5	783.75
9	4.0	784.32
10	4.5	784.76

Final Results: 3.73%C Analyst: KSD Time: 11:51:50

COULOMETER ANALYSIS REPORT

Sample #: 19478 Analysis Type: C Date: 04-15-2004
Sample Weight: .0467 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	1.30
3	1.0	272.29
4	1.5	719.28
5	2.0	854.42
6	2.5	878.74
7	3.0	882.42
8	3.5	883.83
9	4.0	884.59
10	4.5	885.21

Final Results: 1.89%C Analyst: KSD Time: 11:57:19

COULOMETER ANALYSIS REPORT

Sample #: 19478 Analysis Type: C Date: 04-15-2004
Sample Weight: .0401 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.18
3	1.0	149.82
4	1.5	577.71
5	2.0	749.90
6	2.5	781.67
7	3.0	786.89
8	3.5	788.28
9	4.0	789.17
10	4.5	789.76

Final Results: 1.96%C Analyst: KSD Time: 12:02:52

COULOMETER ANALYSIS REPORT

Sample #: CC01 Analysis Type: C Date: 04-15-2004
Sample Weight: .0181 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.39
3	1.0	209.32
4	1.5	592.00
5	2.0	753.32
6	2.5	826.98
7	3.0	849.99
8	3.5	853.51
9	4.0	854.93
10	4.5	855.74

Final Results: 4.71%C Analyst: KSD Time: 12:08:11

COULOMETER ANALYSIS REPORT

Sample #: CB01 Analysis Type: C Date: 04-15-2004
Sample Weight: .4791 g Blank: 2.35 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.16
3	1.0	0.29
4	1.5	0.38
5	2.0	0.45
6	2.5	0.55
7	3.0	0.64
8	3.5	0.72
9	4.0	0.75
10	4.5	0.83

Final Results: -3.2ugC/g Analyst: KSD Time: 12:16:21

COULOMETER ANALYSIS REPORT

Sample #: 19479 Analysis Type: C Date: 04-15-2004
Sample Weight: .0396 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.02
3	1.0	198.47
4	1.5	732.32
5	2.0	1072.39
6	2.5	1121.70
7	3.0	1130.54
8	3.5	1132.54
9	4.0	1133.62
10	4.5	1134.27

Final Results: 2.86%C Analyst: KSD Time: 13:00:02

COULOMETER ANALYSIS REPORT

Sample #: 19480 Analysis Type: C Date: 04-15-2004
Sample Weight: 9.399999E-02 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.20
3	1.0	159.92
4	1.5	642.37
5	2.0	1050.50
6	2.5	1177.97
7	3.0	1228.13
8	3.5	1256.12
9	4.0	1269.92
10	4.5	1277.17

Final Results: 1.36%C Analyst: KSD Time: 13:05:16

COULOMETER ANALYSIS REPORT

Sample #: 19481 Analysis Type: C Date: 04-15-2004
Sample Weight: .031 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	2.32
3	1.0	200.17
4	1.5	699.86
5	2.0	1079.70
6	2.5	1143.41
7	3.0	1153.68
8	3.5	1155.95
9	4.0	1156.95
10	4.5	1157.63

Final Results: 3.73%C Analyst: KSD Time: 13:10:32

COULOMETER ANALYSIS REPORT

Sample #: 19482 Analysis Type: C Date: 04-15-2004
Sample Weight: .0255 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.33
3	1.0	241.78
4	1.5	849.85
5	2.0	1198.50
6	2.5	1255.33
7	3.0	1265.23
8	3.5	1267.03
9	4.0	1268.03
10	4.5	1268.70

Final Results: 4.97%C Analyst: KSD Time: 13:15:42

COULOMETER ANALYSIS REPORT

Sample #: 19483 Analysis Type: C Date: 04-15-2004
Sample Weight: .0244 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.37
3	1.0	182.92
4	1.5	662.77
5	2.0	930.93
6	2.5	976.17
7	3.0	984.71
8	3.5	986.69
9	4.0	988.05
10	4.5	988.87

Final Results: 4.05%C Analyst: KSD Time: 13:20:53

COULOMETER ANALYSIS REPORT

Sample #: 19484 Analysis Type: C Date: 04-15-2004
Sample Weight: .0283 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.24
3	1.0	230.15
4	1.5	802.13
5	2.0	1198.22
6	2.5	1272.64
7	3.0	1285.85
8	3.5	1287.80
9	4.0	1288.83
10	4.5	1289.59

Final Results: 4.55%C Analyst: KSD Time: 13:26:03

COULOMETER ANALYSIS REPORT

Sample #: 19485 Analysis Type: C Date: 04-15-2004
Sample Weight: .0911 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.30
3	1.0	81.47
4	1.5	352.28
5	2.0	585.15
6	2.5	688.79
7	3.0	723.22
8	3.5	729.10
9	4.0	730.41
10	4.5	731.12

