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206926

TECHNICAL MEMORANDUM NO. 3A
REMEDIAL INVESTIGATION
PHASE 1, TASK 2

LENZ OIL SERVICES, INC.
LEMONT, ILLINOIS

VOLUME 2 OF 3

SUBMITTED BY:

LENZ OIL SETTLING RESPONDENTS

JULY 2, 1991

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PROJECT NUMBER: 0252

APPENDIX G

DATA VALIDATION REPORT

QUALITY ASSURANCE REVIEW

OF THE LENZ OIL SITE

VOLUME I

June 28, 1991

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Introduction

This quality assurance review is based upon a review of all data generated from the 35 samples which were collected from May 2 through May 9, 1991 as part of the Lenz Oil RI/FS. The samples that have undergone a rigorous quality assurance review are listed on Table 1.

This review has been performed with guidance from the "Functional Guidelines for Evaluating Organics Analyses" (U.S. EPA, 1988) and the "Functional Guidelines for Evaluating Inorganics Analyses" (U.S. EPA, 1988).

The reported analytical results are presented as a summary of the data in Section 2. Data were examined to determine the usability of the analytical results and also to determine contractual compliance relative to analytical requirements and data package deliverables specified in the EPA's Contract Laboratory Program (CLP) protocols. Qualifier codes have been placed next to results so that the data user can quickly assess the qualitative and/or quantitative reliability of any result. Details of this quality assurance review are presented in the narrative section of this report. This report was prepared to provide a critical review of the laboratory analyses and reported chemical results. Rigorous quality assurance reviews of laboratory-generated data routinely identify various problems associated with analytical measurements, even from the most experienced and capable laboratories. The nature and extent of problems identified in this critical review should not be interpreted to mean that those results that do not have qualifier codes are less than valid.

TABLE 1

SAMPLES INCLUDED IN THIS QUALITY ASSURANCE REVIEW

ERM-North Central Sample Number	Laboratory Sample Number	Date of Sample Collection	Fractions Analyzed
LO-1G102D-GW	111897-1	5/6/91	V, S, P, M, CN
LO-1G102L-GW	111897-2	5/6/91	V, S, P, M, CN
LO-1G101D-GW	111897-3	5/6/91	V, S, P, M, CN
LO-1G101M-GW	111897-4	5/6/91	V, S, P, M, CN
LO-1G101L-GW	111897-5	5/6/91	V, S, P, M, CN
LO-1MW01D-GW	111897-6	5/6/91	V, S, P, M, CN
LO-1MW01S-GW	111897-7	5/6/91	V, S, P, M, CN
LO-1MW03S-GW	111897-8	5/6/91	V, S, P, M, CN
LO-1MW03D-GW	111897-9	5/6/91	V, S, P, M, CN
LO-1MW03S-FD	111897-10	5/6/91	V, S, P, M, CN
LO-1GW1-FB	111897-11	5/6/91	V, S, P, M, CN
LO-GW6-TB	111897-12	5/2/91	V
LO-1MW04D-GW	111908-1	5/7/91	V, S, P, M, CN
LO-1G104D-GW	111908-2	5/7/91	V, S, P, M, CN
LO-1GW2-FB	111908-3	5/7/91	V, S, P, M, CN
LO-1MW07D-GW	111908-4	5/7/91	V, S, P, M, CN
LO-1MW07S-GW	111908-5	5/7/91	V, S, P, M, CN
LO-1MW02D-GW	111908-6	5/7/91	V, S, P, M, CN
LO-1MW05S-GW	111908-7	5/7/91	V, S, P, M, CN
LO-1MW05S-FD	111908-8	5/7/91	V, S, P, M, CN
LO-1G104L-GW	111908-9	5/7/91	V, S, P, M, CN
LO-1MW05D-GW	111908-10	5/7/91	V, S, P, M, CN
LO-1G106DR-GW	111908-11	5/7/91	V, S, P, M, CN
LO-1G106DR-MS/MSD	111908-12	5/7/91	V
LO-1GW-TB1	111908-13	5/7/91	V

TABLE 1 (Cont.)

ERM-North Central Sample Number	Laboratory Sample Number	Date of Sample Collection	Fractions Analyzed
LO-1MW06D-GW	111918-1	5/8/91	V, S, P, M, CN
LO-1MW04S-FD	111918-2	5/8/91	V, S, P, M, CN
LO-1MW02S-GW	111918-3	5/8/91	V, S, P, M, CN
LO-1GW3-FB	111918-4	5/8/91	V, S, P, M, CN
LO-1MW06S-GW	111918-5	5/8/91	V, S, P, M, CN
LO-1MW04S-GW	111918-6	5/8/91	V, S, P, M, CN
LO-1MW02S-MS/MSD	111918-7	5/8/91	V
LO-1GW-TB	111918-8	5/8/91	V
LO-1G106S-WO	111928-1	5/9/91	V, S, P, M*, CN
LO-1GW-TB3	111928-2	5/2/91	V

NOTES:

V	TCL Volatile Organic Compounds
S	TCL Semivolatile Organic Compounds
P	TCL Pesticide/PCB Organic Compounds
M*	Total Metals Only
M	Total and Dissolved Metals
CN	Total Cyanide

Section 1 Quality Assurance Review

A. Organic Data

The organic analysis of 35 aqueous samples and one oil sample was performed by Applied Research and Development Laboratories, Inc. of Mt. Vernon, Illinois. This data set was provided in four separate data packages and the samples are listed on Table 1. The samples were analyzed by CLP protocols collectively for the Target Compound List (TCL) volatile organic compounds, the TCL base/neutral/acid extractable compounds and the TCL pesticides/PCBs. In addition, mass spectral library searches were performed on up to 30 extraneous chromatographic peaks for the volatile and semivolatile GC/MS analyses combined. The findings offered in this report are based upon a rigorous review of holding times, blank analysis results, surrogate and matrix spike recoveries, analytical sequence, GC/MS tuning, system performance, target compound matching quality, calibrations, internal standard areas, quantitation of positive results and Tentatively Identified Compounds (TICs). The analytical results are provided in Section 2.

Overall, the organic data quality was good; however, a portion of the data was qualified or rejected. Contractual criteria and reporting requirements were met for the data package with the exception of the following. It should be emphasized that the following items are contractual in nature and do not necessarily affect data usability. Usability is addressed separately.

Correctable Deficiencies

1. The laboratory originally reported m-xylene and o- & p-xylene on the sample Form I's in cases 111897, 111918 and 111908. Per CLP protocol, the total concentration of both isomers should be reported as total xylenes on the Form I data sheets. The laboratory has reissued Form I's with the appropriate description.

2. The mass listings and bar graph spectra for all of the BFB and DFTPP tunes of this data set were not labeled with the date or time of analysis as required by CLP protocol (SOW288, B-13 and B-17).

3. A very large peak elutes within the first 2 minutes of the analytical run in the volatile and semivolatile chromatograms of all samples. Although this peak is most likely due to a an air leak (carbon dioxide) or a solvent front, it is greater than 10% of the area of the associated internal standard and should have been library searched per CLP protocol (SOW288, E-26 and E-45).

4. Per CLP protocol, tabulated results of matrix spiked TCL compounds are not to be reported on the matrix spike and matrix spike duplicate Form I's (SOW288, B-14, B-18 and B-21). The laboratory reported both spiked and nonspiked TCL compounds on the Form I's for all fractions.

5. Several discrepancies were observed between the date of initial calibration reported on the Form VI's and Form VII's in the volatile and semivolatile fraction and the observed date of analysis from the raw data. These discrepancies, none of which impact data usability, are summarized below.

Case	Fraction	Initial Calibration Date Reported on Form VI/Form VII	Observed Initial Calibration Date
111897	BNA	5/22/91	5/21/91
111928	VOA	6/12/91	5/19/91
111928	BNA	6/4/91	6/3/91
111928	BNA	6/11/91	6/10/91
111918	VOA	4/30/91	4/29/91
111908	VOA	5/20/91	5/19/91
111908	VOA	4/30/91	4/29/91
111908	BNA	5/22/91	5/21/91
111908	BNA	5/28/91	5/24/91
111908	BNA	5/31/91	5/29/91

6. The following minor discrepancies were observed for mass ion 365 between the reported percent abundances on the applicable semivolatile Form V's and the raw GC/MS tuning. The DFTPP raw data for mass ion 365 indicated only 2 significant digits. None of these discrepancies impact data usability.

Date/Time of Tune	Reported Abundance	Observed Abundance
5/21/91 at 14:28	1.81	1.8
5/22/91 at 9:22	1.75	1.7
5/23/91 at 14:01	1.41	1.4
6/4/91 at 13:09	2.25	2.2
6/5/91 at 9:18	2.55	2.6
6/11/91 at 12:17	2.42	2.4
5/30/91 at 21:11	2.17	2.2

7. The semivolatile continuing calibration check forms (Form VII) were not provided for the 50 ng standards analyzed on 6/14/91 at 17:12 (Case 111987), 6/10/91 at 21:13 and 6/11/91 at 13:33 (Case 111928), 5/29/91 at 18:33, 6/4/91 at 17:12 and 6/6/91 at 16:14 (Case 111918) and 5/26/91 at 18:32, 5/29/91 at 18:33 and 6/4/91 at 17:12 (Case 111908). For these calibrations, the laboratory analyzed samples within the same 12-hour shift that the associated initial multi-point calibration was performed. Although a Form VI was provided, this form does not demonstrate that the percent differences for the calibration check compounds are compliant with the criteria stated in the CLP protocol. Therefore, a Form VII is a required deliverable.

8. The volatile TCL compound toluene was reported below the quantitation limit as a Tentatively Identified Compound (TIC) on the semivolatile Form I's for samples LO-1G106DR-GW, LO-1G102L-GW and LO-1MW03S-FD. Furthermore, the presence of toluene in sample LO-1MW03S-FD was incorrectly reported as ethylbenzene on the TIC Form I. Only non-target compounds are to be reported as TICs per the CLP protocol.

9. Low internal standard areas were obtained for d_{12}-chrysene in samples LO-1G106S-WO and LO-1G106S-WOMS and for d_{10}-acenaphthene and d_{10}-phenanthrene in sample LO-1G106S-WODL, yet the appropriate "*" flag was not utilized as per CLP protocol (SOW288, B-37).

10. Upon review of the raw data provided for the semivolatile analysis of sample LO-1G106S-WO (oil layer), it was determined that the GPC-cleanup performed on this sample was not considered by the laboratory when calculating the positive results for this sample. Therefore, the reported results on the applicable Form I were biased low by a factor of 2. The laboratory was contacted concerning this matter and subsequently issued Form I's with the correct results. However, the laboratory failed to correct the result for dibenzofuran on the secondary Form I's. The data reviewer has reported the correct results on the sample data tables.

11. The laboratory reported a 25% recovery for the semivolatile surrogate compound 2,4,6-tribromophenol on the Form II for sample LO-1G106S-WODLRE. The data reviewer calculated a 50% recovery for this surrogate compound.

12. Several discrepancies were observed between the laboratory's reported sample identification numbers and the ERM-North Central sample identification numbers from the Chain-of-Custodies provided for this data set. Most of these discrepancies were found throughout a particular data package, whereas others were found in the Case Narrative only. These discrepancies are summarized below.

ERM-North Central Sample Number	Reported Sample Number
LO-1MW03S-FD	LO-1MW3S-FD
LO-1MW05S-FD	LO-1G105S-FD
LO-1GW-TB	LO-1GW-TB2
LO-1G101M-GW	LO-1G101W-GM
LO-1MW075-GW	LO-1MW07S-GW
LO-1MW05D-GR	LO-1MW05D-GW

Noncorrectable Deficiencies

1. Low surrogate recoveries were obtained for d_5-nitrobenzene and 2-fluorobiphenyl in the semivolatile analysis and reanalysis of sample LO-1G101L-GW. Per CLP protocol, reextraction is required if the reanalysis of the extract does not produce acceptable surrogate recoveries (SOW288, E-39).

2. A matrix spike/matrix spike duplicate analysis was not performed on the aqueous sample in Case 111928.

3. In most of the INDA and INDB calibration standards for this data set analyzed on both the primary and the confirmation columns, many of the pesticides/PCBs exhibited percent differences in excess of 15% (for quantitation) and 20% (for confirmation). In addition, many of the individual pesticides within the standards were outside the established retention time windows. Since these were closing standards, it is somewhat ambiguous in CLP protocol whether these represent true noncompliances. However, in most instances these high percent differences do not appear to affect data usability since the observed bias was in the direction of a sensitivity increase.

4. The reported result of acenaphthene in the matrix spike and matrix spike duplicate analyses of sample LO-1G106S-WO (oil layer) exceeded the calibration range of the instrument. Per CLP protocol, this sample should have been diluted (SOW288, E-43).

5. The VOA analysis of samples LO-1MW02S-GW, LO-1MW04S-GW, LO-1MW04S-GWRE, LO-1MW05S-GW, LO-1MW06S-GW, LO-1MW06D-GW, LO-1G106DR-MS/MSD, LO-1G106DR-GW, LO-1MW03S-FD-RE, LO-1MW04S-FD, LO-1MW05S-FD, LO-1MW05S-FD-RE, LO-1GW3-FB, LO-GW6-TB, LO-GW6-TB-RE, LO-1MW02S-MS/MSD, LO-1GW-TB1, LO-1GW-TB, LO-1GW-TB3 and LO-1G106S-WO (aqueous) was performed in excess of 7 days from sample collection as specified in the Lenz Oil "RI/FS Sampling and Analysis Plan" (Page T-8). In addition, the volatile

matrix spike (MS)/matrix spike duplicate (MSD) analyses of Cases 111908, 111918 and 111928 were performed 26-27 days from the date of sample receipt. Furthermore, the semivolatile MS/MSD extractions in Cases 111908, 111918 and 111928 were performed 12-17 days from the date of sample receipt.

6. The semivolatile and pesticide/PCB extraction of sample LO-1G106S-WO (oil layer) was performed 3 days beyond the 5-day holding time from the date of sample receipt.

7. Based on the levels of PCB Aroclors reported in samples LO-1MW05S-GW and LO-1MW05S-FD, it appears that a GC/MS confirmation should have been attempted. SOW288 (E-63) specifies that "Any pesticide/PCB confirmed on two dissimilar GC columns must also be confirmed by GC/MS if the concentration in the final extract is sufficient for GC/MS analysis (based on the laboratory GC/MS detection limits). Although it may be possible that the laboratory's GC/MS detection limits are above the concentrations reported in the aforementioned samples, it appears that the concentrations are sufficient for such a GC/MS confirmation.

8. According to the Chain-of-Custody provided, the analyses for TCL volatiles, TCL semivolatiles and TCL pesticides/PCBs was required for both the aqueous and oil layer of sample LO-1G106S-WO. However, it appears that the volatile analysis was not performed on the oil layer of this sample and the pesticides/PCBs analysis was not performed on the aqueous layer of this sample.

9. The semivolatile analysis of samples LO-1G101L-GW, LO-1MW05S-GW, LO-1MW05S-FD, LO-1MW06D-GW, LO-1G106S-WO and LO-1MW02S-GW revealed surrogate recoveries that necessitated reextraction/reanalysis (SOW288, E-39). However, according to the Form I's for these reanalyses, it was evident that the extraction date was the same as the initial extraction date. Based on conversations with the Laboratory Director, it appears that the extracts were merely reanalyzed and the samples were <u>not</u> reextracted. If this is the case, the semivolatile analyses for the aforementioned samples are noncompliant.

<u>Comments</u>

1. A two-times dilution factor at the instrument was indicated in the quantitation report for all samples analyzed for semivolatile TCL compounds. The data reviewer assumed this to be a result of the 2 milliliter combined extract per SOW288. This assumption is also corroborated by the quantitation limits reported on the Form I.

2. The Chain-of-Custody indicated that air bubbles were present in one of the volatile vials of samples LO-1G102L-GW, LO-1G104L-GW and LO-1GW-TB1. The data reviewer assumed that the volatile analysis of the samples was performed on an aliquot of sample

from the vial without air bubbles present. In addition, the Chain-of-Custody indicated that air bubbles were present in both volatile vials of sample LO-1MW02S-GW.

With regard to data usability, principal areas of concern include blank contamination, surrogate recoveries, matrix spike recoveries, target compound matching quality, holding times, internal standard areas, calibrations and sample integrity. Based upon a review of the data provided, the following data qualifiers are offered. It should be noted that the following data usability issues represent an interpretation of the quality control results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the following data usability issues should not necessarily be construed as an indication of laboratory performance.

Data Qualifiers

- Due to the trace-level presence of methylene chloride, toluene, total xylenes and butylbenzyl phthalate in the laboratory, field and/or trip blanks, the reported presence of these compounds reported in samples should be considered "not-detected" and they have been flagged "U" on the sample data tables. Furthermore, results that were reported below the quantitation limit were replaced with the quantitation limit with the appropriate "U" qualifier.

Compound	Applicable Samples
methylene chloride	All positive sample results
toluene	LO-1MW01S-GW, LO-1MW03S-GW, LO-1MW03D-GW and LO-MW03S-FD
total xylenes	LO-1MW03D-GW, LO-1G102L-GW, LO-1G101D-GW and LO-1MW03S-FD
butylbenzyl phthalate	LO-1MW02S-GW and LO-1MW07S-GW

- Although there is no direct reason to question the reported results for bis(2-ethylhexyl)phthalate in samples LO-1MW02S-GW, LO-1MW05S-GW, LO-1MW05S-GWRE, LO-1MW05S-FD, LO-1MW05S-FDRE, LO-1MW05S-FDDLand LO-1G106S-WO (multiple analyses)and acetone in sample LO-1G106S-WO (aqueous) phthalate esters and acetone are extremely common laboratory and field contaminants. Accordingly, great caution should be exercised when using these results.

- The reported result for N-nitrosodiphenylamine in sample LO-1G106S-WO (aqueous and oil layer) may represent the presence of this compound and/or diphenylamine. The analysis is not capable of distinguishing between these two compounds.

- Upon review of the raw data provided, it appears that acetone may be present in sample LO-1MW05S-GW. A peak identified as acetone is indicated on the quantitation report of this sample. This peak elutes at the same relative retention time of acetone compared to the associated continuing calibration standard. However, the mass spectra for acetone in this sample was not provided. Therefore, based on the information provided, the analysis for acetone in this sample is unreliable and has been flagged "R" (compound may or may not be present) on the sample data tables.

- The actual analysis for 2-butanone in all samples is unreliable and has been flagged "R" on the sample data tables. Very low response factors were observed for 2-butanone in all multi-point initial and continuing calibrations in this data set.

- Very low surrogate recoveries ($< 10\%$) were obtained for d_5-nitrobenzene in the semivolatile analysis of sample LO-1G106S-WO (oil layer), d_{14}-terphenyl in the semivolatile analysis of sample LO-1MW05S-GWRE, d_5-phenol and 2,4,6-tribromophenol in the semivolatile analysis of samples LO-1MW05S-GW, LO-1MW05S-GWRE, LO-1MW05S-FD and LO-1MW05S-FDRE and for all three acid surrogate compounds in the semivolatile analysis of samples LO-1MW06D-GW and LO-1MW06D-GWRE. Accordingly, the analysis for all base/neutral compounds in samples LO-1G106S-WO (oil layer) and LO-1MW05S-GWRE and all acid compounds in samples LO-1MW06D-GW, LO-1MW06D-GWRE, LO-1MW05S-GW, LO-1MW05S-GWRE, LO-1MW05S-FD and LO-1MW05S-FDRE are unreliable and have been flagged "R" on the sample data tables. Similarly, the positive results reported for base/neutral compounds in samples LO-1G106S-WO (oil layer) and LO-1MW05S-GWRE should be considered estimated and have been flagged "J" on the sample data tables.

- The CLP spiking compounds 2,4-dinitrotoluene, 4-nitrophenol and N-nitroso-di-n-propylamine were not detected in the matrix spike and/or matrix spike duplicate analysis of sample LO-G106S-WO (oil layer). Accordingly, the analysis for the aforementioned compounds in this sample is unreliable and have been flagged "R" on the sample data tables.

- The reported positive results for heptachlor epoxide, methoxychlor and endrin ketone in sample LO-1G106-WO (oil layer) is unreliable and have been flagged "R" on the data tables. Examination of the raw data revealed the presence of patterns clearly indicative of the presence of PCB Aroclors, Specifically, the reviewer obtained a very good match to PCB 1242 on both GC columns with a concentration of 1,130 μg/Kg as PCB 1242 which has been added to the data tables. Clearly, the PCB patterns resulted in false-positive results for the aforementioned pesticides. Furthermore, it appears that Aroclors

1254 and 1260 may also be present, but due to significant peak overlapping, the presence of Aroclors 1254 and 1260 cannot be determined with certainty. Therefore, the analysis for of Aroclor 1254 and Aroclor 1260 in sample LO-1G106S-WO (oil layer) are unreliable and have been flagged "R" (compound may or may not be present) on the sample data tables. (The identification and quantitation of Aroclor 1242 in this sample can be found as the final pages of Section 3D.)

- The actual detection limits for all "not-detected" results for compounds quantitated using the internal standard(s) chrysene-d_{12} in sample LO-1MW02S-GW; perylene-d_{12} in sample LO-1MW02S-GWRE; d_8-naphthalene, d_{10}-acenaphthene and d_{10}-phenanthrene in sample LO-1G106S-WODL (oil layer); d_{10}-acenaphthene in sample LO-1G106S-WODLRE, d_{10}-acenaphthene and d_{10}-phenanthrene in sample LO-1MW05S-FDRE; all volatile compounds in sample LO-1MW03S-GWRE; bromochloromethane and 1,4-difluorobenzene in samples LO-1MW05S-FD; bromochloromethane in sample LO-1MW03S-FDRE; all compounds quantitated using d_8-naphthalene, d_{10}-acenaphthene, d_{10}-phenanthrene and d_{12}-chrysene in sample LO-1G106S-WO (oil layer); and all "not-detected" results for semivolatile compounds except those quantitated using d_4-1,4-dichlorobenzene in sample LO-1MW05S-GW and LO-1MW05S-FD; and d_4-1,4-dichlorobenzene and d_8-naphthalene in sample LO-1MW05S-FDDL may be higher than reported and have been flagged "UL" (unless previously flagged "R") on the sample data tables. Similarly, any positive result for compounds quantitated using the aforementioned internal standards in the associated samples should be considered estimated and have been flagged "J" on the sample data tables. The areas for these internal standards in the associated samples were not within CLP criteria. A listing of the internal standards with corresponding TCL analytes assigned for quantitation is presented as the final pages of Section 3.

- The actual detection limits for VOA compounds in sample LO-1MW02S-GW may be higher than reported and have been flagged "UL" on the data tables. Similarly, the positive result for total-1,2-dichloroethene in sample LO-1MW02S-GW should be considered estimated and has been flagged "J" on the data tables. According to the Chain-of-Custody, both VOA vials for this sample were observed to contain air bubbles when this sample was received by the laboratory.

- The positive results reported for methylene chloride in samples LO-1GW1-FBRE and LO-GW6-TBRE and acetone in sample LO-1G106S-WO (aqueous layer), and tetrachloroethane in samples LO-1G101D-GW, LO-1G102L-GW and LO-1MW03S-FD should be considered estimated and have been flagged "J" on the sample data tables. High percent differences (>25%) were observed between the response factors used to quantitate these results and the average response factors calculated from the associated initial multi-point calibrations.

- The positive results reported for acetone in sample LO-1G106S-WO and methylene chloride in samples LO-1GW1-FBRE and LO-GW6-TBRE should be considered estimated and have been flagged "J" on the sample data tables. A high relative standard deviation (>30%) was observed for the response factors of acetone and methylene chloride in the initial multi-point calibration associated with the aforementioned samples.

- The positive results reported for 2-methylnaphthalene, acenaphthene, dibenzofuran, fluorene and phenanthrene in sample LO-1G106S-WO (oil layer), 2-methylnaphthalene and phenanthrene in samples LO-1MW05S-FD, LO-1MW05S-GWRE, LO-1MW05D-FDRE and LO-1MW05S-GW and naphthalene in sample LO-1MW05S-FD should be considered estimated and have been flagged "J" on the sample data tables. These results exceeded the calibration range of the instrument.

- The actual detection limits for all base/neutral compounds in samples LO-1G101L-GW and LO-1G101L-GWRE may be higher than reported and have been flagged "UL" on the sample data tables. Low surrogate recoveries were obtained for d_5-nitrobenzene and 2-fluorobiphenyl in the semivolatile analysis of this sample.

- The positive results reported for tetrachloroethene in sample LO-1MW03S-FD, methylene chloride in samples LO-1GW1-FBRE and LO-1GW6-TB, toluene, acetone and total xylenes in sample LO-1GW1-FB, 1,2-dichloroethane, ethylbenzene and total xylenes in samples LO-1MW05S-FD and LO-MW05S-FDRE and all positive results in samples LO-1G106S-WODL (oil layer) and LO-1G106S-WODLRE (oil layer) should be considered estimated and have been flagged "J" on the sample data tables. High surrogate recoveries were observed in the volatile and/or semivolatile analyses of the aforementioned samples.

- A slightly high relative percent difference was observed for toluene between the matrix spike and matrix spike duplicate analysis of sample LO-1G106S-WO (aqueous layer). Accordingly, the positive result reported for toluene in this sample should be considered estimated and has been flagged "J" on the sample data tables.

- A high percent recovery was obtained for acenaphthene in the matrix spike (MS) and matrix spike duplicate (MSD) analysis of sample LO-G106S-WO (oil layer). In addition, a high relative percent difference was obtained for acenaphthene between the MS and MSD. Accordingly, the positive result reported for acenaphthene in this sample should be considered estimated and has been flagged "J" on the sample data tables.

- The volatile analysis of samples LO-1MW04S-GWRE and LO-1GW-TB3 were performed 20-21 days from the date of sample collection. Therefore, the actual detection limits of all volatile compounds in these samples may be higher than reported and have been flagged "UL" on the sample data tables. Similarly, all the positive results reported for samples LO-1GW-TB3 and LO-1MW04S-GWRE should be considered estimated and have been flagged "J" on the sample data tables.

- The actual detection limits for the volatile aromatic compounds in samples LO-1MW02S-GW, LO-1MW04S-GW, LO-1MW05S-GW, LO-1MW06S-GW, LO-1MW06D-GW, LO-G106DR-MS/MSD, LO-1G106DR-GW, LO-1MW03S-FDRE, LO-1MW04S-FD, LO-1MW05S-FD, LO-1MW05S-FDRE, LO-1GW3-FB, LO-GW6-TB, LO-GW6-TBRE, LO-1MW02S-MS/MSD, LO-1GW-TB1, LO-1GW-TB, LO-1GW-TB3 and LO-1G106S-WO (aqueous) may be higher than reported and have been flagged "UL" on the data tables. Similarly, positive results for volatile aromatic compounds LO-1MW05S-GW, LO-1MW05S-FD, LO-1MW05S-FD-RE, LO-1GW-TB3 and LO-1G106-WO (aqueous) may be higher than reported and have been flagged "UL" on the data tables. The volatile analyses of the aqueous aforementioned samples were analyzed in excess of the Federal Register maximum allowable holding time for the analysis for purgeable aromatics of 7 days from collection in unpreserved samples. In addition, it should be noted that the aforementioned samples were analyzed in excess of the Lenz Oil Site "RI/FS Sampling and Analysis Plan" of 7 days from collection (Page T-8). Non-aromatic volatiles that were analyzed within the Federal Register holding time of 14 days from sample collection did not require qualification.

- The relative retention time for the peak reported as 2-methylnaphthalene in sample LO-1G106-WO (oil layer) differed by 12 seconds from the relative retention time reported for 2-methylnaphthalene in the associated continuing calibration standard. However, a reasonably good qualitative match was observed between the sample and standard mass spectrum for 2-methylnaphthalene. Furthermore, it is possible that this reported result represents the total concentration of the 1-methylnaphthalene and 2-methylnaphthalene isomers. Therefore, the reported result for 2-methylnaphthalene in sample LO-1G106S-WO (oil layer) should be considered estimated and has been flagged "J" on the data tables.

- The laboratory reported results for Aroclor 1248 and Aroclor 1260 in samples LO-1MW05S-GW and LO-1MW05S-FD. However, the data reviewer observed an additional multi-peak pattern indicative of Aroclor 1242 in sample LO-1MW05S-GW. The quantitated result of 645 μg/Kg for Aroclor 1242 has been added to the sample data tables. Due to the significant peak overlapping it is somewhat judgmental whether Aroclor 1242 and/or Aroclor 1248 is truly present. Furthermore, the presence of Aroclor 1242 was not clearly evident in sample LO-1MW05S-FD, the field duplicate of sample LO-1MW05S-GW. The quantitations in support of these identifications are presented as the final pages in Section 3B.

- Three blind field duplicate pairs were submitted to the laboratory for this data set as listed below.

Sample	Duplicate
LO-1MW03S-GW	LO-1MW03S-FD
LO-1MW04S-GW	LO-1MW04S-FD
LO-1MW05S-GW	LO-1MW05S-FD

- Positive results were not-detected above the quantitation limit for any volatile, semivolatile or pesticide/PCB target compounds for the field QC samples LO-1MW03S-GW and LO-1MW03S-FD and LO-1MW04S-GW and LO-1MW04S-FD with the exception of benzoic acid (27 μg/L) in the field duplicate of sample LO-1MW04S-GW. However, the following high percent differences (>35%) were observed for several target compounds in the volatile, semivolatile and pesticide/PCB fractions for the field QC samples LO-1MW05S-GW and LO-1MW05S-FD. Therefore, the positive results for the following compounds should be considered estimated and have been flagged "J" on the sample data tables. Similarly, the "not-detected" results for the following compound have been flagged "UL" on the sample data tables.

Compound	Sample Result	Duplicate Result	Percent Difference
1,1-dichloroethane	28 μg/L	not detected	100%
chloroform	14 μg/L	not detected	100%
total xylene	670 μg/L	920 μg/L	37%
1,2-dichloroethane	not detected	28 μg/L	100%
dibenzofuran	410 μg/L	670 μg/L	63%
phenanthrene	1800 μg/L	3600 μg/L	100%
anthracene	79 μg/L	150 μg/L	90%
fluoranthene	not detected	130 μg/L	100%
bis(2-ethylhexyl)phthalate	290 μg/L	530 μg/L	83%

- The following high percent differences (>35%) were observed between results reported above the quantitation limit for several target compounds in the original analysis and reanalysis and/or dilution analysis of several samples. Accordingly, the positive results reported for the following compounds should be considered estimated and have been flagged "J" on the sample data tables.

Sample	Compound	Result for Original Analysis	Result for Reanalysis/Dilution	Percent Difference
LO-1MW05S-GW	2-methylnaphthalene	3200 μg/L	1900 μg/L	41%
LO-1MW05S-GW	anthracene	79 μg/L	120 μg/L	52%
LO-1MW05S-GW	pyrene	110 μg/L	59 μg/L	46%

- Per CLP protocol, all results reported below the quantitation limit should be considered estimated and have been flagged "J" on the data tables.

- Tentatively Identified Compounds (TICs) have been evaluated and are presented on the data tables. Most of the TICs were reported at levels below the quantitation limit. The TICs include numerous benzene derivations and several alkanes and unknowns.

A complete support documentation of this organic quality assurance review is presented in Section 3 of this report.

B. Inorganic Data

The inorganic analysis of 60 aqueous samples (including 6 field blanks) representing 30 total and dissolved samples and the analysis of one oil sample was performed by ARDL, Inc. Laboratory of Mount Vernon, Illinois. All samples were analyzed by CLP protocols for the Target Analyte List (TAL) inorganic constituents. The data set was submitted in four distinct sample delivery groups (SDGs) as specified by the six-digit prefix of the laboratory sample number.

The findings offered in this report are based upon a rigorous review of the sample holding times, blank analysis results, pre- and post-digestion spike recoveries, laboratory duplicate analyses, initial and continuing calibrations, ICP interference checks, instrument sensitivity, system performance, ICP serial dilutions, graphite furnace duplicate burns and the quantitation of positive results. The analytical results are provided in Section 2B.

Overall, the inorganic data quality was fair. Contractual criteria and reporting requirements were met for this data set, with the exception of the following deficiencies. It should be noted that the following issues are contractual in nature and may not necessarily affect data usability. Usability is addressed in a separate section of this report.

Correctable Deficiencies

1. According to the Chain-of-Custodies provided, the laboratory misidentified sample LO-1MW05S-FD as LO-1G105S-FD on the Form I.

2. The concentration level was not reported on any of the QC forms as required (SOW788, B-15).

3. None of the raw data were labelled with the ERM-NC sample numbers as required (SOW788, B-9).

4. Digestion logs for the flame atomic absorption and hydride generation analyses were not included in the data packages provided.

5. The values and percent recoveries for total cyanide were not reported on the Initial and Continuing Calibration Verification Forms (Form II's) as required (SOW788, E-5).

6. An inconsistent number of significant figures was used to report the "Initial Calibration Found" and "Continuing Calibration Found" on the Initial and Continuing Calibration Verification Forms (Form II's). According to CLP protocol. the value of the concentration of each analyte measured in the verification solutions should be reported to two decimal places (SOW788, B-20).

7. The percent recoveries were not reported on the ICP Interference Check Sample Forms (Form IV's) for aluminum, calcium, iron and magnesium as required (SOW788, B-24). In addition, the concentrations of all elements except for aluminum, calcium, iron and magnesium were not reported on the Form IV's for Solution A.

8. The prep blank concentration units were misreported on the Blank Form (Form III) for SDG 111928. The correct units should be mg/Kg.

9. The Analysis Run Log Forms (Form XIV's) are incorrect for the analytes checked when the calibration verifications, laboratory control samples and interference check samples were reanalyzed.

Noncorrectable Deficiencies

1. The laboratory analyzed samples called "blank" in between the analysis of the ICP initial calibration verifications and the initial calibration blanks for SDGs 111798, 111908 and 111918. Per CLP protocol, the initial calibration blank must be analyzed immediately after every initial calibration verification (SOW788, E-6).

2. The laboratory did not analyze many of the continuing calibration verifications and continuing calibration blanks at the required frequency of 10% or every 2 hours (whichever is more frequent) during the ICP analytical runs for SDGs 111897, 111908 and 111918 as required (SOW788, E-7).

3. In SDG 111908, the laboratory reported the values for the percent recoveries for iron (total) and magnesium (total) from the continuing calibration verifications performed on 5/23/91 at 11:36 and at 11:33 (respectively) based on only the first analytical run instead of from the average of the two analytical runs as required (SOW788, D-1). In addition, in SDG 111897, the laboratory reported the percent recovery for magnesium (dissolved) from the CCV performed on 5/8/91 at 10:57 based upon the first analytical run. Finally, in SDG 111918, the laboratory reported the percent recovery for aluminum (dissolved) from the CCV performed on 5/28/91 at 7:56 based upon the first analytical run. Although the actual noncompliance in the reporting requirement is a correctable deficiency, the implications of this are noncorrectable. Had the values of the averages of the two analytical runs been reported, percent recoveries would have been obtained outside the control limits for these elements. In accordance with CLP protocol, if the recovery of any element falls outside the specified control limits, the analysis must be terminated, the instrument must be recalibrated, the calibration must be verified and the preceding 10 samples must be reanalyzed (SOW788, E-6).

4. The concentrations of all of the CRI standards for antimony were 1.25 times the concentration specified in CLP protocol. In addition, the concentrations of the CRA standards for lead, arsenic, selenium, sodium and thallium were higher than the specified concentrations (SOW788, E-6).

5. The final ICP interference check sample (ICS) solution ICSAB was analyzed twice at the conclusion of the analytical run performed on 5/15/91 (associated with the dissolved samples in SDG 111908) and analyzed twice at the beginning of the analytical run performed on 5/8/91 (associated with the dissolved samples in SDG 111897). In the first of the two analyses on 5/15/91 of the final ICSAB solution, a 147% recovery for beryllium and a 181% recovery for manganese was obtained. In the first of the two analyses on 5/8/91 of the initial ICSAB solution, 176.8% recovery for manganese was obtained. The laboratory immediately reanalyzed the ICSAB solutions and obtained recoveries for beryllium and manganese that were within the 80-120% control limits. Per CLP protocol, if the results for the ICP analyses of the ICSAB solution outside the 80-120% control limits, then the analysis must be terminated, the instrument must be recalibrated and all analytical samples analyzed since the last good ICS analysis must be reanalyzed (SOW788, E-8).

6. Arsenic and selenium were analyzed by hydride generation for all samples. This method of analysis is not listed as an accepted method in the CLP protocol.

7. The spiking concentrations of the elements analyzed by the ICP method for the matrix spike analysis of sample LO-1MW04D-GW (total) in SDG 111908 were two times the levels specified in CLP protocol (SOW788, E-11).

8. The laboratory did not perform any post-digestion spikes on the elements that did not meet the specified control limit criteria for the pre-digestion spikes as required (SOW788, E-10).

9. The concentration of magnesium reported on the Laboratory Control Sample Form (Form VII) for the LCS performed on 5/15/91 at 8:30 (associated with dissolved samples in SDG 111908) on 5/7/91 at 7:45 and on 5/8/91 at 11:21 (associated with all samples in SDG 111918) was only based upon one run instead of upon the average of the two analytical runs as required (SOW788, D-1). Although the actual noncompliance in the reporting requirement is a correctable deficiency, the implications of this are noncorrectable. Had the concentration of the average of the two runs been reported, the percent recoveries for magnesium would have been just slightly outside the specified 80-120% control limits. Per CLP protocol, the analysis should have been terminated and the associated sample should have been redigested and reanalyzed (SOW788, E-13).

10. The analysis reported for cyanide for the samples in SDGs 111908 and 111897 was performed 2 days beyond the 14 day holding time from date of sample receipt. According to the case narratives, these samples were originally analyzed within holding time using the TRAACS 800 Auto Analyzer. However, the laboratory reanalyzed the samples using the manual method and reported the latter results, with no further explanation. In addition, the raw data for the automated method was not included in the data packages provided.

11. For SDGs 111897, 111908 and 111918, the laboratory analyzed many of the ICP calibration verification standards (initial and continuing) two or three times until elements that were outside the specified control limits were brought within the control limits. Per CLP protocol, if the recovery of a calibration verification standard falls outside the specified 90-110% control limits for ICP analyses, the analysis must be stopped, the instrument recalibrates, the calibration verified and the preceding 10 analytical samples reanalyzed (SOW788, E-6).

12. The sample volume for the analysis of mercury and total cyanide in many project samples were not the volumes specified for these analyses in CLP protocol (SOW788, D-47 and D-66).

13. The spiking concentrations of the elements analyzed by ICP and flame methods for the matrix spike analysis of sample LO-1G106S-WO were one half the levels specified in CLP protocol (SOW788, E-11).

14. The positive results for calcium in samples LO-1G101M-GW (total), LO-1MW01S-GW (total), LO-1MW07S-GW (total), LO-1MW05S-GW (total), LO-1G105S-FD (total), LO-1MW05D-GW (total), LO-1MW04S-GW (total), LO-1MW04S-FD (total), LO-1MW02S-GW (total) and LO-1MW04S-GW (total), for magnesium in samples LO-1MW01S-GW

(total), LO-1MW05S-GW (total), LO-1G105S-FD (total), LO-1MW04S-FD (total), LO-1MW02S-GW (total), LO-1MW04S-GW (total) and LO-1MW07D-GW (dissolved) and for iron in sample LO-1MW02S-GW (total) exceeded the calibration of the instrument. Per CLP protocol, all measurements must be within the instrument linear range (SOW788, D-14).

Comment

- It is interesting to note that none of the initial calibration blanks, continuing calibration blanks and laboratory preparation blanks for any of the SDGs revealed even the slightest trace-level blank contamination. This is extremely unusual.

With regard to data usability, principal areas of concern include blank contamination, holding times, the two-times CRDL standard recoveries, pre- and post-digestion spike recoveries, laboratory duplicate analyses, laboratory control sample results, calibrations, field duplicate precision, method of standard addition results and serial dilution results. Based upon a review of the data provided, the following inorganic data qualifiers are offered. It should be noted that the following inorganic data usability issues represent an interpretation of the quality control results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the validation guidelines routinely specify areas of the data that require qualification, yet the methods used for analysis do not require any corrective action by the laboratory. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Inorganic Data Qualifiers

- Due to the trace-level presence of the following elements in the field blanks, the reported results for these elements in the samples listed below should be considered "not-detected" and have been flagged "U" on the data tables.

Element	Applicable Samples
aluminum	LO-1MW06D-GW (total)
iron	LO-1MW06D-GW (total)
lead	LO-1MW06D-GW (total)
manganese	LO-1MW06D-GW (total)

Element	Applicable Samples
zinc	LO-1MW04D-GW (total), LO-1G104D-GW (total), LO-1MW07D-GW (total), LO-1MW07S-GW (total), LO-1MW02D-GW (total), LO-1G104L-GW (total), LO-1MW05D-GW (total), LO-1G106DR-GW (total), LO-1MW06D-GW (total), and LO-MW06S-GW (total)

- The analyses for the elements in the following samples are unreliable and have been flagged "R" on the data tables. Very low or zero percent recoveries were obtained for the two-times CRDL standard associated with these samples.

Element	Applicable Samples
aluminum	All samples in SDG 111908 (dissolved), LO-1GW2-2FB (total), LO-1G102L-GE (total), LO-1GW1-FB (total), and all samples in SDG 111918 (dissolved) except sample LO-1MW04S-GW (dissolved)
cadmium	All samples in SDG 111908 (dissolved) except sample LO-1MW04D-GW (dissolved). All samples in SDG 111897 (dissolved) and all samples in SDG 111918 with "not-detected" results
manganese	LO-1GW2-FB (total), LO-1MW06S-GW (dissolved) and LO-1MW06D-GW (dissolved)
silver	All sample in SDG 111908 (total), all samples in SDG 111897 (total) and all samples in SDG 111918 with "not-detected" results
antimony	All samples in SDG 111918 except sample LO-1MW02S-GW (total)

- The analysis for barium in all samples in SDG 111918 (dissolved) except samples LO-1MW04S-GW (dissolved) and LO-1MW04S-FD (dissolved) are unreliable and have been flagged "R" on the data tables. A very low recovery was obtained (29%) for the matrix spike associated with these samples.

- The positive results for the elements in the following samples should be considered estimated and have been flagged "J" on the data tables. High percent differences were obtained between the results for these elements in the field duplicate pairs.

Element	Applicable Samples
arsenic	LO-1MW05S-GW (total) and LO-1MW05S-FD (total)
beryllium	LO-1MW05S-GW (total) and LO-1MW05S-FD (total)
copper	LO-1MW05S-GW (total) and LO-1MW05S-FD (total)
aluminum	LO-1MW04S-GW (dissolved)
lead	LO-1MW03S-GW (dissolved), LO-1MW04S-GW (total) and LO-1MW04S-FD (total)
potassium	LO-1MW04S-GW (total) and LO-1MW04S-FD (total)
total cyanide	LO-1MW04S-GW (total) and LO-1MW04S-FD (total)
iron	LO-1MW04S-GW (dissolved) and LO-1MW04S-FD (dissolved)
zinc	LO-1MW04S-FD (dissolved)

- The positive result for total cyanide in sample LO-1G106DR-GW should be considered estimated and has been flagged "J" on the data tables. Similarly, the actual detection limits for all "not-detected" results in SDGs 111897 and 111908 may be higher than reported and have been flagged "UL" on the data tables. The reanalysis of cyanide for samples in these SDGs was performed 17 days from sample collection. The Federal Register holding time for the cyanide analysis is 14 days from sample collection to analysis.

- The positive results for the elements in the following samples should be considered estimated and have been flagged "J" on the data tables. High relative percent differences were obtained for these elements between the total and dissolved sample results, with the dissolved sample analyses displaying the higher analytical result.

Element	Applicable Samples
sodium	LO-1MW05S-GW (total and dissolved), LO-1MW05S-FD (total and dissolved) and LO-1G101L-GW (total and dissolved)
manganese	LO-1G104L-GW (total and dissolved)
aluminum	LO-1G101L-GW (total and dissolved) and LO-1MW01D-GW (total and dissolved)
potassium	LO-1MW04S-GW (total and dissolved)

- The actual detection limits for thallium in samples LO-1MW04D-GW (total and dissolved), LO-1G104D-GW (dissolved), LO-1GW2-FB (total), LO-1MW07S-GW (total), LO-1MW02D-GW (dissolved), LO-1MW05S-GW (dissolved), LO-1G104L-GW (dissolved), LO-1G106DR-GW (dissolved), LO-1G102D-GW (total and dissolved), LO-1G102L-GW (total and dissolved), LO-1G101D-GW (total and dissolved), LO-1G101M-GW (total and dissolved), LO-1G101L-GW (total), LO-1MW01D-GW (total and dissolved), LO-1MW01S-GW (dissolved), LO-1MW03S-GW (total and dissolved), LO-1MW03D-GW (total and dissolved), LO-1MW03S-FD (total), LO-1MW06D-GW (total and dissolved), LO-1MW04S-FD (total), LO-1MW02S-GW (dissolved), LO-1GW3-FB (total and dissolved), LO-1MW06S-GW (total and dissolved), LO-1MW04S-GW (total and dissolved), LO-1G106S-WO and for lead in samples LO-1GW2-FB (total), LO-1G106DR-GW (dissolved), LO-1G101L-GW (dissolved), LO-1GW1-FB (total) and LO-1GW3-FB (dissolved) may be higher then reported and have been flagged "UL" on the data tables. Low post-digestion spike recoveries were obtained for thallium and lead in the aforementioned samples.

- The positive results for lead in samples LO-1MW01S-GW (total) and LO-1MW04S-GW (dissolved) should be considered estimated and have been flagged "J" on the data tables. Low correlation coefficients (<0.995) were obtained for lead in the method of standard addition analysis of these samples.

- The positive results for the elements in the following samples should be considered estimated and have been flagged "J" on the data tables. Similarly, the actual detection limits for the elements in the following samples may be higher then reported and have been flagged "UL" on the data tables. Whenever possible, the reasons for the qualifications have been footnoted and when possible, an indication of bias (percent recovery, percent difference, etc.) has been presented. For ease of data usability, this information has been presented in four tables to correspond to the four sample delivery groups.