Final Results: 0.80%C Analyst: KSD Time: 13:31:18

COULOMETER ANALYSIS REPORT

Sample #: 19486 Analysis Type: C Date: 04-15-2004
Sample Weight: .0341 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.19
3	1.0	234.33
4	1.5	814.62
5	2.0	1320.89
6	2.5	1433.26
7	3.0	1456.86
8	3.5	1460.32
9	4.0	1461.63
10	4.5	1462.47

Final Results: 4.29%C Analyst: KSD Time: 13:36:34

COULOMETER ANALYSIS REPORT

Sample #: 19487 Analysis Type: C Date: 04-15-2004
Sample Weight: .0239 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.41
3	1.0	190.92
4	1.5	691.73
5	2.0	1096.91
6	2.5	1176.32
7	3.0	1195.14
8	3.5	1197.47
9	4.0	1198.54
10	4.5	1199.23

Final Results: 5.01%C Analyst: KSD Time: 13:41:45

COULOMETER ANALYSIS REPORT

Sample #: 19488 Analysis Type: C Date: 04-15-2004
Sample Weight: .0905 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.02
3	1.0	136.68
4	1.5	628.52
5	2.0	1140.55
6	2.5	1356.03
7	3.0	1417.99
8	3.5	1439.68
9	4.0	1445.75
10	4.5	1448.62

Final Results: 1.60%C Analyst: KSD Time: 13:46:59

COULOMETER ANALYSIS REPORT

Sample #: 19489 Analysis Type: C Date: 04-15-2004
Sample Weight: .0381 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	1.34
3	1.0	288.58
4	1.5	911.93
5	2.0	1556.12
6	2.5	1841.73
7	3.0	1902.58
8	3.5	1919.23
9	4.0	1922.60
10	4.5	1924.32

Final Results: 5.05%C Analyst: KSD Time: 13:52:12

COULOMETER ANALYSIS REPORT

Sample #: 19490 Analysis Type: C Date: 04-15-2004
Sample Weight: .0319 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.84
3	1.0	171.13
4	1.5	648.44
5	2.0	907.80
6	2.5	967.87
7	3.0	982.95
8	3.5	985.53
9	4.0	987.21
10	4.5	988.39

Final Results: 3.10%C Analyst: KSD Time: 13:57:24

COULOMETER ANALYSIS REPORT

Sample #: 19491 Analysis Type: C Date: 04-15-2004
Sample Weight: .1183 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.22
3	1.0	117.04
4	1.5	548.56
5	2.0	995.00
6	2.5	1230.77
7	3.0	1298.50
8	3.5	1323.19
9	4.0	1329.56
10	4.5	1333.48

Final Results: 1.13%C Analyst: KSD Time: 14:02:40

COULOMETER ANALYSIS REPORT

Sample #: 19492 Analysis Type: C Date: 04-15-2004
Sample Weight: .1213 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	2.11
3	1.0	116.23
4	1.5	477.09
5	2.0	791.80
6	2.5	904.24
7	3.0	941.01
8	3.5	948.10
9	4.0	949.34
10	4.5	950.07

Final Results: 0.78%C Analyst: KSD Time: 14:07:54

COULOMETER ANALYSIS REPORT

Sample #: 19493 Analysis Type: C Date: 04-15-2004
Sample Weight: .0753 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.00
3	1.0	180.41
4	1.5	638.18
5	2.0	872.11
6	2.5	937.04
7	3.0	956.66
8	3.5	959.13
9	4.0	959.97
10	4.5	960.56

Final Results: 1.27%C Analyst: KSD Time: 14:13:35

COULOMETER ANALYSIS REPORT

Sample #: 19494 Analysis Type: C Date: 04-15-2004
Sample Weight: .0736 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.00
3	1.0	96.56
4	1.5	412.77
5	2.0	661.96
6	2.5	749.65
7	3.0	796.33
8	3.5	825.63
9	4.0	848.07
10	4.5	868.54

Final Results: 1.18%C Analyst: KSD Time: 14:18:47

COULOMETER ANALYSIS REPORT

Sample #: 19494 Analysis Type: C Date: 04-15-2004
Sample Weight: .0681 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	11.73
3	1.0	105.43
4	1.5	403.96
5	2.0	651.69
6	2.5	751.85
7	3.0	800.40
8	3.5	825.16
9	4.0	840.97
10	4.5	853.08

Final Results: 1.25%C Analyst: KSD Time: 14:24:30

COULOMETER ANALYSIS REPORT

Sample #: 19500 Analysis Type: C Date: 04-15-2004
Sample Weight: .0564 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	7.42
3	1.0	144.10
4	1.5	593.44
5	2.0	949.30
6	2.5	1073.73
7	3.0	1134.01
8	3.5	1167.44
9	4.0	1179.51
10	4.5	1184.53