TABLE 2

SAMPLES IN SAMPLE DELIVERY GROUP 111897

Element	Samples With Biased Detection Limits	Samples With Estimated Positive Results	%REC, PD(%) or RPD (%)
aluminum[a,b,c,d,g]		LO-1G101L-GW (dissolved), LO-1MW01D-GW (dissolved) and all samples in SDG (total) except samples LO-1GW1-FB (total) and LO-1G102L-GW (total)	0%; 275%; 70%; 22% (PD)
antimony[a]	All samples in SDG		38% and 89%, 31% and 39%
beryllium[a]	All samples in SDG except LO-1G101M-GW (total) and LO-1MW01S-GW (total)	LO-1G101M-GW (total) and LO-1MW01S-GW (total)	60% and 80%, 70% and 80%
calcium[d]		All samples in SDG (dissolved) except sample LO-1GW1-FB (dissolved)	*
cadmium[b]		LO-1G102D-GW (total)	120%
chromium[a]	All samples in SDG with "not-detected" results	LO-1MW03S-GW (total) and LO-1MW03S-FD (total)	85%
cobalt[a]	All samples in SDG (dissolved)		83%
iron[a,c,e]		LO-1G101L-GW (dissolved) and all samples in SDG (total) except sample LO-1GW1-FB (total)	80%; 65%; 10.5% (PD)
lead[b,d]		LO-1MW03D-GW (dissolved) and all samples in SDG (total) except samples LO-1GW1-FB (total)	112%, 120%; 146%
manganese[a,b]	All samples in SDG with "not-detected" results	LO-1G102D-GW (dissolved) and LO-1G101L-GW (total)	47%, 43% and 57%; 78.4% and 79.7%
nickel[a]	All samples in SDG with "not-detected" results	LO-1G102D-GW (total and dissolved), LO-1G101M-GW (total), LO-1MW03S-GW (total) and LO-1MW3S-FD (total)	72% and 88%, 81%
potassium[a]	LO-1GW1-FB (total and dissolved)	All samples in SDG with positive results	85%
thallium[c]	All samples in SDG (total)		74%
vanadium[a]	All samples in SDG (total) except sample LO-1MW01S-GW (total)	LO-1MW01S-GW (total)	88%
zinc[a]	All samples in SDG with "not-detected" results	LO-1G101L-GW (total)	82%, 83%

* See noncorrectable deficiency 11.

TABLE 3

SAMPLES IN SAMPLE DELIVERY GROUP 111908

Element	Samples With Biased Detection Limits	Samples With Estimated Positive Results	%REC, PD (%) or RPD (%)
aluminum[c]		All samples in SDG (total) except sample LO-1GW2-FB (total)	68%
antimony[a]	All samples in SDG (dissolved)		65% and 72%
arsenic[d]		LO-1G104D-GW (total), LO-1MW05S-GW (total), LO-1MW05S-FD (total) and LO-1MW05D-GW (total)	140%
barium[a]	LO-1MW04D-GW (dissolved), LO-1G104D-GW (dissolved), LO-1GW2-FB (dissolved), LO-1MW07D-GW (dissolved), LO-1MW02D-GW (dissolved) and LO-1MW05D-GW (dissolved)	LO-1MW07S-GW (dissolved), LO-1MW05S-GW (dissolved), LO-1MW05S-FD (dissolved), LO-1G104L-GW (dissolved) and LO-1G106DR-GW (dissolved)	86%
beryllium[a]	All samples in SDG (dissolved)		80%
cadmium[a]		LO-1MW04D-GW (total and dissolved), LO-1MW05S-FD (total) and LO-1G104L-GW (total)	0%, 80%
calcium[a]		All samples in SDG with positive results	*
cobalt[a]	All samples in SDG (dissolved), LO-1MW04D-GW (total), LO-1GW2-FB (total), LO-1MW07D-GW (total), LO-1MW02D-GW (total), LO-1G104L-GW (total) and LO-1G106DR-GW (total)	LO-1G104D-GW (total), LO-1MW07S-GW (total), LO-1MW05S-GW (total), LO-1MW05S-FD (total) and LO-1MW05D-GW (total)	85%, 87%
copper[a,c]	All samples in SDG (total and dissolved) except samples LO-1MW05S-GW (total) and LO-1MW05S-FD (total)	LO-1MW05S-GW (total) and LO-1MW05S-FD (total)	82%; 60%
iron[a,f]		All samples in SDG (total)	14% (PD)
magnesium[a,g,h]	LO-1GW2-FB (dissolved)	All samples in SDG except sample LO-1GW2-FB (dissolved)	82%; 117%; 79.7%
manganese[a]	LO-1MW04D-GW (dissolved), LO-1G104D-GW (dissolved), LO-1GW2-FB (dissolved), LO-1MW07D-GW (dissolved), LO-1MW07S-GW (dissolved), LO-1MW02D-GW (dissolved), LO-1MW05D-GW (Dissolved) and LO-1G106DR-GW (dissolved)	LO-1MW04D-GW (total)	40% and 50%; 0%
mercury[a]	All samples in SDG (dissolved)		80%
nickel[a]	All samples in SDG (dissolved)		66%
potassium[a]	LO-1GW2-FB (total and dissolved)	All samples in SDG except samples LO-1GW2-FB (total and dissolved) and LO-1G104L-GW (total and dissolved)	82%
silver[a,c]	All samples in SDG (dissolved)		60%; 62%
thallium[a,c]	All samples in SDG		80%; 74%
zinc[a,b]		LO-1MW07S-GW (dissolved), LO-1GW2-FB (total) and LO-1G104L-GW (dissolved)	88%, 11.50%

* See noncorrectable deficiency 11.

TABLE 4

SAMPLES IN SAMPLE DELIVERY GROUP 111918

Element	Samples With Biased Detection Limits	Samples With Estimated Positive Results	%REC, PD (%) or RPD (%)
aluminum[a,c,d,i]		All reported positive results in SDG except for sample LO-1MW06D-GW (total)	0% and 65%; 370%, 45%, 76% (PD)
antimony[a,d]		LO-1MW02S-GW (total)	0% and 7%; 150% and 190%
arsenic[d]		All positive results in SDG (total)	140%
beryllium[a]	All samples in SDG with "not-detected" results	LO-1MW04S-GW (total) and LO-1MW04S-FD (total)	80%
barium[c]		LO-1MW04S-GW (dissolved) and LO-1MW04S-FD (dissolved)	29%
cadmium[a]		LO-1MW02S-GW (total), LO-1MW04S-GW (total) and LO-1MW04S-FD (total and dissolved)	0% and 50%
calcium[g]		All samples in SDG with positive results	*
chromium[b]		LO-1MW06D-GW (total)	110% and 115%
cobalt[a]	All samples in SDG with "not-detected" results	LO-1MW06S-GW (total)	87% and 88%
copper[a,c]	All samples in SDG with "not-detected" results		88%; 60%
iron[d]		All samples in SDG (dissolved) with positive results	650%
lead[b,c]	LO-1MW02S-GW (dissolved), LO-1MW06S-GW (dissolved), LO-1MW06D-GW (dissolved) and LO-1GW3-FB (dissolved)	LO-1MW04S-GW (dissolved) and LO-1MW04S-FD (dissolved)	112%; 70%
magnesium[g]		All samples in SDG (total)	36% (PD)
mercury[b]		LO-1MW04S-FD (total)	120%
nickel[a]	All samples in SDG with "not-detected" results	LO-1MW06S-GW (total)	81%
potassium[a]	LO-1GW3-FB (total and dissolved)		82%
selenium[b,c]	All samples in SDG except sample LO-1MW02S-GW (total)	LO-1MW02S-GW (total)	120%; 64% and 73%
silver[a,c]		LO-1MW02S-GW (total) and LO-1MW04S-GW (total)	0% and 55%; 62% and 66%
thallium[a]	All samples in SDG (total) except sample LO-1MW02S-GW (total)	LO-1MW02S-GW (total)	80%
zinc[b]		LO-1GW3-FB (total)	112%
total cyanide[e]	LO-1MW02S-GW (total), LO-1MW06S-GW (total), LO-1MW06D-GW (total) and LO-1GW3-FB (total)	LO-1MW04S-GW (total) and LO-1MW04S-FD (total)	39%

* See noncorrectable deficiency 11.

TABLE 5

OIL SAMPLE IN SDG 111928

Element	Samples With Biased Detection Limits	Samples With Estimated Positive Results	%REC, PD (%) or RPD (%)
antimony[a]	LO-1G106S-WO		61%
copper[a]	LO-1G106S-WO		50%
iron[b]		LO-1G106S-WO	135%
lead[c]		LO-1G106S-WO	56%
magnesium[a]	LO-1G106S-WO		89%
mercury[a]	LO-1G106S-WO		71%
selenium[c]	LO-1G106S-WO		52%
silver[c]	LO-1G106S-WO		68%
zinc[b]		LO-1G106S-WO	125% and 130%

NOTES:

[a] A low recovery was obtained for this element in the two-times CRDL standard associated with these samples.

[b] A high recovery was obtained for this element in the two-times CRDL standard associated with these samples.

[c] A low recovery was obtained for this element in the matrix spike associated with these samples.

[d] A high recovery was obtained for this element in the matrix spike associated with these samples.

[e] A high percent difference was obtained between the results for this element in the serial dilution associated with these samples.

[f] A low recovery was obtained for this element in an associated continuing calibration verification.

[g] High recoveries were obtained for this element in associated continuing calibration verification standards.

[h] A low recovery was obtained for this element in an associated laboratory control sample.

[i] A high percent difference was obtained for this element between the sample and the associated laboratory duplicate sample.

- The positive results for calcium in samples LO-1G101M-GW (total), LO-1MW01S-GW (total), LO-1MW07S-GW (total), LO-1MW05S-GW (total), LO-1G105S-FD (total), LO-1MW05D-GW (total), LO-1MW04S-GW (total), LO-1MW04S-FD (total), LO-1MW02S-GW (total) and LO-1MW04S-GW (total), for magnesium in samples LO-1MW01S-GW (total), LO-1MW05S-GW (total), LO-1G105S-FD (total), LO-1MW04S-FD (total), LO-1MW02S-GW (total), LO-1MW04S-GW (total) and LO-1MW07D-GW (dissolved) and for iron in sample LO-1MW02S-GW (total) should be considered estimated and have been flagged "J" on the data tables. The concentration of these elements in these samples exceeded the calibration range of the instrument. These samples were not diluted and reanalyzed for the associated elements.

C. Conclusions

This quality assurance review has identified aspects of the analytical data that have required qualification. In general, the majority of the data represents good qualitative and quantitative analyses. Nonetheless, a large portion of the data has been either qualified or rejected. To confidently use any of the analytical results from the data sets examined, the data users should understand the qualifications and limitations stated in this report.

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SECTION 2

ANALYTICAL RESULTS

A. ORGANIC DATA

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS

Page 1

ERA-North Central Sample Number	10-	1MW01S-6W	1MW01D-6W	1MW02S-6W	1MW02D-6W	1MW03S-6W	1MW03D-6W	1MW04	1MW04S-6W	1MW05S-6W	1MW05D-6W	1MW06S-6W	1MW06D-6W	1MW07S-6W	1MW07D-6W	1610[illegible]	SDF-MSMSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-[illegible]	111908-5	111908-4	111897-5	[illegible]908-12
Remarks																	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quant. Limit					Analyzed Twice		Analyzed Twice									
Chloromethane	10			UL		- / UL		- / UL									
Bromomethane	10			UL		- / UL		/ UL									
Vinyl Chloride	10			UL		- / UL		/ UL									
Chloroethane	10			UL		- / UL		- / UL									46
Methylene Chloride	5		23 U	12 U	6 U	/ 20 U	- / 19 U	5 U/ 5 U	5 U	50 U	6 U	5 U	7 U	5 U			5 U
Acetone	10			UL		- / UL		- / UL									
Carbon Disulfide	5			UL		- / UL		- / UL									
1,1-Dichloroethene	5			UL		- / UL		- / UL									
1,1-Dichloroethane	5			UL		- / UL		- / UL		28 J							
Total 1,2-Dichloroethene	5			3 J		- / UL		- / UL									2 J
Chloroform	5			UL		- / UL		- / UL		14 J							
1,2-Dichloroethane	5			UL		- / UL		- / UL									
2-Butanone	10	R	R	R	R	R/ R	R/ R	R/ R	R	R	R	R	R	R	R	R	R
1,1,1-Trichloroethane	5			UL		- / UL		- / UL									
Carbon Tetrachloride	5			UL		- / UL		- / UL									
Vinyl Acetate	10			UL		- / UL		- / UL									
Bromodichloromethane	5			UL		- / UL		- / UL									
1,1,2,2 Tetrachloroethane	5			UL		- / UL		- / UL									
1,2-Dichloropropane	5			UL		- / UL		- / UL									
trans-1,3-Dichloropropene	5			UL		- / UL		- / UL									
Trichloroethene	5			UL		- / UL		- / 2 J									
Dibromochloromethane	5			UL		- / UL		- / UL									
1,1,2-Trichloroethane	5			UL		- / UL		- / UL									
Benzene	5			UL		- / UL		UL/ UL		UL		UL	UL				UL

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	1MW01S-GW	1MW01D-GW	1MW02S-GW	1MW02D-GW	1MW03S-GW	1MW03D-GW	1MW04S-GW	1MW04D-GW	1MW05S-GW	1MW05D-GW	1MW06S-GW	1MW06D-GW	1MW07S-GW	1MW07D-GW	1610101L-GW	1G106DR-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918 5	111918-1	111906-5	111908-4	111897-5	111908 12
Remarks																	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quant. Limit					Analyzed Twice	Analyzed Twice	Analyzed Twice									
cis-1,3-Dichloropropene	5			UL		- / UL		- / UL									
Bromoform	5			UL		- / UL		- / UL									
2-Hexanone	10			UL		- / UL		- / UL									
4-Methyl-2-Pentanone	10			UL		- / UL		- / UL									
Tetrachloroethene	5			UL		- / UL		- / UL									
Toluene	5	6 U		UL		5 U/ UL	5 U/ -	UL/ UL		UL		UL	UL				UL
Chlorobenzene	5			UL		- / UL		UL/ UL		UL		UL	UL				UL
Ethylbenzene	5			UL		- / UL		UL/ UL		270 J		UL	UL				UL
Styrene	5			UL		- / UL		UL/ UL		UL		UL	UL				UL
Total Xylenes	5			UL		- / UL	13 U/ -	UL/ UL		670 J		UL	UL				UL
Quantitation Limit Multiplier		1.00	1.00	1.00	1.00	1.00/ 1.00	1.00/ 1.00	1.00/ 1.00	1.00	10.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Date of Sample Collection		5/6/91	5/6/91	5/8/92	5/7/91	5/6/91	5/6/91	5/8/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/7/91	5/7/91	5/6/91	5/7/91
Date Sample Received by Laboratory		5/7/91	5/7/91	5/9/91	5/8/91	5/7/91	5/7/91	5/9/91	5/8/91	5/8/91	5/8/91	5/9/91	5/9/91	5/8/91	5/8/91	5/7/91	5/8/91
Date of Sample Analysis		5/12/91	5/13/91	5/22/91	5/14/91	5/12 & 5/13	5/12/& 5/13	5/22 & 5/28	5/14/91	5/17/91	5/14/91	5/22/91	5/22/91	5/14/91	5/14/91	5/12/91	5/17/91
Instrument Used for Analysis	MS-	HP-2	HP-2	HP-2	HP-4	HP-2/ HP-2	HP-2/ HP-2	HP-2/ HP-2	HP-4	HP-4	HP-4	HP 4	HP-4	HP-4	HP-4	HP-2	HP-4

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	1MW01S-6W	1MW01D-6W	1MW02S-6W	1MW02D-6W	1MW03S-6W	1MW03D-6W	1MW04S-6W	1MW04C-6W	1MW05S-6W	1MW05D-6W	1MW06S-6W	1MW06D-6W	1MW07S-6W	1MW07D-6W	Lab Blank	161060F-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111919-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. Limit			Analyzed Twice						Analyzed Twice			Analyzed Twice			Analyzed Twice	
Phenol	10									R/ R			R/ R				
bis(2-Chloroethyl)ether	10									-/ R						UL/ UL	
2-Chlorophenol	10									R/ R			R/ R				
1,3 Dichlorobenzene	10									-/ R						UL/ UL	
1,4-Dichlorobenzene	10									-/ R						UL/ UL	
Benzyl Alcohol	10									-/ R						UL/ UL	
1,2-Dichlorobenzene	10									-/ R						UL/ UL	
2-Methylphenol	10									R/ R			R/ R				
bis(2-Chloroisopropyl)ether	10									-/ R						UL/ UL	
4 Methylphenol	10									R/ R			R/ R				
N-Nitroso-di-n-Propylamine	10									-/ R						UL/ UL	
Hexachloroethane	10									-/ R						UL/ UL	
Nitrobenzene	10									UL/ R						UL/ UL	
Isophorone	10									UL/ R						UL/ UL	
2-Nitrophenol	10									R/ R			R/ R				
2,4-Dimethylphenol	10							2 J		R/ R			R/ R				
Benzoic Acid	50									UL/ R						UL/ UL	
bis(2-Chloroethoxy)methane	10									UL/ R						UL/ UL	
2,4-Dichlorophenol	10									R/ R			R/ R				
1,2,4-Trichlorobenzene	10									UL/ R						UL/ UL	
Naphthalene	10									1300 J/ 1100 J						UL/ UL	
4-Chloroaniline	10									UL/ R						UL/ UL	
Hexachlorobutadiene	10									UL/ R						UL/ UL	
4-Chloro-3-Methylphenol	10									R/ R			R/ R				
2-Methylnaphthalene	10									3200 J/ 1900 J	2 J					UL/ UL	

ERM-North Central Sample Number	LO-	1MW01S-GW	1MW01D-GW	1MW02S-GW	1MW02D-GW	1MW03S-GW	1MW03D-GW	1MW04S-GW	1MW04D-GW	1MW05S-GW	1MW05D-GW	1MW06S-GW	1MW06D-GW	1MW07S-GW	1MW0	101L-GW	1G105DR-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908 1
Remarks																	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. Limit			Analyzed Twice						Analyzed Twice			Analyzed Twice			Analyzed Twice	
Hexachlorocyclopentadiene	10									UL/ R						UL/ UL	
2,4,6-Trichlorophenol	10									R/ R			R/ R				
2,4,5-Trichlorophenol	50									R/ R			R/ R				
2-Chloronaphthalene	10									UL/ R						UL/ UL	
2 Nitroaniline	50									UL/ R						UL/ UL	
Dimethylphthalate	10									UL/ R						UL/ UL	
Acenaphthylene	10									UL/ R						UL/ UL	
3-Nitroaniline	50									UL/ R						UL/ UL	
Acenaphthene	10									UL/ R						UL/ UL	
2,4-Dinitrophenol	50									R/ R			R/ R				
4-Nitrophenol	50									R/ R			R/ R				
Dibenzofuran	10									410 J/ 340 J						UL/ UL	
2,4-Dinitrotoluene	10									UL/ R						UL/ UL	
2,6-Dinitrotoluene	10									UL/ R						UL/ UL	
Diethylphthalate	10									UL/ R						UL/ UL	
4-Chlorophenylphenylether	10									UL/ R						UL/ UL	
Fluorene	10									710 J/ 590 J						UL/ UL	
4-Nitroaniline	50									UL/ R						UL/ UL	
4,6-Dinitro-2-Methylphenol	50									R/ R			R/ R				
N-Nitrosodiphenylamine	10									UL/ R						UL/ UL	
4-Bromophenylphenylether	10									UL/ R						UL/ UL	
Hexachlorobenzene	10									UL/ R						UL/ UL	
Pentachlorophenol	50									R/ R			R/ R				
Phenanthrene	10									1800 J/ 2300 J						UL/ UL	

EXTRACTABLE ORGANIC ANALYSIS ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	1MW01S-6W	1MW01D-6W	1MW02S-6W	1MW02D-6W	1MW03S-6W	1MW03D-6W	1MW04S-6W	1MW04D-6W	1MW05S-6W	1MW05D-6W	1MW06S-6W	1MW06D-6W	1MW07S-6W	1MW07D-6W	161801-6W	161806R-MS/MSC
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPOUNDS	Quant. Limit			Analyzed Twice						Analyzed Twice			Analyzed Twice			Analyzed Twice	
Anthracene	10									79 J/ 120 J						UL/ UL	
Di-n-Butylphthalate	10									UL/ R						UL/ UL	
Fluoranthene	10									UL/ R						UL/ UL	
Pyrene	10			UL/ -						110 J, 59 J						UL/ UL	
Butylbenzylphthalate	10			10 U/ -						UL/ R				5 U		UL/ UL	
3,3'-Dichlorobenzidine	20			UL/ -						UL/ R						UL/ UL	
Benzo(a)anthracene	10			UL/ -						UL/ R						UL/ UL	
bis(2-Ethylhexyl)phthalate	10			2 J/ -						290 J/ 380 J						UL/ UL	
Chrysene	10			UL/ -						UL/ R						UL/ UL	
Di-n-Octylphthalate	10			-/ UL						UL/ R						UL/ UL	
Benzo(b)fluoranthene	10			-/ UL						UL/ R						UL/ UL	
Benzo(k)fluoranthene	10			-/ UL						UL/ R						UL/ UL	
Benzo(a)pyrene	10			-/ UL						UL/ R						UL/ UL	
Indeno(1,2,3-cd)pyrene	10			-/ UL						UL/ R						UL/ UL	
Dibenz(a,h)anthracene	10			-/ UL						UL/ R						UL/ UL	
Benzo(g,h,i)perylene	10			-/ UL						UL/ R						UL/ UL	
Quantitation Limit Multiplier		1.00	1.00	1.00/ 1.00	1.00	1.00	1.00	1.00	1.00	10.0 / 10.0	1.00	1.00	1.00/ 1.00	1.00	1.00	1.00/ 1.00	1.00
Date of Sample Collection		5/6/91	5/6/91	5/8/91	5/7/91	5/6/91	5/6/91	5/8/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/7/91	5/7/91	5/6/91	5/7/91
Date Sample Received by Laboratory		5/7/91	5/7/91	5/9/91	5/8/91	5/7/91	5/7/91	5/9/91	5/8/91	5/8/91	5/8/91	5/9/91	5/9/91	5/8/91	5/8/91	5/7/91	5/8/91
Date Sample Extracted		5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	5/14/91	5/10/91	5/10/91	5/10/91	5/10/91
Date of Sample Analysis		5/22/91	5/22/91	5/30 & 6/6	6/4/91	5/22/91	5/22/91	5/31/91	5/23/91	5/27 & 5/30	5/23/91	5/31/91	5/31 & 6/5	5/23/91	5/23/91	5/22 & 5/23	5/24/91
Instrument Used for Analysis	GC/MS-	HP-1	HP-1	HP-1/ HP-1	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1 / HP 1	HP 1	HP-1	HP-1/ HP-1	HP-1	HP-1	HP-1/ HP-1	HP-1

ERM-North Central Sample Number	LG-	1MW01S-6W	1MW01D-6W	1MW02S-6W	1MW02D-6W	1MW03S-6W	1MW03D-6W	1MW04S-6W	1MW04D-6W	1MW05S-6W	1MW05D-6W	1MW06S-6W	1MW06D-6W	1MW07S-6W	1MW07D-6W	1G1@1L-6W	1G1@6CR A5/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
COMPOUNDS																	
VOLATILE COMPONENTS						Analyzed Twice	Analyzed Twice	Analyzed Twice									
Unknown (No. of Peaks)				24 (3)J	8 (1)J			115 (4)J/ 74 (2)J	23 (1)J	5133 (8)J	77 (3)J	3 (1)J	44 (2)J	8 (1)J			357 (2)J
Blank Contaminants			90 R			- / 43 R	- / 8 R	5 R/ -									
Unknown Amide		72 J				- / 6 J											
Laboratory Artifact				280 R													
Unknown Oxygenated Compound				6 J													
3-Methylhexane										110 J							
Unknown Alkane										460 J							
SEMIVOLATILE COMPONENTS				Analyzed Twice						Analyzed Twice			Analyzed Twice			Analyzed Twice	
Blank Contaminants (No. of Peaks)		2 (1) R			8 (2)R	2 (1)R	5 (1)R		10 (3)R		23 (2)J	3 (1)R		6 (2)R	6 (2) R	2 (1)R/ 2 (1)R	6 (1)R
Unknown (No. of Peaks)		27 (5) J		33 (5)J/ 13 (1)J	27 (3)J	4 (1)J	25 (2)J	352 (12)J		18100 (6)J/ 19660 (9)J	70 (9)J	10 (3)J	17 (2)J/ 17 (3)J	2 (1)J		4 (1)J/11 (3)J	136 (14)J
Unknown Phthalate					4 J				4 J								
Alkylbenzene Isomers										- / 880 J							9 (3)J
2-Methoxy-ethanol																2 J/	

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS

CLP-North Central Sample Number	LO-	MW01S-4	MW01D-6W	MW02S-6W	MW02D-6W	MW03S-6W	MW03D-6W	MW04	MW04D-6W	MW05S-6W	MW05S-6W	MW05S-6W	MW05D-6W	MW06D-6W	MW07S-6W	6W	161031-6W	161035DR-MS/MSD
Laboratory Sample Number		111897-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
COMPOUNDS										Analyzed Twice			Analyzed Twice			Analyzed Twice	
SEMIVOLATILE COMPONENTS (Cont.)																	
Unknown Hydrocarbon					J							2 J	6 J/ -			3 J/ -	
Unknown Alkane (No. of Peaks)										44890 (13)J/ 16000 (8)J	2 (1)J						
Triethylene Glycol			15 J				30 J									17 J/ 9 J	
Unknown Oxygenated Compound (No. of Peaks)		207 (5) J		3 (1)J/-	37 (2)J					21 (1)J						3 J/ -	
2-Methyl-1(1,1-DimethylEthyl)-propanoic acid		6 J	4 J	2 J/ -		4 J	4 J									4 J/ -	
Tetramethylphenol								8 J									
3-Chloro-octane			4 J														
5-Ethyl-2-methyl-pyridine								23 J									
N-methyl-N-(1-oxododecyl)-glycine		5 J															
Dimethylpyridine (Number of Peaks)								28 (2)J									
1,4-Dioxane		20 J															
Dimethylnaphthalene											10 (3)J						
2,2-Oxybis-butane		3 J						8 J									8 (1)J
[1,1-Biphenyl]-2-ol		2 J															
1,2,3-TrimethyleEthylbenzene										3500 J/ -							
Dioctyl ester hexanedioic acid							180 J										
Unknown Aromatic											9 J						
Ethylmethyl benzene										- / 1100 J							
Dimethylethyl phenol isomer								18 J					2 J/ -				
Hexadecanoic acid				-/ 6 J													2 (1)J
3,3,5-Trimethyl cyclohexane (No. of Peaks)								53 (2)J									

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 8

ERM-North Central Sample Number	LD-1	1MW01-6W	1MW010-6W	1MW02S-6W	1MW020-6W	1MW03S-6W	1MW03D-6W	1MW04S-6W	1MW040-6W	1MW05S-6W	1MW05D-6W	1MW06S-6W	1MW06D-6W	1MW07S-6W	1MW07D-6W	1610111-6W	110608-MS/MSD
Laboratory Sample Number		111185-7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908-7	111908-10	111918-5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																	
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Pesticides	Quant. limit																
alpha-BHC	0.05																
beta-BHC	0.05																
delta-BHC	0.05																
gamma-BHC (Lindane)	0.05																
Heptachlor	0.05																
Aldrin	0.05																
Heptachlor Epoxide	0.05																
Endosulfan I	0.05																
Dieldrin	0.10																
4,4'-DDE	0.10																
Endrin	0.10																
Endosulfan II	0.10																
4,4'-DDD	0.10																
Endosulfan Sulfate	0.10																
4,4'-DDT	0.10																
Methoxychlor	0.50																
Endrin Ketone	0.10																
alpha-Chlordane	0.50																
gamma-Chlordane	0.50																
Toxaphene	1.0																

EXTRACTABLE ORGANIC ANALYSIS — ANALYTICAL RESULTS —

ERM-North Central Sample Number: 10	IRW01S-GW	IRW01D-GW	IRW025-GW	IRW02D-GW	IRW035-GW	IRW03D-GW	IRW045-GW	IRW04D-GW	IRW05S-GW	IRW05D-GW	IRW06S-GW	IRW06D-GW	IRW07S-GW	IRW07D-GW	161016CA-MS/MSD
Laboratory Sample Number	111897 7	111897-6	111918-3	111908-6	111897-8	111897-9	111918-6	111908-1	111908 7	111908 10	111918 5	111918-1	111908-5	111908-4	111897-5	111908-12
Remarks																
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PCBs — Quant. Limit																
Aroclor-1016 — 0.5																
Aroclor-1221 — 0.5																
Aroclor 1232 — 0.5																
Aroclor-1242 — 0.5									645							
Aroclor-1248 — 0.5									350							
Aroclor-1254 — 1.0																
Aroclor-1260 — 1.0									120							
Quantitation Limit Multiplier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.0	10.0	1.00	1.00	1.00	1.00	1.00	1.00
Date of Sample Collection	5/6/91	5/6/91	5/8/91	5/7/91	5/6/91	5/6/91	5/8/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/7/91	5/7/91	5/6/91	5/7/91
Date Sample Received by Laboratory	5/7/91	5/7/91	5/9/91	5/8/91	5/7/91	5/7/91	5/9/91	5/8/91	5/8/91	5/9/91	5/9/91	5/9/91	5/8/91	5/8/91	5/7/91	5/8/91
Date Sample Extracted	5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	5/14/91	5/10/91	5/10/91	5/10/91	5/10/91
Date of Sample Analysis	5/21/91	5/21/91	5/21/91	5/20/91	5/21/91	5/22/91	5/21/91	5/17/91	5/22/91	5/20/91	5/21/91	5/21/91	5/17/91	5/17/91	5/17/91	6/4/91

NOTES:

- Compound was not detected.
- U — This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R — Unreliable result - Compound may or may not be present in this sample.
- J — Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL — This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

...TILE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 10

...North Central Sample Number	...G	16101M-6W	16101D-6W	16102L-6W	16102D-6W	16104L-6W	16104D-6W	16106DR-6W	1MW03S-FD	1MW0	1MW05S-FD	16W1-FB	16W2-FB	16W3-FB	6W6-TB	1MW02S-MS/MSD
...ratory Sample Number		111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8	111897-11	111908-3	111918-4	111897-12	111918-7
Remarks									Duplicate of LO-1MW03S-6W	Duplicate of LO-1MW04S-6W	Duplicate of LO-1MW05S-6W	Field Blank	Field Blank	Field Blank	Trip Blank	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
...ATILE COMPOUNDS	Quant. Limit								Analyzed Twice		Analyzed Twice	Analyzed Twice			Analyzed Twice	
...romethane	10								- / UL		UL / -					
...omethane	10								- / UL		UL / -					
...Chloride	10				13				- / UL		UL / -					
...ethane	10			4 J	5 J			53	- / UL		UL / -					
...ylene Chloride	5			5 U	5 U	5 U	5 U	7 U	- / 27 U	6 U	50 U / 50 U	16 J	4 J	8 J	- / 15 J	5 U
...ene	10								- / UL		UL / -					
...n Disulfide	5								- / UL		UL / -					
...Trichloroethene	5		2 J	5	3 J				- / UL		UL / -					
...Dichloroethane	5			58	70		4 J		- / UL	2 J	UL / -					2 J
...1,2-Dichloroethene	5			21	15				- / UL		UL / -					3 J
...form	5		3 J						- / UL		UL / -					
...Dichloroethane	5								- / UL		31 J / 28 J					
...tanone	10	R	R	R	R	R	R	R	R / R	R	R / R	R / R	R	R	R / R	R
...Trichloroethane	5		2 J	120	83						UL / UL					
...on Tetrachloride	5		3 J								UL / UL					
...l Acetate	10										UL / UL					
...modichloromethane	5										UL / UL					
...1,2-Tetrachloroethane	5															
...Dichloropropane	5										UL / UL					
...s 1,3-Dichloropropene	5										UL / UL					
...hloroethene	5			6	3 J						UL / UL					
...omochloromethane	5										UL / UL					
...,1-Trichloroethane	5										UL / UL					
...rene	5							UL	- / UL	UL	UL / UL			UL	UL / UL	UL

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS

SRM-North Central Sample Number	16101M-6W	16101D-6W	16102L-6W	16102D-6W	16104.-6W	16104D-6W	16106DR-6W	1MW03S-FD	1MW04S-FD	1MW05S-FD	16W2-FB	16W3-FB	16W8-TB	1MW02D-MS/MSD
Laboratory Sample Number	111897-4	111897-3	111897-2	111897-1	111908-9	111908-10	111908-11	111897-10	111918-2	111908-8	111897-11	111906-3	111918-4	111897-12	111918-7
Remarks								Duplicate of LO-1MW03S-6W	Duplicate of LO-1MW04S-6W	Duplicate of LO-1MW05S-6W	Field Blank	Field Blank	Field Blank	Trip Blank	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quant. Limit							Analyzed Twice		Analyzed Twice	Analyzed Twice			Analyzed Twice	
cis-1,3 Dichloropropene	5									UL / UL					
Bromoform	5									UL / UL					
2 Hexanone	10														
4 Methyl-2-Pentanone	10														
Tetrachloroethene	5		2 J	3 J				2 J/							
Toluene	5						UL	5 U/ UL	UL	UL / UL	3 J/ -		UL	UL/ UL	UL
Chlorobenzene	5						UL	-/ UL	UL	UL / UL			UL	UL/ UL	UL
Ethylbenzene	5						UL	-/ UL	UL	350 J/ 370 J			UL	UL/ UL	UL
Styrene	5						UL	-/ UL	UL	UL / UL			UL	UL/ UL	UL
Total Xylenes	5		5 U	5 U			UL	12 U/ UL	UL	920 J/ 890 J	11 J/ -		UL	UL/ UL	UL
Quantitation Limit Multiplier		1.00	1.00	1.00	1.00	1.00	1.00	1.00/ 1.00	1.00	10.0/ 10.0	1.00/ 1.00	1.00	1.00	1.00	1.00
Date of Sample Collection		5/6/91	5/6/91	5/6/91	5/6/91	5/7/91	5/7/91	5/7/91	5/6/91	5/8/91	5/7/91	5/6/91	5/7/91	5/8/91	5/2/91	5/8/91
Date Sample Received by Laboratory		5/7/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/8/91	5/7/91	5/9/91	5/8/91	5/7/91	5/8/91	5/9/91	5/7/91	5/9/91
Date of Sample Analysis		5/12/91	5/12/91	5/12/91	5/12/91	5/14/91	5/14/91	5/21/91	5/12 & 5/13	5/22/91	5/17 & 5/17	5/12 & 5/13	5/14/91	5/22/91	5/12 & 5/13	5/22/91
Instrument Used for Analysis	MS-	HP-2	HP-2	HP-2	HP-2	HP-4	HP-4	HP-2	HP-2/ HP-2	HP-4	HP-2/ HP-4	HP-2/ HP-2	HP-4	HP-2	HP-2/ HP-2	HP-2

NOTES:

- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation.
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number LO-	16101M-GW	16101D-GW	16102L-GW	16102D-GW	16104L-GW	16104D-GW	16106DR-GW	1MW03S-FD	1MW04S-FD	1MW05S-FD		16W1-FB	16W2-FB	16W3-FB	6W6-TB	1MW02S-MS/MSD
Laboratory Sample Number	111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8		111897-11	111908-3	111916-4	111897-12	111918-7
Remarks								Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW04S-GW	Original/ Dilution/ Reanalyses	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Trip Blank	
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l		ug/l	ug/l	ug/l	ug/l	ug/l
SEMIVOLATILE COMPOUNDS	Quant. Limit									Analyzed						
Phenol	10									R/	R/ R				NA	
bis(2-Chloroethyl)ether	10														NA	
2-Chlorophenol	10									R/	R/ R				NA	
1,3-Dichlorobenzene	10														NA	
1,4-Dichlorobenzene	10														NA	
Benzyl Alcohol	10														NA	
1,2-Dichlorobenzene	10														NA	
2-Methylphenol	10									R/	R/ R				NA	
bis(2-Chloroisopropyl)ether	10														NA	
4-Methylphenol	10									R/	R/ R				NA	
N-Nitroso-di-n-Propylamine	10														NA	
Hexachloroethane	10														NA	
Nitrobenzene	10									UL/	-/ -				NA	
Isophorone	10									UL/	-/ -				NA	
2-Nitrophenol	10									R/	-/ R				NA	
2,4-Dimethylphenol	10								2 J	R/	-/ R				NA	
Benzoic Acid	50								27 J	R/	R/ R				NA	
bis(2-Chloroethoxy)methane	10									UL/	-/ -				NA	
2,4-Dichlorophenol	10									R/	R/ R				NA	
1,2,4-Trichlorobenzene	10									UL/	-/ -				NA	
Naphthalene	10									1800 J/	2400 / 1100				NA	
4-Chloroaniline	10									UL/	-/ -				NA	
Hexachlorobutadiene	10									UL/	-/ -				NA	
4-Chloro-3-Methylphenol	10									R/	R/ R				NA	
2-Methylnaphthalene	10									3400 J/	6000 / 2200 J				NA	

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number LO-		16101M-GW	16101D-GW	16102L-GW	16102D-GW	16104L-GW	16104D-GW	16105DR-GW	1MW03S-FD	1MW04S-FD	1MW05S-FD		16W1-FB	16W2-FB	16W3-FB	6W5-TB	1MW02S-MS/MSD
Laboratory Sample Number		111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8		111897-11	111908-3	111918-4	111897-12	111918-7
Remarks									Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW04S-GW	Original/ Dilution/ Reanalyses	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Trip Blank	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. Limit																
Hexachlorocyclopentadiene	10										UL/	UL/ UL				NA	
2,4,6-Trichlorophenol	10										R/	R/ R				NA	
2,4,5-Trichlorophenol	50										R/	R/ R				NA	
2-Chloronaphthalene	10										UL/	UL/ UL				NA	
2-Nitroaniline	50										UL/	UL/ UL				NA	
Dimethylphthalate	10										UL/	UL/ UL				NA	
Acenaphthylene	10										UL/	UL/ UL				NA	
3-Nitroaniline	50										UL/	UL/ UL				NA	
Acenaphthene	10										UL/	UL/ UL				NA	
2,4-Dinitrophenol	50										R/	R/ R				NA	
4-Nitrophenol	50										R/	R/ R				NA	
Dibenzofuran	10										660 J/	560 J/ 670 J				NA	
2,4-Dinitrotoluene	10										UL/	UL/ UL				NA	
2,6-Dinitrotoluene	10										UL/	UL/ UL				NA	
Diethylphthalate	10										UL/	UL/ UL				NA	
4-Chlorophenylphenylether	10										UL/	UL/ UL				NA	
Fluorene	10										870 J/	1200 J/ 930 J				NA	
4-Nitroaniline	50										UL/	UL/ UL				NA	
4,6-Dinitro-2-Methylphenol	50										R/	R/ R/				NA	
N-Nitrosodiphenylamine	10										UL/	UL/ UL				NA	
4-Bromophenylphenylether	10										UL/	UL/ UL				NA	
Hexachlorobenzene	10										UL/	UL/ UL				NA	
Pentachlorophenol	50										R/	R/ R				NA	
Phenanthrene	10										2300 J/	3200 J/ 2600 J				NA	

EPA-North Centre, Sample Number LO-	161811M-6W	161810-6W	161812L-6W	161820-6W	161814L-6W	161840-6W	1614	1MW03S-FD	1MW04S-FD	1MW05S FD		16W1-FB	16W2-FB	16W2-FB	E	1MW02S-MS/MSD
Laboratory Sample Number	111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8		111897-11	111908-3	111918-4	111897-12	111918-7
Remarks								Duplicate of LO-1MW03S-6W	Duplicate of LO-1MW04S-6W	Original/ Dilution/ Reanalyses	Duplicate of LO-1MW05S-6W	Field Blank	Field Blank	Field Blank	Trip Blank	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPOUNDS	Quant. Limit															
Anthracene	10									150 J/	UL/ 210 J				NA	
Di-n-Butylphthalate	10									UL/	UL/ UL				NA	
Fluoranthene	10									75 J/	UL/ 130 J				NA	
Pyrene	10									160 J/	UL/ 99 J				NA	
Butylbenzylphthalate	10									UL/	UL/ -			5 J	NA	
3,3'-Dichlorobenzidine	20									UL/	UL/ -				NA	
Benzo(a)anthracene	10									UL/	UL/ -				NA	
bis(2-Ethylhexyl)phthalate	10									520 J/	640 J/ 530				NA	
Chrysene	10									UL/	UL/ -				NA	
Di-n-Octylphthalate	10									UL/	UL/ -				NA	
Benzo(b)fluoranthene	10									UL/	UL/ -				NA	
Benzo(k)fluoranthene	10									UL/	UL/ -				NA	
Benzo(a)pyrene	10									UL/	UL/ -				NA	
Indeno(1,2,3-cd)pyrene	10									UL/	UL/ -				NA	
Dibenz(a,h)anthracene	10									UL/	UL/ -				NA	
Benzo(g,h,i)perylene	10									UL/	UL/				NA	
Quantitation Limit Multiplier	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.0/50.0/10.0		1.00	1.00	1.00	NA	1.00
Date of Sample Collection	5/6/91	5/6/91	5/6/91	5/6/91	5/7/91	5/7/91	5/7/91	5/6/91	5/8/91	5/7/91		5/5/91	5/7/91	5/8/91	NA	5/8/91
Date Sample Received by Laboratory	5/7/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/8/91	5/7/91	5/9/91	5/8/91		5/7/91	5/8/91	5/9/91	NA	5/9/91
Date Sample Extracted	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/14/91	5/10/91		5/10/91	5/10/91	5/14/91	NA	5/14/91
Date of Sample Analysis	6/4/91	6/4/91	6/4/91	6/4/91	6/4/91	5/23/91	5/23/91	5/22/91	5/30/91	5/27, 5/30 & 5/31		5/22/91	5/23/91	5/30/91	NA	5/31/91
Instrument Used for Analysis GCMS-	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1	HP-1/HP 1/HP 1		HP-1	HP-1	HP-1	NA	HP-1

CLP TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS

ERM-North Central Sample Number	LO	161018-6W	161010-6W	161021-6W	161020-6W	161046-6W	161040-6W	161060R-6W	1MW03S-FD	1MW04S-FD	1MW05S-FD	16W1-FB	16W2-FB	16W3-FB	6W6-TB	1MW02S-MS/MSD
Laboratory Sample Number		111897-4	11897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8	111897-11	111908-3	111918-4	111897-12	111918-7
Remarks									Duplicate of LO-1MW03S-6W	Duplicate of LO-1MW04S-6W	Duplicate of LO-1MW05S-6W	Field Blank	Field Blank	Field Blank	Trip Blank	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE COMPONENTS		-		-			-		Analyzed Twice		Analyzed Twice	Analyzed Twice			Analyzed Twice	-
Unknown (Number of Peaks)			5 (1)J		21 (1)J	11 (1)J		52 (2)J		149 (2)J	9528 (6)J/2717 (8)J		6 (1)J	5 (1)J		
Blank Contaminants									- 84 R			- / 40 R			- / 28 R	

- Compound was not detected.

U This compound should be considered "not detected" since it was detected in a blank at a similar level.

R Unreliable result - Compound may or may not be present in in this sample.

J Quantitation is approximate due to limitations identified during the quality assurance review.

UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

NA This fraction was not analyzed.