Final Results: 2.10%C Analyst: KSD Time: 14:29:44

COULOMETER ANALYSIS REPORT

Sample #: 19500 Analysis Type: C Date: 04-15-2004
Sample Weight: .0448 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	1.66
3	1.0	101.46
4	1.5	430.90
5	2.0	667.47
6	2.5	756.64
7	3.0	807.42
8	3.5	836.52
9	4.0	850.31
10	4.5	859.20

Final Results: 1.92%C Analyst: KSD Time: 14:34:54

COULOMETER ANALYSIS REPORT

Sample #: CCO2 Analysis Type: C Date: 04-15-2004
Sample Weight: .0189 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	2.88
3	1.0	161.84
4	1.5	548.00
5	2.0	754.59
6	2.5	843.15
7	3.0	886.78
8	3.5	899.53
9	4.0	901.68
10	4.5	902.61

Final Results: 4.77%C Analyst: KSD Time: 14:40:41

COULOMETER ANALYSIS REPORT

Sample #: CB02 Analysis Type: C Date: 04-15-2004
Sample Weight: .4978 g Blank: .83 # of Readings: 10

Reading #	Analysis Time (min)	Coulometer Reading
1	0.0	0.00
2	0.5	0.11
3	1.0	1.91
4	1.5	2.52
5	2.0	2.71
6	2.5	2.84
7	3.0	2.87
8	3.5	2.88
9	4.0	2.88
10	4.5	2.88

Final Results: 4.1ugC/g Analyst: KSD Time: 14:45:52

ND

Battelle

The Business of Innovation

ShpNo SHP-040323-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 2960097.3203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Tuesday, March 23, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959704

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	2.0	8

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1420 - S1427

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/23/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 9:09:

Authorized By: **Authorized On:**

4.5 :
2.0 Temp Blank:

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Chain of Custody

Proj. No	Proj. Name
29600097.3203	Allen Harbor Sediment Sampling

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3.22.04	1035	S1420	AH-07	Sediment				X				X			2
3.22.04	1540	S1421	AH-08	Sediment				X				X			2
3.22.04	1450	S1422	AH-09	Sediment				X				X			2
3.22.04	1410	S1423	AH-10	Sediment				X				X			2
3.22.04	1215	S1424	AH-11	Sediment				X				X			2
3.22.04	1215	S1424 ~~S1425~~ ①	AH-11 MS/MSD	Sediment				X				X			4
3.22.04	—	S1426	AH-DUP01	Sediment				X				X			2
3.22.04	—	S1427	AH-DUP02	Sediment				X				X			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	03/22/04 1900	[signature]	3/23/04 10:30
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: ① Sample given same ID as background sample per PM's request 4/5/04 JMF.
All 6 jars have ID S1424

ORIGINAL

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Battelle

The Business of Innovation

ShpNo SHP-040323-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑

Project Number: 2960097.3203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Tuesday, March 23, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1420	AH-07	03/22/04 16:35	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1421	AH-08	03/22/04 15:40	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1422	AH-09	03/22/04 14:50	03/23/04 13:54	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1423	AH-10	03/22/04 14:10	03/23/04 13:56	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1424	AH-11	03/22/04 12:15	03/23/04 13:56	6	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	Jars 1 & 2 are AH-11, J
S1426	AH-DUP 01	03/22/04 0:00	03/23/04 13:58	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	
S1427	AH-DUP 02	03/22/04 0:00	03/23/04 13:58	2	SEDIMENT	2	NA	NA	NA	29 Freezer	BIN	85	

Total Samples: 7

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ShpNo SHP-040324-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑ ☐

Project Number: 29600973203 **Client:** EA Engineering
Received by: Newell, Jeffrey **Date/Time Received:** Wednesday, March 24, 2004 10:30 AM
No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959645
COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	5.4	13

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☐ Sample containers intact
☑ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 5.4 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1428 - S1440
Samples logged in by: Newell, Jeffrey **Date/Time:** 03/24/2004 10:30 AM
Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:30:0
Authorized By: **Authorized On:**

Battelle
The Business of Innovation

ShpNo: SHP-040324-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved:

COC Client: EA Engineering

COC Project: Allen Harbor Sediment Sampling

COC Date: 3/24/2004 10:38:00 AM

	Description of Problem:	Explanation:
Sample Container Integrity	Cap broken	Several samples received with damaged caps: AH-16 (S1436, 1of2), AH-15 (S1437, 2of2), Dup3 (S1430)