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS

ERM-North Central Sample Number LO-	1G101M-6W	1G101D-6W	1G102L-6W	1G102D-6W	1G104L-6W	1G104D-6W	1G106DR-6W	1MW	1MW04S-FD	1MW05S-FD	1GW1-FB	1GW2-FB	1GW3-FB		1MW02S-MS/MSD
Laboratory Sample Number	111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8	111897-11	111908-3	111908-4	111897-12	111918-7
Remarks								Duplicate of LO-1MW03S-6W	Duplicate of LO-1MW04S-6W	Duplicate of LO-1MW05S-6W	Field Blank	Field Blank	Field Blank	Trip Blank	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE COMPONENTS										Analyzed Three Times					
Trimethylbenzene							2 (1)J								
Ethyldimethylbenzene										- / 4000 J/ -					
Dimethylbenzene							6 (2)J			760 J/ - / -					
Unknown Alkane (No. of Peaks)					6 (1)J					5330 (10)J/251200 (16)J/38440 (9)J					
Unknown Cyclohexanes (No. of Peaks)										540 (2)J/ - / 5900 (1)J					
Bis(1,1-Dimethyl-ethyl)phenol					2 J		3 J								
Blank Contaminants (No. of Peaks)	39 (5)R	40 (5)R	322 (5)R	1055 (6)R		15 (4)R			6 (1)R	580 (1)R/ - / -	2 (1)R				
Unknown (No. of Peaks)	9 (3)J	8 (3)J	18 (8)J	33 (3)J	38 (5)J	10 (4)J	107 (10)J	5 (1)J	385 (12)J	1850 (4)J/ 4900 (1)J/ 19380 (10)			6 (2)J		31 (2)J
Unknown Phthalate (No. of Peaks)	7 (2)J	7 (2)J	7 (2)J	8 (2)J									2 (1)J		
Hexadecanoic Acid			8 J		10 J										
Ethylbenzene (VOA Target)							2 (1)J								
Methylbenzene (VOA Target)			2 J				2 J	3 J							
1,1-Biphenyl-2-ol	2 J														
2-Methyl-1(1,1-dimethylethy)propanoic Acid								2 J			2 J				
Dioctylester Hexadecanoic Acid								490 J			640 J				
Unknown Oxygenated Compound (No. of Peaks)											26 (1)J				
Unknown Aromatic (No. of Peaks)							7 (2)J			320 (1)J/ 5300 (1)J/ -					
Unknown Polyaromatic Hydrocarbon										530 J/ / -					
Dimethylpyridine (No. of Peaks)									29 (2)J						
5-Ethyl-2-Methylpyridine									20 J						
3,3,5-Trimethyl-cyclohexane (No. of Peaks)							3 (1)J		157 (2)J						
Tetramethylbutyl Phenol									13 J						
Unknown Carboxylic Acid									11 J						
Laboratory Artifact (No. of Peaks)					2 (1)R		5 (1)R					10 (3)R	2 (1)R		
Dimethylnaphthalene										- / 16000 J/ -					

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number LO-		16101M-6W	16101D-6W	16102L-6W	16102D-6W	16104L-6W	16104D-6W	16106DR-6W	[illegible]-FD	1MW04S-FD	1MW05S-FD	16W1-FB	16W2-FB	16W3-FB	6W6-TB	1MW02S-MS/MSD
Laboratory Sample Number		111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8	111897-11	111908-3	111908-4	111897-12	111918-7
Remarks									Duplicate of LO-1MW03S-6W	Duplicate of LO-1MW04S-6W	Duplicate of LO-1MW05S-6W	Field Blank	Field Blank	Field Blank	Trip Blank	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Pesticides	Quant. Limit															
alpha-BHC	0.05														NA	
beta-BHC	0.05														NA	
delta-BHC	0.05														NA	
gamma-BHC (Lindane)	0.05														NA	
Heptachlor	0.05														NA	
Aldrin	0.05														NA	
Heptachlor Epoxide	0.05														NA	
Endosulfan I	0.05														NA	
Dieldrin	0.10														NA	
4,4'-DDE	0.10														NA	
Endrin	0.10														NA	
Endosulfan II	0.10														NA	
4,4'-DDD	0.10														NA	
Endosulfan Sulfate	0.10														NA	
4,4'-DDT	0.10														NA	
Methoxychlor	0.50														NA	
Endrin Ketone	0.10														NA	
alpha-Chlordane	0.50														NA	
gamma-Chlordane	0.50														NA	
Toxaphene	1.0														NA	

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM-North Central Sample Number	LO-	161@1M-6W	161@1D-6W	161@21-6W	161@2D-6W	161@4L-6W	161@4D-6W	161@6DR-6W	1MW@3S-FD	1MW@4S-FD	1MW@5S-FD	16W1-FB	16W2-FB	16W3-FB	6W6-TB	1MW@2S-MS/MSD
Laboratory Sample Number		111897-4	111897-3	111897-2	111897-1	111908-9	111908-2	111908-11	111897-10	111918-2	111908-8	111897-11	111908-3	111908-4	111897-12	111918-7
Remarks									Duplicate of LO-1MW03S-6W	Duplicate of LO-1MW04S-6W	Duplicate of LO-1MW05S-6W	Field Blank	Field Blank	Field Blank	Trip Blank	
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
PCBs	Quant. Limit															
Aroclor-1221	0.5														NA	
Aroclor-1221	0.5														NA	
Aroclor-1232	0.5														NA	
Aroclor-1242	0.5														NA	
Aroclor-1248	0.5										420				NA	
Aroclor-1254	1.0														NA	
Aroclor-1260	1.0										160				NA	
Quantitation Limit Multiplier		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.0	1.00	1.00	1.00	NA	1.00
Date of Sample Collection		5/6/91	5/6/91	5/6/91	5/6/91	5/7/91	5/7/91	5/7/91	5/6/91	5/8/91	5/7/91	5/6/91	5/7/91	5/8/91	NA	5/8/91
Date Sample Received by Laboratory		5/7/91	5/7/91	5/7/91	5/7/91	5/8/91	5/8/91	5/8/91	5/7/91	5/9/91	5/8/91	5/7/91	5/8/91	5/9/91	NA	5/9/91
Date Sample Extracted		5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/10/91	5/14/91	5/10/91	5/10/91	5/10/91	5/14/91	NA	5/14/91
Date of Sample Analysis		5/17/91	5/17/91	5/17/91	5/17/91	5/20/91	5/17/91	5/20/91	5/22/91	5/21/91	5/22/91	5/22/91	5/17/91	5/29/91	NA	5/22/91

NOTES:

- *Compound was not detected.*
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R *Unreliable result - Compound may or may not be present in* in this sample.
- J Quantitation is approximate due to limitations identified *during the quality assurance review.*
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the *quality assurance review.*
- NA This fraction was not analyzed.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 19

ERM-North Central Sample Number LO-	16W-TB1	16W-TB	16W-TB3
Laboratory Sample Number	111908-13	111918-8	111928-2
Remarks	Trip Blank	Trip Blank	Trip Blank
Units	ug/l	ug/l	ug/l
VOLATILE COMPOUNDS	Quantitation Limit			
Chloromethane	10			UL
Bromomethane	10			UL
Vinyl Chloride	10			UL
Chloroethane	10			UL
Methylene Chloride	5	7	6	4 J
Acetone	10			UL
Carbon Disulfide	5			UL
1,1-Dichloroethene	5			UL
1,1-Dichloroethane	5			UL
Total 1,2-Dichloroethene	5			UL
Chloroform	5			2 J
1,2-Dichloroethane	5			UL
2-Butanone	10	R	R	R
1,1,1-Trichloroethane	5			UL
Carbon Tetrachloride	5			UL
Vinyl Acetate	10			UL
Bromodichloromethane	5			UL
1,1,2,2-Tetrachloroethane	5			UL
1,2-Dichloropropane	5			UL
trans-1,3-Dichloropropene	5			UL
Trichloroethene	5			UL
Dibromochloromethane	5			UL
1,1,2-Trichloroethane	5			UL
Benzene	5	UL	UL	3 J

NOTES:

- Compound was not detected.

U This compound should be considered "not detected" since it was detected in a blank at a similar level.

R Unreliable result - Compound may or may not be present in this sample.

J Quantitation is approximate due to limitations identified during the quality assurance review.

UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 20

ERM-North Central Sample Number LO-	16W-TB1	16W-TB	16W-TB3
Laboratory Sample Number	111908-13	111918-8	111928-2
Remarks	Trip Blank	Trip Blank	Trip Blank
Units	ug/L	ug/L	ug/L
VOLATILE COMPOUNDS	Quantitation limit			
cis 1,3-Dichloropropene	5			UL
Bromoform	5			UL
2-Hexanone	10			UL
4-Methyl-2-Pentanone	10			UL
Tetrachloroethene	5			UL
Toluene	5	UL	UL	UL
Chlorobenzene	5	UL	UL	UL
Ethylbenzene	5	UL	UL	UL
Styrene	5	UL	UL	UL
Total Xylenes	5	UL	UL	3 J
Quantitation Limit Multiplier		1.00	1.00	1.00
Date of Sample Collection		5/7/91	5/8/91	5/2/91
Date Sample Received by Laboratory		5/8/91	5/9/91	5/13/91
Date of Sample Analysis		5/21/91	5/22/91	5/23/91
Instrument Used for Analysis MS-		HP-2	HP-4	HP-2

NOTES:

- Compound was not detected.

U This compound should be considered "not detected" since it was detected in a blank at a similar level.

R Unreliable result - Compound may or may not be present in this sample.

J Quantitation is approximate due to limitations identified during the quality assurance review.

UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

CLP - TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS -page 21			
ERM-North Central Sample Number	LO-16W-TB1	LO-16W-TB	LO-16W-TB3
Laboratory Sample Number	111908-13	111918-8	111928-2
Remarks	Trip Blank	Trip Blank	Trip Blank
Units	ug/L	ug/L	ug/L
COMPOUNDS			
VOLATILE COMPONENTS		-	
Unknown (Number of Peaks)	15 (1) J		5 (1) J
SEMIVOLATILE COMPONENTS	NA	NA	NA

NOTES:

- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA This fraction was not analyzed.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 22

ERA-North Central Sample Number	LO-161065-WO	161065-WO	161065-WO
Laboratory Sample Number	111928-1	111928-1	111928-1
Remarks	Aqueous Layer	Oil Layer	Oil Layer
Units	ug/L	ug/Kg*	ug/Kg*
VOLATILE COMPOUNDS	Quantitation Limit		Dilution Analysis of LO-161065-WO
Chloromethane	10	UL	NA	NA
Bromomethane	10	UL	NA	NA
Vinyl Chloride	10	UL	NA	NA
Chloroethane	10	27 J	NA	NA
Methylene Chloride	5	41 U	NA	NA
Acetone	10	150 J	NA	NA
Carbon Disulfide	5	UL	NA	NA
1,1-Dichloroethene	5	UL	NA	NA
1,1-Dichloroethane	5	UL	NA	NA
Total 1,2-Dichloroethene	5	UL	NA	NA
Chloroform	5	UL	NA	NA
1,2-Dichloroethane	5	UL	NA	NA
2-Butanone	10	R	NA	NA
1,1,1-Trichloroethane	5	UL	NA	NA
Carbon Tetrachloride	5	UL	NA	NA
Vinyl Acetate	10	UL	NA	NA
Bromodichloromethane	5	UL	NA	NA
1,1,2,2-Tetrachloroethane	5	UL	NA	NA
1,2-Dichloropropane	5	UL	NA	NA
trans-1 3-Dichloropropene	5	UL	NA	NA
Trichloroethene	5	UL	NA	NA
Dibromochloromethane	5	UL	NA	NA
1,1,2-Trichloroethane	5	UL	NA	NA
Benzene	5	140 J	NA	NA

NOTES:

- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

VOLATILE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 23

ERM-North Central Sample Number	LO-16106 -WO	16106S-WO	16106S-WO
Laboratory Sample Number	111928--1	111928-1	111928-1
Remarks	Aqueous Layer	Oil Layer	Oil Layer
Units	ug/L	ug/Kg*	ug/Kg*
VOLATILE COMPOUNDS	Quantitation Limit		Dilution Analysis of LO-16106S-WO
cis-1,3-Dichloropropene	5	UL	NA	NA
Bromoform	5	UL	NA	NA
2-Hexanone	10	UL	NA	NA
4-Methyl-2-Pentanone	10	UL	NA	NA
Tetrachloroethene	5	UL	NA	NA
Toluene	5	360 J	NA	NA
Chlorobenzen	5	UL	NA	NA
Ethylbenzene	5	130 J	NA	NA
Styrene	5	UL	NA	NA
Total Xylenes	5	2400 J	NA	NA
Quantitation Limit Multiplier		10.0	NA	NA
Date of Sample Collection		5/9/91	NA	NA
Date Sample Received by Laboratory		5/13/91	NA	NA
Date of Sample Analysis		5/23/91	NA	NA
Instrument Used for Analysis	MS-	HP-2	NA	NA

NOTES:

- Compound was not detected.
U This compound should be considered "not detected" since it was detected in a blank at a similar level.
R Unreliable result - Compound may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
* Reported on an "as received" basis.
NA This fraction was not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 24

ERM-North Central Sample Number	LO-	16106S-WO	16106S-WO	16106S-WO	
Laboratory Sample Number		111928-1	111928-1	111928-1	
Remarks		Aqueous Layer	Oil Layer	Oil Layer	Analyzed Twice
Units		ug/L	ug/Kg*	ug/Kg*	

SEMIVOLATILE COMPOUNDS	Quantitation Limit (Aq)	Quantitation Limit (Sol)		Dilution of LO-16	Dilution Analysis of LO-16106S-WO	
Phenol	10	330	13			
bis(2-Chloroethyl)ether	10	330		R		
2-Chlorophenol	10	330				
1,3-Dichlorobenzene	10	330		R		
1,4-Dichlorobenzene	10	330		R		
Benzyl Alcohol	10	330		R		
1,2-Dichlorobenzene	10	330	10 J	R		
2-Methylphenol	10	330				
bis(2-Chloroisopropyl)ether	10	330		R		
4-Methylphenol	10	330	8 J			
N-Nitroso-di-n-Propylamine	10	330		R		
Hexachloroethane	10	330		R		
Nitrobenzene	10	330		R	UL/ -	
Isophorone	10	330		R	UL/ -	
2-Nitrophenol	10	330		UL	UL/ -	
2,4-Dimethylphenol	10	330	17	UL	UL/ -	
Benzoic Acid	50	1650		UL	UL/ -	
bis(2-Chloroethoxy)methane	10	330		R	UL/ -	
2,4-Dichlorophenol	10	330		UL	UL/ -	
1,2,4-Trichlorobenzene	10	330		R	UL/ -	
Naphthalene	10	330	82	R	430000 J/ 410000 J	
4-Chloroaniline	10	330		R	UL/ -	
Hexachlorobutadiene	10	330		R	UL/ -	
4-Chloro-3-Methylphenol	10	330		UL	UL/ -	
2-Methylnaphthalene	10	330	190	730000 J	1500000 J/ 1400000 J	

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

ERM-North Central Sample Number	LO-	161065-WO	161065-WO	161065-WO
Laboratory Sample Number		111928-1	111928-1	111928-1
Remarks		Aqueous Layer	Oil Layer	Oil Layer Analyzed Twice
Units		ug/l	ug/Kg*	ug/Kg*

SEMIVOLATILE COMPOUNDS	Quantitation Limit (Aq)	Quantitation Limit (Sol)			Dilution Analysis of LO-161065-WO	
Hexachlorocyclopentadiene	10	330		R	UL/	UL
2,4,6-Trichlorophenol	10	330		UL	UL/	UL
2,4,5-Trichlorophenol	50	330		UL	UL/	UL
2-Chloronaphthalene	10	330		R	UL/	UL
2-Nitroaniline	50	330		R	UL/	UL
Dimethylphthalate	10	330		R	UL/	UL
Acenaphthylene	10	330		R	UL/	UL
3-Nitroaniline	50	330		R	UL/	UL
Acenaphthene	10	330	15	430000 J	290000 J/	320000 J
2,4-Dinitrophenol	50	330		UL	UL/	UL
4-Nitrophenol	50	330		R	UL/	UL
Dibenzofuran	10	330		53000 J	190000 J/	420000 J
2,4-Dinitrotoluene	10	330		R	UL/	UL
2,6-Dinitrotoluene	10	330		R	UL/	UL
Diethylphthalate	10	330		R	UL/	UL
4-Chlorophenylphenylether	10	330		R	UL/	UL
Fluorene	10	1650	27	820000 J	540000 J/	570000 J
4-Nitroaniline	50	330		R	UL/	UL
4,6-Dinitro-2-Methylphenol	50	330		UL	UL/ -	
N-Nitrosodiphenylamine	10	330	24	140000 J	240000 J/	280000 J
4-Bromophenylphenylether	10	330		R	UL/ -	
Hexachlorobenzene	10	330		R	UL/ -	
Pentachlorophenol	50	330		UL	UL/ -	
Phenanthrene	10	330	47	510000 J	640000 J/	520000 J

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation)
- UJ This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - DRY WEIGHT BASIS -page 26

ERM-North Central Sample Number		LO-	16106S-WO	16106S-WO	16106S-WO
Laboratory Sample Number			111928-1	111928-1	111928-1
Remarks			Aqueous Layer	Oil Layer	Oil Layer Analyzed Twice
Units			ug/l	ug/Kg*	ug/Kg*
SEMIVOLATILE COMPOUNDS	Quantitation limit (Aq)	Quantitation limit (Soil)			Dilution Analysis of LO-16106S-WO
Anthracene	10	330		R	UL/ -
Di-n-Butylphthalate	10	330		R	UL/ -
Fluoranthene	10	330		R	UL/ -
Pyrene	10	330	4 J	47000 J	28000 J/ 30000 J
Butylbenzylphthalate	10	330		R	
3,3'-Dichlorobenzidine	20	660		R	
Benzo(a)anthracene	10	330		R	
bis(2-Ethylhexyl)phthalate	10	330	15	120000 J	170000 J/ 130000 J
Chrysene	10	330		R	
Di-n-Octylphthalate	10	330		R	
Benzo(b)fluoranthene	10	330		R	
Benzo(k)fluoranthene	10	330		R	
Benzo(a)pyrene	10	330		R	
Indeno(1,2,3-cd)pyrene	10	330		R	
Dibenz(a,h)anthracene	10	330		R	
Benzo(g,h,i)perylene	10	330		R	
Quantitation Limit Multiplier			1.20	60.6	300 / 300
Date of Sample Collection			5/9/91	5/9/91	5/9/91
Date Sample Received by Laboratory			5/13/91	5/13/91	5/13/91
Date Sample Extracted			5/21/91	5/21/91	5/21/91
Date of Sample Analysis			6/6/91	6/5/91	6/11 & 6/11
Instrument Used for Analysis		GC/MS	HP-3	HP-3	HP-3

NOTES:

- Compound was not detected.
- U — This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R — Unreliable result - Compound may or may not be present in this sample.
- J — Quantitation is approximate due to limitations identified during the quality assurance review (data validation)
- UL — This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * — Reported on an "as received" basis.
- NA — This fraction was not analyzed.

CLP-TENTATIVELY IDENTIFIED COMPOUNDS-ESTIMATED CONCENTRATIONS -page 2

ERM-North Central Sample Number LO-	16106S-WO	16106S-WO	16106S-WO	
Laboratory Sample Number	111928-1	111928-1	111928-1	
Remarks	Aqueous Layer	Oil Layer	Oil Layer	Dilution Analysis of LO-16106S-WO
Units	ug/L	ug/Kg*	ug/Kg*	
VOLATILE COMPONENTS				
Unknown (No. of Peaks)	436 (5)J			
C6H12 Isomer	144 (2)J			
C7H16 Isomer	140 J			
Unknown Alkane	470 J			
Ethylmethylbenzene	710 J			
SEMIVOLATILE COMPONENTS				
Unknown Ketone			- / * J	
Alkylbenzenes (No. of Peaks)			950000 (2)J / * (2)J	
Unknown (No. of Peaks)	196 (3)J	363000 (9)J	2440000 (5)J / * (5)J	
Dioctyl ester Hexanedioic acid	540 J			
Ethylmethylbenzene	86 J		540000 J / -	
Unknown Aromatic (No. of Peaks)	149 (2)J	124000 (2)J	1330000 (3)J / * (3)J	
Undecane	62 J			
Unknown Alkane (No. of Peaks)	844 (7)J	71000 (4)J	4880000 (7)J / * (6)J	
C11H10 Isomer	63 J			
Dimethylnaphthalene (No. of Peaks)	197 (2)J			
2,6,10,14-Tetramethyl-pentadecane	160 J			
3-Methyl-octadecane	140 J			
2,3,4-Trimethyl-pentane		16000 J		
Methylbenzene (Toluene)		16000 J		
Dimethyl-octane		11000 J	370000 J / * (3)J	
C7H12 Isomer		10000 J		
Nonane		57000 J		
Unknown Cyclohexane			390000 / -	
2,3,4-Trimethyl-pentane				

NOTES:

- Compound was not detected.
U *This compound should be considered "not detected" since it was detected in a blank at a similar level.*
R *Unreliable result - Compound may or may not be present in this sample.*
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
UJ This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
* *Reported on an "as received" basis.*
NA This fraction was not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS -page 28

ERM-North Central Sample Number	L0-	161065-MO	161065-MO	161065-MO
Laboratory Sample Number		111928-1	111928-1	111928-1
Remarks		Aqueous Layer	Oil Layer	Oil Layer
Units		ug/L	ug/Kg*	ug/Kg*

Pesticides	Quantitation Limit (Aq)	Quantitation Limit (Sol)				Dilution Analysis of L0-161065-MO
alpha-BHC	0.05	8.0	NA		R	NA
beta-BHC	0.05	8.0	NA		R	NA
delta-BHC	0.05	8.0	NA		R	NA
gamma-BHC (Lindane)	0.05	8.0	NA		R	NA
Heptachlor	0.05	8.0	NA		R	NA
Aldrin	0.05	8.0	NA		R	NA
Heptachlor Epoxide	0.05	8.0	NA	510	R	NA
Endosulfan I	0.05	8.0	NA		R	NA
Dieldrin	0.10	16	NA		R	NA
4,4'-DDE	0.10	16	NA		R	NA
Endrin	0.10	16	NA		R	NA
Endosulfan II	0.10	16	NA		R	NA
4,4'-DDD	0.10	16	NA		R	NA
Endosulfan Sulfate	0.10	16	NA		R	NA
4,4'-DDT	0.10	16	NA		R	NA
Methoxychlor	0.50	80	NA	1800	R	NA
Endrin Ketone	0.10	16	NA	4800	R	NA
alpha-Chlordane	0.50	80	NA		R	NA
gamma-Chlordane	0.50	80	NA		R	NA
Toxaphene	1.0	160	NA		R	NA

NOTES:

- \- Compound was not detected.
- U This compound should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Compound may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UJ This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- * Reported on an "as received" basis.
- NA This fraction was not analyzed.

EXTRACTABLE ORGANIC ANALYSIS - ANALYTICAL RESULTS - DRY WEIGHT BASIS -page 29

ERM-North Central Sample Number			LO-161065-WO	161065-WO	161065-WO
Laboratory Sample Number			111928-1	111928-1	111928-1
Remarks			Aqueous Layer	Oil Layer	Oil Layer
Units			ug/L	ug/Kg*	ug/Kg*
PCBs	Quantitation Limit (Aq)	Quantitation limit (Sol)			Dilution Analysis of LO-161065-WO
Aroclor-1016	0.5	80	NA		NA
Aroclor 1221	0.5	80	NA		NA
Aroclor-1232	0.5	80	NA		NA
Aroclor-1242	0.5	80	NA	1130	NA
Aroclor-1248	0.5	80	NA	R	NA
Aroclor-1254	1.0	160	NA	R	NA
Aroclor-1260	1.0	160	NA	R	NA
Quantitation Limit Multiplier			NA	15	NA
Date of Sample Collection			NA	5/9/91	NA
Date Sample Received by Laboratory			NA	5/13/91	NA
Date Sample Extracted			NA	5/21/91	NA
Date of Sample Analysis			NA	5/29/91	NA

NOTES:

- Compound was not detected.
U This compound should be considered "not detected" since it was detected in a blank at a similar level.
R Unreliable result - Compound may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
UL This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
* Reported on an "as received" basis.
NA This fraction was not analyzed.

B. INORGANIC DATA

ERM North Central Sample Number		LO-161020-6W	LO-161020-6W	LO-161021-6W	LO-161021-6W	LO-161010-6W	LO-161010 6W	LO-16101M-6W	LO-16101M-6W
Laboratory Sample Number		111897-1	111897-1	111897-2	111897-2	111897 3	111897-3	111897-4	111897-4
Remarks		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit							
Aluminum	P	200	1500 J	R		220 J		19000 J	
Antimony	P	60	UL	UL	UL	UL	UL	UL	UL
Arsenic	M	0.9	8.2	5.6	63	5.1		58	
Barium	P	50	56	93	67			130	
Beryllium	P	5.0	UL	UL	UL	UL	UL	8 J	UL
Cadmium	P	5.0	7 J	R	R		R	R	
Calcium	P	1000	170000	110000 J	150000	110000 J	170000	120000 J	730000 J	87000 J
Chromium	P	10	230	UL	UL	UL	UL	42	UL
Cobalt	P	50		UL		UL	UL	110	UL
Copper	P	25						39	
Iron	P	50	8400 J	1600	46000 J	1200	1200 J	820	94000 J	
Lead	F	2.0	6.9 J		6 J		5.4 J		54 J	
Magnesium	P	1000	84000	55000	71000	56000	59000	61000	420000	44000
Manganese	P	15	240	37 J	300	61	UL	UL	2300	UL
Mercury	CV	0.20								
Nickel	P	40	110 J	46 J	UL	UL	UL	UL	57 J	UL
Potassium	A	500	6300 J	5900 J	5600 J	5600 J	2600 J	2600 J	9000 J	1500 J
Selenium	M	0.9								
Silver	P	10	R		R		R		R	
Sodium	A	500	150000	140000	140000	140000	8400	7900	4600	3800
Thallium	F	5.0	UL	UL	UL	UL	UL	UL	UL	UL
Vanadium	P	50	UL		UL		UL		UL	
Zinc	P	20	UL	UL	UL	UL	UL	UL	270	UL
Cyanide	C	10	UL	NA	UL	NA	UL	NA	UL	NA

NOTES:

- Element was not detected.

L This analyte should be considered "not detected" since it was detected in a blank at a similar level.

R Unreliable result - Analyte may or may not be present in this sample.

J *Quantitation is approximate* due to limitations identified during the quality assurance review (data validation).

UL *This analyte was not detected*, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

NA Not analyzed.

ANALYTICAL METHOD:

P - Inductively Coupled Plasma

F - Graphite Furnace Atomic Absorption

CV - Cold Vapor Atomic Absorption

C - Manual Spectrophotometric

A - Flame Atomic Absorption

M Hydride Generation

INORGANIC ANALYSIS ANALYTICAL RESULTS -page 2-

ERM North Central Sample Number		LO-16101-6W	LO-16101-6W	LO-1MW01D-6W	LO-1MW01D-6W	LO-1MW01S-6W	LO-1MW01S-6W	LO-1MW03S-6W	LO-1MW03S-6W
Laboratory Sample Number		111897-5	111897-5	111897-6	111897-6	111897-7	111897-7	111897-8	111897-8
Remarks		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS	Detection Limit								
Aluminum	P	200	710 J	970 J	420 J	1000 J	51000 J	12000 J	
Antimony	P	60	UL	UL	UL	UL	UL	UL	UL
Arsenic	H	0.9				74	8.3	56	
Barium	P	50				350	79	91	
Beryllium	P	5.0	UL	UL	UL	UL	13 J	UL	UL
Cadmium	P	5.0		R		R		R	
Calcium	P	1000	130000	110000 J	200000	160000 J	1300000	130000 J	380000	93000 J
Chromium	P	10	UL	UL	UL	UL	67	UL	22 J	UL
Cobalt	P	50		UL		UL	180	UL	66	UL
Copper	P	25					120			
Iron	P	50	4000 J	270 J	4300 J	1400	160000 J	2600	43000 J	
Lead	F	2.0	14 J	UL	3.8 J		59 J		54 J	5.5 J
Magnesium	P	1000	68000	54000	100000	87000	710000 J	61000	210000	46000
Manganese	P	15	36 J	UL	UL	UL	3700	80	930	UL
Mercury	CV	0.20								
Nickel	P	40	UL	UL	UL	UL	130	UL	52 J	UL
Potassium	A	500	2400 J	3600 J	4100 J	3600 J	17000 J	5600 J	6900 J	2300 J
Selenium	H	0.9								
Silver	P	10	R		R		R		R	
Sodium	A	500	6600 J	1300000 J	24000	22000	220000	210000	28000	27000
Thallium	F	5.0	UL		UL	UL	UL	UL	UL	UL
Vanadium	P	50	UL		UL		77 J		UL	
Zinc	P	20	33 J	UL	UL	UL	320	UL	110	UL
Cyanide	C	10	UL	NA	UL	NA	UL	NA	UL	NA

NOTES:

- Element was not detected
U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
R Unreliable result - Analyte may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
NA Not analyzed

ANALYTICAL METHOD:

P - Inductively Coupled Plasma
F - Graphite Furnace Atomic Absorption
CV - Cold Vapor Atomic Absorption
C - Manual Spectrophotometric
A - Flame Atomic Absorption
H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS 3

ERM North Central Sample Number			LO-1MW03D-GW	LO-1MW03D-GW	LO-1MW03S-FD	LO-1MW03S-FC	LO-16W1-FB	LO-16W1-FB
Laboratory Sample Number			111897-9	111897-9	111897-10	111897-10	111897-11	111897-11
Remarks			Total	Dissolved	Total	Dissolved	Total	Dissolved
Units			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit			Duplicate of LO-1MW03S-GW	Duplicate of LO-1MW03S-GW	Field Blank	Field Blank
Aluminum	P	200	1300 J		13000 J		R	
Antimony	P	60	UL	UL	UL	UL	UL	UL
Arsenic	H	0.9			54			
Barium	P	50			88			
Beryllium	P	5.0	UL	UL	UL	UL	UL	UL
Cadmium	P	5.0		R		R		R
Calcium	P	1000	230000	180000 J	400000	91000 J		
Chromium	P	10	UL	UL	21 J	UL	UL	UL
Cobalt	P	50		UL	67	UL		UL
Copper	P	25						
Iron	P	50	5400 J	1800	44000 J			
Lead	F	2.0	6.7 J	2.3 J	50 J		UL	
Magnesium	P	1000	120000	98000	220000	46000		
Manganese	P	15	UL	UL	970	UL	UL	UL
Mercury	CV	0.20						
Nickel	P	40	UL	UL	59 J	UL	UL	UL
Potassium	A	500	5400 J	4690 J	7800 J	2300 J	UL	UL
Selenium	H	0.9						
Silver	P	10	R		R		R	
Sodium	A	500	39000	39000	29000	27000		
Thallium	F	5.0	UL	UL	UL		UL	
Vanadium	P	50	UL		UL		UL	
Zinc	P	20	UL	UL	110	UL	UL	
Cyanide	C	10	UL	NA	UL	NA	UL	NA

NOTES:

- Element was not detected.

U This analyte should be considered "not detected" since it was detected in a blank at a similar level.

R Unreliable result - Analyte may or may not be present in this sample.

J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).

UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

NA Not analyzed.

ANALYTICAL METHOD:

P - Inductively Coupled Plasma

F - Graphite Furnace Atomic Absorption

CV - Cold Vapor Atomic Absorption

C - Manual Spectrophotometric

A Flame Atomic Absorption

H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM North Central Sample Number		LO-1MW02S-6W	LO-1MW02S-6W	LO-1MW02D-6W	LO-1MW02D-6W
Laboratory Sample Number		111918-3	111918-3	111908-6	111908-6
Remarks		Total	Dissolved	Total	Dissolved
Units		ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS	Detection limit				
Aluminum	P	200	170000 J	R	1100 J	R
Antimony	P	60	60 J	R		UL
Arsenic	H	0.9	320 J			
Barium	P	50	520	R	53	UL
Beryllium	P	5.0	33	UL		UL
Cadmium	P	5.0	9 J	R		R
Calcium	P	1000	3650000 J	180000 J	240000 J	160000 J
Chromium	P	10	240			
Cobalt	P	50	560	UL	UL	UL
Copper	P	25	430	UL	UL	UL
Iron	P	50	540000 J	99 J	7200 J	1900
Lead	F	2.0	430	UL	2.2	
Magnesium	P	1000	3050000 J	94000	130000 J	84000 J
Manganese	P	15	11000	440	120	UL
Mercury	CV	0.20				UL
Nickel	P	40	400	UL		UL
Potassium	A	500	49000	6500	6000 J	5500 J
Selenium	H	0.9	5.6 J	UL		
Silver	P	10	10 J	R	R	UL
Sodium	A	500	23000	220000	62000	64000
Thallium	F	5.0	15.1 J	UL	UL	UL
Vanadium	P	50	340			
Zinc	P	20	1300		41 U	
Cyanide	C	10	UL	NA	UL	NA

NOTES:

- \- Element was not detected.
- U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

ANALYTICAL ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- C - Manual Spectrophotometric
- A - Flame Atomic Absorption
- H - Hydride Generation

ORGANIC ANALYSIS - ANALYTICAL RESULTS

North Central Sample Number		LO-1MW04S-6W	LO-1MW04S-6W	LO-1MW04D-6W	LO-1MW04D-6W	LO-1MW05S-6W	LO-1MW05S-6W	LO-1MW05D-6W	LO-1MW05D-6W
Laboratory Sample Number		111918-6	111918-6	111908-1	111908-1	111908-7	111908-7	111908-10	111908-10
Remarks		Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Units		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
ORGANIC ELEMENTS	Detection Limit								
Aluminum	P	200	77000 J	450 J	1200 J	R	31000 J	R	5700 J	R
Antimony	P	60	R	R		UL		UL		UL
Arsenic	H	0.9	120 J	31			13 J	22	9.6 J	
Barium	P	50	440	84 J		UL	560	62 J	90	UL
Beryllium	P	5.0	15 J	UL		UL	11 J	UL		UL
Cadmium	P	5.0	8 J	R	6 J	7 J		R		R
Calcium	P	1000	1090000 J	190000 J	230000 J	170000 J	1600000 J	120000 J	570000 J	150000 J
Chromium	P	10	110				53		13	
Cobalt	P	50	160	UL	UL	UL	210 J	UL	60 J	UL
Copper	P	25	98	UL	UL	UL	68 J	UL	UL	UL
Iron	P	50	160000	110 J	5200 J	1900	150000 J	1500	35000 J	1200
Lead	F	2.0	380 J	5.8 J	4.7	4.1	360	3.7	11	
Magnesium	P	1000	720000 J	210000	130000 J	87000 J	850000 J	58000 J	340000 J	78000 J
Manganese	P	15	3400	150	45 J	UL	4500	220	900	UL
Mercury	CV	0.20				UL	0.38	UL		UL
Nickel	P	40	130	UL		UL	140	UL		UL
Potassium	A	500	3100 J	70000 J	5900 J	5800 J	12000 J	4200 J	9200 J	7000 J
Selenium	H	0.9	UL	UL			4.6			
Silver	P	10	22 J	R	R	UL	R	UL	R	UL
Sodium	A	500	870000	890000	100000	110000	140000 J	190000 J	140000	150000
Thallium	F	5.0	UL	UL	UL	UL	UL	UL	UL	UL
Vanadium	P	50	130							
Zinc	P	20	610		54 U		230		57 U	
Cyanide	C	10	96 J	NA	UL	NA	UL	NA	UL	NA

NOTES:

- Element was not detected.
U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
R Unreliable result - Analyte may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
NA Not analyzed.

ANALYTICAL METHOD:

P - Inductively Coupled Plasma
F - Graphite Furnace Atomic Absorption
CV - Cold Vapor Atomic Absorption
C - Manual Spectrophotometric
A - Flame Atomic Absorption
H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS

ERM North Central Sample Number			LO-1MW865-GW	LO-1MW865-GW	LO-1MW860-GW	LO-1MW860-GW	LO-1MW875-GW	LO-1MW875-GW	LO-1MW870-GW	LO-1MW870-GW
Laboratory Sample Number			111918-5	111918-5	111918-1	111918-1	111908-5	111908-5	111908-4	111908-4
Remarks			Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
Units			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit								
Aluminum	P	200	62000 J	R	6000 U	R	3700 J	R	2600 J	R
Antimony	P	60	R	R	R	R	UL			UL
Arsenic	H	0.9	27 J							
Barium	P	50	250	R	67	R	110	81 J		UL
Beryllium	P	5.0	UL	UL	UL	UL		UL		UL
Cadmium	P	5.0	R	R	R	R		R		R
Calcium	P	1000	340000 J	73000 J	220000 J	180000 J	570000 J	220000 J	260000 J	170000 J
Chromium	P	10	81		17 J		12		12	
Cobalt	P	50	54 J	UL	UL	UL	56 J	UL	UL	UL
Copper	P	25	83	UL	UL	UL	UL	UL	UL	UL
Iron	P	50	68000	67 J	7400 U	2400 J	26000 J	9900	9100 J	1100
Lead	F	2.0	50	UL	2.2 U	UL	15	2.5	7.3	5.4
Magnesium	P	1000	180000 J	28000	120000 J	88000	320000 J	120000 J	140000 J	930000 J
Manganese	P	15	1100	R	80 U	R	630	UL	170	UL
Mercury	CV	0.20						UL		UL
Nickel	P	40	57 J	UL	UL	UL		UL		UL
Potassium	A	500	26000	6300	9100	6400	8500 J	7100 J	5200 J	3800 J
Selenium	H	0.9	UL	UL	UL	UL				
Silver	P	10	R	R	R	R	R	UL	R	UL
Sodium	A	500	280000	26000	58000	62000	420000	450000	32000	36000
Thallium	F	5.0	UL	UL	UL	UL	UL	UL	UL	UL
Vanadium	P	50	88							
Zinc	P	20	220 U		30 U		86 U	28 J	44 U	
Cyanide	C	10	UL	NA	UL	NA	UL	NA	UL	NA

NOTES:

- Element was not detected.

U This analyte should be considered "not detected" since it was detected in a blank at a similar level.

R Unreliable result - Analyte may or may not be present in this sample.

J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).

UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

NA Not analyzed.

ANALYTICAL METHOD:

P - Inductively Coupled Plasma

F - Graphite Furnace Atomic Absorption

CV - Cold Vapor Atomic Absorption

C - Manual Spectrophotoametric

A - Flame Atomic Absorption

H - Hydride Generation

ERM North Central Sample Number			LO-161040-GW	LO-161040-GW	LO-161060R-GW	LO-161060R-GW	LO-161065-WC	LO-1MW04S-FD	LO-1MW04S-FD
Laboratory Sample Number			111908-2	111908-2	111908 11	111908-11	111928 1	111918-2	111918-2
Remarks			Total	Dissolved	Total	Dissolved		Total	Dissolved
Units			ug/L	ug/L	ug/L	ug/L	mg/kg	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit						Duplicate of LO-1MW04S-GW	Duplicate of LO-1MW04S-GW
Aluminum	P	200/38	3500 J	R	840 J	R		88000 J	R
Antimony	P	60/12		UL		UL	UL	R	R
Arsenic	H	4.5/0.87	8.8 J	6.7				130 J	34
Barium	P	50/9.6	140	UL	120	110 J		520	100 J
Beryllium	P	5.0/0.96		UL		UL		12 J	UL
Cadmium	P	5.0/0.96		R		R		6 J	9 J
Calcium	P	1000/200	350000 J	130000 J	190000 J	130000 J	180	1190000 J	200000 J
Chromium	P	10/1.9	75					130	
Cobalt	P	50/9.6	55 J	UL	UL	UL		180	UL
Copper	P	25/4.8	UL	UL	UL	UL	UL	110	UL
Iron	P	50/9.6	17000 J	1000	4700 J	700 J	16 J	160000	610 J
Lead	F	2.0/.38	6.3	7.2	5.9	UL	0.66 J	740 J	4.2 J
Magnesium	P	1000/200	190000 J	70000 J	94000 J	58000 J	UL	750000 J	210000
Manganese	P	15/2.9	370	UL	120	UL		3300	170
Mercury	CV	0.20/0.067		UL		UL	UL	0.37 J	
Nickel	P	40/7.7	170	UL		UL		150	UL
Potassium	P	500/96	9800 J	6500 J	14000 J	15000 J		110000 J	63000
Selenium	H	4.5/0.87					UL	UL	UL
Silver	P	10/1.9	R	UL	R	UL	UL	R	R
Sodium	A	500/.96	130000	130000	170000	180000		840000	890000
Thallium	F	5.0/9.6	UL	UL	UL	UL	UL	UL	UL
Vanadium	P	50/9.6						150	
Zinc	P	20/3.8	92 U		39 U		4.2 J	660	42 J
Cyanide	C	10/1.9	UL	NA	12 J	NA		73 J	NA

NOTES:

- \- Element was not detected.
- U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- C - Manual Spectrophotometric
- A - Flame Atomic Absorption
- H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS			-page	
ERM North Central Sample Number		LO-161041-GW	LO-161041-GW	
Laboratory Sample Number		111908-9	111908-9	
Remarks		Total	Dissolved	
Units		ug/l	ug/l	
INORGANIC ELEMENTS		Detection Limit		
Aluminum	P	200	900 J	R
Antimony	P	60		UL
Arsenic	H	4.5		
Barium	P	50	70	55 J
Beryllium	P	5.0		UL
Cadmium	P	5.0	5 J	R
Calcium	P	1000	120000 J	110000 J
Chromium	P	10	38	
Cobalt	P	50	UL	UL
Copper	P	25	UL	UL
Iron	P	50	6800 J	
Lead	F	2.0	5.8	
Magnesium	P	1000	78000 J	78000 J
Manganese	P	15	280 J	510 J
Mercury	CV	0.20		UL
Nickel	P	40		UL
Potassium	P	500	36000	34000
Selenium	H	4.5		
Silver	P	10	R	UL
Sodium	A	500	95000	110000
Thallium	F	5.0	UL	UL
Vanadium	P	50		
Zinc	P	20	92 U	23 J
Cyanide	C	10	UL	NA

NOTES:

- Element was not detected.
- U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result - Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- C - Manual Spectrophotometric
- A - Flame Atomic Absorption
- H - Hydride Generation

INORGANIC ANALYSIS - ANALYTICAL RESULTS

EPA North Central Sample Number			LO-1MW05S-FD	LO-1MW05S-FD	LO-16W2-FB	LO-16W2-FB	LO-16W3-FB	LO-16W3-FB
Laboratory Sample Number			111908-8	111908-8	111908-3	111908-3	111918-4	111918-4
Remarks			Total	Dissolved	Total	Dissolved	Total	Dissolved
Units			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
INORGANIC ELEMENTS		Detection Limit	Duplicate of LO-1MW05S-GW	Duplicate of LO-1MW05S-GW	Field Blank	Field Blank	Field Blank	Field Blank
Aluminum	P	200	29000 J	R	R	R	1200 J	R
Antimony	P	60		UL		UL	R	R
Arsenic	M	4.5	21 J	23				
Barium	P	50	440	62 J		UL		R
Beryllium	P	5.0	15 J	UL		UL	UL	UL
Cadmium	P	5.0	11 J	R		R	R	R
Calcium	P	1000	1300000 J	120000 J	6300 J		38000 J	
Chromium	P	10	44					
Cobalt	P	50	170 J	UL	UL	UL	UL	UL
Copper	P	25	45 J	UL	UL	UL	UL	UL
Iron	P	50	140000 J	1600	150 J		4400	
Lead	F	2.0	300		UL		2.2	UL
Magnesium	P	1000	780000 J	58000 J	3300 J	UL	21000 J	
Manganese	P	15	3800	220	R	UL	73	
Mercury	CV	0.20	0.33	UL		UL		
Nickel	P	40	120	UL		UL	UL	UL
Potassium	P	500	14000 J	4100 J	UL	UL	UL	UL
Selenium	M	4.5					UL	UL
Silver	P	10	R	UL	R	UL	R	R
Sodium	A	500	140000 J	200000 J	2400		790	
Thallium	F	5.0	UL	UL	UL	UL	UL	UL
Vanadium	P	50						
Zinc	P	20	220		22 J		47 J	
Cyanide	C	10	UL	NA	UL	NA	UL	NA

NOTES:

- Element was not detected.
- U This analyte should be considered "not detected" since it was detected in a blank at a similar level.
- R Unreliable result. Analyte may or may not be present in this sample.
- J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
- UL This analyte was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
- NA Not analyzed.

ANALYTICAL METHOD:

- P - Inductively Coupled Plasma
- F - Graphite Furnace Atomic Absorption
- CV - Cold Vapor Atomic Absorption
- C - Manual Spectrophotometric
- A - Flame Atomic Absorption
- M - Hydride Generation

SECTION 3

ORGANIC DATA SUPPORT DOCUMENTATION

PROJECT NAME: Lenz Oil

SUPPORT DOCUMENTATION FOR THE REVIEW OF ORGANIC ANALYSIS LAB DATA PACKAGE

CLP Volatiles (VOA)
CLP Semivolatiles (BNA)
TYPE OF ANALYSIS: CLP Pesticide/PCB (P/PCB)
CONTRACT LABORATORY: ARNL
REVIEWER: MPiccone
REVIEW DATE: June 1991

APPLICABLE SAMPLE NO's.: refer to Table 1

THE FOLLOWING TABLE INDICATES AREAS WHICH WERE EXAMINED IN DETAIL, THE IDENTIFIED PROBLEM AREAS, AND SUPPORT DOCUMENTATION ATTACHMENTS:

	AREAS EXAMINED IN DETAIL (CHECK (✓) IF YES OR FOOTNOTE LETTER FOR COMMENTS BELOW)				PROBLEM AREAS IDENTIFIED (CHECK (✓) IF YES OR FOOTNOTE NUMBER FOR COMMENTS BELOW)				SUPPORT DOCUMENTATION ATTACHMENTS (CHECK (✓) IF YES — OR IDENTIFY ATTACHMENT NO.)			
	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB
HOLDING TIMES	✓											
BLANK ANALYSIS RESULTS, TARGET COMPOUNDS	✓					✓	✓			✓	✓	✓
BLANK ANALYSIS RESULTS, TENTATIVE C.I.	✓					✓	✓			✓	✓	
SURROGATE SPIKE RESULTS	✓					✓	✓		✓			
MATRIX SPIKE RESULTS	✓						✓		✓			
DUPLICATE ANALYSIS RESULTS	✓											
TARGET COMPOUND MATCHING QUALITY	✓											
TENTATIVELY IDENTIFIED COMPOUNDS		✓	✓									
DFTPP & BFB SPECTRUM TUNE RESULTS		✓	✓			✓				✓	✓	
GC INSTRUMENT PERFORMANCE	✓					✓			✓			
INITIAL CALIBRATIONS	✓					✓	✓		✓			
CONTINUING CALIBRATIONS	✓					✓	✓	✓	✓			
QUANTITATION OF RESULTS	✓											
OTHERS: Sample identification	✓				✓				✓			

COMMENTS: Data is acceptable unless otherwise qualified.
Support documentation is arranged by fraction (VOA, BNA, P/PCB)

BLANK ANALYSIS RESULTS FOR [illegible]

FRACTION	TYPE/ MATRIX	SAMPLE #	SOURCE	CONTAMINANT (CONCENTRATION)
VOA	Method / Aq	BLK 5/12/91	ARDL	none
VOA	Method/Aq	BLK5/13/91	ARDL	5 ug/L methylene chloride
VOA	Method/Aq	BLK5/14/91	ARDL	4 ug/L (methylene) chloride
VOA	Field / Aq	LO-1GW1-FB	-	16 ug/L methylene chloride 3 ug/L toluene 11 ug/L total xylene
~~VOA~~	~~Field / Aq~~	~~LO-1GW2-FB~~	~~-~~	~~none~~
~~VOA~~	~~Field / Aq~~	~~LO-1GW3-FB~~	~~-~~	~~none~~
VOA	Trip / Aq	LO-GW1a-TB	-	15 ug/L methylene chloride
BNA	Method / Aq	B1339	ARDL	12 ug/L bis(2-ethylhexyl)phthalate
BNA	Field / Aq	LO-1GW1-FB	-	none
P/PCB	Method/Aq	PBLK1338	ARDL	none
P/PCB	Field/Aq	LO-1GW1-FB	—	none

LABORATORY REPORTED FIELD BLANK IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN THE SAMPLE ANALYTICAL DATA SUMMARY. TICs IN BLANKS ARE LISTED ON A SEPERATE FORM.

COMMENTS:

(1) RESULT REPORTED BY THE LABORATORY AND CONFIRMED BY REVIEWER

(2) RESULT INFERED FROM QUANTITATION LIST, CHROMATOGRAM AND/OR SPECTRUM

Case 11897

BLANK ANALYSIS RESULTS FOR TENTATIVELY IDENTIFIED COMPOUNDS

ALL TENTATIVELY IDENTIFIED COMPOUNDS FOUND IN THE BLANK ANALYSES ARE LISTED BELOW

SAMPLE NUMBER	FRACTION	SCAN	ESTIMATED CONCENTRATION	COMPOUND NAME/ COMMENTS
BLK 5-12-91	VOA			none
BLK 5-13-91	VOA	330	55	unknown RT 14.17
BLK 5-14-91	VOA	335	5	unknown RT 14.28
B1339	BNA	809	5	unknown RT 10.56
↓	↓	1177	33	unknown RT 13.98
		1594	49	unknown alcohol RT 17.87
		1609	4	$C_{14}H_{22}O$ isomer RT 18.01
		1728	17	unknown RT 19.18
		2397	14	unknown RT 25.35
↓	↓	2606	784	unknown RT 27.30
P/PCB				NA
LD-16W-1-FB	VOA			refer to data tables
↓	BNA			refer to data tables
↓	P/PCB			NA
LD-GW6-TB	VOA			refer to data tables

2A

WATER VOLATILE SURROGATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: 111897 SAS No.: ------ SDG No.: ------

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	LO-1G102D-GW	99	99	99		0
02	LO-1G102D-GWMS	98	108	109		0
03	LO-1G102D-GWMSD	101	109	119 *		1
04	LO-1G102L-GW	101	103	106		0
05	LO-1G101D-GW	99	104	104		0
06	LO-1G101M-GW	99	99	110		0
07	LO-1G101L-GW	100	104	112		0
08	LO-1G101L-GWRE	100	104	112		0
09	LO-1MW01D-GW	102	109	111		0
10	LO-1MW01S-GW	109	92	110		0
11	LO-1MW03S-GW	99	102	117 *		1
12	LO-1MW03S-GWRE	102	108	119 *		1
13	LO-1MW03D-GW	98	103	116 *		1
14	LO-1MW03D-GWRE	99	110	122 *		1
15	LO-1MW3S-FD	97	102	120 *		1
16	LO-1MW3S-FDRE	99	108	125 *		1
17	LO-1GW1-FB	98	105	121 *		1
18	LO-1GW1-FBRE	98	109	123 *		1
19	LO-GW6-TB	97	105	125 *		1
20	LO-GW6-TBRE	100	113	123 *		1
21	BLK 5/12/91	98	101	98		0
22	BLK 5/13/91	100	107	99		0
23	BLK 5/14/91	101	102	103		0
26						
27						
28						
29						
30						

	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromofluorobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

ab me: ARDL, INC. Contract: LENZ OIL

o Code: ------ Case No.: 111897 SAS No.: ------ SDG No.: ------

trix Spike - EPA Sample No.: LO-1G102D-GW

OIL

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	2.90	38.00	71	61-145
Trichloroethene	50.00	2.60	46.00	86	71-120
Benzene	50.00	0.00	42.00	84	76-127
Toluene	50.00	0.00	44.00	87	76-125
C robenzene	50.00	0.00	44.00	88	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	39.00	73	3	14	61-145
Trichloroethene	50.00	43.00	81	6	14	71-120
Benzene	50.00	42.00	85	1	11	76-127
Toluene	50.00	43.00	86	1	13	76-125
C robenzene	50.00	43.00	86	2	13	75-130

Column to be used to flag recovery and RPD values with an asterisk
/alues outside of qc limits

D: 0 out of 5 outside limits
ike Recovery: 0 out of 10 outside limits

MMENTS: _____

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, INC. Contract: --------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >BF507 BFB Injection Date: 5/07/91

Instrument ID: HP- 2 BFB Injection Time: 8:51

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	21.7
75	30.0 - 60.0% OF MASS 95	57.3
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.9
173	Less than 2.0% of mass 174	1.1(1.4)1
174	Greater than 50.0% of mass 95	80.1
175	5.0 - 9.0% of mass 174	6.9(8.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	80.8(100.9)1
177	5.0 - 9.0% of mass 176	6.8(8.4)2

1-Value is % mass 174 2-Value is % mass 176

TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V8902	5/07/91	9:29
02	VOA STD	20 NG STD	>V8903	5/07/91	10:36
03	VOA STD	100 NG STD	>V8904	5/07/91	11:25
04	VOA STD	150 NG STD	>V8905	5/07/91	12:14
05	VOA STD	200 NG STD	>V8906	5/07/91	13:03
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: ---------- Instrument ID: HP-2 ----------

ractor: ARDL, Inc. Calibration Date: 05/07/91 ----------

Contract No: ----------

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30%

Laboratory ID:	>V8903	>V8902	>V8904	>V8905	>V8906						
	RF	RF	RF	RF	RF						
Compound	20.00	50.00	100.00	150.00	200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Chloromethane	.75376	.76277	.74529	.72892	.64260	.173	.72667	6.691		**	
Bromomethane	1.47306	1.51090	1.47025	1.54249	1.35957	.287	1.47126	4.700			
Dichlorodifluoromethane	.57358	.82791	.55649	.47330	.43373	.366	.57300	26.837			
Vinyl Chloride	1.11536	1.28673	1.13236	1.18398	1.02111	.380	1.14791	8.486	*		
Chloroethane	.82341	.81414	.81489	.87923	.73449	.490	.81323	6.349			
Iodomethane	3.57864	3.44171	3.29875	3.55141	3.33392	.653	3.44089	3.643			
Methylene Chloride	7.31695	1.29849	3.15737	1.36435	1.47511	.712	2.92245	88.118			
Acetone	.39544	.25226	.24351	.80332	.22875	.806	.38466	63.302			
2-Propenal	.07787	.04907	.03956	.04182	.04212	.797	.05009	31.815			
Carbon Disulfide	3.67566	4.00707	3.70029	3.84358	3.61890	.848	3.76910	4.157			
Acrylonitrile	.19574	.20842	.23127	.25706	.23571	.859	.22564	10.651			
Trichlorofluoromethane	1.55650	1.62302	1.54497	1.57576	1.47035	.895	1.55412	3.571			Conc=40.0,100.0,200.0,50
1,1-Dichloroethene	1.22300	1.30198	1.25559	1.23244	1.17906	.959	1.23842	3.641	*		
1,1-Dichloroethane	2.68224	2.69709	2.84728	2.90900	2.78559	1.069	2.78424	3.479		**	
Tetrahydrofuran	.11560	.11504	.12500	.12318	.11633	1.082	.11903	3.936			
Trans-1,2-Dichloroethene	1.28603	1.31203	1.32585	1.32862	1.30238	1.131	1.31098	1.338			
Chloroform	4.24180	3.84601	3.72196	3.79244	3.59786	1.181	3.84001	6.330	*		
1,2-Dichloroethane-d4	2.33642	2.27236	2.52862	2.80445	2.85858	1.235	2.56008	10.383			(Conc=50.0,50.0,50.0,50.0
1,1,2-Trichlorotrifluoroethane	2.42828	2.60261	2.49327	2.39611	2.34728	1.209	2.45351	4.026			
1,2-Dichloroethane	2.56858	2.57934	2.75106	2.96985	2.82947	1.244	2.73966	6.220			
2-Butanone	.02261	.01668	.01439	.07222	.01889	.669	.02896	94.156			
Dibromomethane	.68651	.69240	.69649	.66398	.64872	.674	.67762	3.020			
Ethyl Ether	.42741	.39145	.27302	.24482	.23580	.628	.31450	28.189			
Propane,2-methoxy-2-methyl-	.98474	.97071	.98561	.97520	.91823	.715	.96690	2.889			
1,1,1-Trichloroethane	.97971	1.00360	1.02041	.97534	.97476	.723	.99076	2.056			
Carbon Tetrachloride	.81697	.88402	.85910	.82768	.84689	.740	.84693	3.120			
Ethyl Acetate	.36623	.34042	.36790	.38376	.35276	.736	.36221	4.530			
Vinyl Acetate	.41399	.56443	.37219	.38430	.33750	.745	.41448	21.278			
Bromodichloromethane	1.08721	1.15133	1.17262	1.17894	1.15027	.766	1.14807	3.163			
1,2-Dichloropropane	.45965	.47468	.48195	.47269	.45491	.826	.46878	2.383	*		

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300182

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-2

Contractor: AROL, Inc. Calibration Date: 05/07/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30%

Laboratory ID:	>V8903	>V8902	>V8904	>V8905	>V8906					
	RF	RF	RF	RF	RF					
Compound	20.00	50.00	100.00	150.00	200.00	RRT	$\overline{RF}$	% RSD	CCC	SPCC
cis-1,3-Dichloropropene	.76608	.81897	.82284	.83781	.81176	.837	.81029	3.658		
Trichloroethene	.63074	.66237	.64982	.59440	.56915	.863	.62140	6.271		
Benzene	.99351	1.05933	1.03352	.99283	.93728	.885	1.00529	4.626		
Dibromochloromethane	.93503	1.03689	1.09675	1.07655	1.01175	.889	1.05139	6.154		
trans-1,3-Dichloropropene	.61415	.66651	.66170	.65954	.62306	.895	.64499	3.787		
1,1,2-Trichloroethane	.48249	.49300	.49730	.48662	.44430	.894	.48074	4.401		
Chloroethylvinylether	.13509	.14337	.15536	.01561	.14244	.944	.11831	48.915		
Bromoform	.64740	.71194	.76935	.80551	.75282	1.010	.73740	8.206	**	
4-Methyl-2-Pentanone	.44011	.38194	.40708	.54080	.39791	.845	.43357	14.620		
Paraldehyde	.13979	.11396	.11801	.00982	.10951	.897	.09818	81.697		
1,2,3-Trichloropropane	.74411	.69577	.70412	.72334	.64846	.903	.70316	5.094		
2-Hexanone	.27226	.18720	.19023	.59722	.22720	.903	.29482	58.516		
Tetrachloroethene	.55861	.57257	.51905	.51505	.50848	.913	.53471	5.379		
trans-1,4-Dichloro-2-butene	.18636	.18668	.19498	.20848	.19132	.924	.19357	4.685		
1,2,2-Tetrachloroethane	.75494	.75517	.77755	.74515	.68491	.912	.73314	3.964	**	
Toluene-d8	1.23702	1.20670	1.18157	1.17318	1.19224	.955	1.19814	2.094		
Ethyl methacrylate	.66868	.64318	.67760	.67054	.62120	.957	.65624	3.585		
Toluene	.77557	.77515	.75329	.73883	.69702	.962	.74797	4.337	*	
Chlorobenzene	1.06074	1.09210	1.09100	1.04403	1.00079	1.004	1.05773	3.577	**	
Ethylbenzene	.50270	.50595	.49029	.48614	.47370	1.005	.48476	3.578	*	
Bromofluorobenzene	1.20555	1.15468	1.15401	1.20331	1.17107	1.164	1.17772	2.150		
Styrene	1.11633	1.13649	1.13676	1.14345	1.10977	1.215	1.12656	1.571		
o-Xylene	.68729	.66665	.66215	.63865	.61263	1.224	.65367	4.393		
m & p-Xylene	.69073	.65222	.63213	.65517	.62397	1.259	.66284	3.822		
1,4-Dichlorobenzene	1.17926	1.24505	1.25253	1.30525	1.14524	1.426	1.22567	5.223		

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300183

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, INC. Contract: --------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >BF512 BFB Injection Date: 5/12/91

Instrument ID: HP- 2 BFB Injection Time: 11:29

Matrix:(soil/water) WATER Level:(low/med) LOW: Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	16.9
75	30.0 - 60.0% OF MASS 95	49.0
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.8
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	87.8
175	5.0 - 9.0% of mass 174	6.0(6.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.9(97.8)1
177	5.0 - 9.0% of mass 176	6.6(7.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V8989	5/12/91	12:05
02	BLK 5/12/91	BL 5/12/91	>V8990	5/12/91	13:40
03	LO-1G102D-GW	111897-1	>V8991	5/12/91	14:36
04	LO-1G102L-GW	111897-2	>V8992	5/12/91	15:20
05	LO-1G101D-GW	111897-3	>V8993	5/12/91	16:03
06	LO-1G101M-GW	111897-4	>V8994	5/12/91	16:46
07	LO-1G101L-GW	111897-5	>V8995	5/12/91	17:30
08	LO-1MW01S-GW	111897-7	>V8997	5/12/91	18:57
09	LO-1MW03S-GW	111897-8	>V8998	5/12/91	19:40
10	LO-1MW03D-GW	111897-9	>V8999	5/12/91	20:23
11	LO-1MW3S-FD	111897-10	>V9000	5/12/91	21:07
12	LO-1GW1-FB	111897-11	>V9001	5/12/91	21:50
13	LO-GW6-TB	111897-12	>V9002	5/12/91	22:33
14	LO-TANK/001	111898-1	>V9003	5/12/91	23:16
15					
16					
17					
18					
19					
20					
21					
22					

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/12/91

Contractor: ARGL, INC. Time: 12:05

Contract No: Laboratory ID: >V8989

Instrument ID: HP-2 Initial Calibration Date: 05/07/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.72667	.60829	16.29		**	
Bromomethane	1.47126	1.23603	15.99			
Dichlorodifluoromethane	.57300	.37544	34.48			
Vinyl Chloride	1.14791	1.02035	11.11	*		
Chloroethane	.81323	.65665	19.25			
Iodomethane	3.44089	3.15999	8.16			
Methylene Chloride	2.92245	1.05001	64.07			
Acetone	.38466	.10745	72.06			
2-Propenal	.05009	.00966	80.71			
Carbon Disulfide	3.76910	3.36207	10.80			
Acrylonitrile	.22564	.17365	23.04			
Trichlorofluoromethane	1.55412	1.27763	17.79			(Conc=100.00)
1,1-Dichloroethene	1.23842	1.13925	8.01	*		
1,1-Dichloroethane	2.78424	2.36370	15.10		**	
Tetrahydrofuran	.11903	.08662	27.23			
-1,2-Dichloroethene	1.31098	1.18788	9.39			
.oform	3.84001	2.97468	22.53	*		
1,2-Dichloroethane-d4	2.56008	1.82879	28.57			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.45351	2.52478	2.90			
1,2-Dichloroethane	2.73966	2.00592	26.78	*		
2-Butanone	.02896	.01147	60.40			
Dibromomethane	.67762	.68045	-.42			
Ethyl Ether	.31450	.19264	38.75			
Propane,2-methoxy-2-methyl-	.96690	.75645	21.77			
1,1,1-Trichloroethane	.99076	.75044	24.26			
Carbon Tetrachloride	.84693	.69386	18.07			
Ethyl Acetate	.36221	.23335	35.56			
Vinyl Acetate	.41448	.42299	-2.05			
Bromodichloromethane	1.14807	.87571	23.72			
1,2-Dichloropropane	.46878	.39549	15.63	*		
cis-1,3-Dichloropropene	.81029	.66312	18.16			(Conc=50.00)
Trichloroethene	.62140	.57866	6.88			

RF - Response factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

BIK 5/12/91
- 10-10 aP - GW
- 2L -
- 1P -
- 1M -
- 1L -
- IMW-01S -
- 3S -
- 3D -
- IMW3S-FP
- 1GW1-FB
- GW4-TB
- Tank 1001

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/12/91

Contractor: AROL, INC. | Time: 12:05

Contract No: | Laboratory ID: >V8989

Instrument ID: HP-2 | Initial Calibration Date: 05/07/91

Minimum $\overline{RF}$ for SPCC is 0.3 | Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Benzene	1.00329	.88133	12.16			
Dibromochloromethane	1.03139	.83216	19.32			
trans-1,3-Dichloropropene	.64499	.48045	25.51		*	(Conc=30.00)
1,1,2-Trichloroethane	.48074	.39486	17.86			
Chloroethylvinylether	.11831	.10827	8.49			(Conc=100.00)
Bromoform	.73740	.65876	10.67		**	
4-Methyl-2-Pentanone	.43357	.26037	39.95			
Par[illegible]hyde	.09818	.06685	31.91			
1,2,3-Trichloropropane	.70316	.53801	23.49			
2-Hexanone	.29482	.10821	63.30			
Tetrachloroethene	.53471	.67236	25.74			
trans-1,4-Dichloro-2-butene	.19357	.14473	25.23			
1,1,2,2-Tetrachloroethane	.75314	.60135	17.98		**	
Toluene-d8	1.19814	1.17650	1.81			(Conc=50.00)
Ethyl methacrylate	.65624	.48499	26.10			
To[illegible]	.74797	.70825	5.31	*		
Chlorobenzene	1.05773	1.08941	3.00		**	
Ethylbenzene	.48476	.47375	2.27	*		
Bromofluorobenzene	1.17772	1.06598	9.49			(Conc=50.00)
Styrene	1.12672	1.03651	8.01			
m-Xylene	.65367	.62703	4.07			
o & p-Xylene	.66784	.65465	1.98			(Conc=100.00)
1,4-Dichlorobenzene	1.22507	-	-			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300210

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, INC. Contract: --------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >BF513 BFB Injection Date: 5/13/91

Instrument ID: HP- 2 BFB Injection Time: 12:57

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	19.6
75	30.0 - 60.0% OF MASS 95	53.2
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.9
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	97.7
175	5.0 - 9.0% of mass 174	6.6(6.8)1
176	Greater than 95.0%, but less than 101.0% of mass 174	94.3(96.5)1
177	5.0 - 9.0% of mass 176	6.4(6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V9007	5/13/91	13:44
02	BLK 5/13/91	BLK 5/13/91	>V9008	5/13/91	15:05
03	012WAMS	913-2MS	>V9009	5/13/91	16:31
04	012WAMSD	913-2MSD	>V9010	5/13/91	17:14
05	013WA	913-3	>V9011	5/13/91	17:57
06	014WA	913-4	>V9012	5/13/91	18:40
07	LO-1MW01D-GW	111897-6	>V9013	5/13/91	19:23
08	LO-1MW03S-GWRE	111897-8RE	>V9015	5/13/91	20:50
09	LO-1MW03D-GWRE	111897-9RE	>V9016	5/13/91	21:34
10	LO-1MW3S-FDRE	111897-10RE	>V9017	5/13/91	22:17
11	LO-1GW1-FBRE	111897-11RE	>V9018	5/13/91	23:00
12	LO-GW6-TBRE	111897-12RE	>V9019	5/13/91	23:43
13	LO-TANK/001RE	111898-1RE	>V9020	5/14/91	00:26
14					
15					
16					
17					
18					
19					
20					
21					
22					

300007

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/13/91

Sector: ARCL, INC. Time: 13:44

Contract No: Laboratory ID: >U9007

Instrument ID: HP-2 Initial Calibration Date: 05/07/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.72667	.48933	32.66		**	
Bromomethane	1.47126	1.32126	10.19			
Dichlorodifluoromethane	.57300	.39595	30.90			
Vinyl Chloride	1.14791	.92817	19.14	*		
Chloroethane	.81323	.63753	21.60			
Iodomethane	3.44089	3.60413	4.74			
Methylene Chloride	2.72245	1.18191	56.59			
Acetone	.38466	.47112	22.48			OK
2-Propenal	.05009	.01690	66.27			
Carbon Disulfide	3.76910	3.13452	16.84			
Acrylonitrile	.22564	.14647	35.09			
Trichlorofluoromethane	1.55412	1.51159	2.74			(Conc=100.00)
1,1-Dichloroethene	1.23842	1.07318	13.34	*		
1,1-Dichloroethane	2.78424	2.28798	17.82		**	
Tetrahydrofuran	.11903	.08182	31.26			
trans-1,2-Dichloroethene	1.31098	1.14387	12.75			
Chloroform	3.84001	3.16073	17.69	*		
1,2-Dichloroethane-d4	2.56008	2.07670	18.89			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.45351	2.74649	11.94			
1,2-Dichloroethane	2.73966	2.32517	15.13			
2-Butanone	.02896	.03282	13.49			
Dibromomethane	.67762	.5950	12.32			
Methyl t-Butyl Ether	.31450	.18202	42.12			
Propane,2-methoxy-2-methyl-	.96690	.82268	14.92			
1,1,1-Trichloroethane	.99076	.90141	9.02			
Carbon Tetrachloride	.84693	.85738	1.23			
Ethyl Acetate	.36221	.20954	42.15			
Vinyl Acetate	.41448	.42516	2.58			
Bromodichloromethane	1.14807	.78420	14.27			
1,2-Dichloropropane	.46878	.36405	22.34	*		
cis-1,3-Dichloropropene	.31029	.06572	17.84			(Conc=70.00)
Trichloroethene	.62140	.58425	5.98			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

BLK 5/13/91
012WAMS
-MSD

013WA
014WA
LD - 1MW01D-GW
- 1MW03S-GWRE
- 30-GWRE
- 1MW35-FDRE
- 16W1-FBRE
- GW4-TBRE
LD - Tank/001RE

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/13/91

Contractor: ARDL, INC. | Time: 13:44

Contract No: | Laboratory ID: >V9007

Instrument ID: HP-2 | Initial Calibration Date: 05/07/91

Minimum $\overline{RF}$ for SPCC is 0.3 | Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Benzene	1.00329	.83367	16.91			
Dibromochloromethane	1.03139	.96433	6.50			
trans-1,3-Dichloropropene	.64499	.52903	17.98			(Conc=30.00)
1,1,2-Trichloroethane	.48074	.39715	17.39			
Chloroethylvinylether	.11831	.10176	13.99			(Conc=100.00)
Bromoform	.73740	.74417	.92		**	
4-Methyl-2-Pentanone	.43357	.30648	29.31			
Paraldehyde	.09818	.07474	23.88			
1,2,3-Trichloropropane	.70316	.53519	23.89			
2-Hexanone	.29482	.28868	2.08			
Tetrachloroethene	.53471	.66527	24.42			
trans-1,4-Dichloro-2-butene	.19357	.13404	30.75			
1,1,2,2-Tetrachloroethane	.73314	.59759	18.49		**	
Toluene-d8	1.19814	1.15394	3.69			(Conc=50.00)
[illegible] methacrylate	.65624	.45786	30.23			
Toluene	.74797	.65619	12.27	*		
Chlorobenzene	1.05773	1.06500	[illegible].69		**	
Ethylbenzene	.48476	.45015	7.14	*		
Bromofluorobenzene	1.17772	1.04705	11.09			(Conc=50.00)
Styrene	1.12672	.99683	11.53			
n-Xylene	.65367	.59728	8.63			
o & p-Xylene	.66784	.62245	6.80			(Conc=100.00)
1,4-Dichlorobenzene	1.22507	-	-			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300217

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

ne: ARDL, INC. Contract: --------

Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

File ID: >BF514 BFB Injection Date: 5/14/91

strument ID: HP- 2 BFB Injection Time: 10:20

rix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	21.7
75	30.0 - 60.0% OF MASS 95	54.2
95	Base peak, 100% relative abundance	100.
[illegible]	5.0 - 9.0% of mass 95	8.5
17[illegible]	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	94.7
175	5.0 - 9.0% of mass 174	7.3(7.7)1
176	Greater than 95.0%, but less than 101.0% of mass 174	95.6(101.0)1
177	5.0 - 9.0% of mass 176	6.7(7.1)2

1-Value is % mass 174 2-Value is % mass 176

I. UNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V9040	5/14/91	10:58
02	BLK 5/14/91	BLK 5/14/91	>V9041	5/14/91	11:41
03	LO-TANK/002	111898-2	>V9042	5/14/91	12:24
04	LO-1G102D-GWMS	111897-1MS	>V9043	5/14/91	13:57
05	LO-1G102D-GWMSD	111897-1MSD	>V9044	5/14/91	14:40
06	PMW-1MS	111917-1MS	>V9051	5/14/91	19:43
07	PMW-1MSD	111917-1MSD	>V9052	5/14/91	20:26
08	PMW-1	111917-1	>V9053	5/14/91	21:09
09	PMW-FB	111917-2	>V9054	5/14/91	21:53
10	PMW-TB	111917-3	>V9055	5/14/91	22:36
11					
12					
13					[illegible] part
14					12 hr tune
15					
16					
17					
18					
19					
20					
21					
22					

300008

FORM V VOA 1/87 Rev.

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/14/91

ctor: ARCL, INC. | Time: 10:58

Contract No: | Laboratory ID: >V9040

Instrument ID: HP-2 | Initial Calibration Date: 05/07/91

Minimum $\overline{RF}$ for SPCC is 0.3 | Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.72667	.49992	31.20		**	
Bromomethane	1.47126	1.33538	9.24			
Dichlorodifluoromethane	.57300	.37401	34.73			
Vinyl Chloride	1.14791	.96275	16.13	*		
Chloroethane	.81323	.67156	17.42			
Iodomethane	3.44089	3.65174	6.13			
Methylene Chloride	2.92245	1.16876	60.02			
Acetone	.38466	.20420	46.91			
2-Propenal	.05009	.03639	27.35			
Carbon Disulfide	3.76910	3.04203	19.29			
Acrylonitrile	.22564	.14816	34.34			
Trichlorofluoromethane	1.55412	1.61894	4.17			(Conc=100.00)
1,1-Dichloroethene	1.23842	1.13322	8.49	*		
1,1-Dichloroethane	2.78424	2.34193	15.89		**	
yorofuran	.11903	.08753	26.46			
ans-1,2-Dichloroethene	1.31098	1.18761	9.41			
Chloroform	3.84001	3.26253	15.04	*		
1,2-Dichloroethane-d4	2.56008	2.14913	16.05			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.45351	2.91614	18.86			
1,2-Dichloroethane	2.73966	2.40619	12.17			
2-Butanone	.02896	.01306	54.90			
Dibromomethane	.67762	.79061	16.67			
Ethyl Ether	.31450	.18326	41.73			
ropane,2-methoxy-2-methyl-	.96690	.87429	9.59			
,1,1-Trichloroethane	.99076	.95356	3.76			
Carbon Tetrachloride	.84693	.91010	7.46			
Ethyl Acetate	.36221	.23645	34.72			
Vinyl Acetate	.41448	.43365	4.62			
Bromodichloromethane	1.14807	1.02319	10.88			
1,2-Dichloropropane	.46878	.37070	20.92	*		
cis-1,3-Dichloropropene	.81029	.69226	14.57			(Conc=70.00)
Trichloroethene	.62140	.59863	3.66			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

BLK 5/14
LO-Tank/002
LO-1G102D-GWMS
-MSD
PMW-1MS
1MSD
PMW-1
-FB
-TB

300223

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/14/91

Contractor: AROL, INC. Time: 10:58

Contract No: Laboratory ID: >V9040

Instrument ID: HP-2 Initial Calibration Date: 05/07/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Benzene	1.00329	.84493	15.78			
Dibromochloromethane	1.03139	1.00725	2.34			
trans-1,3-Dichloropropene	.64499	.54408	15.65			(Conc=30.00)
1,1,2-Trichloroethane	.48074	.40618	15.51			
Chloroethylvinylether	.11851	.10818	8.57			(Conc=100.00)
Bromoform	.73740	.79993	8.48		**	
4-Methyl-2-Pentanone	.43357	.27656	36.21			
Paraldehyde	.09818	.06964	29.06			
1,2,3-Trichloropropane	.70316	.55683	20.81			
2-Hexanone	.29482	.12279	58.35			
Tetrachloroethene	.53471	.70517	31.88			
trans-1,4-Dichloro-2-butene	.19357	.14377	25.73			
1,1,2,2-Tetrachloroethane	.73314	.63634	13.20		**	
Toluene-d8	1.19814	1.15276	3.79			(Conc=50.00)
Ethylmethacrylate	.65624	.51130	22.11			
Toluene	.74797	.67556	9.68	*		
Chlorobenzene	1.05773	1.08524	2.60		**	
Ethylbenzene	.48476	.45619	5.89	*		
Bromofluorobenzene	1.17772	1.06386	9.67			(Conc=50.00)
Styrene	1.12672	1.00807	10.53			
o-Xylene	.65367	.60854	6.90			
m & p-Xylene	.66784	.62506	6.41			(Conc=100.00)
1,4-Dichlorobenzene	1.22507	-	-			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300224

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: --------

Lab Code: ----- Case No.: ------ SAS No.: ----- SDG No.: -----

Lab File ID (Standard): >V8989 Date Analyzed: 5/12/91

Instrument ID: HP-2 Time Analyzed: 12:05

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

		IS1(BCM) AREA #	IS1(BCM) RT	IS2(DFB) AREA #	IS2(DFB) RT	IS3(CBZ) AREA #	IS3(CBZ) RT
	12 HOUR STD	153618	11.84	498469	22.07	426075	26.92
	UPPER LIMIT	307236	12.34	996938	22.57	852150	27.42
	LOWER LIMIT	76809	11.34	249234	21.57	213038	26.42
	EPA SAMPLE NO.						
01	BLK 5/12/91	137286	11.68	466070	21.95	404698	26.83
02	LO-TANK/001	89252	11.80	278655	22.02	243635	25.91
	LO-1G102D-GW	136352	11.77	433863	22.00	369707	26.88
04	LO-1G102L-GW	116238	11.79	365276	22.02	319483	26.90
05	LO-1G101D-GW	124907	11.83	384646	22.02	335860	25.90
06	LO-1G101M-GW	107602	11.82	337910	22.05	292783	26.89
07	LO-1G101L-GW	111784	11.82	350908	22.04	309652	26.88
08	LO-1MW01S-GW	103775	11.82	296107	22.04	222744	26.89
09	LO-1MW03S-GW	107817	11.82	336470	22.00	292132	26.88
10	LO-1MW03D-GW	96755	11.81	300346	22.00	262528	26.88
11	LO-1MW3S-FD	89800	11.83	280028	22.02	244961	26.90
12	LO-1GW1-FB	90416	11.83	271771	22.02	246433	26.90
13	LO-GW6-TB	85570	11.84	270320	22.02	244986	26.90
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

300009

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: ---------

Lab Code: ----- Case No.: ------ SAS No.: ----- SDG No.: -----

Lab File ID (Standard): >V9040 Date Analyzed: 5/14/91

Instrument ID: HP-2 Time Analyzed: 10:58

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

	IS1(BCM) AREA #	IS1(BCM) RT	IS2(DFB) AREA #	IS2(DFB) RT	IS3(CBZ) AREA #	IS3(CBZ) RT
12 HOUR STD	112427	11.86	351994	22.05	306108	26.89
UPPER LIMIT	224854	12.36	703988	22.55	612216	27.39
LOWER LIMIT	56214	11.36	175997	21.55	153054	26.39
EPA SAMPLE NO.						
01 BLK 5/14/91	105844	11.84	334246	22.03	292663	26.91
02 LO-TANK/002	91554	11.85	283481	22.03	250250	26.87
LO-1G102D-GWMS	73206	11.67	229685	21.97	210103	26.85
04 LO-1G102D-GWMSD	76333	11.80	244331	22.02	216892	26.90
05						
06						
07						
08						
09						
10						
12						
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14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

* Column used to flag internal standard area values with an asterisk

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: --------

Lab Code: ----- Case No.: ------ SAS No.: ----- SDG No.: -----

Lab File ID (Standard): >V9007 Date Analyzed: 5/13/91

Instrument ID: HP-2 Time Analyzed: 13:44

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) PACK

		IS1(BCM)		IS2(DFB)		IS3(CBZ)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	124469	11.87	386338	22.06	339551	26.91
	UPPER LIMIT	248938	12.37	772676	22.56	679102	27.41
	LOWER LIMIT	62234	11.37	193169	21.56	169776	26.41
	EPA SAMPLE NO.						
01	BLK 5/13/91	106208	11.69	345856	21.99	303267	26.87
02	LO-TANK/001RE	66161	11.81	205917	22.03	180520	26.91
	LO-1MW01D-GW	85359	11.82	261387	22.05	231366	26.89
04	LO-1MW03S-GWRE	59721 *	11.81	178640 *	22.03	157149 *	26.87
05	LO-1MW03D-GWRE	75520	11.81	239076	22.03	214013	26.91
06	LO-1MW3S-FDRE	62232 *	11.81	194552	22.03	177090	26.91
07	LO-1GW1-FBRE	67373	11.84	205397	22.06	185066	26.90
08	LO-GW6-TBRE	66899	11.84	207621	22.02	183741	26.90
09							
10							
11							
12							
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15							
16							
17							
18							
19							
20							
21							
22							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

* Column used to flag internal standard area values with an asterisk

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G102D-GWMS

ab me: ARDL, INC. Contract: LENZ OIL

b Code: ------ Case No.: 111897 SAS No.: ------ SDG No.: ------

trix: (soil/water) WATER Lab Sample ID: 111897-1MS

ample wt/vol: 5.0 (g/mL) mL Lab File ID: >V9043

vel: (low/med) LOW Date Received: 5/07/91

Moisture: not dec. --- Date Analyzed: 5/14/91

lumn: (pack/cap) PACK Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	8.	J
75-00-3	Chloroethane	4.	J
75-09-2	Methylene_Chloride	4.	JB
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	38.	
75-34-3	1,1-Dichloroethane	64.	
540-59-0	1,2-Dichloroethene_(total)	12.	
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	73.	
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	46.	
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	42.	
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	44.	
108-90-7	Chlorobenzene	44.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
108-38-3	m-Xylene	5.	U
106-42-3	o & p-Xylene	5.	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G102D-GWMSD

ame: ARDL, INC. Contract: LENZ OIL

b Code: ------ Case No.: 111897 SAS No.: ------ SDG No.: ------

trix: (soil/water) WATER Lab Sample ID: 111897-1MSD

ample wt/vol: 5.0 (g/mL) mL Lab File ID: >V9044

vel: (low/med) LOW Date Received: 5/07/91

Moisture: not dec. --- Date Analyzed: 5/14/91

lumn: (pack/cap) PACK Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	
75-00-3	Chloroethane	4.	J
75-09-2	Methylene_Chloride	3.	JB
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	39.	
75-34-3	1,1-Dichloroethane	68.	
540-59-0	1,2-Dichloroethene_(total)	14.	
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	76.	
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	43.	
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	42.	
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	43.	
108-90-7	Chlorobenzene	43.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
108-38-3	m-Xylene	5.	U
106-42-3	o & p-Xylene	5.	U

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: 111897 SAS No.: ------ SDG No.: ------

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	LO-1G102D-GW	85	65	93	33	39	74		0
02	LO-1G102L-GW	72	73	64	35	43	77		0
03	LO-1G101D-GW	68	69	59	38	48	75		0
04	LO-1G101M-GW	59	55	58	35	45	82		0
05	LO-1G101L-GW	31 *	32 *	43	36	52	71		2
06	LO-1G101L-GWRE	32 *	32 *	46	37	53	70		2
07	LO-1MW01D-GW	71	66	73	25	34	61		0
08	LO-1MW01S-GW	71	66	80	32	44	75		0
09	LO-1MW03S-GW	66	62	66	28	43	64		0
10	LO-1MW03D-GW	68	61	64	28	41	65		0
11	LO-1MW3S-FD	56	51	62	22	33	54		0
12	LO-1GW1-FB	51	48	52	32	48	61		0
13	LO-1G102D-GWMS	63	56	71	28	41	64		0
14	LO-1G102D-GWMSD	72	63	78	27	39	66		0
15	BLANK B1339	77	76	66	36	41	76		0
16									
17									
18									
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23									
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28									
29									
30									

	QC LIMITS
S1 (NBZ) = D5 Nitrobenzene	(35-114)
S2 (FBP) = 2-Fluorobiphenyl	(43-116)
S3 (TPH) = D14 Terphenyl	(33-141)
S4 (PHL) = D5 Phenol	(10- 94)
S5 (2FP) = 2-Fluorophenol	(21-100)
S6 (TBP) = 2,4,6-Tribromophenol	((10-123)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

e Name: ARDL, INC. Contract: LENZ OIL

ab Code: ------ Case No.: 111897 SAS No.: ------ SDG No.: ------

atrix Spike - EPA Sample No.: LO-1G102D-GW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200.00	0.00	48.00	24	12- 89
2-Chlorophenol	200.00	0.00	87.00	43	27-123
1,4-Dichlorobenzene	100.00	0.00	44.00	44	36- 97
N-Nitroso-di-n-prop.(1)	100.00	0.00	63.00	63	41-116
1,2,4-Trichlorobenzene	100.00	0.00	41.00	41	39- 98
4-Chloro-3-methylphenol	200.00	0.00	ok 100.00	50	23- 97
Acenaphthene	100.00	0.00	65.00	65	46-118
4-Nitrophenol	200.00	0.00	42.00	21	10- 80
2,4-Dinitrotoluene	100.00	0.00	61.00	61	24- 96
Pentachlorophenol	200.00	0.00	100.00	50	9-103
Pyrene	100.00	0.00	70.00	70	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200.00	45.00	23	4	42	12- 89
2-Chlorophenol	200.00	83.00	42	2	40	27-123
1,4-Dichlorobenzene	100.00	47.00	47	7	28	36- 97
N-Nitroso-di-n-prop.(1)	100.00	65.00	65	3	38	41-116
1,2,4-Trichlorobenzene	100.00	46.00	46	11	28	39- 98
4-Chloro-3-methylphenol	200.00	97.00	48	4	42	23- 97
Acenaphthene	100.00	71.00	71	9	31	46-118
4-Nitrophenol	200.00	36.00	18	15	50	10- 80
2,4-Dinitrotoluene	100.00	65.00	65	6	38	24- 96
Pentachlorophenol	200.00	95.00	47	6	50	9-103
Pyrene	100.00	78.00	78	11	31	26-127

1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
Values outside of qc limits

PD: 0 out of 11 outside limits
pike Recovery: 0 out of 22 outside limits

OMMENTS: _____

200009

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

e: ARDL, INC. Contract: ----

Code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

File ID: >SV521 DFTPP Injection Date: 5/21/91

:trument ID: HP- 1 DFTPP Injection Time: 14:28

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	49.1
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	59.
70	Less than 2.0% of mass 69	.3(.5)1
27	40.0 - 60.0% of mass 198	42.1
197	Less than 1.0% of mass 198	0.0
98	Base Peak, 100% relative abundance	100.
9	5.0 - 9.0% of mass 198	6.3
175	10.0 - 30.0% of mass 198	18.3
365	Greater than 1.00% of mass 198	1.81
441	Present, but less than mass 443	11.4
442	Greater than 40.0% of mass 198	82.7
443	17.0 - 23.0% of mass 442	15.2(18.4)2

1-Value is % mass 69 2-Value is % mass 442

TS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	50 NG STD	>D5347	5/21/91	14:55
02	BNA STD	20 NG STD	>D5348	5/21/91	16:01
03	BNA STD	80 NG STD	>D5349	5/21/91	16:54
04	BNA STD	120 NG STD	>D5350	5/21/91	17:45
05	BNA STD	160 NG STD	>D5351	5/21/91	18:36
06					
07					
08					
09					
10					
11					
12					
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15					
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: ---------- Instrument ID: HP-1 ----------

Contractor: [illegible] Calibration Date: 05/22/91 ----------

Contract No: ----------

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>05348	>05347	>05349	>05350	>05351						
	RF	RF	RF	RF	RF						
Compound	20.00	50.00	80.00	120.00	160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Pyridine	1.65346	1.85687	1.64990	1.39095	1.39947	[illegible]	1.63013	14.126			
N-Nitrosodimethylamine	1.16303	1.26261	1.20763	1.10694	1.07939	.443	1.16392	6.378			
2-Picoline	1.87895	1.83641	1.80027	1.58703	1.47434	.601	1.71540	10.230			
2-Fluorophenol (Surr 1)	1.12453	1.22926	1.12033	1.12435	1.12850	.746	1.14540	4.101			(Conc=100.0,100.0,100.0,1
Aniline	2.51660	2.47338	2.37314	2.25268	2.11397	.942	2.34595	7.024			
2,5-Phenol (Surr 2)	1.52148	1.68471	1.49297	1.49724	1.40255	.951	1.51979	6.756			(Conc=100.0,100.0,100.0,1
Phenol	2.17971	2.24724	1.85313	1.64245	1.49128	.954	1.88276	17.473	*		
Bis(2-Chloroethyl)Ether	2.18219	2.15819	1.89456	1.60632	1.50641	.960	1.86554	16.339			
2-Chlorophenol	1.99267	1.83230	1.60915	1.44317	1.32180	.965	1.63982	16.765			
1,3-Dichlorobenzene	1.93436	1.93586	1.53057	1.31569	1.22993	.992	1.58888	20.998			
1,4-Dichlorobenzene	1.94844	1.83829	1.50833	1.24912	1.15853	1.004	1.54054	22.648	*		
Benzyl Alcohol	.91442	.83049	.80413	.78516	.72569	1.045	.81198	8.502			
1,2-Dichlorobenzene	1.83203	1.60381	1.27244	1.09433	1.02701	1.044	1.36592	25.128			
2-Methylphenol	1.57444	1.45105	1.13793	.96918	.87036	1.078	1.20059	25.299			
Bis(2-Chloroisopropyl)Ether	2.79852	2.80320	2.69568	2.25410	2.05335	1.077	2.52097	13.700			
4-Methylphenol	1.42494	1.12503	.83548	.81216	.76266	1.111	.99205	28.268			
N-Nitroso-Di-n-Propylamine	1.53169	1.41347	1.26792	1.23667	1.12853	1.112	1.31566	12.004		**	
Hexachloroethane	.75930	.64194	.43226	.41502	.39094	1.111	.52789	31.011			
2,5-Nitrobenzene (Surr 3)	.46155	.47969	.48319	.46268	.46327	.880	.47008	2.226			(Conc=50.0,50.0,50.0,50.0
Nitrobenzene	.60091	.58285	.53120	.46464	.45791	.884	.52750	12.453			
Isophorone	1.19646	1.17283	1.13414	.97711	.95205	.928	1.08652	10.480			
2-Nitrophenol	.28592	.27410	.25563	.22865	.22788	.939	.25444	10.304	*		
2,4-Dimethylphenol	.52892	.50709	.45036	.40445	.39383	.956	.45693	13.167			
Bis(2-Chloroethoxy)Methane	.77995	.77333	.70395	.60589	.60098	.970	.69282	12.539			
Benzoic Acid	.16171	.20920	.21860	.21057	.19761	.993	.19954	11.243			
2,4-Dichlorophenol	.42766	.39395	.35197	.31490	.28198	.983	.35409	16.553	*		
1,2,4-Trichlorobenzene	.46452	.44156	.38072	.31955	.31644	.994	.38456	17.696			
Naphthalene	1.27197	1.15156	1.02206	.82055	.85231	1.004	1.02369	18.830			
4-Chloroaniline	.55704	.52764	.48685	.42872	.41772	1.020	.48359	12.534			
Hexachlorobutadiene	.24471	.22806	.19146	.16315	.16949	1.039	.19937	17.991	*		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

% RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400243

Initial Calibration Data

ABN Compounds

Lab File ID: BF5...

Instrument ID: HP5...