Documentation of project manager notification

Sample Custodian	Newell, Jeffrey	**Date:**	3/24/2004 11:31:00 A
Laboratory Manager:	Peven-McCarthy, Carole	**Date:**	4/1/2004 10:50:00 AM
Project Manager:	Hardenstine, Jeffery	**Date:**	3/26/2004 1:03:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Sent e-mail to Dan Hinkley of EA Engineering on 3-26-04 notifing of samples with cracked caps. Note sample intergrity is not compromised. Caps are replaced

Date this form was received back to the custodian: _____

Reference Number: _____

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Chain of Custody

Proj. No: 96001 3203

Proj. Name: Allen Harbor Sediment Sampling

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION		Bottle ID #	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3/23/04	0930	~~AH-12~~	AH-12	Sediment		S1428				X				X			2
3/23/04	1005		AH-06 MS	Sediment	S1432	~~S1429~~ ①				X				X			2
			DUP 3	Sediment		S1430				X				X			2
3/23/04	1005		AH-06 MSD	Sediment	S1432	~~S1431~~ ①				X				X			2
3/23/04	1005		AH-06	Sediment		S1432				X				X			2
3/23/04	1125		AH-05	Sediment		S1433				X				X			2
~~3/23/04~~	~~1555~~		Temp Blank														
3/23/04	1555		AH-19	Sediment		S1434				X				X			2
3/23/04	1625		AH-17	Sed		S1435				X				X			2
3/23/04	1530		AH-16	Sed		S1436				X				X			2
3/23/04	1505		AH-15	Sed		S1437				X				X			2
3/23/04	1350		AH03	Sed		S1438				X				X			2
3/23/04	1325		AH-04	Sed		S1439				X				X			2
3/23/04	1430		AH-14	Sed		S1440				X				X			2

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/23/04	18:00	[signature]	3/24/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:

① samples were given same ID as background sample. all 6 jars are now logged in as S1432 per PM's request. JMF 4/5/04

ORIGINAL

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ShpNo SHP-040324-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Wednesday, March 24, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1428	AH-12	03/23/04 9:30	03/24/04 11:12	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1430	Dup3		03/24/04 11:13	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1432	AH-06	03/23/04 10:05	03/24/04 11:15	6	SEDIMENT	5.4	NA	NA	NA	29 Freezer			Jars 1 & 2 are AH06, Ja
S1433	AH-05	03/23/04 11:25	03/24/04 11:16	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1434	AH-19	03/23/04 15:55	03/24/04 11:17	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1435	AH-17	03/23/04 16:25	03/24/04 11:19	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1436	AH-16	03/23/04 15:30	03/24/04 11:21	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1437	AH-15	03/23/04 15:05	03/24/04 11:22	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1438	AH-03	03/23/04 13:50	03/24/04 11:23	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1439	AH-04	03/23/04 13:25	03/24/04 11:24	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			
S1440	AH-14	03/23/04 14:30	03/24/04 11:24	2	SEDIMENT	5.4	NA	NA	NA	29 Freezer			

Total Samples: 11

Battelle

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ShpNo SHP-040325-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Thursday, March 25, 2004 10:00 AM

No. of Shipping Containers: 2

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959634

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 2	Cooler	Tape	Intact	Intact	0.8	7
2 of 2	Cooler	Tape	Intact	Intact	2.3	9

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2.3 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1442 - S1457

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/25/2004 10:00 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:50:0

Authorized By: _____ **Authorized On:** _____

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ShpNo: SHP-040325-01
Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No. 1 of 1
Approved:

COC Client: EA Engineering
COC Project: AH Sediment Sampling
COC Date: 3/25/2004 10:21:00 AM

	Description of Problem:	Explanation:
Sample Container Integrity	Cap broken	SAMPLE REF 1-1(S1442) BOTTLE 2 OF 2 CAP BROKEN; NO SAMPLE LOST

Documentation of project manager notification

Sample Custodian	Newell, Jeffrey	**Date:**	3/25/2004 12:00:00 PM
Laboratory Manager:	Peven-McCarthy, Carole	**Date:**	4/1/2004 10:43:00 AM
Project Manager:	Hardenstine, Jeffery	**Date:**	3/26/2004 1:13:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Sent Dan Hinkley of EA Engineering an e-mail on 3-26-04 notifing of samples received with broken cap. Note, sample integrity is not compromised. The cap is replaced.