Start Cal Date: 05/12/91

Calibration Date: 05/12/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >05348 RF 20.00	>05347 RF 50.00	>05349 RF 80.00	>05350 RF 120.00	>05351 RF 160.00	$\overline{RT}$	$\overline{RF}$	% RSD	CCC	SPCC
4-Chloro-3-Methylphenol	.44183	.49336	.37219	.31405	.30094	1.111	.38047	16.207	*	
2-Methylnaphthalene	.74235	.66573	.59935	.51413	.49246	1.125	.60277	17.298		
1,2,3,4-Tetrachlorobenzene	.42461	.39303	.35667	.33834	.31244	.360	.36542	12.101		
Hexachlorocyclopentadiene	.39330	.49109	.46175	.47457	.46110	.870	.45670	8.177		**
2,4,6-Trichlorophenol	.56737	.53935	.49894	.50800	.46753	.906	.51068	7.333	*	
2,4,5-Trichlorophenol	.54769	.55821	.50213	.49551	.45946	.906	.51130	8.160		
2-Fluorobiphenyl (Surr 4	1.47990	1.33344	1.26307	1.17674	1.13392	.812	1.26342	7.855		(Surr=70.00-130.00%)
2-Chloronaphthalene	1.35499	1.21256	1.14362	1.03922	1.02737	.825	1.15751	10.105		
1,2,4,5-Tetrachlorobenzene	.77071	.68116	.63419	.52345	.49435	.925	.61997	18.743		
Toluenediamine	.67299	.59812	.57629	.55768	.51520	.925	.60406	24.559		
2-Nitroaniline	.48270	.47601	.50754	.49607	.46736	.943	.48593	3.291		
1,3-Dinitrobenzene	.31173	.29216	.26472	.24902	.21699	.974	.26693	13.847		
Dimethyl Phthalate	1.63724	1.69161	1.54237	1.37164	1.26952	.976	1.54245	14.958		
2,6-Dinitrotoluene	.39946	.38655	.37593	.34414	.31704	.982	.36463	9.205		
Acenaphthylene	2.07793	2.12090	1.97670	1.75884	1.64192	1.097	1.91527	10.818		
3-Methylene	2.44430	2.26130	2.07933	1.92596	1.77247	.979	2.09667	12.675		
3-Nitroaniline	.59395	.55127	.54954	.52175	.47813	.999	.53493	7.881		
Acenaphthene	1.42865	1.30509	1.21753	1.14928	1.06309	1.005	1.23273	11.443	*	
2,4-Dinitrophenol	.09667	.12177	.14828	.15552	.14325	1.012	.13510	17.985		**
4-Nitrophenol	.10935	.10129	.09581	.08734	.08031	1.027	.09482	12.029		**
Dibenzofuran	1.88799	1.67468	1.59553	1.48074	1.39574	1.027	1.60773	11.808		
2,6-Dinitrotoluene	.42598	.40456	.41458	.37345	.35470	1.034	.39466	7.519		
Diethylphthalate	1.60812	1.43367	1.22857	1.02993	.95274	1.072	1.25008	21.093		
4-Chlorophenyl-phenylether	.77669	.72591	.69152	.60410	.55360	1.076	.68718	13.513		
4,6-Dinitro-2-Methylphenol	.16705	.14133	.14715	.13156	.12036	1.080	.14149	12.397		
Fluorene	1.82975	1.71942	1.64575	1.55335	1.39084	1.075	1.00782	21.676		
4-Nitroaniline	.27628	.25326	.26819	.25664	.23604	1.087	.25808	5.948		
2,4,6-Tribromophenol (Surr 5	.20012	.19242	.18877	.20036	.17960	1.103	.19226	4.502		(Surr=10.00-130.00%)
4,6-Dinitro-2-Methylphenol	.14377	.13651	.14809	.15072	.14410	.909	.13856	10.874		
N-Nitrosodiphenylamine	.79970	.80004	.74247	.64343	.64391	.913	.72584	10.852	*	

RF - Response Factor Subscript is amount in ug/L)

$\overline{RT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

Calibration Check Compounds *) SPCC - System Performance Check Compounds **)

400244

Initial Calibration Data
BNA Compounds

Case No: Instrument ID: HP-1

Lab Name: RMAL, INC. Calibration Date: 05/22/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	05348	05347	05349	05350	05351					
	RF	RF	RF	RF	RF					
Compound	20.00	50.00	80.00	100.00	160.00	$\overline{RRT}$	$\overline{Rt}$	% RSD	CCC	SPCC
4-Bromophenyl-phenylether	.33330	.35775	.32581	.30256	.28699	.952	52084	8.555		
Hexachlorobenzene	.42252	.41301	.37273	.33460	.35089	.967	.37473	11.395		
Pentachlorophenol	.16575	.18605	.18033	.16401	.16439	988	17211	6.007		*
Phenanthrene	1.32694	1.29764	1.16694	1.02072	1.03907	1.003	1.17018	12.105		
Anthracene	1.37443	1.33249	1.21483	1.09781	1.09917	1.008	1.22295	10.583		
Carbazole	1.13082	99042	.88079	82580	.79467	1.027	92448	14.856		
Di-N-Butylphthalate	1.70063	1.75746	1.58706	1.39733	1.40069	1.079	1.56863	10.619		
Fluoranthene	.98918	.94116	.87902	.82132	.80994	1.137	.88813	8.664		*
Pyrene	2.79135	3.05515	2.86106	2.68776	3.07350	894	2.89376	5.791		
1,4 Terphenyl (Surr 6)	1.52833	1.68116	1.77420	1.80394	1.97369	.911	1.75226	9.351		Conc=50.0,50.0,50.0,50.0,50.0
Butylbenzylphthalate	1.17691	1.32097	1.20709	1.13612	1.16513	.959	1.20124	5.960		
3,3'-Dichlorobenzidine	.38282	.37697	.40581	.39344	.38531	.999	.38887	2.871		
Benzo(a)Anthracene	1.37028	1.35628	1.31053	1.26949	1.25445	.999	1.31220	3.900		
Bis(2-Ethylhexyl)Phthalate	1.62425	1.72030	1.67214	1.61569	1.61840	1.013	1.65016	2.756		
Chrysene	1.32309	1.27514	1.30063	1.20720	1.18404	1.002	1.25602	4.765		
Di-n-Octyl Phthalate	3.40076	3.80899	3.37760	3.02936	3.31464	.943	3.38628	8.241		*
Benzo(b)Fluoranthene	1.53296	1.48781	1.44071	1.36703	1.47309	.968	1.46072	4.180		
Benzo(k)Fluoranthene	1.46827	1.55310	1.32681	1.21215	1.23117	970	1.35630	10.838		
Benzo(a)Pyrene	1.21514	1.24301	1.11084	1.04246	1.17023	995	1.15634	5.270		*
Indeno(1,2,3-cd)Pyrene	96333	99245	1.04462	1.02985	1.09...	...12	1.00417	5.765		
Dibenz(a,h)Anthracene	.83093	86028	.84065	.84513	.84829	...03	84816	5.47		
Benzo(g,h,i)Perylene	.80911	83257	.79842	78705	.81553	...44	80150	2.213		

- Response Factor (Subscript is amount in ug/L)

$\overline{RT}$ - Average Relative Retention Time (RT std/RT data)

$\overline{RF}$ - Average Response Factor

% - Percent Relative Standard Deviation

* - Calibration Check Compounds (RF, RSD, or Outlier Performance Check Compounds (PCC)

400245

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ARDL, INC. Contract: ----

Lab Code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID: >SV522 DFTPP Injection Date: 5/22/91

Instrument ID: HP- 1 DFTPP Injection Time: 9:22

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	49.4
68	Less than 2.0% of mass 69	1.0(1.6)1
69	Mass 69 relative abundance	58.
70	Less than 2.0% of mass 69	0.0(0.0)1
127	40.0 - 60.0% of mass 198	42.9
197	Less than 1.0% of mass 198	.5
198	Base Peak, 100% relative abundance	100.
199	5.0 - 9.0% of mass 198	6.0
275	10.0 - 30.0% of mass 198	17.4
365	Greater than 1.00% of mass 198	1.75
441	Present, but less than mass 443	10.3
442	Greater than 40.0% of mass 198	71.1
443	17.0 - 23.0% of mass 442	14.3(20.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	50NG STD	>D5352	5/22/91	09:45
02	LO-1G101L-GW	111897-5	>D5353	5/22/91	11:17
03	LO-1MW01D-GW	111897-6	>D5354	5/22/91	12:17
04	LO-1MW01S-GW	111897-7	>D5355	5/22/91	13:09
05	LO-1MW03S-GW	111897-8	>D5356	5/22/91	14:00
06	LO-1MW03D-GW	111897-9	>D5357	5/22/91	14:51
07	LO-1MW3S-FD	111897-10	>D5358	5/22/91	15:42
08	LO-1GW1-FB	111897-11	>D5359	5/22/91	16:33
09	LO-1GW1-FBMS	111897-11MS	>D5360	5/22/91	17:25
10	LO-1GW1-FBMSD	111897-11MSD	>D5361	5/22/91	18:16
11	BLANK B1333	BLANK B1333	>D5362	5/22/91	19:07
12					
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20					
21					
22					

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/22/91

Lab Name: ARDL,INC. | Time: 09:45

Contract No: | Laboratory ID: >05352

Instrument ID: HP-1 | Initial Calibration Date: 05/22/91

Minimum $\overline{RF}$ for SPCC is 0.05 | Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Pyridine	1.03013	1.79267	9.98			
N-Nitrosodimethylamine	1.16392	1.21428	4.33			
2-Picoline	1.71540	1.77431	3.43			
2-Fluorophenol (Surr 1)	1.14540	1.16844	2.01			(Conc=100.00)
Aniline	2.34595	2.42122	3.21			
D5 Phenol (Surr 2)	1.51979	1.66025	9.24			(Conc=100.00)
Phenol	1.88276	2.10942	12.04	*		
Bis-2-Chloroethyl Ether	1.86554	2.19491	17.66			
2-Chlorophenol	1.63982	1.82534	11.31			
1,3-Dichlorobenzene	1.58668	1.87483	18.00			
1,4-Dichlorobenzene	1.54054	1.82522	18.35	*		
Benzyl Alcohol	.81198	.84629	4.23			
1,2-Dichlorobenzene	1.36592	1.59251	16.59			
2-Methylphenol	1.28059	1.40377	16.92			
Bis(2-Chloroisopropyl)Ether	2.52097	2.74179	8.76			
4-Methylphenol	.99205	1.19746	20.71			
N-Nitroso-Di-n-Propylamine	1.31566	1.46823	11.60		**	
Hexachloroethane	.52789	.59584	12.87			
D5 Nitrobenzene (Surr 3)	.47008	.48424	3.01			(Conc=50.00)
Nitrobenzene	.52350	.59410	13.49			
Isophorone	1.08662	1.23087	13.28			
2-Nitrophenol	.25444	.30480	19.80	*		
2,4-Dimethylphenol	.45493	.55795	22.71			
Bis(2-Chloroethoxy)Methane	.69282	.79105	14.18			
Benzoic Acid	.19954	.16486	17.38			
2,4-Dichlorophenol	.35209	.41540	17.97	*		
1,2,4-Trichlorobenzene	.38456	.45065	17.19			
Naphthalene	1.02569	1.19985	17.01			
4-Chloroaniline	.48359	.54356	12.40			
Hexachlorobutadiene	.19937	.23784	19.04	*		
4-Chloro-3-Methylphenol	.36047	.42448	17.83	*		
2-Methylnaphthalene	.60279	.69926	16.00			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

LO-1610IL-GW
LO-1MW01D-GW
LO-1MW01S-GW
LO-1MW03S-GW
LO-1MW03D-GW
LO-1MW35-FD
LO-1GW1-FB
LO-1GW1-FBMS
-MSD
BLK B1333

400329

Continuing Calibration Check
HSL Compounds

Lab Name: [illegible] Calibration Date: 05/22/91

Lab File ID: [illegible] Time: 09:45

Contract No: Laboratory ID: 205352

Instrument ID: HP-1 Initial Calibration Date: 05/22/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
1,2,3,4-Tetrachlorobenzene	.36502	.37865	3.79			
Hexachlorocyclopentadiene	.45670	.44896	1.70		**	
2,4,6-Trichlorophenol	.51608	.50996	1.19	*		
2,4,5-Trichlorophenol	.51180	.52419	2.42			
2-Fluorobiphenyl (Surr #)	1.63607	1.49346	8.83			(Conc=50.00)
2-Chloronaphthalene	1.36591	1.41734	3.80			
1,2,5,5-Tetrachlorobenzene	.61077	.63677	4.26			
Toluenediamine	.40406	.41693	3.19			
2-Nitroaniline	.48595	.48962	.76			
1,3-Dinitrobenzene	.26695	.30393	13.86			
Dimethyl Phthalate	1.54243	1.74947	13.42			
2,6-Dinitrotoluene	.36463	.40402	10.80			
Acenaphthylene	1.91527	2.17670	13.65			
3-Nitroaniline	2.09667	2.27065	8.30			
2,4-Dinitrophenol	.53493	.55590	3.92			
Acenaphthene	1.23273	1.28577	4.30	*		
4,6-Dinitro-2-methylphenol	.13510	.14806	11.24		**	
4-Nitrophenol	.09482	.11179	17.90		**	
Dibenzofuran	1.60773	1.70615	6.12			
2,6-Dinitrotoluene	.34466	.38496	11.48			
Diethylphthalate	1.15408	1.40160	16.74			
4-Chlorophenyl-phenylether	.66718	.75426	13.05			
2,3,5,6-Tetrachlorophenol	.14149	.15314	8.23			
Fluorene	1.00792	1.14247	13.36			
4-Nitroaniline	.23806	.27617	7.79			
4,6-Dibromophenol (Surr #)	.19126	.21042	9.45			(Conc=100.00)
4,6-Dinitro-2-Methylphenol	.13650	.15027	8.81			
N-Nitrosodiphenylamine	.72584	.82572	13.76	*		
4-Bromophenyl-phenylether	.32094	.34293	6.87			
Hexachlorobenzene	.37473	.40237	7.38			
Pentachlorophenol	.17211	.19012	10.47	*		
Phenanthrene	1.17018	1.25886	7.58			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form 6

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400330

Continuing Calibration Check
BNA Compounds

Case No: Calibration Date: 05/22/91

Contractor: ARDL,INC. Time: 09:45

Contract No: Laboratory ID: 005352

Instrument ID: HP-1 Initial Calibration Date: 05/22/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Anthracene	1.22295	1.29870	6.19			
Carbazole	.92448	1.01349	9.63			
Di-N-Butylphthalate	1.56865	1.78254	13.64			
Fluoranthene	.88813	.99412	11.93	*		
Pyrene	2.89376	2.79704	3.34			
1,4 Terphenyl (Surr st	1.75226	1.62984	6.99			(Conc=50.00)
Butylbenzylphthalate	1.20124	1.30914	8.98			
3,3'-Dichlorobenzidine	.38887	.41430	6.54			
Benzo(a)Anthracene	1.31220	1.41646	7.95			
Bis(2-Ethylhexyl)Phthalate	1.65016	1.86392	12.95			
Chrysene	1.25802	1.32097	5.00			
Di-n-Octyl Phthalate	3.58628	3.70352	9.37	*		
Benzo(b)Fluoranthene	1.46072	1.60630	9.97			
Benzo(k)Fluoranthene	1.35630	1.31585	2.98			
Benzo(a)Pyrene	1.19194	1.20455	1.06	*		
Indeno(1,2,3-cd)Pyrene	1.06419	1.02331	3.84			
Dibenzo(a,h)Anthracene	.90616	.87741	3.17			
Benzo(g,h,i)Perylene	.89130	.82641	7.28			

$\overline{RF}$ - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400331

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

e: ARDL, INC. Contract: --------

Code: ------ Case No.: ------- SAS No.: ----- SDG No.: -----

File ID: >S523V DFTPP Injection Date: 5/23/91

trument ID: HP- 1 DFTPP Injection Time: 14:01

/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	57.7
68	Less than 2.0% of mass 69	1.0(1.4)1
69	Mass 69 relative abundance	66.
70	Less than 2.0% of mass 69	0.0(0.0)1
27	40.0 - 60.0% of mass 198	41.3
97	Less than 1.0% of mass 198	0.0
98	Base Peak, 100% relative abundance	100.
9	5.0 - 9.0% of mass 198	6.2
75	10.0 - 30.0% of mass 198	16.7
55	Greater than 1.00% of mass 198	1.4
41	Present, but less than mass 443	10.4
42	Greater than 40.0% of mass 198	69.7
43	17.0 - 23.0% of mass 442	13.6(19.5)2

1-Value is % mass 69 2-Value is % mass 442

S TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	50NG STD	>D5367	5/23/91	14:24
02	LO-1G101L-GWRE	111897-5RE	>D5368	5/23/91	15:17
03	BLANK B1341	BLANK B1341	>D5371	5/23/91	16:08
04	LO-1MW04D-GW	111908-1	>D5372	5/23/91	17:01
05	LO-1G104D-GW	111908-2	>D5373	5/23/91	17:53
06	LO-1GW2-FB	111908-3	>D5374	5/23/91	18:45
07	LO-1MW07D-GW	111908-4	>D5375	5/23/91	19:37
08	LO-1MW07S-GW	111908-5	>D5376	5/23/91	20:28
09	LO-1MW05D-GW	111908-10	>D5379	5/23/91	22:59
10	LO-1G106DR-GW	111908-11	>D5380	5/23/91	23:49
11	LO-G106DR-MS/MSD	111908-12	>D5382	5/24/91	01:30
12					
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22					

e 1 of 1

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/23/91

C tor: AROL,INC. Time: 14:24

Contract No: Laboratory ID: >05367

Instrument ID: HP-1 Initial Calibration Date: 05/22/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
yridine	1.63013	1.38500	15.04			
-Nitrosodimethylamine	1.16392	1.27929	9.91			
2-Picoline	1.71540	1.73184	.96			
-Fluorophenol (Surr 1)	1.14540	1.11586	2.58			(Conc=100.00)
niline	2.34595	2.36361	.75			
5 Phenol (Surr 2)	1.51979	1.60550	5.64			(Conc=100.00)
henol	1.88276	1.98697	5.53	*		
s(-2-Chloroethyl)Ether	1.86554	2.20930	18.43			
-Chlorophenol	1.63982	1.78567	8.89			
3-Dichlorobenzene	1.58888	1.80886	13.84			
-Dichlorobenzene	1.54054	1.72546	12.00	*		
yl Alcohol	.81198	.74678	8.03			
-Dichlorobenzene	1.36592	1.48567	8.77			
thylphenol	1.20059	1.31832	9.81			
-chloroisopropyl)Ether	2.52097	3.34416	32.65			
ylphenol	.99205	.97509	1.71			
itroso-Di-n-Propylamine	1.31566	1.42611	8.40		**	
xachloroethane	.52789	.56025	6.13			
Nitrobenzene (Surr 3)	.47008	.52778	12.27			(Conc=50.00)
itrobenzene	.52750	.61961	17.46			
sophorone	1.08652	1.27415	17.27			
-Nitrophenol	.25444	.23897	6.08	*		
2,4-Dimethylphenol	.45693	.49679	8.72			
is(-2-Chloroethoxy)Methane	.69282	.80996	16.91			
enzoic Acid	.19954	.16373	17.94			
,4-Dichlorophenol	.35409	.37883	6.99	*		
1,2,4-Trichlorobenzene	.38456	.43329	12.67			
aphthalene	1.02369	1.13619	10.99			
-Chloroaniline	.48359	.50802	5.05			
Hexachlorobutadiene	.19937	.23254	16.63	*		
-Chloro-3-Methylphenol	.36647	.40658	10.95	*		
-Methylnaphthalene	.60279	.65213	8.18			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400340

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/23/91

actor: ARDL,INC. Time: 14:24

Contract No: Laboratory ID: >05367

Instrument ID: HP-1 Initial Calibration Date: 05/22/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
1,2,3,4-Tetrachlorobenzene	.36502	.37793	3.54			
Hexachlorocyclopentadiene	.45670	.55842	22.27		**	
2,4,6-Trichlorophenol	.51608	.52838	2.38	*		
2,4,5-Trichlorophenol	.51180	.52638	2.85			
2-Fluorobiphenyl (Surr 4)	1.63807	1.47886	9.72			(Conc=50.00)
2-Chloronaphthalene	1.36551	1.53544	12.44			
1,2,4,5-Tetrachlorobenzene	.61077	.72060	17.98			
Acenediamine	.40406	.34934	13.54			
2-Nitroaniline	.48593	.50125	3.15			
1,3-Dinitrobenzene	.26693	.31821	19.21			
Dimethyl Phthalate	1.54243	1.79723	16.52			
2,6-Dinitrotoluene	.36463	.43168	18.39			
Azobenzene	1.91527	2.39255	24.92			
Acenaphthylene	2.09667	2.22019	5.89			
3-Nitroaniline	.53493	.63550	18.80			
Acenaphthene	1.23273	1.33337	8.16	*		
2,4-Dinitrophenol	.13310	.13967	4.94		**	
4-Nitrophenol	.09482	.11664	23.02		**	
Dibenzofuran	1.60773	1.73681	8.03			
2,4-Dinitrotoluene	.39466	.50066	26.86	*		
Diethylphthalate	1.25008	1.47078	17.66			
4-Chlorophenyl-phenylether	.66718	.77830	16.65			
2,3,4,6-Tetrachlorophenol	.14149	.16081	13.65			
Fluorene	1.00782	1.05553	4.73			
4-Nitroaniline	.25806	.30270	17.30			
2,4,6-Tribromophenol (Surr 5)	.19226	.24332	26.56			(Conc=100.00)
4,6-Dinitro-2-Methylphenol	.13856	.13804	.37			
N-Nitrosodiphenylamine	.72584	.76033	4.75	*		
4-Bromophenyl-phenylether	.32084	.34578	7.77			
Hexachlorobenzene	.37473	.42895	14.47			
Pentachlorophenol	.17211	.18930	9.99	*		
Phenanthrene	1.17018	1.20632	3.09			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400341

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/23/91

C ctor: ARDL,INC. Time: 14:24

Contract No: Laboratory ID: >05367

Instrument ID: HP-1 Initial Calibration Date: 05/22/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Anthracene	1.22295	1.29931	6.24			
Carbazole	.92448	1.00371	8.57			
Di-N-Butylphthalate	1.56863	1.68801	7.61			
Fluoranthene	.88813	1.03301	16.31	*		
Pyrene	2.89376	2.37738	17.84			
D14 Terphenyl (Surr 6)	1.75226	1.48231	15.41			(Conc=50.00)
Butylbenzylphthalate	1.20124	1.10126	8.32			
3,3'-Dichlorobenzidine	.38887	.38776	.28			
Benzo(a)Anthracene	1.31220	1.35394	3.18			
bis(2-Ethylhexyl)Phthalate	1.65016	1.59954	3.07			
Chrysene	1.25802	1.30257	3.54			
Di-n-Octyl Phthalate	3.38628	2.78254	17.83	*		
Benzo(b)Fluoranthene	1.46072	1.36217	6.75			
Benzo(k)Fluoranthene	1.35630	1.41411	4.26			
Benzo(a)Pyrene	1.19194	1.22324	2.63	*		
(1,2,3-cd)Pyrene	1.06419	1.15496	8.53			
Dibenzo(a,h)Anthracene	.90616	1.00543	10.96			
Benzo(g,h,i)Perylene	.89130	.99116	11.20			

F - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

Diff - % Difference from original average or curve

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400342

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

e:ARDL, INC. Contract:--------

Code: ----- Case No.: ------ SAS No.: ----- SDG No.: -----

File ID: >604SV DFTPP Injection Date: 6/04/91

strument ID: HP-1 DFTPP Injection Time: 13:09

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	47.5
68	Less than 2.0% of mass 69	.8(1.5)1
69	Mass 69 relative abundance	55.
70	Less than 2.0% of mass 69	.4(.8)1
127	40.0 - 60.0% of mass 198	40.7
197	Less than 1.0% of mass 198	0.0
1	Base Peak, 100% relative abundance	100.
199	5.0 - 9.0% of mass 198	6.4
275	10.0 - 30.0% of mass 198	19.7
365	Greater than 1.00% of mass 198	2.25
441	Present, but less than mass 443	13.1
442	Greater than 40.0% of mass 198	87.4
443	17.0 - 23.0% of mass 442	17.5(20.1)2

1-Value is % mass 69 2-Value is % mass 442

HIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	20 NG STD	>D5500	6/04/91	13:32
02	BNA STD	160 NG STD	>D5501	6/04/91	14:22
03	BNA STD	120 NG STD	>D5502	6/04/91	15:34
04	BNA STD	80 NG STD	>D5503	6/04/91	16:23
05	BNA STD	50 NG STD	>D5504	6/04/91	17:12
06	BLANK B1339	BLANK B1339	>D5505	6/04/91	18:11
07	LO-1G102D-GW	111897-1	>D5506	6/04/91	18:59
08	LO-1G102L-GW	111897-2	>D5507	6/04/91	19:46
09	LO-1G101D-GW	111897-3	>D5508	6/04/91	20:34
10	LO-1G101M-GW	111897-4	>D5509	6/04/91	21:21
11	LO-1MW02D-GW	111908-6	>D5510	6/04/91	22:08
12	LO-1G104L-GW	111908-9	>D5511	6/04/91	22:55
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

Contractor: ARDL,INC. Calibration Date: 06/04/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>05500	>05504	>05503	>05502	>05501					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Pyridine	1.61532	.92054	.96311	.98781	.89479	.395	1.07631	28.196		
n-Nitrosodimethylamine	1.12314	1.08035	.97227	.94155	.98914	.382	1.02129	7.530		
2-Picoline	-	1.07690	1.06465	1.03804	.97971	.569	1.03982	4.158		
2-Fluorophenol (Surr 1)	1.02259	1.01584	1.04690	1.03192	1.06159	.730	1.03577	1.791		(Conc=100.0,100.0,100.0,1
Aniline	-	1.83430	1.55222	1.39836	1.28726	.940	1.51803	15.625		
D5 Phenol (Surr 2)	1.33597	1.31915	1.22604	1.14773	1.12894	.957	1.23157	7.720		(Conc=100.0,100.0,100.0,1
Phenol	1.72403	1.35788	1.12958	.99703	.97991	.960	1.23769	25.132	*	
bis(-2-Chloroethyl)Ether	1.31577	1.31145	1.13585	.99583	1.03258	.960	1.15829	13.019		
2-Chlorophenol	1.63199	1.46437	1.21476	1.08637	1.02400	.965	1.28430	20.044		
1,3-Dichlorobenzene	1.73729	1.54073	1.30213	1.18323	1.10433	.990	1.37354	19.057		
1,4-Dichlorobenzene	1.77024	1.44572	1.26512	1.10872	1.02764	1.004	1.32349	22.401	*	
Benzyl Alcohol	.65483	.93315	.80300	.76057	.78363	1.056	.78703	12.673		
1,2-Dichlorobenzene	1.73088	1.50220	1.28585	1.16777	1.07515	1.047	1.35237	19.601		
2-Methylphenol	1.50335	1.29197	1.02662	.91021	.88504	1.094	1.12344	23.736		
bis(2-chloroisopropyl)Ether	3.06128	2.88651	2.42390	2.29224	2.93176	1.088	2.71914	12.467		
4-Methylphenol	1.55608	1.32808	1.12003	1.02438	1.00572	1.131	1.20686	19.341		
N-Nitroso-Di-n-Propylamine	1.57425	1.41696	1.21529	1.05045	1.13304	1.126	1.27800	16.773		**
Hexachloroethane	.76834	.66893	.55859	.51543	.45372	1.119	.59300	21.182		
D5 Nitrobenzene (Surr 3)	.46765	.48039	.45609	.48070	.47586	.873	.47214	2.204		(Conc=50.0,50.0,50.0,50.0
Nitrobenzene	.52592	.50352	.45542	.44795	.44173	.877	.47491	7.899		
Isophorone	1.01428	.99244	.93182	.90017	.88222	.925	.94419	6.078		
2-Nitrophenol	.26186	.27075	.23435	.23110	.22072	.936	.24575	8.798	*	
2,4-Dimethylphenol	.45101	.43993	.38089	.37432	.35691	.960	.40061	10.499		
bis(-2-Chloroethoxy)Methane	.70012	.61578	.54606	.50309	.49179	.973	.57137	15.204		
Benzoic Acid	.20062	.21082	.19388	.19484	.21270	1.006	.20257	4.343		
2,4-Dichlorophenol	.38134	.35080	.29204	.29165	.25629	.995	.31242	16.582	*	
1,2,4-Trichlorobenzene	.45037	.42554	.36754	.35814	.32651	.994	.38562	13.199		
Naphthalene	1.30530	1.06949	.89064	.83324	.78121	1.004	.97598	21.903		
4-Chloroaniline	.55353	.46338	.38177	.36468	.32350	1.032	.41737	21.930		
Hexachlorobutadiene	.24697	.24680	.20332	.19645	.16794	1.044	.21230	16.133	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

* - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

Contractor: ARDL,INC. Calibration Date: 06/04/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>05500	>05504	>05503	>05502	>05501					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
4-Chloro-3-Methylphenol	.37249	.37456	.30900	.29717	.28305	1.126	.32726	13.210	*	
2-Methylnaphthalene	.76810	.69834	.57661	.53008	.47981	1.135	.61059	19.593		
1,2,3,4-Tetrachlorobenzene	.41229	.37521	.33422	.31211	.28639	.881	.34404	14.583		
Hexachlorocyclopentadiene	.47588	.52124	.43625	.43884	.40494	.886	.45543	9.784		**
2,4,6-Trichlorophenol	.49198	.48456	.42295	.38838	.36440	.898	.43045	13.194	*	
2,4,5-Trichlorophenol	.57755	.55993	.48390	.43962	.40881	.904	.49396	14.892		
2-Fluorobiphenyl (Surr 4)	1.39265	1.43378	1.43603	1.41940	1.42534	.910	1.42144	1.225		(Conc=50.0,50.0,50.0,50.0
hyladipate	.74437	1.31686	.46189	.36208	.29806	.921	.63665	65.466		
2-Chloronaphthalene	1.38511	1.09249	.99851	.82993	.74111	.919	1.00943	24.883		
1,2,4,5-Tetrachlorobenzene	.77062	.39626	.52981	.45470	.38347	.922	.50697	31.231		
Toluenediamine	-	.12441	.11991	.12929	.07641	.928	.11251	21.656		
3-Nitroaniline	.52894	.54378	.48546	.45715	.43190	.943	.48945	9.628		
Azobenzene	2.08682	1.82797	1.61887	1.44778	1.31573	1.104	1.65943	18.467		
Acenaphthylene	2.22662	1.78705	1.56272	1.38356	1.25017	.978	1.64202	23.378		
1,3-Dinitrobenzene	.29431	.28557	.31950	.35608	.31215	.975	.31352	8.734		
nyl Phthalate	1.54149	1.29279	1.15476	1.02455	.96743	.979	1.19620	19.249		
2,6-Dinitrotoluene	.39814	.40486	.35745	.33113	.32169	.984	.36265	10.446		
2-Nitroaniline	.56499	.61794	.56443	.50217	.44487	1.003	.53888	12.369		
Acenaphthene	1.43532	1.26649	1.07062	.92476	.82125	1.005	1.10369	22.623	*	
2,4-Dinitrophenol	.18162	.19926	.20011	.18366	.18252	1.016	.18943	4.957		**
4-Nitrophenol	.11948	.12217	.11615	.10124	.09816	1.035	.11144	9.855		**
Dibenzofuran	1.97095	1.81390	1.50161	1.36455	1.23485	1.028	1.57717	19.522		
2,4-Dinitrotoluene	.48394	.48205	.44255	.40578	.36456	1.038	.43578	11.745		
Diethylphthalate	1.71317	1.43983	1.17522	.93796	.79743	1.080	1.21272	30.615		
chlorophenyl-phenylether	.75579	.61931	.51283	.41934	.37791	1.082	.53703	28.603		
2,3,4,6-Tetrachlorophenol	.17989	.15824	.15568	.13508	.13361	1.055	.15250	12.502		
Fluorene	1.52804	1.26387	1.08904	.96181	.89062	1.077	1.14667	22.529		
4-Nitroaniline	.31580	.33894	.31408	.27776	.26033	1.092	.30138	10.523		
2,4,6-Tribromophenol (Surr 5)	.26516	.26962	.26092	.23888	.23137	1.114	.25319	6.708		(Conc=100.0,100.0,100.0,1
4,6-Dinitro-2-Methylphenol	.17237	.17435	.16683	.16291	.16093	.908	.16748	3.472		

RF_n - Response Factor (Subscript is amount in ug/L)

$\overline{RT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

* - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

C ctor: ARDL,INC. Calibration Date: 06/04/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Laboratory ID: >05500 >05504 >05503 >05502 >05501

Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
N-Nitrosodiphenylamine	.69837	.58489	.53887	.47212	.43113	.912	.54508	19.117	*	
4-Bromophenyl-phenylether	.30141	.26965	.24686	.24259	.23671	.952	.25944	10.242		
Hexachlorobenzene	.40595	.36855	.33797	.31852	.29995	.966	.34619	12.121		
Pentachlorophenol	.18795	.16178	.16992	.15641	.17018	.989	.16925	7.064	*	
Phenanthrene	1.41019	1.12138	1.04113	.96711	.92263	1.003	1.09249	17.665		
Anthracene	1.45919	1.16739	1.11168	.99215	.95704	1.009	1.13749	17.513		
Carbazole	1.17318	.92432	.92759	.81191	.78102	1.030	.92360	16.695		
Di-N-Butylphthalate	1.78728	1.48598	1.34445	1.17095	1.14449	1.087	1.38663	18.989		
Fluoranthene	1.27264	.99807	.93067	.80404	.78208	1.143	.95750	20.625	*	
Pyrene	2.61179	2.80267	3.40494	3.21806	3.20388	.890	3.04827	10.770		
Benzidine	.21260	.73295	.79182	.65568	.55300	.888	.58921	38.820		
D14 Terphenyl (Surr 6)	1.50511	1.70836	2.26517	2.18776	2.28769	.910	1.99082	18.074		(Conc=50.0,50.0,50.0,50.0
Butylbenzylphthalate	1.09052	1.10177	1.12517	1.03209	1.04267	.960	1.07844	3.680		
Bis-2-ethylhexyladipate	1.67151	4.06590	2.00263	1.92106	1.87376	.972	2.30697	42.949		
3 ichlorobenzidine	.36803	.36340	.39067	.36386	.42087	1.001	.38137	6.495		
Be a)Anthracene	1.39659	1.31134	1.39000	1.22107	1.31403	.999	1.32661	5.389		
bis(2-Ethylhexyl)Phthalate	1.39038	1.27137	1.42959	1.26466	1.40326	1.017	1.35185	5.760		
Chrysene	1.37954	1.25657	1.32192	1.22632	1.24303	1.002	1.28548	4.968		
Di-n-Octyl Phthalate	3.12825	2.82321	2.82951	2.61245	2.43121	.954	2.76493	9.469	*	
Benzo(b)Fluoranthene	1.56921	1.44266	1.51854	1.42024	1.47377	.973	1.48478	4.033		
Benzo(k)Fluoranthene	1.56554	1.49113	1.40999	1.41370	1.37162	.975	1.45039	5.352		
Benzo(a)Pyrene	1.32230	1.21573	1.24953	1.17187	1.24846	.996	1.24158	4.440	*	
Indeno(1,2,3-cd)Pyrene	1.01326	1.08102	1.11809	.96365	1.06085	1.093	1.04738	5.746		
Dibenzo(a,h)Anthracene	.38617	.93194	.95217	.98336	1.09085	1.096	.96890	7.923		
Benzo(g,h,i)Perylene	.37350	.37585	.90645	.92420	1.05541	1.120	.92708	8.071		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{F}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400288

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC Contract: ---------

Lab code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

Lab File ID (Standard): >D5352 Date Analyzed: 05/22/91

Instrument ID: HP-1 Time Analyzed: 09:45

	IS1(DCB)		IS2(NAP)		IS3(ACE)	
	AREA #	RT	AREA #	RT	AREA #	RT
12 HOUR STD	55114	11.20	198653	14.36	99869	18.85
UPPER LIMIT	110228	11.70	397306	14.86	199738	19.35
LOWER LIMIT	27557	10.70	99326	13.86	49934	18.35
VA SAMPLE NO.						
LO-1G101L-GW	69696	11.20	239112	14.36	112116	18.86
LO-1MW01D-GW	64268	11.17	225645	14.33	116208	18.83
LO-1MW01S-GW	63686	11.17	223584	14.33	120595	18.83
LO-1MW03S-GW	77211	11.17	266171	14.33	128081	18.83
LO-1MW03D-GW	67233	11.18	237827	14.33	127460	18.83
1MW3S-FD	67125	11.17	229321	14.33	117233	18.83
LO-1GW1-FB	72954	11.18	256841	14.34	131044	18.84
LO-1G102D-GWMS	69868	11.17	245892	14.33	128795	18.83
LO-1G102D-GWMSD	72465	11.18	244257	14.33	124487	18.83

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

a Name: ARDL, INC Contract: --------

Lab code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

ab File ID (Standard): >D5352 Date Analyzed: 05/22/91

Instrument ID: HP-1 Time Analyzed: 09:45

	IS4(PHN)		IS5(CHR)		IS6(PER)	
	AREA #	RT	AREA #	RT	AREA #	RT
12 HOUR STD	114571	22.59	39299	29.36	23748	33.11
UPPER LIMIT	229142	23.09	78598	29.86	47496	33.61
LOWER LIMIT	57286	22.09	19650	28.86	11874	32.61
EPA SAMPLE NO.						
LO-1G101L-GW	146781	22.59	52787	29.37	31109	33.12
LO-1MW01D-GW	161962	22.57	64410	29.35	40953	33.10
LO-1MW01S-GW	157415	22.57	52273	29.34	33023	33.08
LO-1MW03S-GW	155814	22.56	60013	29.35	42136	33.09
[illegible]-1MW03D-GW	170383	22.58	65376	29.35	47162	33.09
-1MW3S-FD	153507	22.57	48973	29.35	27005	33.09
LO-1GW1-FB	160576	22.57	58352	29.35	35639	33.10
LO-1G102D-GWMS	160243	22.57	48590	29.35	25206	33.09
LO-1G102D-GWMSD	152409	22.58	40123	29.34	18884	33.08

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

a ame: ARDL, INC. Contract: ----

ab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

ab File ID (Standard): >D5367 Date Analyzed: 05/2?/91

Instrument ID: HP- 1 Time Analyzed: 14:24

	IS1(DCB)			IS2(NAP)			IS3(ACE)		
	AREA	#	RT	AREA	#	RT	AREA	#	RT
12 HOUR STD	35461		11.08	129582		14.24	61008		18.72
UPPER LIMIT	70922		11.58	259164		14.74	122016		19.22
LOWER LIMIT	17731		10.58	64791		13.74	30504		18.22
EPA SAMPLE NO.									
1 LO-1G101L-GWRE	45938		11.06	159213		14.21	78208		18.70
2 BLANK B1341	43235		11.06	149697		14.20	71917		18.69
3 LO-1MW04D-GW	45609		11.06	162393		14.21	81664		18.69
4 LO-1G104D-GW	42249		11.05	143939		14.20	65446		18.68
LO-1GW2-FB	39155		11.05	136560		14.20	63609		18.69
6 LO-1MW07D-GW	31714		11.05	110306		14.20	54628		18.69
7 LO-1MW07S-GW	31021		11.05	114655		14.20	59180		18.68
8 LO-1MW05D-GW	29717		11.06	96169		14.21	49168		18.69
9 LO-1G106DR-GW	27465		11.06	96340		14.21	50204		18.70
10 LO-G10GDR-MS/MSD	27654		11.05	94504		14.20	50915		18.68
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: ----

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5367 Date Analyzed: 05/23/91

Instrument ID:HP- 1 Time Analyzed: 14:24

		IS4(PHN)		IS5(CHR)		IS6(PER)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	77659	22.43	32750	29.19	24771	32.83
	UPPER LIMIT	155318	22.93	65500	29.69	49542	33.33
	LOWER LIMIT	38829	21.93	16375	28.69	12386	32.33
	EPA SAMPLE NO.						
1	LO-1G101L-GWRE	104797	22.42	44691	29.17	27758	32.82
2	BLANK B1341	94867	22.41	39901	29.17	20956	32.82
3	LO-1MW04D-GW	113454	22.42	52733	29.16	28562	32.82
4	LO-1G104D-GW	85112	22.40	34539	29.16	15595	32.82
5	LO-1GW2-FB	91376	22.41	41901	29.16	23261	32.81
6	LO-1MW07D-GW	81757	22.40	34259	29.16	17293	32.82
7	LO-1MW07S-GW	93919	22.40	36830	29.16	17271	32.81
9	LO-1MW05D-GW	65884	22.42	26554	29.17	14943	32.82
10	LO-1G106DR-GW	71954	22.42	28766	29.17	13782	32.82
11	LO-G106DR-MS/MSD	70130	22.41	29591	29.16	18737	32.81
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100%
of internal standard area.
LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC Contract: ---------

Lab code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

Lab File ID (Standard): >D5504 Date Analyzed: 06/04/91

Instrument ID: HP-1 Time Analyzed: 17:12

	IS1(DCB)		IS2(NAP)		IS3(ACE)	
	AREA #	RT	AREA #	RT	AREA #	RT
12 HOUR STD	37750	10.16	130874	13.28	68932	17.71
UPPER LIMIT	75500	10.66	261748	13.78	137864	18.21
LOWER LIMIT	18875	9.66	65437	12.78	34466	17.21
EPA SAMPLE NO.						
BLANK B1339	51341	10.14	181132	13.26	97438	17.67
LO-1G102D-GW	31279	10.13	108873	13.25	59416	17.68
LO-1G102L-GW	41615	10.15	145567	13.26	77044	17.70
LO-1G101D-GW	40560	10.13	134969	13.24	75117	17.68
-1G101M-GW	43381	10.13	145650	13.25	78501	17.68
-1MW02D-GW	36640	10.12	127944	13.24	67380	17.67
LO-1G104L-GW	37330	10.15	126573	13.27	66686	17.70
BLANK B1349	36243	10.13	122909	13.25	65421	17.67

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

ai ame: ARDL, INC Contract: --------

ab code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

ab File ID (Standard): >D5504 Date Analyzed: 06/04/91

nstrument ID: HP-1 Time Analyzed: 17:12

	IS4(PHN)		IS5(CHR)		IS6(PER)	
	AREA #	RT	AREA #	RT	AREA #	RT
12 HOUR STD	100039	21.38	34818	28.07	16474	31.43
UPPER LIMIT	200078	21.88	69636	28.57	32948	31.93
LOWER LIMIT	50020	20.88	17409	27.57	8237	30.93
EPA SAMPLE NO.						
BLANK B1339	134232	21.36	51704	28.04	26399	31.43
LO-1G102D-GW	82578	21.35	25907	28.04	10274	31.43
LO-1G102L-GW	109556	21.37	47450	28.05	18429	31.44
LO-1G101D-GW	102649	21.36	39840	28.03	21432	31.42
LO-1G101M-GW	117738	21.36	54374	28.04	22004	31.42
1MW02D-GW	94803	21.34	42735	28.03	21524	31.41
1G104L-GW	95394	21.38	47281	28.07	20807	31.45
BLANK B1349	91313	21.35	42233	28.04	17293	31.41

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LC-1G102D-GWMS

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111897 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WATER Lab Sample ID: 111897-1MS

Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5360

Level: (low/med) LOW Date Received: 5/07/91

% Moisture: not dec. --- dec. --- Date Extracted: 5/10/91

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/22/91

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	48.	
111-44-4	bis(-2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	87.	
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	44.	
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	53.	
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(-2-Chloroethoxy)Methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	41.	
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	100.	
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethyl Phthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

400387

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G102D-GWMS

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111897 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WATER Lab Sample ID: 111897-1MS

Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5360

Level: (low/med) LOW Date Received: 5/07/91

% Moisture: not dec. --- dec. --- Date Extracted: 5/10/91

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/22/91

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	65.	
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	42.	J
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	61.	
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	100.	
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	70.	
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-Octyl_Phthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)Anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

1. - Cannot be separated from Diphenylamine

400388

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G102D-GWMSD

Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111897 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WATER Lab Sample ID: 111897-1MSD

Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5361

Level: (low/med) LOW Date Received: 5/07/91

% Moisture: not dec. --- dec. --- Date Extracted: 5/10/91

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/22/91

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	45.	
111-44-4	bis(-2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	83.	
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	47.	
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	65.	
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(-2-Chloroethoxy)Methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	46.	
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	97.	
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethyl Phthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G102D-GWMSD

Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111897 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WATER Lab Sample ID: 111897-1MSD

Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5361

Level: (low/med) LOW Date Received: 5/07/91

% Moisture: not dec. --- dec. --- Date Extracted: 5/10/91

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/22/91

GPC Cleanup: (Y/N) N pH: 7.1 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	71.	
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	36.	J
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	65.	
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	95.	
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	78.	
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-Octyl Phthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)Anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

400397

2E

WATER PESTICIDE SURROGATE RECOVERY

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: Case No.: 111897 SAS No.: SDG No.:

EPA SAMPLE NO.	S1 (DBC) #	OTHER
LO-1G102D-GW	60	
LO-1G102D-GWMS	68	
LO-1G102D-GWMSD	71	
LO-1G102L-GW	71	
LO-1G101D-GW	31	
LO-1G101M-GW	71	
LO-1G101L-GW	61	
LO-1MW01D-GW	68	
LO-1MW01S-GW	84	
LO-1MW03S-GW	78	
LO-1MW03D-GW	76	
LO-1MW3S-FD	81	
LO-1GW1-FB	100	
111897-B1338	90	

Advisory
QC Limits
(24-154)

S1 (DBC) = Dibutylchlorendate
= Column used to flag recovery values
* = Values outside QC Limits
D = Surrogates diluted out

3E

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: Case No.: 111897 SAS No.: - SDG No.: -
Matrix Spike Sample Number : LO1G102D-GW

Compound	Spike Added (ug/L)	Sample Conc. (ug/L)	MS Conc. (ug/L)	MS % Rec #	QC Limits Rec
Lindane	0.40	-	0.25	63	56-123
Heptachlor	0.40	-	0.23	58	40-131
Aldrin	0.40	-	0.24	60	40-120
Dieldrin	1.0	-	0.65	65	52-126
Endrin	1.0	-	1.0	100	56-121
4,4'-DDT	1.0	-	0.63	63	38-127

Compound	Spike Added (ug/L)	MSD Conc. (ug/L)	MSD % Rec #	% RPD #	QC Limits RPD	QC Limits REC
Lindane	0.40	0.27	68	7.7	15	56-123
Heptachlor	0.40	0.26	65	12	20	40-131
Aldrin	0.40	0.27	68	12	22	40-120
Dieldrin	1.0	0.69	69	6.0	18	52-126
Endrin	1.0	1.2	120	18	21	56-121
4,4'-DDT	1.0	0.70	70	11	27	38-127

= Column to be used to flag recovery and RPD values with an asterisk
* = Values outside QC Limits

RPD : 0 out of 6 outside limits
Spike Recovery : 0 out of 12 outside limits

Comments :

200010

PESTICIDE EVALUATION STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ 01C

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: TRACOR 540 GC Column ID: DB 608 0.53mm x 30m 35% diphenyl polysiloxane

Dates of Analyses: 5-16-91 to 5-18-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (+/- 10.0%)	
ALDRIN	1154880	1096340	1180547	3.8	
ENDRIN	886496	800354	839044	5.1	
4,4'-DDT	907194	828739	849974	4.7	(1)
DBC	776430	720068	724395	4.2	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	5-16-91	0911	9.4	1.6	5.6
02	EVAL MIX B	5-17-91	0344	6.8	0.91	3.9
03	EVAL MIX B	5-17-91	1910	6.1	1.4	3.8
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form Instructions.

BE

PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: TRACOR 540 GC Column ID: DB608 0.53mm X 30m. 35% diphenyl polysiloxane

Dates of Analyses: 05-16-91 to 05-18-91

28.068

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALB	EVAL B	05-16-91	0911	—	
02	EVALA	EVAL A	05-16-91	1005	0.17	
03	EVALC	EVAL C	05-16-91	1100	0.09	
04	INDA	INDA	05-16-91	1216	0.15	
05	INDB	INDB	05-16-91	1311	0.24	
06	TOXAPH	TOXAPH	05-16-91	1419	0.12	
07	Ar1221	Ar1221	05-16-91	1644	0.57	
08	Ar1232	Ar1232	05-16-91	1738	0.01	
09	Ar1242	Ar1242	05-16-91	1834	0.58	
10	Ar1248	Ar1248	05-16-91	1929	0.06	
11	Ar1254	Ar1254	05-16-91	2121	0.13	
12	Ar1660	Ar1660	05-16-91	2216	0.68	
13	ZZZZ	111800-BLK#7	05-16-91	2311	0.21	
14	ZZZZ	111800-5	05-17-91	0006	0.24	
15	ZZZZ	111800-6	05-17-91	0100	0.24	
16	PBLK1334	200215-B1334	05-17-91	0250	0.22	
17	EVALB	EVALB	05-17-91	0344	0.06	
18	ZZZZ	111800-6(5ml→1ml)	05-17-91	0439	0.10	
19	ZZZZ	111800-5(5ml→1ml)	05-17-91	0534	0.06	
20	PBLK1347	200215-B1347	05-17-91	0629	0.11	
21	SW101MS	200215-1MS	05-17-91	0724	0.07	
22	SW101MSD	200215-1MSD	05-17-91	0911	0.20	
23	INDA	INDA ✓	05-17-91	1006	0.07	
24	PBLK1338	B1338	05-17-91	1154	0.12	
25	LO-IG102D-GW	111897-1	05-17-91	1323	0.15	
26	LO-IG102L-GW	111897-2	05-17-91	1418	0.06	
27	LO-IG101O-GW	111897-3	05-17-91	1522	0.21	
28	LO-IG101M-GW	111897-4	05-17-91	1816	0.16	
29	EVALB	EVAL B	05-17-91	1910	0.10	
30	LO-IG101L-GW	111897-5	05-17-91	2040	0.16	
31	LO-TANK/001	111898-1	05-17-91	2057	0.15	
32	LO-TANK/002	111898-2	05-17-91	2151	0.06	
33	LO-TANK/001MS	111898-1MS	05-17-91	2245	0.20	
34	LO-TANK/001MSD	111898-1MSD	05-17-91	2339	0.19	
35	INDA	INDA END SEQ	05-18-91	0033	0.21	
36	INDB	INDB END SEQ	05-18-91	1018	0.30	
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns) LE for megabore

PESTICIDE STANDARDS FORM

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: TRACOR 540 GC Column ID: DB608 35% Diphenyl polysilox 0.53mm x 30m

DATE(S) OF ANALYSIS FROM: 05-16-91 DATE OF ANALYSIS 05-17-91

TO: 05-18-91 TIME OF ANALYSIS 1006

TIME(S) OF ANALYSIS FROM: 0911

TO: 1018

EPA SAMPLE NO. (STANDARD) INDA1

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	12.52	12.40	12.64	258400				
beta-BHC	13.89	13.74	14.04	380400				
delta-BHC	15.21	15.03	15.39	650200				
gamma-BHC	13.73	13.64	13.82	712200	13.74	706800	Y	0.76
Heptachlor	14.88	14.76	15.00	928100	14.89	902400	Y	2.8
Aldrin	16.21	16.03	16.39	711300	16.23	686500	Y	3.5
Hept. epoxide	18.71	18.59	18.83	708800	18.71	655200	Y	7.6
Endosulfan I	20.40	20.25	20.55	689200	20.42	692600	Y	0.49
Dieldrin	21.83	21.68	21.98	724100	21.86	739300	Y	2.1
4,4'-DDE	21.25	21.04	21.46	613000				
Endrin	23.54	23.33	23.75	543600				
Endosulfan II	24.37	24.19	24.55	670250	24.39	664350	Y	0.88
4,4'-DDD	23.85	23.64	24.06	617400				
Endo.sulfate	26.63	26.33	26.93	746900				
4,4'-DDT	25.34	25.16	25.52	637400	25.36	716000	Y	12.
Methoxychlor	30.74	30.44	31.04	407360	30.75	370070	Y	9.2
Endrin ketone	31.87	31.45	32.09	833500				
a. chlordane	20.16	20.00	20.36	709400				
g. chlordane	19.44	19.26	19.62	720900				
Toxaphene	24.44	24.35	24.53	3156000				
Aroclor-1016	13.76	13.70	13.82	4705.99				
Aroclor-1221	12.48	12.42	12.54	89025				
Aroclor-1232	14.89	14.71	15.07	223038				
Aroclor-1242	14.98	14.77	15.19	417016				
Aroclor-1248	19.00	18.82	19.18	539707				
Aroclor-1254	22.12	22.00	22.24	664633				
Aroclor-1260	28.49	28.28	28.70	749522				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

35% 0.53mm x 30m

Instrument ID: TRACOR 540 GC Column ID: DB608 Diphenyl polysiloxa

DATE(S) OF ANALYSIS FROM: 05-16-91
TO: 05-18-91

TIME(S) OF ANALYSIS FROM: 0911
TO: 1018

DATE OF ANALYSIS 05-18-91

TIME OF ANALYSIS 0033

EPA SAMPLE NO. (STANDARD) INDA (AND SEQ

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	12.52	12.40	12.64	258400				
beta-BHC	13.89	13.74	14.04	380400				
delta-BHC	15.21	15.03	15.39	650200				
gamma-BHC	13.73	13.64	13.82	712200	13.23	567200	N	20
Heptachlor	14.88	14.76	15.00	928100	14.88	640900	N	31
Aldrin	16.21	16.03	16.39	711300	16.22	483700	N	32
Hept. epoxide	18.71	18.59	18.83	708800	18.71	518200	N	30
Endosulfan I	20.40	20.25	20.55	689200	20.40	481000	N	30
Dieldrin	21.83	21.68	21.98	724100	21.83	555100	N	23
4,4'-DDE	21.25	21.04	21.46	613000				
Endrin	23.54	23.33	23.75	543600				
Endosulfan II	24.37	24.19	24.55	670250	24.36	500400	N	25
4,4'-DDD	23.85	23.64	24.06	617400				
Endo.sulfate	26.63	26.33	26.93	746900				
4,4'-DDT	25.34	25.16	25.52	637400	25.32	501250	N	21
Methoxychlor	30.74	30.44	31.04	407360	30.71	271990	N	33
Endrin ketone	31.87	31.45	32.29	833500				
a. chlordane	20.18	20.00	20.36	709400				
g. chlordane	19.44	19.26	19.62	720900				
Toxaphene	24.44	24.35	24.53	215600				
Aroclor-1016	13.76	13.70	13.82	470599				
Aroclor-1221	18.48	12.42	12.54	89025				
Aroclor-1232	14.89	14.71	15.07	223038				
Aroclor-1242	14.98	14.77	15.19	417016				
Aroclor-1248	19.00	18.82	19.18	539707				
Aroclor-1254	22.12	22.00	22.24	664633				
Aroclor-1260	28.49	28.28	28.70	749522				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

FORM IX PEST 8/87 Re

500055

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

35% 0.53mm x 30m

Instrument ID: TRACOR 540 GC Column ID: DB608 Diphenyl polysiloxa

DATE(S) OF ANALYSIS FROM: 05-16-91 TO: 05-16-91

DATE OF ANALYSIS 05-18-91

TIME(S) OF ANALYSIS FROM: 0911 TO: 1018

TIME OF ANALYSIS 1018

EPA SAMPLE NO. (STANDARD) 1NDB End Seq

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	12.52	12.40	12.64	758400	12.50	678400	Y	11
beta-BHC	13.89	13.74	14.04	380400	13.86	330100	N	13
delta-BHC	15.21	15.03	15.39	650200	15.18	520600	N	20
gamma-BHC	13.73	13.64	13.82	712200				
Heptachlor	14.88	14.76	15.00	928100				
ldrin	16.21	16.03	16.39	711300	16.15	504300	N	29
Hept. epoxide	18.71	18.59	18.83	708800				
Endosulfan I	20.40	20.25	20.55	689200				
Dieldrin	21.83	21.68	21.98	724100				
4,4'-DDE	21.25	21.04	21.46	613000	21.22	556200	N	9.3
Endrin	23.54	23.33	23.75	543600	23.51	442300	N	19
Endosulfan II	24.37	24.19	24.55	670250				
4'-DDD	23.85	23.64	24.06	617400	23.83	498850	N	19
ndo.sulfate	26.63	26.33	26.93	746900	26.58	780550	N	4.5
4,4'-DDT	25.34	25.16	25.52	637400				
Methoxychlor	30.74	30.44	31.04	407360				
Endrin ketone	31.87	31.45	32.29	833500	31.86	592300	N	29
a. chlordane	20.18	20.00	20.36	709400	20.15	567800	N	20
g. chlordane	19.44	19.26	19.62	720900	19.51	1190500	N	65
Toxaphene	24.44	24.35	24.53	815600				
Aroclor-1016	13.76	13.70	13.82	470599				
Aroclor-1221	18.48	12.42	12.54	89025				
Aroclor-1232	14.89	14.71	15.07	223038				
Aroclor-1242	14.98	14.77	15.19	417016				
Aroclor-1248	19.00	18.82	19.18	539707				
Aroclor-1254	22.12	22.00	22.24	664633				
Aroclor-1260	28.49	28.28	28.70	749522				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

3'

PESTICIDE EVALUATION STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm x 30m 5% diphenyl polysiloxane

Dates of Analyses: 05-21-91 to 05-22-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (+/- 10.0%)	
ALDRIN	3197228	3325350	3196636	2.2	
ENDRIN	2605054	2746260	2530983	4.2	
4,4'-DDT	2229838	2411347	2237010	4.5	(1)
DBC	1788584	1993032	1826431	5.8	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown (percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-21-91	0927	5.2	0.85	3.2
02	EVAL MIX B	05-21-91	2143	4.2	1.1	3.8
03	EVAL MIX B	05-22-91	1248	5.7	3.9	4.9
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form Instructions.

500047

8E

PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm X 30m 5% diphenyl polysiloxane

Dates of Analyses: 05-21-91 to 05-22-91

36.873

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALA	EVALA	05-21-91	0837	—	
02	EVALB	EVALB	05-21-91	0927	0.23	
03	EVALC	EVALC	05-21-91	1021	0.30	
04	INDA	INDA	05-21-91	1122	0.05	
05	INDB	INDB	05-21-91	1212	0.15	
06	TOXAPH	TOXAPH	05-21-91	1303	0.15	
07	Ar1242	Ar1242	05-21-91	1354	0.12	
08	Ar1248	Ar1248	05-21-91	1444	0.07	
09	Ar1254	Ar1254	05-21-91	1535	0.17	
10	Ar1660	Ar1660	05-21-91	1639	0.12	
11	PBLK1338	111897-B1338	05-21-91	1730	0.07	
12	PBLK1352	111914-B1352	05-21-91	1820	0.10	
13	LO-1MW01D-GW	111897-6	05-21-91	1911	0.04	
14	LO-1MW01S-GW	111897-7	05-21-91	2002	0.05	
15	LO-1MW03S-GW	111897-8	05-21-91	2052	0.00	
16	EVALB	EVALB	05-21-91	2143	0.04	
17	SW CORNER	111914-2	05-21-91	2233	0.12	
18	CENTER	111914-3	05-21-91	2324	0.17	
19	NW CORNER	111914-4	05-22-91	0015	0.01	
20	LO-1MW05S-GW	111908-7 (10X)	05-22-91	0105	0.10	
21	LO-1G10SS-FD	111908-8 (10X)	05-22-91	0156	0.00	
22	IND B	INDB	05-22-91	0337	0.04	
23	1MW03D-GW	111897-9	05-22-91	0834	0.01	
24	LO-1MW35-FD	111897-10	05-22-91	0924	0.11	
25	LO-1GW1-FB	111897-11	05-22-91	1015	0.26	
26	PBLK 342	A-A1348	05-22-91	1107	0.12	
27	LO-1MW02S-ms/msd	111918-7	05-22-91	1158	0.26	
28	EVALB	EVALB	05-22-91	1248	0.21	
29	Comp	111922-1	05-22-91	1339	0.22	
30	IND A	INDA ENDSEQ.	05-22-91	1508	0.12	
31	IND B	INDA ENDSEQ	05-22-91	1559	0.30	
32						
33						
34						
35						
36						
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns) 1.5 for megabore

500051

PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

5% diphenyl polysiloxane

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm x 30m

DATE(S) OF ANALYSIS FROM: 05-21-91 TO: 05-22-91

DATE OF ANALYSIS 05-22-91

TIME OF ANALYSIS 0337

TIME(S) OF ANALYSIS FROM: 0837 TO: 1554

EPA SAMPLE NO. (STANDARD) 1ND86

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	13.78	13.51	14.05	2464400	13.72	2674600	Y	8.5
beta-BHC	14.69	14.42	14.96	1257600	14.64	1315800	Y	4.6
delta-BHC	15.83	15.56	16.10	2163200	15.77	2436400	Y	13
gamma-BHC	15.00	14.88	15.12	2194600				
Heptachlor	18.15	18.03	18.27	2112300				
Aldrin	19.92	19.80	20.04	2259000	19.89	2226800	Y	1.4
Hept. epoxide	21.95	21.83	22.07	2001800				
Endosulfan I	24.09	23.97	24.21	2097400				
Dieldrin	25.66	25.54	25.78	1905300				
4,4'-DDE	25.27	24.97	25.57	2162100	25.19	2214800	Y	2.4
Endrin	27.09	26.79	27.39	1525000	27.01	1655300	Y	8.5
dosulfan II	27.56	27.44	27.68	1732100				
4'-DDD	27.93	27.66	28.20	1495550	27.85	1667450	Y	11
Endo.sulfate	30.37	30.07	30.67	1826600	30.28	1803250	Y	1.3
4,4'-DDT	30.47	30.35	30.59	1753900				
Methoxychlor	34.41	34.32	34.50	978960				
Endrin ketone	33.68	33.38	33.98	2667300	33.59	2432600	Y	9.7
a. chlordane	24.23	23.93	24.53	2049500	24.16	2213800	Y	8.0
g. chlordane	23.32	23.02	23.62	2044700	23.25	2213900	Y	8.2
Toxaphene	27.00	25.83	28.17	804943				
Aroclor-1016	17.25	17.16	17.34	816092				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	17.76	17.58	17.94	813198				
Aroclor-1248	23.27	23.12	23.42	1080960				
Aroclor-1254	25.85	25.76	25.94	1340080				
Aroclor-1260	35.66	35.57	35.75	1225801				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm x 30m 5% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 05-21-91 TO: 05-22-91 DATE OF ANALYSIS 05-22-91

TIME(S) OF ANALYSIS FROM: 0837 TO: 1559 TIME OF ANALYSIS 1508

EPA SAMPLE NO. (STANDARD) INDA CCC SEE

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	13.78	13.51	14.05	2464400				
beta-BHC	14.69	14.42	14.96	1257600				
delta-BHC	15.83	15.56	16.10	2163200				
gamma-BHC	15.00	14.88	15.12	2194600	14.98	4422000	N	101
Heptachlor	18.15	18.03	18.27	2112300	18.13	3434200	N	63
Aldrin	19.92	19.80	20.04	2259000	19.90	3329000	N	47
Hept. epoxide	21.95	21.83	22.07	2001800	21.95	3099800	N	55
Endosulfan I	24.09	23.97	24.21	2097400	24.07	3236700	N	54
Dieldrin	25.66	25.54	25.78	1905300	25.65	3181100	N	67
4,4'-DDE	25.27	24.97	25.57	2162100				
Endrin	27.09	26.79	27.39	1525000				
Endosulfan II	27.56	27.44	27.68	1732100	27.56	2666750	N	54
4,4'-DDD	27.93	27.66	28.20	1495550				
Endo.sulfate	30.37	30.07	30.67	1826600				
4,4'-DDT	30.47	30.35	30.59	1253900	30.47	2261350	N	29
Methoxychlor	34.41	34.32	34.50	978960	34.41	1455460	N	49
Endrin ketone	33.68	33.38	33.98	2267300				
a. chlordane	24.23	23.93	24.53	3049500				
g. chlordane	23.32	23.02	23.62	2044700				
Toxaphene	27.00	26.83	28.17	9049.3				
Aroclor-1016	17.25	17.16	17.34	816092				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	17.76	17.58	17.94	813198				
Aroclor-1248	23.27	23.12	23.42	1080960				
Aroclor-1254	25.85	25.76	25.94	1340080				
Aroclor-1260	35.66	35.57	35.75	1725801				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 18917 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm x 30m 5% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 05-21-91 DATE OF ANALYSIS 05-22-91

TO: 05-22-91 TIME OF ANALYSIS 1559

TIME(S) OF ANALYSIS FROM: 0837 EPA SAMPLE NO. (STANDARD) INDB End Seq.

TO: 1559

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	13.78	13.51	14.05	2464400	13.77	3971600	N	61
beta-BHC	14.69	14.42	14.96	1257600	14.69	1909100	N	52
delta-BHC	15.83	15.56	16.10	2163200	15.82	3569400	N	65
gamma-BHC	15.00	14.88	15.12	2194600				
Heptachlor	18.15	18.03	18.27	2112300				
Aldrin	19.92	19.80	20.04	2259000	19.96	3109800	N	3
Hept. epoxide	21.95	21.83	22.07	2001800				
Endosulfan I	24.09	23.97	24.21	2097400				
Dieldrin	25.66	25.54	25.78	1905300				
4,4'-DDE	25.27	24.97	25.57	2162100	25.29	3142100	N	45
Endrin	27.09	26.79	27.39	1525000	27.13	2281600	N	50
Endosulfan II	27.56	27.44	27.68	1732160				
4,4'-DDD	27.93	27.66	28.20	1495550	27.97	2363500	N	58
Endo.sulfate	30.37	30.07	30.67	1826600	30.42	2582450	N	41
4,4'-DDT	30.47	30.35	30.59	1253900				
Methoxychlor	34.41	34.32	34.50	978960				
Endrin ketone	33.68	33.38	33.98	2267300	33.73	3287000	N	45
a. chlordane	24.23	33.93	24.53	2049500	24.26	3099100	N	51
g. chlordane	23.32	23.02	23.62	2044700	23.35	3056400	N	49
Toxaphene	27.00	25.83	26.17	8049.43				
Aroclor-1016	17.25	17.16	17.34	816092				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	17.76	17.58	17.94	813198				
Aroclor-1248	23.27	23.12	23.42	1080960				
Aroclor-1254	25.85	25.76	25.94	1340080				
Aroclor-1260	35.66	35.57	35.75	1725801				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

PESTICIDE EVALUATION STANDARDS SUMMARY

Lab Name: AROL, INC Contract: LENZ OIL

Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: TRACOR 540 GC Column ID: DB608 0.53mm x 30m 35% diphenyl polysiloxane

Dates of Analyses: 05-22-91 to 05-23-91

Confirmation Only

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (+/- 10.0%)	
ALDRIN	1493096	1526652	1495339	1.2	
ENDRIN	1269786	1275487	1218706	2.5	
4,4'-DDT	1245226	1270234	1188522	3.4	(1)
DBC	1071294	1042861	1058772	1.3	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-22-91	1525	0.0	1.1	0.54
02	EVAL MIX B	05-23-91	0115	0.0	0.58	0.28
03	EVAL MIX B					
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form Instructions.

PESTICIDE EVALUATION STANDARDS SUMMARY
Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: ARDL, INC Contract: LENZ OIL

Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: TRACOR 540 GC Column ID: DB 608 0.53mm x 30m 35% diphenyl polysiloxane

Dates of Analyses: 05-22-91 to 05-23-91

Confirmation Only 28.085

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVAL B	EVAL B	05-22-91	1525	—	
02	EVAL A	EVAL A	05-22-91	1711	0.10	
03	EVAL C	EVAL C	05-22-91	1805	0.20	
04	IND A	IND A	05-22-91	1859	0.06	
05	IND B	IND B	05-22-91	1953	0.14	
06	LO-1MW03D-GW	111897-9	05-22-91	2046	0.14	
07	LO-1MW35-FD	111897-10	05-22-91	2140	0.03	
08	ZZZZ	905-11	05-22-91	2328	0.38	
09	ZZZZ	905-5	05-22-91	2234	0.26	
10	LO-1MW01S-GW	111897-7	05-23-91	0021	0.48	
11	EVAL B	EVAL B	05-23-91	0115	0.47	
12	ZZZZ	905-9	05-23-91	0209	0.33	
13	ZZZZ	905-12	05-23-91	0303	0.43	
14	ZZZZ	905-12MS	05-23-91	0356	0.30	
15	ZZZZ	905-12MSD	05-23-91	0450	0.07	
16	IND A	IND A-ENDSEQ	05-23-91	1017	1.09	
17	IND B	IND B ENDSEQ	05-23-91	1111	2.04	
18						
19						
20						
21						
22						
23						
24						
25						
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* Values outside of QC limits (2.0% for packed columns, 0.5% for capillary columns) 1.5 for megabore

FORM VIII PEST-2 1/87 Rev.

500052

Lab Name: ARDL, INC Contract: KENZ 01C

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: TRACOR 540 GC Column ID: DB 608 0.53mm x 30m 35% diphenyl dimethylsilane

DATE(S) OF ANALYSIS FROM: 05-22-91 TO: 05-23-91

DATE OF ANALYSIS 05-23-91

TIME(S) OF ANALYSIS FROM: 1525 TO: 1111

TIME OF ANALYSIS 1111

EPA SAMPLE NO. (STANDARD) INDB

Confirmation Only

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	12.55	12.43	12.67	823400	12.64	831800	N	1.0
beta-BHC	13.91	13.76	14.06	504200	14.03	520200	N	3.2
delta-BHC	15.25	15.07	15.43	796500	15.36	814900	N	2.3
gamma-BHC	13.77	13.68	13.86	793800				
Heptachlor	14.92	14.80	15.04	553300				
Aldrin	16.26	16.08	16.44	845000	16.37	790600	N	6.4
Hept. epoxide	18.76	18.64	18.88	934700				
Endosulfan I	20.45	20.30	20.60	881300				
Dieldrin	21.87	21.72	22.02	877600				
4,4'-DDE	21.29	21.08	21.50	792400	21.36	883000	N	11
Endrin	23.58	23.37	23.79	721900	23.64	826800	N	15
Endosulfan II	24.40	24.22	24.58	934300				
4,4'-DDD	23.89	23.68	24.10	861850	23.93	913250	N	6.0
Endo.sulfate	26.67	26.37	26.97	1110000	26.20	1204800	N	8.5
4,4'-DDT	25.36	25.18	25.54	1193800				
Methoxychlor	30.79	30.49	31.09	545740				
Endrin ketone	31.92	31.50	32.34	1307650	31.96	1166800	N	3.4
a. chlordane	20.23	20.15	20.51	967200	20.32	1076500	N	11
g. chlordane	19.49	19.31	19.67	893200	19.58	919500	N	2.9
Toxaphene								
Aroclor-1016								
Aroclor-1221								
Aroclor-1232								
Aroclor-1242								
Aroclor-1248								
Aroclor-1254								
Aroclor-1260								

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

FORM IX PEST 8/87 Rev

500061

Contract: [illegible]

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: TRACOR 540 GC Column ID: DB 608 0.53mm x 30m 35% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 05-22-91 TO: 05-23-91

TIME(S) OF ANALYSIS FROM: 1525 TO: 1111

DATE OF ANALYSIS 05-23-91

TIME OF ANALYSIS 1017 ✓

EPA SAMPLE NO. (STANDARD) INDA ✓ EPA 529

Confirmation Only

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	12.55	12.43	12.67	823400				
beta-BHC	13.91	13.76	14.06	504200				
delta-BHC	15.25	15.07	15.43	796500				
gamma-BHC	13.77	13.68	13.86	793800	14.00	1016200	N	28
Heptachlor	14.92	14.80	15.04	553300	15.14	1027300	N	26
Aldrin	16.26	16.08	16.44	845000	16.47	1065800	N	26
Hept. epoxide	18.76	18.64	18.88	934700	18.90	1206700	N	2
Endosulfan I	20.45	20.30	20.60	881300	20.55	1224300	N	34
Dieldrin	21.87	21.72	22.02	877600	21.95	1210900	N	38
4,4'-DDE	21.29	21.08	21.50	792400				
Endrin	23.58	23.37	23.79	721900				
Endosulfan II	24.40	24.22	24.58	934300	24.44	1062200	N	14
4,4'-DDD	23.89	23.68	24.10	861850				
Endo. sulfate	26.67	26.37	26.97	1110000				
4,4'-DDT	25.36	25.18	25.54	1193800	25.70	988350	N	17
Methoxychlor	30.79	30.49	31.09	545740	30.85	523600	N	4.1
Endrin ketone	31.92	31.50	32.34	1307650				
alpha-chlordane	20.23	20.15	20.51	967200				
gamma-chlordane	19.49	19.31	19.67	893200				
Toxaphene								
Aroclor-1016								
Aroclor-1221								
Aroclor-1232								
Aroclor-1242								
Aroclor-1248								
Aroclor-1254								
Aroclor-1260								

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

PESTICIDE EVALUATION STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LEN2 01L

Lab Code: ----- Case No.: 11897 SAS No.: ----- SDG No.: -----

Instrument ID: HP#1 5890 GC Column ID: RTX5 .0,53 mm X30,

Dates of Analyses: 05-29-91 To 06-01-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (+/- 10.0%)	
ALDRIN	1495232	1761326	1564632	8.6	
ENDRIN	1072854	1283205	1120734	9.9	
4,4'-DDT	982968	1072631	1035999	4.4	(1)
DBC	1146500	1283071	1211359	5.6	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-29-91	1204	13	3.5	8.9
02	EVAL MIX B	05-30-91	0204	16	2.3	9.5
03	EVAL MIX B	05-31-91	1509	2.0	0.27	1.1
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form instructions.

8E

PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: ARDL, INC Contract: LEN2 OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: HP#1 5890 GC Column ID: RTX5 0.53 mm x 30m

Dates of Analyses: 05-29-91 to 06-01-91

31.112

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALB	EVALB	05-29-91	1204	—	
02	EVALA	EVALA	05-29-91	1322	0.05	
03	EVALC	EVALC	05-29-91	1413	0.23	
04	IND A	IND A	05-29-91	1506	0.37	
05	IND B	IND B	05-29-91	1557	0.41	
06	TOXADL	TOXADL	05-29-91	1749	0.22	
07	Ar 1242	Ar 1242	05-29-91	1838	0.23	
08	Ar 1248	Ar 1248	05-29-91	1927	0.39	
09	Ar 1254	Ar 1254	05-29-91	2017	0.32	
10	Ar 1660	Ar 1660	05-29-91	2106	0.32	
11	PBLK 1334	200215-B1334	05-29-91	2156	0.34	
12	PBLK 1371	457-B1371	05-29-91	2246	0.41	
13	G101	200215-3ms	05-29-91	2335	0.34	
14	G101	200215-3msD	05-30-91	0025	0.33	
15	PL-2	457-2	05-30-91	0114	0.39	
16	EVALB	EVALB	05-30-91	0204	0.41	
17	PL-1	457-1	05-30-91	0253	0.40	
18	PL-3	457-3	05-30-91	0343	0.41	
19	PL-1	457-1MS	05-30-91	0732	0.41	
20	LO-IG102D-GW	111897-1ms	05-30-91	0912	0.47	
21	LO-IG102D-GW	111897-1MSD	05-30-91	1002	0.41	
22	IND B	IND B	05-30-91	1141	0.26	
23	PBLK 1338	111897-B1338	05-30-91	1335	0.33	
24	BLK	457-B1376	05-30-91	1424	0.39	
25	PBLK 1365	111928-B1365	05-30-91	1631	0.28	
26	PL-1	457-1(10X)	05-30-91	1745	0.47	
27	PL-2	457-2(10X)	05-30-91	1859	0.58	
28	EVALB	EVALB	05-31-91	1507	0.04	
29	PL-1	457-1MS(10X)	05-31-91	1619	0.01	
30	PL-1	457-1MSD(10X)	05-31-91	1727	0.05	
31	LO-IG1065-W1D	111928-1	05-31-91	1971	1.38	
32	LO-IG1065-W2	111928-1MS	05-31-91	2141	1.30	
33	LO-IG1065-W1D	111928-1MSD	05-31-91	2350	1.56	
34	IND A	IND A	06-01-91	0200	2.07	
35	IND B	IND B	06-01-91	0304	0.04	
36						
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns) .5 for megabore

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

nstrument ID: HP4/5890 GC Column ID: RTX 5 0.53mm X30

DATE(S) OF ANALYSIS FROM: 05-29-91 TO: 06-01-91
TIME(S) OF ANALYSIS FROM: 1204 TO: 0304
DATE OF ANALYSIS 06-01-91
TIME OF ANALYSIS 0304
EPA SAMPLE NO. (STANDARD) INDB

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	9.86	9.35	10.37	995800	9.88	1201800	N	20.7
beta-BHC	10.45	9.94	10.96	800500	10.48	815000	N	4.8
delta-BHC	11.17	10.60	11.74	954700	11.21	1257600	N	31.7
gamma-BHC	10.63	10.54	10.72	1137200				
Heptachlor	12.55	12.49	12.61	1021300				
Aldrin	13.71	13.65	13.77	898000	13.74	1148700	N	27.9
Hept. epoxide	15.22	15.16	15.28	1217800				
Endosulfan I	16.90	16.81	16.99	1268000				
Dieldrin	18.23	18.11	18.35	1025600				
4,4'-DDE	17.92	17.14	18.71	904400	17.99	1079100	N	19.3
Endrin	19.44	18.62	20.36	471700	19.57	977900	N	106.5
Endosulfan II	20.04	19.86	20.22	1094600				
4,4'-DDD	20.42	19.49	21.35	801150	20.51	1051700	N	31.2
Endo.sulfate	22.86	21.81	23.27	1015600	22.97	1279600	N	31.9
4,4'-DDT	23.03	22.79	23.27	751900				
Methoxychlor	27.82	27.52	28.12	558120				
Endrin ketone	26.52	25.32	27.72	1174400	26.65	1620800	N	38.0
a. chlordane	16.98	15.76	17.20	1205100	17.05	1490600	N	23.7
g. chlordane	16.26	15.57	16.95	1169200	16.33	1466700	N	25.4
Toxaphene	19.46	18.14	20.78	312782				
Aroclor-1016	12.01	11.74	12.28	489304				
Aroclor-1221	10.38	9.63	11.13	581734				
Aroclor-1232	8.97	843	9.51	143338				
Aroclor-1242	15.81	15.27	16.35	494293				
Aroclor-1248	16.24	15.79	16.69	241050				
Aroclor-1254	23.37	22.80	23.94	763899				
Aroclor-1260	29.04	28.62	29.46	870219				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

Name: ARDL, INC Contract: LEN2 01L

Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

nt ID: HP#1 5890 GC Column ID: RTX 5 0.53mm X 30

DATE(S) OF ANALYSIS FROM: 05-29-91 DATE OF ANALYSIS 05-30-91

TO: 6-1-91 TIME OF ANALYSIS 1141

TIME(S) OF ANALYSIS FROM: 1204 EPA SAMPLE NO. (STANDARD) IND B

TO: 0304

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
ha-BHC	9.86	9.35	10.37	995800	9.86	910200	Y	8.6
a-BHC	10.45	9.94	10.96	900500	10.45	741900	Y	7.3
ta-BHC	11.17	10.60	11.74	954700	11.17	861100	Y	9.8
ma-BHC	10.63	10.54	10.72	1137200				
tachlor	12.55	12.49	12.61	1021300				
rin	13.71	13.65	13.77	898000	13.70	833500	Y	7.2
t. epoxide	15.22	15.16	15.28	1217800				
osulfan I	16.90	16.81	16.99	1268000				
ldrin	18.23	18.11	18.35	1025600				
'-DDE	17.92	17.14	18.71	904400	17.92	849000	Y	6.1
rin	19.14	18.62	20.36	471700	19.49	451200	Y	4.3
osulfan II	20.04	19.86	20.22	1094600				
D	20.42	19.49	21.35	801150	20.42	734700	Y	3.3
o lfate	22.86	21.81	23.27	1015600	22.96	912900	Y	8.4
'-DDT	23.63	22.77	23.27	751900				
hoxychlor	27.82	27.52	28.12	558120				
rin ketone	26.52	25.32	27.72	1174400	26.52	1125100	Y	4.2
chlordane	16.98	15.76	17.20	1205100	16.98	1149800	Y	4.6
chlordane	16.26	15.57	16.95	1169200	16.26	1129500	Y	2.5
aphene	19.46	18.14	20.78	312782				
clor-1016	12.01	11.74	12.28	489704				
clor-1221	10.78	9.63	11.13	581734				
clor-1232	8.97	843	9.51	142228				
clor-1242	15.81	15.27	16.35	494293				
clor-1248	16.24	15.79	16.69	841050				
clor-1254	22.37	22.80	22.94	762899				
clor-1260	26.04	20.62	29.46	870719				

r QNT Y/N: enter Y if quantitation was performed, N if not performed.
ust be less than or equal to 15.0% for quantitation, and less than
qual to 20.0% for confirmation.

: Determining that no compounds were found above the CRQL is a form of
titation, and therefore at least one column must meet the 15.0% criteria.

multicomponent analytes, the single largest peak that is characteristic
he component should be used to establish retention time and ID.
t cation of such analytes is based primarily on pattern recognition

of 1

FORM IX PEST 6/87 Rev.

500062

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111897 SAS No.: ----- SDG No.: -----

Instrument ID: HP#1 5890 GC Column ID: RTX 5 0.53mm X30m

DATE(S) OF ANALYSIS FROM: 05-29-91
TO: 06-01-91
TIME(S) OF ANALYSIS FROM: 1204
TO: 0104

DATE OF ANALYSIS 06-01-91 ✓
TIME OF ANALYSIS 0200 ✓
EPA SAMPLE NO. (STANDARD) INDA ✓

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	9.86	9.35	10.37	995800				
beta-BHC	10.45	9.94	10.96	800500				
delta-BHC	11.17	10.60	11.74	954700				
gamma-BHC	10.63	10.54	10.72	1137200	10.65	2205900	N	93.9
Heptachlor	12.55	12.49	12.61	1021300	12.57	1392300	N	36.3
ldrin	13.71	13.65	13.77	898000	13.74	1418500	N	58.0
ept. epoxide	15.22	15.16	15.28	1217800	15.27	1472500	N	20.9
Endosulfan I	16.90	16.81	16.99	1268000	16.96	1536600	N	21.2
Dieldrin	18.23	18.11	18.35	1035600	18.30	1410000	N	36.2
4,4'-DDE	17.92	17.14	18.71	904400				
Endrin	19.44	18.62	20.36	471700				
Endosulfan II	20.04	19.86	20.22	1094600	20.12	1393750	N	27.3
4,4'-DDD	20.42	19.49	21.35	801150				
do.sulfate	22.86	21.81	23.27	1015600				
,4'-DDT	23.03	22.79	23.27	751900	23.13	1170650	N	55.7
Methoxychlor	27.82	27.52	28.12	558120	27.95	947980	N	69.9
Endrin ketone	26.52	25.32	27.72	1174400				
a. chlordane	16.78	15.76	17.20	1205100				
g. chlordane	16.26	15.57	16.95	1169200				
Toxaphene	19.46	18.14	20.78	312782				
Aroclor-1016	12.01	11.74	12.28	489704				
roclor-1221	10.38	9.63	11.13	581734				
oclor-1232	8.97	843	9.51	143338				
Aroclor-1242	15.81	15.27	16.35	494293				
Aroclor-1248	16.24	15.79	16.69	841050				
Aroclor-1254	23.37	22.80	23.94	763899				
Aroclor-1260	29.04	28.62	29.46	871219				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

1D
PESTICIDE ORGANIC ANALYSIS

Customer Sample No.

LO-1G102D-GWMS

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: _____ Case No.: 111897 SAS No.: ____ SDG No.: ____

Matrix (SOIL/WATER) : WATER
Sample wt/vol : 500 (g/mL) mL
Level (LOW/MED) : LOW
% Moisture (not dec): --- dec. -
Extraction (SEPF/CONT/SONC): SEPF
GPC Cleanup (Y/N): N pH: 7.1

Lab Sample ID : 111897-1MS
Lab File ID :
Date Received : 05/07/91
Date Extracted : 05/10/91
Date Analyzed : 05/30/91
Dilution Factor: 1.0

CAS No.	Compound	Concentration Units: ug/L (ug/L or ug/Kg)	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC(Lindane)	0.25	
76-44-8	Heptachlor	0.23	
309-00-2	Aldrin	0.24	
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.65	
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	1.0	
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.63	
72-43-5	Methoxychlor	1.0	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	1.0	U
5103-74-2	gamma-Chlordane	1.0	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor 1016	1.0	U
11104-28-2	Aroclor 1221	1.0	U
11141-16-5	Aroclor 1232	1.0	U
53469-21-9	Aroclor 1242	1.0	U
12672-29-6	Aroclor 1248	1.0	U
11097-69-1	Aroclor 1254	2.0	U
11096-82-5	Aroclor 1260	2.0	U

1D
PESTICIDE ORGANIC ANALYSIS

Customer Sample No.

LO-1G102D-GWMSD

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: _____ Case No.: 111897 SAS No.: ____ SDG No.: ____

Matrix (SOIL/WATER) : WATER Lab Sample ID : 111897-1MSD
Sample wt/vol : 500 (g/mL) mL Lab File ID :
Level (LOW/MED) : LOW Date Received : 05/07/91
% Moisture (not dec): --- dec. - Date Extracted : 05/10/91
Extraction (SEPF/CONT/SONC): SEPF Date Analyzed : 05/30/91
GPC Cleanup (Y/N): N pH: 7.1 Dilution Factor: 1.0

CAS No.	Compound	Concentration Units: ug/L (ug/L or ug/Kg)	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC(Lindane)	0.27	
76-44-8	Heptachlor	0.26	
309-00-2	Aldrin	0.27	
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.69	
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	1.2	
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.70	
72-43-5	Methoxychlor	1.0	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	1.0	U
5103-74-2	gamma-Chlordane	1.0	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor 1016	1.0	U
11104-28-2	Aroclor 1221	1.0	U
11141-16-5	Aroclor 1232	1.0	U
53469-21-9	Aroclor 1242	1.0	U
12672-29-6	Aroclor 1248	1.0	U
11097-69-1	Aroclor 1254	2.0	U
11096-82-5	Aroclor 1260	2.0	U

B. CASE 111908

PROJECT NAME: Lenz Oil

SUPPORT DOCUMENTATION FOR THE REVIEW OF ORGANIC ANALYSIS LAB DATA PACKAGE

CLP Volatiles (VOA)
CLP Semivolatiles (BNA)
TYPE OF ANALYSIS: CLP Pesticide / PCB
CONTRACT LABORATORY: ARDL

APPLICABLE SAMPLE NO's.: refer to Table 1

REVIEWER: D Liscano
REVIEW DATE: June 1991

THE FOLLOWING TABLE INDICATES AREAS WHICH WERE EXAMINED IN DETAIL, THE IDENTIFIED PROBLEM AREAS, AND SUPPORT DOCUMENTATION ATTACHMENTS:

	AREAS EXAMINED IN DETAIL (CHECK (√) IF YES OR FOOTNOTE LETTER FOR COMMENTS BELOW)				PROBLEM AREAS IDENTIFIED (CHECK (√) IF YES OR FOOTNOTE NUMBER FOR COMMENTS BELOW)				SUPPORT DOCUMENTATION ATTACHMENTS (CHECK (√) IF YES — OR IDENTIFY ATTACHMENT NO.)			
	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB
HOLDING TIMES	✓											
BLANK ANALYSIS RESULTS: TARGET COMPOUNDS	✓					✓	✓		✓			
BLANK ANALYSIS RESULTS: TENTATIVE (C.I.)		✓	✓			✓	✓			✓	✓	
SURROGATE SPIKE RESULTS	✓					✓	✓		✓			
MATRIX SPIKE RESULTS	✓							✓	✓			
DUPLICATE ANALYSIS RESULTS	✓											
TARGET COMPOUND MATCHING QUALITY	✓					✓		✓			✓	✓
TENTATIVELY IDENTIFIED COMPOUNDS		✓	✓			✓	✓			✓	✓	
DFTPP & BFB SPECTRUM TUNE RESULTS		✓	✓				✓			✓	✓	
GC INSTRUMENT PERFORMANCE	✓					✓	✓		✓			
INITIAL CALIBRATIONS	✓					✓	✓	✓	✓			
CONTINUING CALIBRATIONS	✓					✓	✓	✓	✓			
QUANTITATION OF RESULTS	✓											
OTHERS Sample identification	✓					✓			✓			

COMMENTS: 1) Data is acceptable unless otherwise qualified. Support documentation is arranged by fraction (VOA, BNA, Pest/PCB)

Transparencies were utilized in the identification of Aroclor 1242.

BLANK ANALYSIS RESULTS FOR [illegible]

FRACTION	TYPE/ MATRIX	SAMPLE #	SOURCE	CONTAMINANT (CONCENTRATION)
VOA	Method / Aq	BLK5-14-91	ARDL	none
VOA	Method / Aq	BLK5-16-91	ARDL	none
VOA	Method/Aq	BLK 5-17-91	ARDL	13 ug/L methylene chloride
VOA	Method/Aq	BLK 5-21-91	ARDL	none
VOA	Method / Aq	BLK 6-3-91	ARDL	4 ug/L methylene chloride 2 ug/L acetone *
P/PCB	Method / Aq	PBLK1340	ARDL	none
BNA	Method / Aq	Blank B1341	ARDL	none
VOA	Field / Aq	LO-1GW2-FB	—	4 ug/L methylene chloride
BNA	↓	↓	↓	none
P/PCB	↓	↓	↓	none
VOA	Trip / Aq	LO-1GW-TB1	-	4 ug/L methylene chloride

LABORATORY REPORTED FIELD BLANK IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN THE SAMPLE ANALYTICAL DATA SUMMARY. TICs IN BLANKS ARE LISTED ON A SEPERATE FORM.

COMMENTS:

(1) RESULT REPORTED BY THE LABORATORY AND CONFIRMED BY REVIEWER

(2) RESULT INFERED FROM QUANTITATION LIST, CHROMATOGRAM AND/OR SPECTRUM

Case 111908

* not reported on Form I (below QL) spectrum not provided.