Date this form was received back to the custodian: _____
Reference Number: _____

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Chain of Custody

Proj. No	Proj. Name
9960973303	AH Sed. Sampling

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
												TOC			
3/24/04	0840	51442	REF 1-1 1					X				X			2
3/24/04	0900	51443	REF 1-2 1					X				X			2
3/24/04	0925	51444	REF 1-3 2					X				X			2
3/24/04	1005	51445	REF 1-4 2					X				X			2
3/24/04	1030	51446	REF 1-5 2					X				X			2
3/24/04	1150	51447	REF 2-1 1					X				X			2
3/24/04	1215	51448	REF 2-2 1					X				X			2
3/24/04	1235	51449	REF 2-3 1					X				X			2
3/24/04	1305	51450	REF 2-4 1					X				X			2
3/24/04	1325	51451	REF 2-5 1					X				X			2
3/24/04	1530	51452	AH-23 2					X				X			2
3/24/04	1615	51453	AH-21 2					X				X			2
3/24/04	1600	51454	AH-24 2					X				X			2
			Trip blank					~~X~~	RC			~~X~~	RC		1
3/24/04	1635	51455	AH-18 2					X				X			2
—	—	51456	DUP 04 2					X				X			2
3/24/04	1715	51457	SD Source 2					X				X			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	3/24/04 18:08	[signature]	3/25/04 10:30
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

Battelle
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ShpNo SHP-040325-01

Battelle Project No:

Sample Receipt Form Details

Approved:

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Thursday, March 25, 2004 10:00 AM

No. of Shipping Containers: 2

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1442	REF 1-1	03/24/04 8:40	03/25/04 11:01	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1443	REF 1-2	03/24/04 9:00	03/25/04 11:01	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1444	REF 1-3	03/24/04 9:25	03/25/04 11:02	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1445	REF 1-4	03/24/04 10:05	03/25/04 11:09	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1446	REF 1-5	03/24/04 10:30	03/25/04 11:10	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1447	REF 2-1	03/24/04 11:50	03/25/04 11:15	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1448	REF 2-2	03/24/04 12:15	03/25/04 11:16	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1449	REF 2-3	03/24/04 12:35	03/25/04 11:20	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1450	REF 2-4	03/24/04 13:05	03/25/04 11:21	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1451	REF 2-5	03/24/04 13:25	03/25/04 11:24	2	SEDIMENT	0.8	NA	NA	NA	29 Freezer			
S1452	AH-23	03/24/04 15:30	03/25/04 11:25	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1453	AH-21	03/24/04 16:15	03/25/04 11:26	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1454	AH-24	03/24/04 16:00	03/25/04 11:27	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1455	AH-18	03/24/04 16:35	03/25/04 11:27	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1456	Dup04		03/25/04 11:29	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			
S1457	SID Source 4-1	03/24/04 17:15	03/25/04 11:30	2	SEDIMENT	2.3	NA	NA	NA	29 Freezer			

Total Samples: 16

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Battelle
The Business of Innovation

ShpNo SHP-040326-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Friday, March 26, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959601

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	1.5	15

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☐ Sample containers intact
☑ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 1.5 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1458 - S1472

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/26/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 4/2/2004 8:41:0

Authorized By: **Authorized On:**

Battelle

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ShpNo: SHP-040326-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved: ☑

COC Client: EA Engineering

COC Project: AH Sediment Sampling

COC Date: 3/26/2004 10:25:00 AM

	Description of Problem:	Explanation:
Custody	Jars and C-O-C do not match for time/date	JARS FOR SAMPLE AH-39 (S1469) LIST COLLECTION TIME AS 15:35; COC LISTS TIME AS 15:39
Sample Container Integrity	Cap broken	SAMPLE REF 3-1 (S1467) JAR 2OF2 CAP BROKEN; NO SAMPLE LOST

Documentation of project manager notification

Sample Custodian	Newell, Jeffrey	**Date:**	3/26/2004 11:10:00 A
Laboratory Manager:	Peven-McCarthy, Carole	**Date:**	4/1/2004 10:45:00 AM
Project Manager:	Hardenstine, Jeffery	**Date:**	3/26/2004 1:17:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 26-Mar-04 **I contacted** Hinckley, Daniel **at** EA Engineering, Science, and Technology

Results of communication with client (Describe any corrective action directed by the client):

Sent Dan e-mail. Corrective action for sample lids is to replace with clean lid. Correct collection time for sample AH-39 is 15:35

Date this form was received back to the custodian: _____

Reference Number: _____

7.5 TB

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Chain of Custody

Proj. No: 2960097 3303
Proj. Name: AH Sediment Sampl

SAMPLERS: Signature: JKm

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
												TOC			
3/25/04	1135	S1458	AH-20					✓				✓			2
		S1459	DUP05					✓				✓			2
3/25/04	1215	S1460	AH-13					✓				✓			2
3/25/04	1250	S1461	AH-02					✓				✓			2
3/25/04	1315	S1462	AH-01					✓				✓			2
3/25/04	1005	S1463	REF 3-5					✓				✓			2
3/25/04	0940	S1464	REF 3-4					✓				✓			2
3/25/04	0920	S1465	REF 3-3					✓				✓			2
3/25/04	0855	S1466	REF 3-2					✓				✓			2
3/25/04	0825 *	S1467	REF 3-1					✓				✓			2
3/25/04	1500	S1468	AH-28					✓				✓			2
3/25/04	1539 *	S1469	AH-39					✓				✓			2
		S1470	DUP06					✓				✓			2
3/25/04	1645	S1471	AH-49					✓				✓			2
3/25/04	1670	S1472	AH-50					✓				✓			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	03/25/04 1750	[signature]	3/26/04 10:30
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Hold till Further notice