BLANK ANALYSIS RESULTS FOR TENTATIVELY IDENTIFIED COMPOUNDS

ALL TENTATIVELY IDENTIFIED COMPOUNDS FOUND IN THE BLANK ANALYSES ARE LISTED BELOW

SAMPLE NUMBER	FRACTION	SCAN	ESTIMATED CONCENTRATION	COMPOUND NAME/ COMMENTS
BLK 5-14-91	VOA	309	7	unknown RT 13.17
BLK 5-16-91	VOA			none
BLK 5-17-91	VOA			none
BLK 5-21-91	VOA	*	79	unknown RT 13.37
PBLK 1340	P/PCB			NA
Blank 01341	BNA	858	10	unknown RT 11.43
		1093	2	Lab. artifact RT 13.67
		1782	6	2-methyl-1-(1,1-dimethylethyl)propanoic acid RT 20.88
		2117	2	dibutylester 1,2-benzenedicarboxylic acid RT 23.20
		2800	4	unknown phthalate RT 29.56
LO-GW2-FB	VOA			refer to data tables
↓	BNA			refer to data tables
	P/PCB			NA
LO-GW-TB	VOA			refer to data tables

* spectrum (library search) not provided

2A

WATER VOLATILE SURROGATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------- Case No.: 111908 SAS No.: ------ SDG No.: ------

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	LO-1MW04D-GW	97	99	108		0
02	LO-1G104D-GW	100	109	111		0
03	LO-1G104D-GWMS	99	109	121 *		1
04	LO-1G104D-GWMSD	98	110	118 *		1
05	LO-1GW2-FB	97	103	113		0
06	LO-1MW07D-GW	99	99	110		0
07	LO-1MW07S-GW	100	98	109		0
08	LO-1MW02D-GW	102	99	105		0
09	LO-1MW05S-GW	98	115	110		0
10	LO-1G105S-FD	123 *	170 *	133 *		3
11	LO-1G105S-FDRE	132 *	156 *	108		2
12	LO-1G104L-GW	102	106	111		0
13	LO-1MW05D-GW	90	101	108		0
14	LO-1G106DR-GW	100	106	109		0
15	LO-G106DR-MS/MSD	94	111	108		0
16	LO-1GW-TB1	100	109	107		0
17	BLK 5/14/91	100	101	103		0
18	BLK 5/16/91	99	104	104		0
19	BLK 5/17/91	103	100	102		0
20	BLK 5/21/91	98	102	97		0
21	BLK 6/03/91	97	104	105		0
22						
23						
24						
25						
26						
27						
28						
29						
30						

	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromofluorobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

:t .me: ARDL, INC. Contract: ------

o Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

trix Spike - EPA Sample No.: LO-1G104D-GW

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0.00	48.00	96	61-145
Trichloroethene	50.00	0.00	43.00	87	71-120
Benzene	50.00	0.00	46.00	91	76-127
Toluene	50.00	0.00	46.00	91	76-125
Chlorobenzene	50.00	0.00	46.00	92	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	44.00	89	7	14	61-145
Trichloroethene	50.00	42.00	84	2	14	71-120
Benzene	50.00	43.00	87	5	11	76-127
Toluene	50.00	43.00	86	6	13	76-125
Chlorobenzene	50.00	44.00	87	4	13	75-130

Column to be used to flag recovery and RPD values with an asterisk

Values outside of qc limits

D: 0 out of 5 outside limits
ke Recovery: 0 out of 10 outside limits

MMENTS: _____

_____

200008

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ABDL, INC. Contract: -------

Lab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

Lab File ID: >429HF BFB Injection Date: 4/29/91

Instrument ID: HP- 4 BFB Injection Time: 15:37

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	21.7
75	30.0 - 60.0% OF MASS 95	59.5
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.6
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	74.3
175	5.0 - 9.0% of mass 174	6.3(8.5)1
176	Greater than 95.0%, but less than 101.0% of mass 174	72.6(97.7)1
177	5.0 - 9.0% of mass 176	6.4(8.8)2

1-Value is % mass 174 2-Value is % mass 176

THE TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>H6911	4/29/91	16:32
02	VOA STD	20 NG STD	>H6912	4/29/91	17:37
03	VOA STD	100 NG STD	>H6914	4/29/91	18:58
04	VOA STD	150 NG STD	>H6915	4/29/91	19:40
05	VOA STD	200 NG STD	>H6916	4/29/91	20:21
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: ---------- Instrument ID: HF-4 ----------

Contractor: ARDL,INC ---------- Calibration Date: 04/29/91 ----------

Contract No: ----------

Minimum $\overline{RF}$ for SPCC is 0.5 Maximum % RSD for CCC is 30%

Laboratory ID:	>H6912	>H6911	>H6914	>H6915	>H6916						
	RF	RF	RF	RF	RF						
Compound	20.00	50.00	100.00	150.00	200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Chloromethane	.60441	.51215	.57041	.57393	.57101	.152	.56638	5.910		**	
Bromomethane	1.67058	1.34939	1.57433	1.53042	1.57189	.244	1.53932	7.664			
Dichlorodifluoromethane	.17211	.19558	.10897	.08251	.07010	.312	.12566	44.013			
Vinyl Chloride	.98499	.91808	.92176	1.22526	1.21370	.319	1.05276	14.681	*		
Chloroethane	.67492	.57662	.62833	.65496	.67873	.429	.64271	6.537			
Iodomethane	3.19658	3.24501	3.20664	3.40983	3.49397	.602	3.31040	4.041			
Methylene Chloride	1.37199	1.24725	1.91046	1.60710	1.46650	.664	1.52066	16.740			
Acetone	.32844	.21479	.24124	.22377	.22887	.768	.24742	18.707			
2-Propenal	.00388	.00620	.01138	.00894	.00652	.772	.00738	38.797			
Carbon Disulfide	2.20841	2.55774	2.40093	2.67779	2.62541	.826	2.49406	7.643			
Acrylonitrile	.10122	.11417	.10802	.12309	.11347	.834	.11199	7.227	*		
Trichlorofluoromethane	1.87563	1.97327	1.72452	1.86317	1.80805	.885	1.84893	4.951			(Conc=40.0,100.0,200.0,30
1,1-Dichloroethene	1.08002	1.05236	1.02172	1.10529	1.07380	.963	1.06664	2.944	*		
Dichloroethane	2.41613	2.49898	2.63151	2.79166	2.74135	1.082	2.61592	6.058		**	
1,2-Dichloroethene	1.13631	1.17316	1.23521	1.23825	1.22969	1.159	1.20252	3.795			
Chloroform	4.00968	3.90868	4.10525	4.15560	4.03938	1.209	4.04372	2.337	*		
1,2-Dichloroethane-d4	2.71801	2.67599	2.75012	2.81391	2.92017	1.273	2.77564	3.430			(Conc=50.0,50.0,50.0,50.0
1,1,2-Trichlorotrifluoroethane	5.02952	2.55592	2.78395	2.51837	2.21688	1.243	3.02093	37.764			
1,2-Dichloroethane	2.81982	2.95590	3.06650	3.11697	3.09782	1.284	3.01140	4.115			
Tetrahydrofuran	.07170	.06804	.06792	.06046	.06153	1.098	.06593	7.233			
2-Butanone	.01216	.01360	.01660	.01590	.01697	.652	.01505	13.799			
Dibromomethane	.46785	.45675	.45121	.44834	.44661	.650	.45415	1.887			
Ethyl Ether	.12839	.13619	.12720	.11887	.10625	.605	.12338	9.217			
Propane, 2-methoxy-2-methyl-	.75876	.76821	.73660	.72700	.72646	.696	.74341	2.564			
1,1,1-Trichloroethane	.92947	.98154	.99884	.96572	.97947	.702	.97101	2.681			
Carbon Tetrachloride	.93000	.99373	.97753	.96705	.98352	.720	.97077	2.546			
Ethyl Acetate	.10972	.11688	.11895	.11913	.11278	.723	.11549	3.565			
Vinyl Acetate	.25120	.26297	.22775	.21266	.14740	.738	.20039	43.790			
Bromodichloromethane	.89073	.96334	.98155	.96829	.99422	.747	.95963	4.203			
1,2-Dichloropropane	.29441	.29859	.32252	.30413	.31958	.812	.30784	4.087	*		

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300181

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-4

Contractor: ARDL,INC Calibration Date: 04/29/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30%

Laboratory ID: >H6912 >H6911 >H6914 >H6915 >H6916

Compound	RF 20.00	RF 50.00	RF 100.00	RF 150.00	RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
cis-1,3-Dichloropropene	.65899	.61933	.63084	.61614	.65294	.824	.63565	3.061			(Conc=20.0,70.0,140.0,210
Trichloroethene	.47618	.49149	.49566	.46589	.55178	.853	.49580	6.806			
Benzene	.67056	.66135	.69937	.68596	.72831	.879	.68911	3.816			
Dibromochloromethane	.66758	.75881	.76494	.74324	.79033	.877	.74498	6.259			
trans-1,3-Dichloropropene	.55143	.46620	.50691	.50563	.53339	.886	.51271	6.300			(Conc=12.0,30.0,60.0,90.0
1,2-Trichloroethane	.31066	.29896	.31844	.30022	.30550	.884	.30675	2.612			
Bromoethylvinylether	.07443	.07042	.07525	.07128	.07307	.957	.07289	2.794			(Conc=40.0,100.0,200.0,30
Bromoform	.43469	.51977	.50220	.54679	.55943	1.002	.51258	9.553		**	
4-Methyl-2-Pentanone	.21967	.25993	.24459	.23533	.22815	.841	.23753	6.534			
Paraldehyde	.06842	.04232	.04541	.04570	.04362	.892	.04909	22.181			
1,2,3-Trichloropropane	.38701	.41290	.39993	.40542	.39902	.897	.40045	2.325	*		
2-Hexanone	.28038	.25467	.24215	.23749	.20579	.901	.24410	11.112			
Tetrachloroethene	.54417	.57657	.55887	.58773	.58612	.911	.57069	3.286			
cis-1,4-Dichloro-2-butene	.06849	.07641	.07958	.08718	.09841	.920	.08201	13.844			
1,2,2-Tetrachloroethane	.35856	.38239	.39430	.40916	.36057	.906	.37692	7.424		**	
Toluene-d8	1.04017	1.08300	1.06194	1.11148	1.10109	.955	1.07954	2.683			(Conc=50.0,50.0,50.0,50.0
Ethyl methacrylate	.40164	.39598	.39209	.40967	.37707	.957	.39529	3.072			
Toluene	.55778	.59923	.59388	.62347	.61171	.965	.59721	4.160	*		
Chlorobenzene	.88564	.94219	.95664	1.02804	1.00893	1.004	.96429	5.864		**	
Ethylbenzene	.40088	.42627	.42878	.43617	.42578	1.073	.42318	3.142	*		
Bromofluorobenzene	1.06659	1.08613	1.11373	1.08539	1.12056	1.153	1.09448	2.033			(Conc=50.0,50.0,50.0,50.0
Styrene	.90608	.94138	.98124	.94252	1.01397	1.199	.95700	4.355			
o-Xylene	.57497	.54871	.56635	.53987	.56780	1.209	.55954	2.516			
m & p-Xylene	.65943	.54709	.56831	.54684	.57909	1.239	.58015	8.006			(Conc=40.0,100.0,200.0,30

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, INC. Contract: -------

Lab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

Lab File ID: >HF514 BFB Injection Date: 5/14/91

Instrument ID: HP- 4 BFB Injection Time: 9:41

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	23.1
75	30.0 - 60.0% OF MASS 95	57.8
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.4
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	68.4
175	5.0 - 9.0% of mass 174	5.9(8.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	68.5(100.1)1
177	5.0 - 9.0% of mass 176	5.4(7.9)2

1-Value is % mass 174 2-Value is % mass 176

THE TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>H7166	5/14/91	10:40
02	BLK 5/14/91	BLK 5/14/91	>H7167	5/14/91	11:35
03	9119AFT015WA	913-5	>H7168	5/14/91	13:10
04	9119AFT016WA	913-6	>H7169	5/14/91	13:51
05	9119AFT017WA	913-7	>H7170	5/14/91	14:33
06	LO-1MW04D-GW	111908-1	>H7171	5/14/91	15:15
07	LO-1G104D-GW	111908-2	>H7172	5/14/91	15:57
08	LO-1GW2-FB	111908-3	>H7173	5/14/91	16:40
09	LO-1MW07D-GW	111908-4	>H7174	5/14/91	17:22
10	LO-1MW07S-GW	111908-5	>H7175	5/14/91	18:03
11	LO-1MW02D-GW	111908-6	>H7176	5/14/91	18:45
12	LO-1G104L-GW	111908-9	>H7179	5/14/91	20:48
13	LO-1MW05D-GW	111908-10	>H7180	5/14/91	21:29
14					
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19					
20					
21					
22					

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/14/91

Contractor: AROL, INC Time: 10:40

Contract No: Laboratory ID: >H7166

Instrument ID: HP-4 Initial Calibration Date: 04/30/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.56638	.52452	7.39		**	
Bromomethane	1.53932	1.68208	9.27			
Dichlorodifluoromethane	.12586	.57505	356.91			
Vinyl Chloride	1.05276	.92920	11.74	*		
Chloroethane	.64271	.66692	3.77			
[illegible]ethane	3.31040	3.40783	2.94			
Methylene Chloride	1.52066	1.39211	8.45			
Acetone	.24742	.35235	42.41			
2-Propenal	.00738	.00449	39.16			
Carbon Disulfide	2.49406	2.87956	15.46			
Acrylonitrile	.11199	.10853	3.09			
Trichlorofluoromethane	1.84893	2.33991	26.55			(Conc=100.00)
1,1-Dichloroethene	1.06664	1.21056	13.49	*		
[illegible]ichloroethane	2.61592	2.64031	.93		**	
[illegible]-1,2-Dichloroethene	1.20252	1.34185	11.59			
Chloroform	4.04372	4.18340	3.45	*		
1,2-Dichloroethane-d4	2.77564	2.92850	5.51			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	3.02093	3.51994	16.52			
1,2-Dichloroethane	3.01140	3.24302	7.69			
Tetrahydrofuran	.06593	.07207	9.31			
2-Butanone	.01505	.01810	20.72			
Dibromomethane	.45415	.53694	18.23			
[illegible] Ether	.12338	.14665	18.36			
Propane, 2-methoxy-2-methyl-	.74341	.86256	16.03			
1,1,1-Trichloroethane	.97101	1.14588	18.01			
Carbon Tetrachloride	.97077	1.13545	16.96			
Ethyl Acetate	.11549	.11373	1.52			
Vinyl Acetate	.20039	.28532	42.38			
Bromodichloromethane	.95963	1.10049	14.68			
1,2-Dichloropropane	.30784	.31614	2.69	*		
cis-1,3-Dichloropropene	.63565	.67600	6.35			(Conc=70.00)
Trichloroethene	.49590	.55093	11.12			

LO-1MW04D-GW
1G104D
1GW2
1MW07D
1MW07S
1MW02D
1G104L
1MW05D

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%D - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300262

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/14/91

Contractor: ARDL,INC | Time: 10:40

Contract No: | Laboratory ID: >H7166

Instrument ID: HP-4 | Initial Calibration Date: 04/30/91

Minimum $\overline{RF}$ for SPCC is 0.3 | Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Benzene	.68911	.75433	9.46			
Dibromochloromethane	.74498	.82871	11.24			
trans-1,3-Dichloropropene	.51271	.54083	5.48			(Conc=30.00)
1,1,2-Trichloroethane	.30675	.34768	13.34			
Chloroethylvinylether	.07289	.07764	6.52			(Conc=100.00)
Bromoform	51258	.56392	10.02		**	
4-Methyl-2-Pentanone	.23753	.23728	.11			
Paraldehyde	.04909	.05307	8.11			
1,2,3-Trichloropropane	.40045	.43832	9.46			
2-Hexanone	.24410	.21838	10.54			
Tetrachloroethene	.57069	.62748	9.95			
trans-1,4-Dichloro-2-butene	.08201	.06755	17.64			
1,1,2,2-Tetrachloroethane	.37692	.39556	4.95		**	
[illegible]ene-d8	1.07954	1.19369	10.57			(Conc=50.00)
[illegible] methacrylate	.39529	.41067	3.89			
Toluene	.59721	.62714	5.01	*		
Chlorobenzene	.96429	1.03587	7.42		**	
Ethylbenzene	.42318	.46262	9.32	*		
Bromofluorobenzene	1.09448	1.18591	8.35			(Conc=50.00)
Styrene	.95700	1.04772	9.48			
m-Xylene	.55954	.60019	7.26			
o & p-Xylene	.58015	.60934	5.03			(Conc=100.00)

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300263

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, INC. Contract: -------

Lab Code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

Lab File ID: >HF517 BFB Injection Date: 5/17/91

Instrument ID: HP- 4 BFB Injection Time: 12:20

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	22.4
75	30.0 - 60.0% OF MASS 95	58.8
95	Base peak, 100% relative abundance	100.
	5.0 - 9.0% of mass 95	8.1
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	74.5
175	5.0 - 9.0% of mass 174	5.1(6.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	73.4(98.6)1
177	5.0 - 9.0% of mass 176	5.2(7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>H7221	5/17/91	13:08
02	BLK 5/17/91	BLK 5/17/91	>H7222	5/17/91	14:15
	X201	200216-1	>H7239	5/17/91	17:01
04	X202	200216-2	>H7224	5/17/91	17:42
05	X203	200216-3	>H7225	5/17/91	18:23
06	X204	200216-4	>H7226	5/17/91	19:04
07	X204MS	200216-4MS	>H7227	5/17/91	19:44
08	X204MSD	200216-4MSD	>H7228	5/17/91	20:26
09	LO-1MW05S-GW	111908-7	>H7229	5/17/91	21:07
10	LO-1G105S-FDRE	111908-8RE	>H7230	5/17/91	21:48
11	LO-G106DR-MS/MSD	111908-12	>H7233	5/17/91	23:51
12					
13					
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19					
22					

300011

Continuing Calibration Check
HSL Compounds

C No: Calibration Date: 05/17/91

Contractor: ARCL,INC Time: 13:08

Contract No: Laboratory ID: >H7221

Instrument ID: HP-4 Initial Calibration Date: 04/29/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.56638	.73766	30.24		**	
Bromomethane	1.53952	1.73352	12.62			
Dichlorodifluoromethane	.12586	.34328	172.76			
Vinyl Chloride	1.05276	1.18570	12.63	*		
Chloroethane	.64271	.73610	14.53			
Iodomethane	3.31040	3.39309	2.50			
Methylene Chloride	1.52066	1.44829	4.76			
Acetone	.24742	.33948	37.21			
2-Propenal	.00758	.01075	41.82			
Carbon Disulfide	2.49406	2.85226	14.36			
Acrylonitrile	.11199	.11922	6.46			
Trichlorofluoromethane	1.84895	2.18459	18.15			(Conc=100.00)
1,1-Dichloroethene	1.06664	1.20084	12.58	*		
Dichloroethane	2.61592	2.64664	1.17		**	
trans-1,2-Dichloroethene	1.20252	1.34419	11.79			
Chloroform	4.04372	4.22201	4.41	*		
1,2-Dichloroethane-d4	2.77564	2.89661	4.36			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	3.02093	3.03691	.53			
1,2-Dichloroethane	3.01140	3.04645	1.16			
Tetrahydrofuran	.06593	.07278	10.39			
2-Butanone	.01505	.01426	5.24			
Dibromomethane	.45415	.56302	23.97			
Ethyl Ether	.12338	.15444	25.17			
Propane, 2-methoxy-2-methyl-	.74341	.85429	14.92			
1,1,1-Trichloroethane	.97101	1.11884	15.22			
Carbon Tetrachloride	.97077	1.09434	12.73			
Ethyl Acetate	.11549	.11009	4.68			
Vinyl Acetate	.20039	.32792	63.64			
Bromodichloromethane	.95963	1.07415	11.93			
1,2-Dichloropropane	.30784	.31519	2.39	*		
cis-1,3-Dichloropropene	.63565	.68978	8.52			(Conc=70.00)
Trichloroethene	.49580	.54736	10.40			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

% - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

LO-1MW055-GW
LO-1G1055-FDRE
LO-GW00R-MS/MSD

Continuing Calibration Check
HSL Compounds

I No: Calibration Date: 05/17/91

Contractor: ARCL,INC Time: 13:08

Contract No: Laboratory ID: >H7221

Instrument ID: HP-4 Initial Calibration Date: 04/29/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Benzene	.68911	.75294	9.25			
Dibromochloromethane	.74499	.88369	18.62			
trans-1,3-Dichloropropene	.51271	.55188	7.64			(Conc=50.00)
1,1,2-Trichloroethane	.30675	.36591	19.28			
Chloroethylvinylether	.07289	.07920	8.66			(Conc=100.00)
[illegible]form	.51258	.61852	20.67		**	
4-Methyl-2-Pentanone	.23753	.25449	7.14			
Paraldehyde	.04909	.05395	9.89			
1,2,3-Trichloropropane	.40045	.48312	20.64			
2-Hexanone	.24410	.06824	72.05			
Tetrachloroethene	.57069	.67159	17.68			
trans-1,4-Dichloro-2-butene	.08201	.05564	32.16			
[illegible]1,2,2-Tetrachloroethane	.37692	.42516	12.80		**	
[illegible]ne-d8	1.07954	1.22047	13.06			(Conc=50.00)
Ethyl methacrylate	.39529	.44427	12.39			
Toluene	.59721	.66896	12.01	*		
Chlorobenzene	.96429	1.08184	12.19		**	
Ethylbenzene	.42318	.47504	12.26	*		
Bromofluorobenzene	1.09448	1.19150	8.86			(Conc=50.00)
Styrene	.95700	1.06061	10.83			
m-Xylene	55954	.60535	8.19			
[illegible]o-Xylene	.58015	.61470	5.96			(Conc=100.00)

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

% - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

ab me: ARDL, INC. Contract: --------

.b Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

b File ID: >BF507 BFB Injection Date: 5/07/91

nstrument ID: HP- 2 BFB Injection Time: 8:51

trix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	21.7
75	30.0 - 60.0% OF MASS 95	57.3
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.9
173	Less than 2.0% of mass 174	1.1(1.4)1
174	Greater than 50.0% of mass 95	80.1
175	5.0 - 9.0% of mass 174	6.9(8.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	80.8(100.9)1
177	5.0 - 9.0% of mass 176	6.8(8.4)2

1-Value is % mass 174 2-Value is % mass 176

HI. UNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V8902	5/07/91	9:29
02	VOA STD	20 NG STD	>V8903	5/07/91	10:36
03	VOA STD	100 NG STD	>V8904	5/07/91	11:25
04	VOA STD	150 NG STD	>V8905	5/07/91	12:14
05	VOA STD	200 NG STD	>V8906	5/07/91	13:03
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[illegible] Initial Data
[illegible] Compounds

Lab Name: [illegible] Instrument ID#: HP-1

GC Operator: HP01, Jan Calibration Date: 05/02/91

Contract No:

Minimum RF for SPCC is 0.30 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >VB903 RF 20.00	>VB902 RF 50.00	>VB904 RF 100.00	>VB905 RF 150.00	>VB906 RF 200.00	RRT	$\overline{RF}$	% RSD	CCC	SPCC
Chloromethane	.75376	.76277	.74529	.73892	.64260	.375	.72667	6.671		**
Bromomethane	1.47506	1.51090	1.47025	1.54249	1.35357	.387	1.47126	4.700		
Dichlorodifluoromethane	.57359	.62291	.55649	.47330	.47373	.356	.53700	15.837		
Vinyl Chloride	1.11536	1.08675	1.13236	1.18598	1.02111	.330	1.14791	5.486	*	
Chloroethane	.62341	.61414	.61489	.67923	.73449	.490	.61523	6.849		
Trichloromethane	3.57264	3.44171	3.29925	3.55141	3.33392	.653	3.44039	3.645		
Methylene Chloride	2.21695	1.29569	3.15737	1.36435	1.47511	.712	2.02249	38.113		
Acetone	.38544	.29226	.24381	.80352	.22875	.305	.39486	53.305		
2-Propenal	.07787	.04907	.03956	.04182	.04212	.797	.05009	31.515		
Carbon Disulfide	3.67766	4.00707	3.70029	3.84358	3.61890	.848	3.76910	4.157		
Acrylonitrile	.19574	.20842	.23127	.25706	.25571	.359	.22564	10.651		
Trichlorofluoromethane	1.55650	1.62302	1.54497	1.57576	1.47036	.395	1.55412	3.871		(Comp=0.1,100.0,200.)
1,1-Dichloroethene	1.22300	1.30193	1.25559	1.23244	1.17906	.359	1.23842	3.641	*	
Methylene Chloride	2.66224	2.69709	2.84728	2.90900	2.78559	1.067	2.78424	3.479		**
Tetrahydrofuran	.11560	.11504	.12500	.12318	.11633	1.082	.11903	3.936		
trans-1,2-Dichloroethene	1.28603	1.31203	1.32585	1.32962	1.30238	1.131	1.31098	1.338		
Chloroform	4.24180	3.84601	3.72196	3.79244	3.57786	1.181	3.84001	6.350	*	
1,2-Dichloroethane-d4	2.33642	2.27236	2.52862	2.30445	2.35058	1.235	2.56008	10.585		(Comp=50.0,50.0,50.)
1,1,2-Trichlorotrifluoroethane	2.42523	2.60251	2.49327	2.39611	2.34729	1.209	2.45551	4.326		
1,2-Dichloroethane	2.56858	2.57934	2.75106	2.96985	2.32947	1.244	2.73366	9.229		
2-Butanone	.02261	.01668	.01477	.07223	.01589	.669	.02844	94.156		
Dibromomethane	.69551	.69240	.69649	.66598	.64872	.674	.67782	3.020		
Ethyl Ether	.42741	.39145	.27302	.24402	.23580	.623	.31450	29.189		
Propane,2-methoxy-2-methyl-	.98474	.97071	.98551	.97620	.91823	.215	.96690	2.889		
1,1,1-Trichloroethane	.97771	1.00360	1.02041	.97534	.97476	.723	.99076	2.066		
Carbon Tetrachloride	.81687	.83402	.85910	.82760	.84689	.740	.84693	3.120		
Ethyl Acetate	.36623	.34042	.36790	.38376	.35276	.736	.36221	4.530		
Vinyl Acetate	.41399	.56443	.37219	.38430	.33750	.745	.41448	21.278		
Bromodichloromethane	1.06721	1.15133	1.17262	1.17894	1.15027	.766	1.14807	3.163		
1,2-Dichloropropane	.45965	.47468	.48195	.47269	.45491	.826	.46878	2.383	*	

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300208

Unit 2 Calibration Data
HSL Compounds

Time No: ---------- Instrument ID: HP-2 ----------

Contractor: ARCL, Inc ---------- Calibration Date: 05/07/91 ----------

Contract No: ----------

Minimum $\overline{RF}$ for SPCC is 0.5 Maximum % RSD for CCC is 30%

Laboratory ID:	>V8903	>V8902	>V8904	>V8905	>V8906						
	RF	RF	RF	RF	RF						
Compound	20.00	50.00	100.00	150.00	200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
cis-1,3-Dichloropropene	.75008	.81897	.82284	.83781	.81176	.837	.81029	3.658			(Conc=28.0,70.0,140.0,210
Trichloroethene	.63074	.66287	.64982	.59440	.56915	.863	.62140	6.271			
Benzene	.99351	1.05933	1.03352	.99283	.93728	.885	1.00329	4.626			
Dibromochloromethane	.93503	1.03689	1.09675	1.07655	1.01175	.889	1.03139	6.134			
trans-1,3-Dichloropropene	.61415	.66651	.66170	.65954	.62306	.895	.64499	3.787			(Conc=12.0,30.0,60.0,90.0
1,1,2-Trichloroethane	.48249	.49300	.49730	.48662	.44430	.894	.48074	4.401			
Chloroethylvinylether	.13508	.14307	.15536	.01561	.14244	.944	.11831	48.915			(Conc=40.0,100.0,200.0,__
Bromoform	.64740	.71194	.76935	.80551	.75282	1.010	.73740	8.206		**	
4-Methyl-2-Pentanone	.44011	.38194	.40708	.54080	.39791	.845	.43357	14.670			
Paraldehyde	.13979	.11396	.11801	.00982	.10931	.897	.09818	51.697			
1,2,3-Trichloropropane	.74411	.69577	.70412	.72334	.64846	.903	.70316	5.094			
2-Hexanone	.27226	.18720	.19023	.59722	.22720	.903	.29482	58.516			
Tetrachloroethene	.55861	.57237	.51905	.51505	.50348	.913	.53471	5.379			
1,1,2-1,4-Dichloro-2-butene	.18636	.18668	.19498	.20848	.19132	.924	.19357	4.685			
1,1,2,2-Tetrachloroethane	.75494	.75317	.72753	.74515	.68491	.912	.73314	3.964		**	
Toluene-d8	1.23702	1.20670	1.18157	1.17318	1.19224	.955	1.19814	2.094			(Conc=50.0,50.0,50.0,50.0
Ethyl methacrylate	.66868	.64318	.67760	.67054	.62120	.957	.65624	3.585			
Toluene	.77557	.77515	.75329	.73883	.69702	.962	.74797	4.337	*		
Chlorobenzene	1.06074	1.09210	1.09100	1.04403	1.00079	1.004	1.05773	3.577		**	
Ethylbenzene	.50270	.50595	.49029	.48614	.43870	1.[illegible]	.48476	5.578	*		
Bromofluorobenzene	1.20553	1.15468	1.15401	1.20331	1.17107	1.164	1.17772	2.150			Conc=50.0,50.0,50.0,50.0
Styrene	1.11633	1.13649	1.13656	1.14345	1.10077	1.215	1.12672	1.571			
n-Xylene	.68729	.66665	.66315	.63865	.61263	1.224	.65367	4.393			
o & p-Xylene	.69073	.68222	.68213	.65517	.62897	1.259	.66784	3.822			(Conc=40.0,100.0,200.0,30
1,4-Dichlorobenzene	1.17926	1.24505	1.25253	1.30525	1.14324	1.426	1.22507	5.223			

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

- Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300203

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

La Name: ARDL, INC. Contract: --------

ab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >B516F BFB Injection Date: 5/16/91

.nstrument ID: HP- 2 BFB Injection Time: 12:36

atrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	19.0
75	30.0 - 60.0% OF MASS 95	52.5
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.3
3	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	86.1
175	5.0 - 9.0% of mass 174	6.1(7.1)1
176	Greater than 95.0%, but less than 101.0% of mass 174	86.2(100.2)1
177	5.0 - 9.0% of mass 176	6.5(7.6)2

1-Value is % mass 174 2-Value is % mass 176

.: TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V9109	5/16/91	13:21
02	BLK 5/16/91	BLK 5/16/91	>V9111	5/16/91	15:20
03	G101	200215-3	>V9112	5/16/91	16:16
04	LO-TANK/002MS	111898-2MS	>V9113	5/16/91	17:00
05	LO-TANK/002MSD	111898-2MSD	>V9114	5/16/91	17:44
06	LO-1G105S-FD	111908-8	>V9123	5/17/91	00:25
07					
08					
09					
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15					
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20					
21					
22					

FORM V VOA

300010

1/87 Rev.

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/16/91

Contractor: AROL, INC. Time: 15:21

Contract No: Laboratory ID: >09109

Instrument ID: HP-2 Initial Calibration Date: 05/07/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.72667	.68372	5.91		**	
Bromomethane	1.47126	1.57459	7.02			
Dichlorodifluoromethane	.57300	.27882	51.34			
Vinyl Chloride	1.14791	1.21785	6.09	*		
Chloroethane	.81323	.71163	12.49			
Iodomethane	3.44089	3.76466	9.41			
Methylene Chloride	2.92245	1.18085	59.59			
Acetone	.38466	.13851	63.99			
2-Propenal	.05009	.05104	1.91			
Carbon Disulfide	3.76910	2.80408	25.60			
Acrylonitrile	.22564	.14461	35.91			
Trichlorofluoromethane	1.55412	1.60500	3.27			(Conc=100.00)
1,1-Dichloroethene	1.23842	1.04925	15.28	*		
1,1-Dichloroethane	2.78424	2.27148	18.42		**	
Tetrahydrofuran	.11903	.08469	28.85			
trans-1,2-Dichloroethene	1.31098	1.14438	12.71			
Chloroform	3.84001	3.52214	8.28	*		
1,2-Dichloroethane-d4	2.56008	2.27737	-11.04			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.45351	2.77267	13.01			
1,2-Dichloroethane	2.73966	2.55986	6.56			
2-Butanone	.02896	.01503	48.10			
Dibromomethane	.67762	.81558	20.36			
Ethyl Ether	.31450	.18871	40.00			
Propane,2-methoxy-2-methyl-	.96690	.79532	17.75			
1,1,1-Trichloroethane	.99076	1.02980	3.94			
Carbon Tetrachloride	.84693	.99651	17.66			
Ethyl Acetate	.36221	.23899	34.02			
Vinyl Acetate	.41448	.42196	1.81			
Bromodichloromethane	1.14807	1.10165	4.04			
1,2-Dichloropropane	.46878	.36367	22.42	*		
cis-1,3-Dichloropropene	.81029	.71223	12.10			(Conc=70.00)
Trichloroethene	.62140	.63077	1.51			

BK 5-16-91
0101
LO-1G105S-FD

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300269

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/16/91

Contractor: ARDL, INC. | Time: 13:21

Contract No: | Laboratory ID: >V9109

Instrument ID: HP-2 | Initial Calibration Date: 05/07/91

Minimum $\overline{RF}$ for SPCC is 0.3 | Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Benzene	1.00329	.82734	17.54			
Dibromochloromethane	1.03139	1.05274	2.07			
trans-1,3-Dichloropropene	.64499	.57601	10.70			(Conc=50.00)
1,1,2-Trichloroethane	.48074	.41295	14.10			
Chloroethylvinylether	.11831	.10540	10.92			(Conc=100.00)
Bromoform	.73740	.81546	10.59		**	
4-Methyl-2-Pentanone	.43357	.27235	37.18			
Paraldehyde	.09818	.08048	18.02			
1,2,3-Trichloropropane	.70316	.59856	14.88			
2-Hexanone	.29482	.15079	48.85			
Tetrachloroethene	.53471	.73946	38.29			
trans-1,4-Dichloro-2-butene	.19357	.14130	27.00			
1,1,2,2-Tetrachloroethane	.73314	.61406	16.24		**	
Toluene-d8	1.19814	1.17961	1.55			(Conc=50.00)
Ethylmethacrylate	.65624	.50330	23.31			
Toluene	.74797	.68737	8.10	*		
Chlorobenzene	1.05773	1.11554	5.47		**	
Ethylbenzene	.48476	.47737	1.52	*		
Bromofluorobenzene	1.17772	1.07914	8.37			(Conc=50.00)
Styrene	1.12672	1.07658	4.45			
m-Xylene	.65367	.64104	1.93			
o & p-Xylene	.66784	.64936	2.77			(Conc=100.00)
1,3-Dichlorobenzene	1.22507	-	-			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%D - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300270

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

a) ame: ARDL,INC Contract: -------

.b Code: ------- Case No.: ----- SAS No.: ------ SDG No.: -------

.b File ID: >B519F BFB Injection Date: 5/19/91

nstrument ID: HP- 2 BFB Injection Time: 14:44

.trix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	20.1
75	30.0 - 60.0% OF MASS 95	51.6
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.1
173	Less than 2.0% of mass 174	1.1(1.2)1
174	Greater than 50.0% of mass 95	91.6
175	5.0 - 9.0% of mass 174	6.5(7.1)1
176	Greater than 95.0%, but less than 101.0% of mass 174	91.2(99.6)1
177	5.0 - 9.0% of mass 176	7.7(8.4)2

1-Value is % mass 174 2-Value is % mass 176

'H. TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	20 NG STD	>V9140	5/19/91	15:57
02	VOA STD	50 NG STD	>V9141	5/19/91	16:48
03	VOA STD	100 NG STD	>V9142	5/19/91	17:38
04	VOA STD	150 NG STD	>V9143	5/19/91	18:29
05	VOA STD	200 NG STD	>V9144	5/19/91	19:19
06					
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20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-2

Contractor: PRDL, INC. Calibration Date: 05/20/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>V9140	>V9141	>V9142	>V9143	>V9144					
Compound	RF 20.00	RF 50.00	RF 100.00	RF 150.00	RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Chloromethane	.53741	.59510	.51149	.51349	.58860	.148	.54922	7.337		**
Bromomethane	1.08959	1.12508	.93658	.98067	1.06477	.239	1.03934	7.534		
Dichlorodifluoromethane	.05848	.04216	.01910	.01797	.02022	.309	.03159	47.189		
Vinyl Chloride	1.01610	1.07195	.74055	.77547	.82760	.314	.88634	16.762	*	
Chloroethane	.69032	.70813	.62738	.69623	.74683	.422	.69379	6.222		
[illegible]ethane	3.21760	3.11720	2.84419	3.09947	3.28599	.598	3.11249	5.391		
Methylene Chloride	1.57537	1.12378	1.03881	1.10748	1.18497	.664	1.20708	17.598		
Acetone	.21845	.60659	.21546	.22221	.20522	.761	.29358	59.339		
2-Propenal	.11925	.07180	.06313	.05727	.06127	.771	.07454	34.271		
Carbon Disulfide	3.08254	2.41111	2.22045	2.38250	2.53198	.319	2.52572	13.085		
Acrylonitrile	.23366	.16884	.16404	.17278	.15442	.829	.17875	17.598		
Trichlorofluoromethane	1.46684	1.09211	.98153	1.07537	1.14017	.877	1.15120	16.122		(Conc=40.0,100.0,200.0,30
Methane, oxybis[chloro-	3.86372	3.33327	5.69255	3.82597	3.87990	.977	3.61908	47.761		
1,1-Dichloroethene	1.25954	.92438	.84548	.90177	.94974	.955	.97618	16.699	*	
1,1-Dichloroethane	3.09131	2.31130	2.19950	2.37084	2.56082	1.076	2.50675	14.043		**
Tetrahydrofuran	.11051	.08643	.00439	.08213	.07348	1.063	.07139	55.877		
trans-1,2-Dichloroethene	1.46541	1.10148	1.03477	1.10033	1.17259	1.153	1.17492	14.431		
Chloroform	4.36649	3.31727	3.16606	3.40779	3.69587	1.206	3.59070	13.221	*	
1,2-Dichloroethane-d4	5.54208	2.32821	1.07075	.81119	.64083	1.268	2.07861	98.439		
1,1,2-Trichlorotrifluoroethane	2.51905	2.13230	1.74518	1.86692	1.95847	1.235	2.04438	14.705		
1,2-Dichloroethane	3.27074	2.51724	2.40036	2.53949	2.67276	1.276	2.68812	12.857		
2-Butanone	.02313	.04444	.02483	.02458	.02242	.650	.02788	33.394		
[illegible]omethane	.73154	.68097	.74129	.68455	.65210	.655	.69905	5.343		
Ethyl Ether	.19125	.16694	.17334	.15832	.15423	.606	.16882	8.636		
Propane,2-methoxy-2-methyl-	.82548	.76714	.81713	.75096	.72067	.697	.77627	5.727		
1,1,1-Trichloroethane	1.13164	.85348	.94244	.90892	.95780	.704	.95886	10.904		
Carbon Tetrachloride	1.08124	.81828	.89787	.87993	.92174	.723	.91981	10.658		
Ethyl Acetate	.29839	.23179	.26478	.54313	.22093	.725	.31181	42.596		
Vinyl Acetate	.70132	.40034	.52844	.54313	.42518	.739	.51968	22.928		
Bromodichloromethane	1.29934	.98431	1.10268	1.06381	1.10419	.751	1.11087	10.446		

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

% - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300235

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-2

Contractor: AROL, INC. Calibration Date: 05/20/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>09140	>09141	>09142	>09143	>09144					
Compound	RF 20.00	RF 50.00	RF 100.00	RF 150.00	RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
1,2-Dichloropropane	.50756	.37660	.41148	.39293	.40557	.814	.41883	12.266	*	
cis-1,3-Dichloropropene	.93698	.69771	.78111	.75613	.77565	.827	.78956	11.247		(Conc=20.0,70.0,140.0,210
Trichloroethene	.77469	.56445	.59702	.56842	.58734	.855	.61848	14.285		
Benzene	1.09420	.80874	.87701	.83172	.86299	.878	.89493	12.798		
Dibromochloromethane	1.28181	.96055	1.06743	1.00978	.99922	.881	1.06379	12.011		
trans-1,3-Dichloropropene	2.13628	1.62799	1.82259	1.76429	1.81352	.927	1.84230	11.247		(Conc=12.0,50.0,60.0,90.0
1,1,2-Trichloroethane	.54509	.39539	.43354	.39654	.38388	.886	.43089	15.438		
Chloroethylvinylether	.13618	.01615	.11276	.06092	.08544	.939	.08229	56.527		(Conc=40.0,100.0,200.0,30
Bromoform	1.06624	.78867	.87711	.83388	.77740	1.006	.86866	15.505	**	
4-Methyl-2-Pentanone	.42666	.35386	.37229	.32225	.28337	.840	.35168	15.303		
Paraldehyde	.09613	.00570	.08154	.07206	.06223	.893	.06353	54.563		
1,2,3-Trichloropropane	.66533	.56969	.58161	.54770	.49396	.893	.57166	10.885		
2-Hexanone	.22901	.37750	.36452	.25640	.21904	.900	.28929	26.264		
Tetrachloroethene	.92726	.67531	.71472	.67108	.68959	.912	.73559	14.749		
cis-1,4-Dichloro-2-butene	.15317	.14747	.16423	.16032	.14427	.921	.15589	5.461		
1,1,2,2-Tetrachloroethane	.86715	.60803	.65350	.62572	.56758	.908	.66440	17.693	**	
Toluene-d8	1.22042	1.22637	1.20713	1.21706	1.20567	.954	1.21533	.726		(Conc=50.0,50.0,50.0,50.0
Ethyl methacrylate	.59350	.52672	.58341	.53586	.49367	.957	.54663	7.580		
Toluene	.93533	.69582	.73040	.70687	.72796	.961	.75928	13.101	*	
Chlorobenzene	1.51216	1.11024	1.19202	1.14234	1.18200	1.004	1.22775	13.219	**	
Ethylbenzene	.66742	.49851	.51890	.48569	.50655	1.074	.53541	13.966	*	
Bromofluorobenzene	1.08666	1.11775	1.08033	1.08101	1.07503	1.153	1.08816	1.567		(Conc=50.0,50.0,50.0,50.0
Styrene	1.48335	1.15216	1.18841	1.13235	1.17213	1.199	1.22178	12.136		
m-Xylene	.70721	.68222	.70292	.65685	.67755	1.208	.68535	2.981		
o & p-Xylene	.82580	.70870	.72625	.68871	.71316	1.257	.73252	7.352		(Conc=40.0,100.0,200.0,30
1,4-Dichlorobenzene	1.60233	1.52174	1.57364	1.45723	1.48454	1.380	1.52790	3.946		

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300236

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, INC. Contract: --------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >B521F BFB Injection Date: 5/21/91

Instrument ID: HP- 2 BFB Injection Time: 14:16

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	23.4
75	30.0 - 60.0% OF MASS 95	59.3
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	1.2(1.3)1
174	Greater than 50.0% of mass 95	95.1
175	5.0 - 9.0% of mass 174	7.7(8.1)1
176	Greater than 95.0%, but less than 101.0% of mass 174	94.5(99.3)1
177	5.0 - 9.0% of mass 176	6.6(7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V9186	5/21/91	18:33
02	LK 5/21/91(HP-2)	BLK 5/21/91(HP-2)	>V9169	5/21/91	20:03
03	6276A-036	300025-22	>V9170	5/21/91	21:01
04	6276A-038	300025-23	>V9171	5/21/91	21:46
05	LO-1G106DR-GW	111908-11	>V9172	5/21/91	22:32
06	LO-1GW-TB1	111908-13	>V9173	5/21/91	23:17
07	6276A-901	300024-1	>V9174	5/22/91	00:01
08	6276A-031	300026-2	>V9175	5/22/91	00:46
09	6276A-037	300026-5	>V9176	5/22/91	01:31
10	6276A-039	300026-6	>V9177	5/22/91	02:16
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300013

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/21/91

Contractor: HSL, INC. | Time: 19:33

Contract No: | Laboratory ID: 009186

Instrument ID: HP-2 | Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 | Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.54922	.37668	31.42		**	
Bromomethane	1.03934	1.53519	47.71			
Dichlorodifluoromethane	.03159	.01344	38.36			
Vinyl Chloride	.89634	.92914	4.72	*		
Chloroethane	.69379	.63523	8.44			
Isocmethane	3.11249	3.56064	14.40			
Methylene Chloride	1.20708	1.32432	9.71			
Acetone	.29358	.42799	45.78			
2-Propenal	.07454	.05963	20.00			
Carbon Disulfide	2.52572	1.58711	37.15			
Acrylonitrile	.17375	.17296	0.24			
Trichlorofluoromethane	1.15120	1.25102	8.67			(Conc=100.00)
Methane, oxybis[chloro-	3.61908	.99368	72.54			
1-Dichloroethene	.97618	.73295	24.92	*		
1-Dichloroethane	2.50675	2.15761	13.93		**	
Tetrahydrofuran	.07139	.08373	17.29			
trans-1,2-Dichloroethene	1.17492	.90123	23.29			
Chloroform	3.59070	3.76207	4.77	*		
1,2-Dichloroethane-d4	2.33663	3.22506	38.02			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.04438	3.26582	59.75			
1,2-Dichloroethane	2.68012	3.23939	20.87			
2-Butanone	.02788	.01108	60.25			
Dibromomethane	.69805	.77186	10.57			
Ethyl Ether	.16882	.13991	17.13			
Propane,2-methoxy-2-methyl-	.77627	.93375	20.29			
1,1,1-Trichloroethane	.95886	1.13762	18.64			
Carbon Tetrachloride	.91981	1.14466	24.45			
Ethyl Acetate	.31181	.25336	18.74			
Vinyl Acetate	.51968	.42709	17.82			
Bromodichloromethane	1.11087	1.21246	9.15			
1,2-Dichloropropane	.41883	.33081	21.01	*		
cis-1,3-Dichloropropene	.78956	.70993	10.08			(Conc=70.00)

LO-1G106DR-GW
LO-1GW-TBV

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300283

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/21/91

Contractor: ARDL, INC. | Time: 18:33

Contract No: | Laboratory ID: >V9186

Instrument ID: HP-2 | Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 | Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Trichloroethene	.61848	.54838	11.34			
Benzene	.89493	.68961	22.94			
Dibromochloromethane	1.06375	1.13722	6.91			
trans-1,3-Dichloropropene	1.84230	1.65651	10.08			(Conc=50.00)
1,1,2-Trichloroethane	.43089	.39527	8.26			
Chloroethylvinylether	.08229	.10521	27.85			(Conc=100.00)
Bromoform	.86866	.92977	7.03		**	
4-Methyl-2-Pentanone	.35163	.28685	18.43			
Paraldehyde	.06353	.08444	32.91			
1,2,3-Trichloropropane	.57166	.64348	12.56			
2-Hexanone	.28929	.09065	68.66			
Tetrachloroethene	.73559	.67150	8.71			
trans-1,4-Dichloro-2-butene	.15389	.13869	9.88			
1,1,2,2-Tetrachloroethane	.66440	.57965	12.75		**	
Toluene-d8	1.21533	1.20928	.50			(Conc=50.00)
Ethyl methacrylate	.54663	.52513	3.93			
Toluene	.75928	.61608	18.86	*		
Chlorobenzene	1.22775	1.01861	17.03		**	
Ethylbenzene	.53541	.44323	17.22	*		
Bromofluorobenzene	1.08816	1.22785	12.84			(Conc=50.00)
Styrene	1.22178	1.03160	15.57			
m-Xylene	.68535	.62983	8.10			
o & p-Xylene	.73252	.65349	10.79			(Conc=100.00)
1,4-Dichlorobenzene	1.52790	1.48004	3.13			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300284

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, INC. Contract: --------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >B6C03 BFB Injection Date: 6/03/91

Instrument ID: HP- 2 BFB Injection Time: 21:06

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	23.0
75	30.0 - 60.0% OF MASS 95	57.4
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	94.7
175	5.0 - 9.0% of mass 174	6.4(6.8)1
176	Greater than 95.0%, but less than 101.0% of mass 174	92.3(97.5)1
177	5.0 - 9.0% of mass 176	6.6(7.1)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V9417	6/03/91	21:44
02	BLK 6/03/91	BLK 6/03/91	>V9418	6/03/91	22:44
03	IO-1G104D-GWMS	111908-2MS	>V9423	6/04/91	2:46
04	LO-1G104D-GWMSD	111908-2MSD	>V9424	6/04/91	3:33
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FORM V VOA

300014

1/87 Rev.

Continuing Calibration Check
HSL Compounds

Case No: ----------

Calibration Date: 06/03/91

ractor: ARDL, INC.