ORIGINAL

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Battelle

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ShpNo SHP-040326-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑ Authorized ☐

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Friday, March 26, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1458	AH-20	03/25/04 11:35	03/26/04 10:56	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1459	DUP 05		03/26/04 10:56	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1460	AH-13	03/25/04 12:15	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1461	AH-02	03/25/04 12:50	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1462	AH-01	03/25/04 13:15	03/26/04 10:58	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1463	REF 3-5	03/25/04 10:05	03/26/04 10:59	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1464	REF 3-4	03/25/04 9:40	03/26/04 11:00	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1465	REF 3-3	03/25/04 9:20	03/26/04 11:01	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1466	REF 3-2	03/25/04 8:55	03/26/04 11:01	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1467	REF 3-1	03/25/04 8:25	03/26/04 11:02	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1468	AH-28	03/25/04 15:00	03/26/04 11:03	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1469	AH-39	03/25/04 15:35	03/26/04 11:04	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1470	DUP 06		03/26/04 11:04	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1471	AH-49	03/25/04 16:45	03/26/04 11:05	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			
S1472	AH-50	03/25/04 16:20	03/26/04 11:07	2	SEDIMENT	1.5	NA	NA	NA	29 Freezer			

Total Samples: 15

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ShpNo SHP-040327-01

Battelle Project No: A Davisville

Sample Receipt Form

Approved: ☑ ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Saturday, March 27, 2004 12:15 PM

No. of Shipping Containers: 2

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** Not Recorded

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 2	Cooler	Tape	Intact	Intact	3.6	11
2 of 2	Cooler	None	Not Applicable	Intact	10.0	15

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 10 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1473 - S1498

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/27/2004 12:15 PM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 12:1

Authorized By: Hardenstine, Jeffery **Authorized On:** 3/31/2004 10:04:0

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ShpNo: SHP-040327-01
Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1
Approved: ☑

COC Client: EA Engineering
COC Project: Allen Harbor
COC Date: 3/27/2004 1:22:00 PM

	Description of Problem:	Explanation:
Client Id	Extra samples not listed on the C-O-C	Extra samples Source 1-1 3/26/04 10:15
	Missing samples listed on the C-O-C	Missing sample Source 1-2 3/26/04 10:15
Sample Container Integrity	Cap broken	Lid cracked for sample Source 2-1 (S1484 1of2)
	Cap broken	Lid cracked for sample AH-45 (S1474 1of2)
Temperature and Preservation	Receipt temperature outside of acceptability	Cooler 2 had a temperature of 10.0 which is out of the acceptable range. The spout was open and their was no tape sealing the cooler shut.

Documentation of project manager notification

Sample Custodian Fahey, Jessica **Date:** 3/27/2004 1:26:00 PM
Laboratory Manager: Peven-McCarthy, Carole **Date:** 4/1/2004 10:47:00 AM
Project Manager: Hardenstine, Jeffery **Date:** 4/1/2004 8:29:00 AM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 30-Mar-04 **I contacted** Hinkley, Dan **at** EA Engineering

Results of communication with client (Describe any corrective action directed by the client):

Note cooler temp, proceed with analysis. Source 1-1 is listed on COC twice with same date and different collection times. Source 1-1 collected at 10:15 should be Source 1-2 collected 1/26/04 at 10:15. Per client request please ammend COC. Note cracked lid

Date this form was received back to the custodian: _____
Reference Number: _____

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Chain of Custody

Proj. No: 29600973203
Proj. Name: AH Sed Sample

SAMPLERS: Signature: JGm

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
		51473	DUP07	Sediment				✓				TOC ✓			2
3-26-04	1140	51474	AH-45	Sediment				✓				✓			2
3-26-04	1200	51475	AH-36	Sediment				✓				✓			2
3-26-04	1105	51476	AH-33	Sediment				✓				✓			2
3-26-04	1045	51477	AH-43	Sediment				✓				✓			2
3-26-04	1015	51478	AH-41	Sediment				✓				✓			2
3-26-04	0940	51479	AH-35	Sediment				✓				✓			2
3-26-04	0900	51480	AH-31	Sediment				✓				✓			2
3-26-04	1220	51481	Source 3-1	Sediment				✓				✓			2
3-26-04	1135	51482	Source 3-2	Sediment				✓				✓			2
3-26-04	0930	51483	Source 1-1	Sediment				✓				✓			2
3-26-04	0900	51484	Source 2-1	Sediment				✓				✓			2
3-26-04	1015	~~51485~~ ①	Source 1-~~X2~~ ②	Sediment				✓				✓			2
3-26-04	0920	51486	Source 2-2	Sediment				✓				✓			2
3-26-04	1230	51487	RINS01	Water — Sediment Unless - Forceps				✓							2
3-26-04	—	51488	DUP08	Sediment				✓				✓			1
3-26-04	1000	51489	RINS02	Water — Split Spoon Source Forceps				✓							1

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	3/26/04 1150	[signature]	3/27/04 12:15 pm
Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Hold Until Further Notice.

① WL 3/29/04 JMF

② change per client's request. Please see corrective action [illegible]

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Chain of Custody

Proj. No: 29600973203
Proj. Name: AH Sed. Sample

SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
												TOC			
3-26-04	1515	S1490	AH-32	Sediment				✓				✓			2
-26-04	1445	S1491	AH-29					✓				✓			2
-26-04	1550	S1492	AH-25					✓				✓			2
-26-04	1535	S1493	AH-30					✓				✓			2
-26-04	1350	S1494	AH-47					✓				✓			2
-26-04	1305	S1495	AH-46					✓				✓			2
-26-04	1330	S1496	AH-44					✓				✓			2
-26-04	1420	S1497	AH-38					✓				✓			2
-26-04	1410	S1498	AH-37					✓				✓			2

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	3/26/04 1650	[signature]	3/27/04 12 15 pm
Relinquished by:	Date/Time	Received by:	Date/Time

Comments:

ORIGINAL

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Chain of Custody

Proj. No	Proj. Name
	Allen Harbor

SAMPLERS: Signature

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER	ACIDIFIED	PRESERVED	Total Number of Containers
3-26-04	10:15	S1485	Source 1-2	Sediment											2

Relinquished by:	Date/Time	Received by:	Date/Time
		[signature]	3-27-04 12:15 pm

Relinquished by:	Date/Time	Received by:	Date/Time

Comments: Extra Sample not on original COC.

ORIGINAL

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Battelle
The Business of Innovation

ShpNo SHP-040327-01

Battelle Project No:

Sample Receipt Form Details

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Saturday, March 27, 2004 12:15 PM

No. of Shipping Containers: 2

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1473	DUP 07		03/29/04 8:58	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1474	AH-45	03/26/04 11:40	03/29/04 8:58	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1475	AH-36	03/26/04 12:00	03/29/04 8:59	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1476	AH-33	03/26/04 11:05	03/29/04 9:01	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1477	AH-43	03/26/04 10:45	03/29/04 9:02	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1478	AH-41	03/26/04 10:15	03/29/04 9:03	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1479	AH-35	03/26/04 9:40	03/29/04 9:04	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1480	AH-31	03/26/04 9:00	03/29/04 9:05	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1481	Source 3-1	03/26/04 12:20	03/29/04 9:06	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1482	Source 3-2	03/26/04 11:55	03/29/04 9:09	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1483	Source 1-1	03/26/04 9:50	03/29/04 9:10	2	SEDIMENT	3.6	NA	NA	NA	29 Freezer			
S1484	Source 2-1	03/26/04 9:00	03/29/04 9:13	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1485	Source 1-2	03/26/04 10:15	03/29/04 9:15	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1486	Source 2-2	03/26/04 9:20	03/29/04 9:21	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1487	Rins01	03/26/04 12:30	03/29/04 9:40	1	WATER	10	NA	NA	NA	29 Freezer			
S1488	Dup08	03/26/04 0:00	03/29/04 9:40	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1489	Rins02	03/26/04 10:00	03/29/04 9:41	1	WATER	10	NA	NA	NA	29 Freezer			
S1490	AH-32	03/26/04 15:15	03/29/04 9:41	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1491	AH-29	03/26/04 14:45	03/29/04 9:43	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1492	AH-25	03/26/04 15:50	03/29/04 9:44	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1493	AH-30	03/26/04 15:35	03/29/04 9:45	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1494	AH-47	03/26/04 13:50	03/29/04 9:46	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1495	AH-46	03/26/04 13:05	03/29/04 9:48	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1496	AH-44	03/26/04 13:30	03/29/04 9:57	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1497	AH-38	03/26/04 14:20	03/29/04 9:58	2	SEDIMENT	10	NA	NA	NA	29 Freezer			
S1498	AH-37	03/26/04 14:10	03/29/04 9:58	2	SEDIMENT	10	NA	NA	NA	29 Freezer			

Total Samples: 26

E3

Battelle

The Business of Innovation

ShpNo SHP-040329-01

Battelle Project No:

Sample Receipt Form

Approved: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Monday, March 29, 2004 10:30 AM

No. of Shipping Containers: 1

SHIPMENT

Method of Delivery: Commercial Carrier **Tracking Number:** 845049959520

COC Forms: ☑ Shipped with samples ☐ No Forms

Cooler(s)/Box(es)

Container	Type	Sealed With	Seal Condition	Container Condition	Temp C	Total Samples
1 of 1	Cooler	Tape	Intact	Intact	2.8	10

Samples

Sample Labels:
☑ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals:
☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☑ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples:
☑ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 2.8 Temperature Blank used ☑ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☑ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☑ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☑ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☑ NA
Individual sample deviations noted on sample log

Samples Containers:
Samples returned in PC-grade jars: ☐ Yes ☐ No ☑ Unknown /Lot No.: UnKnown

Storage Location: 29 Freezer **BDO IDs Assigned:** S1502 - S1511

Samples logged in by: Newell, Jeffrey **Date/Time:** 03/29/2004 10:30 AM

Approved By: Fahey, Jessica **Approved On:** 3/29/2004 12:2

Authorized By: **Authorized On:**

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ShpNo: SHP-040329-01

Battelle Project No: A Davisville

Report Corrective Actions

Corrective Action No: 1 of 1

Approved: ☑

COC Client: EA Engineering
COC Project: AH Sediment Sampling
COC Date: 3/29/2004 10:22:

	Description of Problem:	Explanation:
Custody	Jars and C-O-C do not match for time/date	Jars list collection time for sample AH-51 (S1502) as 13:45; COC states time as 13:15

Documentation of project manager notification

Sample Custodian	Newell, Jeffrey	**Date:**	3/29/2004 11:24:00 A
Laboratory Manager:	Peven-McCarthy, Carole	**Date:**	4/1/2004 10:48:00 AM
Project Manager:	Hardenstine, Jeffery	**Date:**	4/1/2004 12:16:00 PM

Documentation of client notification (should be completed by project manager within 24 hrs):

On 30-Mar-04 **I contacted** Hinckley, Daniel **at** EA Engineering, Science, and Technology

Results of communication with client (Describe any corrective action directed by the client):

Correct collection time is 13:45

Date this form was received back to the custodian: _____

Reference Number: _____

2.8

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Chain of Custody

1 of 1

Proj. No: 2960097 3203
Proj. Name: AH Sed. Sampling
SAMPLERS: Signature: JGM

ANALYSIS REQUESTED → "NUMBER OF CONTAINERS"

DATE	TIME	BATTELLE ID	CLIENT ID	SAMPLE DESCRIPTION	PEST	PCB	TPH FINGERPRINT	PAH	VOA	TBT	METALS	OTHER TOC	ACIDIFIED	PRESERVED	Total Number of Containers
3-27-04	1315	S1502	AH-51	Sediment				✓				✓			2
	1245	S1503	AH-48					✓				✓			2
	0750	S1504	AH-22					✓				✓			2
	0820	S1505	AH-26					✓				✓			2
	0900	S1506	AH-27					✓				✓			2
	0920	S1507	AH-42					✓				✓			2
	0940	S1508	AH-34					✓				✓			2
	1030	S1509	AH-40					✓				✓			2
	1200	S1510	Core 1-Top					✓				✓			2
	1200	S1511	Core 1-Bot					✓				✓			2
			Temp Blank												1

Relinquished by:	Date/Time		Received by:	Date/Time	
[signature]	3/27/04	1745	[signature]	3/29/04	10:30
Relinquished by:	Date/Time		Received by:	Date/Time	

Comments:
Hold until further notice.

ORIGINAL

Battelle
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ShpNo SHP-040329-01

Battelle Project No: A Davisville

Sample Receipt Form Details

Approved: ☑ Authorized: ☑

Project Number: 29600973203 **Client:** EA Engineering

Received by: Newell, Jeffrey **Date/Time Received:** Monday, March 29, 2004 10:30 AM

No. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
S1502	AH-51	03/27/04 13:45	03/29/04 11:09	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1503	AH-48	03/27/04 12:45	03/29/04 11:10	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1504	AH-22	03/27/04 7:50	03/29/04 11:11	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1505	AH-26	03/27/04 8:20	03/29/04 11:13	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1506	AH-27	03/27/04 9:00	03/29/04 11:14	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1507	AH-42	03/27/04 9:20	03/29/04 11:15	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1508	AH-34	03/27/04 9:40	03/29/04 11:16	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1509	AH-40	03/27/04 10:30	03/29/04 11:19	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1510	Core 1-Top	03/27/04 12:00	03/29/04 11:21	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			
S1511	Core 1-Bot	03/27/04 12:00	03/29/04 11:22	2	SEDIMENT	2.8	NA	NA	NA	29 Freezer			

Total Samples: 10