Time: 21:44

Contract No: ----------

Laboratory ID: >V9417

Instrument ID: HP-2

Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.54922	.38941	29.10		**	
Bromomethane	1.03934	1.40464	35.15			
Dichlorodifluoromethane	.03159	.24053	661.48			
Vinyl Chloride	.88634	.89536	1.02	*		
Chloroethane	.69379	.60592	12.67			
Iodomethane	3.11249	4.18523	34.47			
ylene Chloride	1.20708	1.31234	8.72			
Acetone	.29358	.28735	2.12			
2-Propenal	.07454	.04699	36.76			
Carbon Disulfide	2.52572	2.46282	2.49			
Acrylonitrile	.17875	.12353	30.89			
Trichlorofluoromethane	1.15120	1.80944	57.18			(Conc=100.00)
Methane, oxybis[chloro-	3.61908	.74209	79.50			
1,1-Dichloroethene	.97618	.96258	1.39	*		
Dichloroethane	2.50675	2.20205	12.16		**	
rahydrofuran	.07139	.06908	3.23			
trans-1,2-Dichloroethene	1.17492	1.03299	12.08			
Chloroform	3.59070	3.51536	2.10	*		
1,2-Dichloroethane-d4	2.33669	2.73356	16.98			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.04438	2.40802	17.79			
1,2-Dichloroethane	2.68012	2.99703	11.82			
2-Butanone	.02788	.01981	28.94			
romomethane	.69805	.73469	5.25			
nyl Ether	.16882	.16439	2.62			
Propane,2-methoxy-2-methyl-	.77627	.79676	2.64			
1,1,1-Trichloroethane	.95886	1.24634	29.98			
Carbon Tetrachloride	.91981	1.22492	33.12			
Ethyl Acetate	.31181	.22647	27.37			
Vinyl Acetate	.51968	.40912	21.27			
Bromodichloromethane	1.11087	1.29109	16.22			
1,2-Dichloropropane	.41883	.33431	20.18	*		
cis-1,3-Dichloropropene	.78956	.72482	8.20			(Conc=70.00)

BHA 6/3/91

LO-16104D-GWMS

MSP

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300290

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 06/03/91

cractor: AROL, INC. Time: 21:44

Contract No: Laboratory ID: >V9417

Instrument ID: HP-2 Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Trichloroethene	.61848	.59862	3.21			
Benzene	.89493	.74153	17.14			
Dibromochloromethane	1.06375	1.12237	5.51			
trans-1,3-Dichloropropene	1.84230	1.69126	8.20			(Conc=30.00)
1,1,2-Trichloroethane	.43089	.37608	12.72			
Chloroethylvinylether	.08229	.10003	21.57			(Conc=100.00)
Bromoform	.86866	.92677	6.69		**	
4-Methyl-2-Pentanone	.35168	.27742	21.12			
Paraldehyde	.06355	.07808	22.91			
1,2,3-Trichloropropane	.57166	.56918	.43			
2-Hexanone	.28929	.22666	21.65			
Tetrachloroethene	.73559	.72672	1.21			
trans-1,4-Dichloro-2-butene	.15389	.13596	11.65			
1,1,2,2-Tetrachloroethane	.66440	.54664	17.72		**	
uene-d8	1.21533	1.18514	2.48			(Conc=50.00)
..hyl methacrylate	.54663	.45963	15.92			
Toluene	.75928	.64832	14.61	*		
Chlorobenzene	1.22775	1.04484	14.90		**	
Ethylbenzene	.53541	.44740	16.44	*		
Bromofluorobenzene	1.08816	1.18510	8.91			(Conc=50.00)
Styrene	1.22178	1.01225	17.15			
m-Xylene	.68535	.57682	15.84			
o & p-Xylene	.73252	.56221	23.25			(Conc=100.00)
1,4-Dichlorobenzene	1.52790	1.54462	1.09			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

..C - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300291

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL, INC. Contract: -----

Lab code: ------ Case No.: ----- SAS No.: ----- SDG No.: -----

Lab File ID (Standard): >H7166 Date Analyzed: 05/14/91

Instrument ID: HP-4 Time Analyzed: 10:40

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

		IS1(BCM)		IS2(DFB)		IS3(CHL)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	42753	10.61	163953	21.19	147660	25.96
	UPPER LIMIT	85506	11.11	327906	21.69	295320	26.46
	LOWER LIMIT	21376	10.11	81977	20.69	73830	25.46
	EPA SAMPLE NO.						
1	BLK 5/14/91	39517	10.62	156031	21.19	138551	25.99
2	LO-1MW04D-GW	31188	10.62	123762	21.15	113513	26.00
3	LO-1G104D-GW	32537	10.62	138164	21.15	113971	25.96
4	LO-1GW2-FB	31497	10.55	128493	21.16	120010	25.97
5	LO-1MW07D-GW	33537	10.61	133786	21.18	120942	25.99
6	LO-1MW07S-GW	27789	10.61	111027	21.18	99824	25.98
7	LO-1MW02D-GW	24288	10.67	121114	21.20	105173	26.01
8	LO-1G104L-GW	31184	10.65	129655	21.19	109317	26.00
9	LO-1MW05D-GW	27050	10.68	109597	21.18	96774	25.99
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IS1 (BCM) = Bromochloromethane (ISTD 1)
IS2 (DFB) = 1,4-Difluorobenzene (ISTD 2)
IS3 (CHL) = D5-Chlorobenzene (ISTD 3)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

300015

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

ab me:ARDL, INC. Contract: LENZ OIL

ab Code: ----- Case No.: 111898 SAS No.: ----- SDG No.: -----

ab File ID (Standard): >V9109 Date Analyzed: 5/16/91

nstrument ID: HP-2 Time Analyzed: 13:21

atrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

		IS1(BCM)		IS2(DFB)		IS3(CBZ)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	95173	11.94	287262	22.13	249246	26.97
	UPPER LIMIT	190346	12.44	574524	22.63	498492	27.47
	LOWER LIMIT	47586	11.44	143631	21.63	124623	26.47
	EPA SAMPLE NO.						
01	BLK 5/16/91	81230	11.88	252311	22.10	220085	26.98
02	LO-TANK/002MS	50402	11.92	154150	22.14	135013	26.98
03	LO-TANK/002MSD	65001	11.86	199450	22.12	170142	26.96
04	LO-1G105S-FD	43701 *	11.89	139891 *	22.08	125212	26.97
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IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

* Column used to flag internal standard area values with an asterisk

300016

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: -----

Lab code: ------ Case No.: ----- SAS No.: ----- SDG No.: -----

Lab File ID (Standard): >H7221 Date Analyzed: 05/17/91

Instrument ID: HP-4 Time Analyzed: 13:08

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

		IS1(BCM)		IS2(DFB)		IS3(CHL)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	49493	10.63	185236	21.17	106529	25.94
	UPPER LIMIT	98986	11.13	370472	21.67	321058	26.44
	LOWER LIMIT	24746	10.13	92618	20.67	80265	25.44
	EPA SAMPLE NO.						
1	BLK 5/17/91	42955	10.59	162713	21.17	140085	26.01
2	LO-1MW05S-GW	30852	10.62	110690	21.20	99570	26.04
3	LO-1G105S-FDRE	27313	10.66	92550 *	21.21	81574	26.02
4	LO-G106DR-MS/MSD	30441	10.65	116175	21.19	100968	26.00
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IS1 (BCM) = Bromochloromethane (ISTD 1)
IS2 (DFB) = 1,4-Difluorobenzene (ISTD 2)
IS3 (CHL) = D5-Chlorobenzene (ISTD 3)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

La ame:ARDL, INC. Contract: --------

ab Code: ----- Case No.: ------ SAS No.: ----- SDG No.: -----

ab File ID (Standard): >V9186 Date Analyzed: 5/21/91

nstrument ID: HP-2 Time Analyzed: 18:33

atrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

		IS1(BCM)		IS2(DFB)		IS3(CBZ)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	130985	10.80	427289	21.32	369915	26.17
	UPPER LIMIT	261970	11.30	854578	21.82	739830	26.67
	LOWER LIMIT	65492	10.30	213644	20.82	184958	25.67
	EPA SAMPLE NO.						
01	BLK 5/21/91	143194	10.81	468020	21.33	424065	26.18
02	LO-1G106DR-GW	94104	10.78	306939	21.29	283413	26.18
03	LO-1GW-TB1	99598	10.78	301253	21.29	283190	26.14
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IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

300018

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ------- Contract: --------

Lab code: ----- Case No.: ----- SAS No.: ----- SDG No.: -----

Lab File ID (Standard): >V9417 Date Analyzed: 06/03/91

Instrument ID: HP-2 Time Analyzed: 21:44

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

	IS1(BCM) AREA #	IS1(BCM) RT	IS2(DFB) AREA #	IS2(DFB) RT	IS3(CHL) AREA #	IS3(CHL) RT
12 HOUR STD	166183	10.81	506123	21.28	440080	26.13
UPPER LIMIT	332366	11.31	1012246	21.78	880160	26.63
LOWER LIMIT	83092	10.31	253062	20.78	220040	25.63
EPA SAMPLE NO.						
1 BLK 6/03/91	136783	10.81	411910	21.32	368527	26.16
2 O-1G104D-GWMS	94516	10.79	298396	21.30	261482	26.18
3 O-1G104D-GWMSD	95839	10.80	288342	21.31	254044	26.15
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IS1 (BCM) = Bromochloromethane (ISTD 1)
IS2 (DFB) = 1,4-Difluorobenzene (ISTD 2)
IS3 (CHL) = D5-Chlorobenzene (ISTD 3)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

300019

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G104D-GWMS

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111908 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WATER Lab Sample ID: 111908-2MS

Sample wt/vol: 5.0 (g/mL) mL Lab File ID: >V9423

Level: (low/med) LOW Date Received: 5/08/91

% Moisture: not dec. --- Date Analyzed: 6/04/91

Column: (pack/cap) PACK Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene Chloride	4.	JB
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	48.	
75-34-3	1,1-Dichloroethane	3.	J
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	43.	
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	46.	
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	46.	
108-90-7	Chlorobenzene	46.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
108-38-3	m-Xylene	5.	U
106-42-3	o & p-Xylene	5.	U

300353

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
LO-1G104D-GWMSD

ame: ARDL, INC. Contract: LENZ OIL

ab Code: ------ Case No.: 111908 SAS No.: ------ SDG No.: ------

trix: (soil/water) WATER Lab Sample ID: 111908-2MSD

ample wt/vol: 5.0 (g/mL) mL Lab File ID: >V9424

vel: (low/med) LOW Date Received: 5/08/91

Moisture: not dec. --- Date Analyzed: 6/04/91

olumn: (pack/cap) PACK Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene_Chloride	3.	JB
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	44.	
75-34-3	1,1-Dichloroethane	3.	J
540-59-0	1,2-Dichloroethene_(total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	42.	
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	43.	
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	43.	
108-90-7	Chlorobenzene	44.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
108-38-3	m-Xylene	5.	U
106-42-3	o & p-Xylene	5.	U

300364

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SO-1MW05S-GW

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------- Case No.: 111908 SAS No.: ------- SDG No.: -------

Matrix: (soil/water) WATER Lab Sample ID: 111908-7

Sample wt/vol: 0.5 (g/mL) mL Lab File ID: >H7229

Level: (low/med) LOW Date Received: 5/08/91

% Moisture: not dec. --- Date Analyzed: 5/17/91

Column: (pack/cap) PACK Dilution Factor: 10.000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	100.	U
75-00-3	Chloroethane	100.	U
75-09-2	Methylene Chloride	36.	JB
67-64-1	Acetone	100.	U
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	50.	U
75-34-3	1,1-Dichloroethane	28.	J
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	14.	J
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	50.	U
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	50.	U
10061-02-6	trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	50.	U
108-90-7	Chlorobenzene	50.	U
100-41-4	Ethylbenzene	270.	
100-42-5	Styrene	50.	U
108-38-3	m-Xylene	50.	U
106-42-3	o & p-Xylene	670.	

3000172

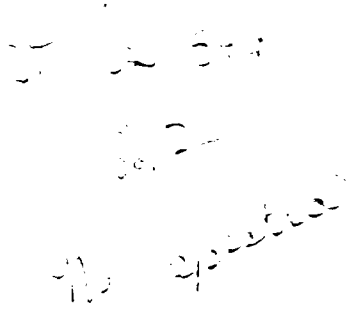
QUANT REPORT

O ator ID: GLEN Quant Rev: 6 Quant Time: 910517 21:43
Du put File: ^H7229::D1 Injected at: 910517 21:07
Data File: >H7229::D5 Dilution Factor: 1.00000
Name: 111908-7
Misc: HP-4 1/10 ERM

ID File: IDWAT::D4
Title: VOLATILE TARGET CPDS W/IDEM
Last Calibration: 910517 14:26

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane (ISTD 1)	10.62	244	30852	50.00	ug/l	77
8)	Methylene Chloride	7.14	154	3244	3.63	ug/l	91
9)	Acetone	8.14	180	2562	12.23	ug/l	72
15)	1,1-Dichloroethane	11.51	267	4618	2.83	ug/l	92
18)	Chloroform	12.87	302	3681	1.41	ug/l	85
19)	1,2-Dichloroethane-d4	13.57	320	97896	54.77	ug/l	82
3)	*1,4-Difluorobenzene (ISTD 2)	21.20	517	110690	50.00	ug/l	87
41)	*D5-Chlorobenzene (ISTD 3)	26.04	642	99570	50.00	ug/l	99
49)	Toluene-d8	24.88	612	119454	49.15	ug/l	100
53)	Ethylbenzene	27.94	691	25737	27.21	ug/l	97
54)	Bromofluorobenzene	29.96	743	136015M	57.32	ug/l	89
57)	o & p-Xylene	32.29	803	82074	67.35	ug/l	91

Compound is ISTD



300077

QUANT REPORT

p tor ID: GLEN Quant Rev: 6 Quant Time: 910517 13:46
utput File: ^H7221::D1 Injected at: 910517 13:08
ata File: >H7221::D5 Dilution Factor: 1.00000
ame: 50NG WAT STANDARD
isc: HP-4 5ML CONT CALIB

D File: IDWAT::D4
itle: VOLATILE TARGET CPDS W/IDEM
ast Calibration: 910514 11:36

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*Bromochloromethane (ISTD 1)	10.63	243	49493M	50.00	ug/l	
2)	Chloromethane	1.57	9	36509	70.32	ug/l	97
3)	Bromomethane	2.58	35	85797	51.53	ug/l	97
4)	Dichlorodifluoromethane	3.31	54	16990	29.85	ug/l	96
5)	Vinyl Chloride	3.39	56	58684	63.80	ug/l	95
6)	Chloroethane	4.55	86	36432	55.19	ug/l	97
7)	Iodomethane	6.45	135	167934	49.78	ug/l	99
8)	Methylene Chloride 3.56	7.07	151	71680	52.02	ug/l	85
9)	Acetone	8.12	178	16802	48.17	ug/l	95
0)	2-Propenal	8.04	176	532M	119.67	ug/l	
1)	Carbon Disulfide	8.89	198	141167	49.53	ug/l	100
2)	Acrylonitrile	8.85	197	5851	54.46	ug/l	77
3)	Trichlorofluoromethane	9.47	213	216244	46.68	ug/l	95
4	1,1-Dichloroethene	10.25	233	59433	49.60	ug/l	80
5	1,1-Dichloroethane	11.49	265	130990	50.12	ug/l	93
6)	Tetrahydrofuran	11.68	270	3602M	50.49	ug/l	
7)	trans-1,2-Dichloroethene	12.38	288	66528	50.09	ug/l	89
8)	Chloroform	12.84	300	208960	50.46	ug/l	99
9)	1,2-Dichloroethane-d4	13.54	318	143362	49.46	ug/l	88
0)	1,1,2-Trichlorotrifluoroethane	13.23	310	150306	43.14	ug/l	93
1)	1,2-Dichloroethane	13.66	321	150778	46.97	ug/l	91
2)	*1,4-Difluorobenzene (ISTD 2)	21.17	515	185236	50.00	ug/l	86
3)	2-Butanone	13.85	326	2641	38.25	ug/l	95
4)	Dibromomethane	13.73	323	104291	52.43	ug/l	91
5)	Ethyl Ether	12.84	300	28608	52.66	ug/l	70
6)	Propane, 2-methoxy-2-methyl-	14.70	348	158246	49.52	ug/l	78
7)	1,1,1-Trichloroethane	14.82	351	207249	48.82	ug/l	90
8)	Carbon Tetrachloride	15.25	362	202712	48.19	ug/l	77
9)	Ethyl Acetate	15.32	364	20392M	48.40	ug/l	65
0)	Vinyl Acetate	15.63	372	60743	57.47	ug/l	98
1)	Bromodichloromethane	15.79	376	198971	48.80	ug/l	97
2)	1,2-Dichloropropane	17.18	412	58385	49.85	ug/l	98
3)	cis-1,3-Dichloropropene	17.42	418	178880	71.43	ug/l	91
4)	Trichloroethene	18.07	435	101391	49.68	ug/l	98
5)	Benzene	18.58	448	139453	49.90	ug/l	84
6)	Dibromochloromethane	18.50	446	163691	53.32	ug/l	92
7)	trans-1,3-Dichloropropene	18.69	451	61337	30.61	ug/l	36
8)	1,1,2-Trichloroethane	18.66	450	67780	52.62	ug/l	89
9	Chloroethylvinylether	19.86	481	29342	51.00	ug/l	94
0	Bromoform	21.17	515	114572	54.84	ug/l	95
1)	*D5-Chlorobenzene (ISTD 3)	25.94	638	160529	50.00	ug/l	93
2)	4-Methyl-2-Pentanone	22.22	542	40853	53.63	ug/l	100
3)	Paraldenyde	23.19	567	8660	50.82	ug/l	80

390281

>H7821

	Compound	R.T.	Scan#	Area	Conc	Units	q
4	1,2,3-Trichloropropane	23.27	569	77555	55.11	ug/l	87
5	2-Hexanone	23.89	585	10954	15.62	ug/l	84
6)	Tetrachloroethene	23.69	580	107810	53.51	ug/l	94
47)	trans-1,4-Dichloro-2-butene	23.93	586	8932	41.19	ug/l	71
8)	1,1,2,2-Tetrachloroethane	23.50	575	68250	53.74	ug/l	94
9)	Toluene-d8	24.82	609	195921	51.12	ug/l	100
50)	Ethyl methacrylate	25.01	614	71319	54.09	ug/l	77
51)	Toluene	25.05	615	107388	53.33	ug/l	89
2)	Chlorobenzene	26.06	641	173666	52.22	ug/l	92
3)	Ethylbenzene 1.94	27.88	688	76258	51.34	ug/l	97
54)	Bromofluorobenzene	29.90	740	191271	50.24	ug/l	96
5)	Styrene	31.22	774	170259	50.62	ug/l	84
6)	m-Xylene	31.41	779	97176	50.43	ug/l	93
57)	o & p-Xylene 6.29	32.23	800	197355	100.88	ug/l	90

* Compound is ISTD

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: 111908 SAS No.: ------ SDG No.: ------

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	LO-1MW04D-GW	58	53	69	24	36	60		0
02	LO-1G104D-GW	57	63	73	29	38	58		0
03	LO-1GW2-FB	61	70	82	25	35	60		0
04	LO-1MW07D-GW	46	55	69	29	38	64		0
05	LO-1MW07S-GW	54	55	89	29	35	72		0
06	LO-1MW02D-GW	70	76	65	42	52	87		0
07	LO-1MW05S-GW	153 *	81	72	0 *	16 *	0 *		4
08	LO-1MW05S-GWRE	160 *	85	0 *	0 *	28	0 *		4
09	LO-1G105S-FD	198 *	89	108	0 *	48	0 *		3
10	LO-1G105S-FDDL	0 D	129 D	0 D	0 D	51	0 D		5
11	LO-1G105S-FDRE	239 *	83	76	0 *	71	0 *		3
12	LO-1G104L-GW	77	84	70	26	30	70		0
13	LO-1MW05D-GW	63	71	85	31	47	77		0
14	LO-1G106DR-GW	52	64	85	25	39	92		0
15	LO-G106DR-MS/MSD	58	69	83	27	41	94		0
16	LO-G106DR-MS/MSDMS	77	72	74	32	43	65		0
17	LO-G106DR-MS/MSDMSD	50	47	69	26	38	71		0
18	LANK B1341	57	59	71	29	40	63		0
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

	QC LIMITS
S1 (NBZ) = D5 Nitrobenzene	(35-114)
S2 (FBP) = 2-Fluorobiphenyl	(43-116)
S3 (TPH) = D14 Terphenyl	(33-141)
S4 (PHL) = D5 Phenol	(10- 94)
S5 (2FP) = 2-Fluorophenol	(21-100)
S6 (TBP) = 2,4,6-Tribromophenol	((10-123)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111908 SAS No.: ----- SDG No.: -----

Matrix Spike - EPA Sample No.: LO-G106DR-MS/MSD

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200.00	0.00	62.00	31	12- 89
2-Chlorophenol	200.00	0.00	99.00	49	27-123
1,4-Dichlorobenzene	100.00	0.00	74.00	74	36- 97
N-Nitroso-di-n-prop.(1)	100.00	0.00	82.00	82	41-116
1,2,4-Trichlorobenzene	100.00	0.00	70.00	70	39- 98
4-Chloro-3-methylphenol	200.00	0.00	110.00	56	23- 97
Acenaphthene	100.00	0.00	86.00	86	46-118
4-Nitrophenol	200.00	0.00	69.00	35	10- 80
2,4-Dinitrotoluene	100.00	0.00	70.00	70	24- 96
Pentachlorophenol	200.00	0.00	120.00	62	9-103
Pyrene	100.00	0.00	68.00	68	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200.00	51.00	25	21	42	12- 89
2-Chlorophenol	200.00	100.00	51	1	40	27-123
1,4-Dichlorobenzene	100.00	38.00	38	64 *	28	36- 97
N-Nitroso-di-n-prop.(1)	100.00	55.00	55	39 *	38	41-116
1,2,4-Trichlorobenzene	100.00	41.00	41	52 *	28	39- 98
4-Chloro-3-methylphenol	200.00	110.00	57	2	42	23- 97
Acenaphthene	100.00	65.00	65	28	31	46-118
4-Nitrophenol	200.00	43.00	22	46	50	10- 80
2,4-Dinitrotoluene	100.00	54.00	54	26	38	24- 96
Pentachlorophenol	200.00	130.00	67	8	50	9-103
Pyrene	100.00	67.00	67	1	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
Values outside of qc limits

No impact

RPD: 3 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: _____

400001

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

e: ARDL, INC. Contract: ----

Code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

File ID: >SV521 DFTPP Injection Date: 5/21/91

trument ID: HP- 1 DFTPP Injection Time: 14:28

/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	49.1
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	59.
70	Less than 2.0% of mass 69	.3(.5)1
27	40.0 - 60.0% of mass 198	42.1
97	Less than 1.0% of mass 198	0.0
98	Base Peak, 100% relative abundance	100.
99	5.0 - 9.0% of mass 198	6.3
75	10.0 - 30.0% of mass 198	18.3
65	Greater than 1.00% of mass 198	1.81
51	Present, but less than mass 443	11.4
52	Greater than 40.0% of mass 198	82.7
43	17.0 - 23.0% of mass 442	15.2(18.4)2

1-Value is % mass 69 2-Value is % mass 442

S TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	50 NG STD	>D5347	5/21/91	14:55
02	BNA STD	20 NG STD	>D5348	5/21/91	16:01
03	BNA STD	80 NG STD	>D5349	5/21/91	16:54
04	BNA STD	120 NG STD	>D5350	5/21/91	17:45
05	BNA STD	160 NG STD	>D5351	5/21/91	18:36
06					
07					
08					
09					
10					
11					
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14					
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16					
17					
18					
19					
20					
21					
22					

400003

Initial Calibration Data
HSL Compounds

C o: Instrument ID: HP-1

Contractor: ARDL,INC. Calibration Date: 05/22/91

ontract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >D5348 RF 20.00	>D5347 RF 50.00	>D5349 RF 80.00	>D5350 RF 120.00	>D5351 RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Pyridine	1.85346	1.85687	1.64990	1.39095	1.39947	.435	1.63013	14.126			
-Nitrosodimethylamine	1.16303	1.26261	1.20763	1.10694	1.07939	.443	1.16392	6.378			
-Picoline	1.87895	1.83641	1.80027	1.58703	1.47434	.601	1.71540	10.230			
-Fluorophenol (Surr 1)	1.12453	1.22926	1.12033	1.12436	1.12850	.746	1.14540	4.101			(Conc=100.0,100.0,100.0,1
Aniline	2.51660	2.47338	2.37314	2.25268	2.11397	.942	2.34595	7.024			
enol (Surr 2)	1.52148	1.68471	1.49297	1.49724	1.40255	.951	1.51979	6.756			(Conc=100.0,100.0,100.0,1
Phenol	2.17971	2.24724	1.85313	1.64245	1.49128	.954	1.88276	17.473	*		
bis(-2-Chloroethyl)Ether	2.18219	2.13819	1.89456	1.60632	1.50641	.960	1.86554	16.339			
-Chlorophenol	1.99267	1.83230	1.60915	1.44317	1.32180	.965	1.63982	16.765			
1,3-Dichlorobenzene	1.93436	1.93386	1.53057	1.31569	1.22993	.992	1.58888	20.998			
1,4-Dichlorobenzene	1.94844	1.83829	1.50833	1.24912	1.15853	1.004	1.54054	22.648	*		
Benzyl Alcohol	.91442	.83049	.80413	.78516	.72569	1.045	.81198	8.502			
Dichlorobenzene	1.83203	1.60381	1.27244	1.09433	1.02701	1.044	1.36592	25.128			
2 ylphenol	1.57444	1.45105	1.13793	.96918	.87036	1.078	1.20059	25.299			
bis(2-chloroisopropyl)Ether	2.79852	2.60320	2.69568	2.25410	2.05335	1.077	2.52097	13.700			
-Methylphenol	1.42494	1.12503	.83548	.81216	.76266	1.111	.99205	28.268			
N-Nitroso-Di-n-Propylamine	1.53169	1.41347	1.26792	1.23667	1.12853	1.112	1.31566	12.004		**	
Hexachloroethane	.75930	.64194	.43226	.41502	.39094	1.111	.52789	31.011			
5 Nitrobenzene (Surr 3)	.46155	.47969	.48319	.46268	.46327	.880	.47008	2.226			(Conc=50.0,50.0,50.0,50.0
itrobenzene	.60091	.58295	.53120	.46464	.45791	.884	.52750	12.453			
Isophorone	1.19646	1.17283	1.13414	.97711	.95205	.928	1.08652	10.480			
ophenol	.28592	.27410	.25563	.22865	.22788	.939	.25444	10.304	*		
1,4-Dimethylphenol	.52892	.50709	.45036	.40445	.39383	.956	.45693	13.167			
bis(-2-Chloroethoxy)Methane	.77995	.77333	.70395	.60539	.60098	.970	.69282	12.539			
Benzoic Acid	.16171	.20920	.21860	.21057	.19761	.993	.19954	11.243			
1,4-Dichlorophenol	.42766	.39395	.35197	.31490	.28198	.983	.35409	16.553	*		
1,2,4-Trichlorobenzene	.46452	.44156	.38072	.31955	.31644	.994	.38456	17.696			
Naphthalene	1.27197	1.15156	1.02206	.82055	.85231	1.004	1.02369	18.830			
-Chloroaniline	.55704	.52764	.48685	.42872	.41772	1.020	.48359	12.534			
Hexachlorobutadiene	.24471	.22606	.19146	.16315	.16949	1.039	.19937	17.991	*		

F - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

- Percent Relative Standard Deviation

... - Calibration Check Compounds (* SPCC - System Performance Check Compounds (**)

400432

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

Contractor: ARDL,INC. Calibration Date: 05/22/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >D5348 RF 20.00	>D5347 RF 50.00	>D5349 RF 80.00	>D5350 RF 120.00	>D5351 RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
4-Chloro-3-Methylphenol	.44180	.40336	.37219	.31405	.30094	1.111	.36647	16.207	*		
2-Methylnaphthalene	.74235	.66578	.59925	.51413	.49246	1.125	.60279	17.298			
1,2,3,4-Tetrachlorobenzene	.42461	.39303	.35667	.33834	.31244	.886	.36502	12.161			
Hexachlorocyclopentadiene	.39380	.49209	.46195	.47457	.46110	.890	.45670	8.175		**	
2,4,6-Trichlorophenol	.56597	.53935	.49894	.50860	.46753	.901	.51608	7.339	*		
2,4,5-Trichlorophenol	.54769	.55821	.50210	.49551	.45546	.906	.51180	8.160			
2-Fluorobiphenyl (Surr 4)	1.47590	1.55344	1.63017	1.77694	1.75392	.912	1.63807	7.855			(Conc=50.0,50.0,50.0,50.0
2-Chloronaphthalene	1.55499	1.51235	1.34362	1.23922	1.17737	.923	1.36551	12.105			
1,2,4,5-Tetrachlorobenzene	.77071	.68116	.58419	.52345	.49435	.925	.61077	18.743			
Toluenediamine	.57299	.39812	.37629	.35768	.31520	.925	.40406	24.559			
2-Nitroaniline	.48270	.47601	.50754	.49607	.46736	.943	.48593	3.291			
1,3-Dinitrobenzene	.31173	.29218	.26472	.24902	.21699	.974	.26693	13.847			
Dimethyl Phthalate	1.83724	1.69161	1.54237	1.37164	1.26932	.976	1.54243	14.958			
2,4-Dinitrotoluene	.39946	.38655	.37593	.34414	.31704	.982	.36463	9.205			
Acetonaphthene	2.07798	2.12090	1.97670	1.75884	1.64192	1.097	1.91527	10.818			
Acenaphthylene	2.44430	2.26130	2.07933	1.92596	1.77247	.979	2.09667	12.675			
4-Nitroaniline	.59395	.53127	.54954	.52175	.47813	.999	.53493	7.881			
Acenaphthene	1.42865	1.30509	1.21753	1.14928	1.06309	1.005	1.23273	11.443	*		
2,4-Dinitrophenol	.09667	.12177	.14828	.15552	.14325	1.012	.13310	17.985		**	
4-Nitrophenol	.10935	.10129	.09581	.08734	.08031	1.027	.09482	12.029		**	
Dibenzofuran	1.38799	1.67468	1.59953	1.48074	1.39574	1.027	1.60773	11.608			
2,4-Dinitrotoluene	.42598	.40456	.41458	.37346	.35470	1.034	.39466	7.519			
Diethylphthalate	1.60812	1.43367	1.22657	1.02930	.95274	1.072	1.25008	21.893			
4-Chlorophenyl-phenylether	.77689	.72591	.67612	.60320	.55380	1.076	.66718	13.513			
2,3,4,6-Tetrachlorophenol	.16705	.14133	.14715	.13156	.12036	1.050	.14149	12.397			
Fluorene	1.32975	1.11942	.94576	.85335	.79084	1.073	1.00782	21.676			
4-Nitroaniline	.27628	.23326	.26810	.25664	.23604	1.083	.25806	5.946			
2,4,6-Tribromophenol (Surr 5)	.20012	.19242	.18877	.20036	.17960	1.103	.19226	4.502			(Conc=100.0,100.0,100.0,1
4,6-Dinitro-2-Methylphenol	.11537	.13651	.14809	.15072	.14410	.909	.13856	10.674			
4-Nitrosodiphenylamine	.79976	.80004	.74247	.64345	.64351	.913	.72584	10.852	*		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**

400433

Initial Calibration Data
RSD Compounds

Ca :

Instrument ID: RP-1

ontractor: ARDL,INC.

Calibration Date: 05/22/91

ontract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>D5348	>D5347	>D5349	>D5350	>D5351					
	RF	RF	RF	RF	RF					
Compound	20.00	50.00	80.00	120.00	160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
4-Bromophenyl-phenylether	.33330	.35775	.32381	.30235	.28699	.952	.32084	8.555		
Hexachlorobenzene	.42252	.41301	.37273	.33450	.33089	.967	.37473	11.395		
Pentachlorophenol	.16575	.18605	.18033	.16401	.16439	.988	.17211	6.007	*	
Phenanthrene	1.32654	1.29764	1.16694	1.02072	1.03907	1.003	1.17018	12.103		
Anthracene	1.37443	1.33249	1.21483	1.09781	1.09517	1.008	1.22295	10.583		
[illegible] Pole	1.13082	.99042	.88079	.82580	.79457	1.027	.92448	14.856		
Di-N-Butylphthalate	1.70063	1.75746	1.58706	1.39733	1.40069	1.079	1.56863	10.618		
Fluoranthene	.98918	.94116	.87902	.82132	.80994	1.137	.88813	8.664	*	
Pyrene	2.79135	3.05515	2.86106	2.68776	3.07350	.894	2.89376	5.791		
14 Terphenyl (Surr 6)	1.52833	1.68116	1.77420	1.80394	1.97369	.911	1.75226	9.351		(Conc=50.0,50.0,50.0,50.0
Butylbenzylphthalate	1.17691	1.32097	1.20709	1.13612	1.16513	.959	1.20124	5.960		
3,3'-Dichlorobenzidine	.38282	.37697	.40581	.39344	.38531	.999	.38887	2.871		
Benzo(a)Anthracene	1.37028	1.35628	1.31053	1.26949	1.25445	.999	1.31220	3.900		
[illegible] Ethylhexyl)Phthalate	1.62425	1.72030	1.67214	1.61569	1.61840	1.012	1.65016	2.756		
Chrysene	1.32309	1.27514	1.30063	1.20720	1.18404	1.002	1.25802	4.769		
Di-n-Octyl Phthalate	3.40076	3.80899	3.37766	3.02936	3.31464	.943	3.38628	8.241	*	
Benzo(b)Fluoranthene	1.53296	1.48781	1.44071	1.36903	1.47309	.968	1.46072	4.180		
Benzo(k)Fluoranthene	1.45827	1.55310	1.32681	1.21215	1.23117	.970	1.35630	10.838		
Benzo(a)Pyrene	1.21514	1.24301	1.18884	1.14246	1.17023	.995	1.19194	3.270	*	
Indeno(1,2,3-cd)Pyrene	.96063	.99245	1.14462	1.12985	1.09521	1.112	1.06419	7.785		
Dibenzo(a,h)Anthracene	.83053	.86628	.94065	.94513	.94620	1.115	.90616	5.990		
[illegible] (g,h,i)Perylene	.80912	.83837	.95842	.93705	.91353	1.144	.89130	7.238		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

- Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400434

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

e: ARDL, INC. Contract: --------

Code: ------ Case No.: ------- SAS No.: ----- SDG No.: -----

File ID: >S523V DFTPP Injection Date: 5/23/91

trument ID: HP- 1 DFTPP Injection Time: 14:01

/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	57.7
68	Less than 2.0% of mass 69	1.0(1.4)1
69	Mass 69 relative abundance	66.
70	Less than 2.0% of mass 69	0.0(0.0)1
27	40.0 - 60.0% of mass 198	41.3
97	Less than 1.0% of mass 198	0.0
98	Base Peak, 100% relative abundance	100.
99	5.0 - 9.0% of mass 198	6.2
75	10.0 - 30.0% of mass 198	16.7
65	Greater than 1.00% of mass 198	1.41
41	Present, but less than mass 443	10.4
42	Greater than 40.0% of mass 198	69.7
43	17.0 - 23.0% of mass 442	13.6(19.5)2

1-Value is % mass 69 2-Value is % mass 442

S TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	50NG STD	>D5367	5/23/91	14:24
02	LO-1G101L-GWRE	111897-5RE	>D5368	5/23/91	15:17
03	BLANK B1341	BLANK B1341	>D5371	5/23/91	16:08
04	LO-1MW04D-GW	111908-1	>D5372	5/23/91	17:01
05	LO-1G104D-GW	111908-2	>D5373	5/23/91	17:53
06	LO-1GW2-FB	111908-3	>D5374	5/23/91	18:45
07	LO-1MW07D-GW	111908-4	>D5375	5/23/91	19:37
08	LO-1MW07S-GW	111908-5	>D5376	5/23/91	20:28
09	LO-1MW05D-GW	111908-10	>D5379	5/23/91	22:59
10	LO-1G106DR-GW	111908-11	>D5380	5/23/91	23:49
11	LO-G106DR-MS/MSD	111908-12	>D5382	5/24/91	01:30
12					
13					
14					
15					
16					
17					
18					
19					
0					
21					
22					

400004

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/23/91

Contractor: ARDL,INC. | Time: 14:24

Contract No: | Laboratory ID: >05367

Instrument ID: HP-1 | Initial Calibration Date: 05/22/91 ~~05/21/91~~

Minimum $\overline{RF}$ for SPCC is 0.05 | Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
yridine	1.63013	1.38500	15.04			
n-Nitrosodimethylamine	1.16392	1.27929	9.91			
-Picoline	1.71540	1.73184	.96			
-Fluorophenol (Surr 1)	1.14540	1.11586	2.58			(Conc=100.00)
Aniline	2.34595	2.36361	.75			
05 Phenol (Surr 2)	1.51979	1.60550	5.64			(Conc=100.00)
ne	1.88276	1.98697	5.53	*		
is(-2-Chloroethyl)Ether	1.86554	2.20930	18.43			
2-Chlorophenol	1.63982	1.78567	8.89			
,3-Dichlorobenzene	1.58888	1.80886	13.84			
,4-Dichlorobenzene	1.54054	1.72546	12.00	*		
Benzyl Alcohol	.81198	.74678	8.03			
,2-Dichlorobenzene	1.36592	1.48567	8.77			
-M lphenol	1.20059	1.31832	9.81			
bi: nloroisopropyl)Ether	2.52097	3.34416	32.65			
4-Methylphenol	.99205	.97509	1.71			
-Nitroso-Di-n-Propylamine	1.31566	1.42611	8.40		**	
exachloroethane	.52789	.56025	6.13			
05 Nitrobenzene (Surr 3)	.47008	.52778	12.27			(Conc=50.00)
itrobenzene	.52750	.61961	17.46			
sophorone	1.08652	1.27415	17.27			
2-Nitrophenol	.25444	.23897	6.08	*		
methylphenol	.45693	.49679	8.72			
s(-2-Chloroethoxy)Methane	.69282	.80996	16.91			
enzoic Acid	.19954	.16373	17.94			
2,4-Dichlorophenol	.35409	.37883	6.99	*		
2,4-Trichlorobenzene	.38456	.43329	12.67			
phthalene	1.02369	1.13619	10.99			
4-Chloroaniline	.48359	.50802	5.05			
xachlorobutadiene	.19937	.23254	16.63	*		
Chloro-3-Methylphenol	.36647	.40658	10.95	*		
2-Methylnaphthalene	.60279	.65213	8.18			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

CO-1010L-GWRE
1MW04D
1G104D
1GW2-FB
1MW07D
1MW07S
1MW05D
1G100R
G100R MS/MSD

400604

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/23/91

Contractor: ARDL,INC. Time: 14:24

Contract No: Laboratory ID: >05367

Instrument ID: HP-1 Initial Calibration Date: 05/22/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
,2,3,4-Tetrachlorobenzene	.36502	.37793	3.54			
Hexachlorocyclopentadiene	.45670	.55842	22.27		**	
,4,6-Trichlorophenol	.51608	.52838	2.38	*		
,4,5-Trichlorophenol	.51180	.52638	2.85			
2-Fluorobiphenyl (Surr 4)	1.63807	1.47886	9.72			(Conc=50.00)
2-Chloronaphthalene	1.36551	1.53544	12.44			
,2,4,5-Tetrachlorobenzene	.61077	.72060	17.98			
oluenediamine	.40406	.34934	13.54			
3-Nitroaniline	.48593	.50125	3.15			
3-Dinitrobenzene	.26693	.31821	19.21			
ethyl Phthalate	1.54243	1.79723	16.52			
2,6-Dinitrotoluene	.36463	.43168	18.39			
obenzene	1.91527	2.39255	24.92			
e thylene	2.09667	2.22019	5.89			
- aniline	.53493	.63550	18.80			
Acenaphthene	1.23273	1.33337	8.16	*		
4-Dinitrophenol	.13310	.13967	4.94		**	
- Nitrophenol	.09482	.11664	23.02		**	
Dibenzofuran	1.60773	1.73681	8.03			
4-Dinitrotoluene	.39466	.50066	26.86			
ethylphthalate	1.25008	1.47078	17.66			
4-Chlorophenyl-phenylether	.66718	.77830	16.65			
3,4,6-Tetrachlorophenol	.14149	.16081	13.65			
uorene	1.00782	1.05553	4.73			
4-Nitroaniline	.25806	.30270	17.30			
2,4,6-Tribromophenol (Surr 5)	.19226	.24332	26.56			(Conc=100.00)
6-Dinitro-2-Methylphenol	.13856	.13804	.37			
Nitrosodiphenylamine	.72584	.76033	4.75	*		
4-Bromophenyl-phenylether	.32084	.34578	7.77			
xachlorobenzene	.37473	.42895	14.47			
ntachlorophenol	.17211	.18930	9.99	*		
Phenanthrene	1.17018	1.20632	3.09			

Xr - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400605

Continuing Calibration Check
HSL Compounds

ase No: Calibration Date: 05/23/91

on..ctor: ARDL,INC. Time: 14:24

ontract No: Laboratory ID: >05367

nstrument ID: HP-1 Initial Calibration Date: 05/22/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
nthracene	1.22295	1.29931	6.24			
arbazole	.92448	1.00371	8.57			
i-N-Butylphthalate	1.56863	1.68801	7.61			
luoranthene	.88813	1.03301	16.31	*		
yrene	2.89376	2.37738	17.84			
14 Terphenyl (Surr 6)	1.75226	1.48231	15.41			(Conc=50.00)
u enzylphthalate	1.20124	1.10126	8.32			
,3'-Dichlorobenzidine	.38887	.38776	.28			
enzo(a)Anthracene	1.31220	1.35394	3.18			
is(2-Ethylhexyl)Phthalate	1.65016	1.59954	3.07			
hrysene	1.25802	1.30257	3.54			
i-n-Octyl Phthalate	3.38628	2.78254	17.83	*		
enzo(b)Fluoranthene	1.46072	1.36217	6.75			
en-)Fluoranthene	1.35630	1.41411	4.26			
e)Pyrene	1.19194	1.22324	2.63	*		
ndeno(1,2,3-cd)Pyrene	1.06419	1.15496	8.53			
ibenzo(a,h)Anthracene	.90616	1.00543	10.96			
enzo(g,h,i)Perylene	.89130	.99116	11.20			

- Response Factor from daily standard file at 50.00 ug/L

- Average Response Factor from Initial Calibration Form VI

iff - % Difference from original average or curve

C - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ARDL, INC. Contract: --------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >SV526 DFTPP Injection Date: 5/26/91

Instrument ID: HP- 1 DFTPP Injection Time: 16:54

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	49.6
68	Less than 2.0% of mass 69	1.0(1.6)1
69	Mass 69 relative abundance	62.
70	Less than 2.0% of mass 69	1.0(1.6)1
27	40.0 - 60.0% of mass 198	41.7
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
99	5.0 - 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	19.1
365	Greater than 1.00% of mass 198	1.60
41	Present, but less than mass 443	10.8
42	Greater than 40.0% of mass 198	76.2
443	17.0 - 23.0% of mass 442	14.0(18.3)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	20 NG STD	>D5397	5/26/91	17:41
02	BNA STD	50 NG STD	>D5398	5/26/91	18:32
03	BNA STD	80 NG STD	>D5399	5/26/91	19:23
04	BNA STD	120 NG STD	>D5400	5/26/91	20:14
05	BNA STD	160 NG STD	>D5401	5/26/91	21:04
06	LO-TANK/002	111898-2	>D5404	5/26/91	23:36
07	LO-TANK/002MS	111898-2MS	>D5405	5/27/91	00:27
08	LO-TANK/002MSD	111898-2MSD	>D5406	5/27/91	01:17
09	LO-G106DR-MS/MSDMS	111908-12MS	>D5407	5/27/91	02:07
10	LO-G106DR-MS/MSDMSD	111908-12MSD	>D5408	5/27/91	02:57
11	LO-1MW05S-GW	111908-7	>D5409	5/27/91	03:47
12	LO-1G105S-FD	111908-8	>D5410	5/27/91	04:38
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Lab: Instrument ID: HP-1

Contractor: AROL,INC. Calibration Date: 05/28/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>05397	>05398	>05399	>05400	>05401					
	RF	RF	RF	RF	RF					
Compound	20.00	50.00	80.00	120.00	160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Pyridine	1.53103	1.71047	1.74589	1.52966	1.40180	.435	1.58377	8.994		
n-Nitrosodimethylamine	.97472	1.10735	1.14126	1.04400	1.01577	.443	1.05662	6.397		
2-Picoline	1.84583	1.87659	1.85404	1.67408	1.57515	.603	1.76514	7.560		
2-Fluorophenol (Surr 1)	1.08962	1.21653	1.15996	1.18897	1.17993	.748	1.16700	4.096		(Conc=100.0,100.0,100.0,1
Aniline	2.40738	2.41913	2.42619	2.25800	2.14195	.942	2.33053	5.416		
Phenol (Surr 2)	1.49166	1.64542	1.49495	1.42582	1.43106	.951	1.49778	5.922		(Conc=100.0,100.0,100.0,1
Benzyl Alcohol	2.08642	2.09025	1.84499	1.50986	1.52305	.955	1.81091	15.827	*	
Bis(2-Chloroethyl)Ether	2.10948	2.17031	1.93203	1.58574	1.48058	.960	1.85563	16.671		
2-Chlorophenol	1.91995	1.83203	1.60819	1.40408	1.37010	.966	1.62687	15.178		
1,3-Dichlorobenzene	1.90149	1.87288	1.55595	1.30300	1.22384	.992	1.57143	19.945		
1,4-Dichlorobenzene	1.92445	1.80439	1.46907	1.20263	1.18147	1.004	1.51640	22.419	*	
Benzyl Alcohol	.89238	.87496	.85546	.78773	.77041	1.046	.83619	6.470		
1,2-Dichlorobenzene	1.82741	1.59575	1.30452	1.10951	1.04073	1.044	1.37559	24.127		
2-Methylphenol	1.58556	1.46854	1.17639	.96827	.93275	1.078	1.22630	23.879		
Bis(2-chloroisopropyl)Ether	2.47892	2.62898	2.32139	2.11854	2.00373	1.077	2.31031	11.054		
4-Methylphenol	1.50132	1.12599	.89891	.90408	.87476	1.112	1.06101	25.100		
N-Nitroso-Di-n-Propylamine	1.50793	1.44734	1.30884	1.29059	1.20764	1.113	1.35247	9.046		**
Hexachloroethane	.77309	.58475	.45110	.43654	.39933	1.111	.52896	28.999		
2,5 Nitrobenzene (Surr 3)	.44546	.45367	.48919	.50081	.47488	.880	.47280	4.928		(Conc=50.0,50.0,50.0,50.0
Nitrobenzene	.55944	.55544	.53195	.49664	.46849	.884	.52239	7.491		
Isophorone	1.15625	1.22519	1.15515	1.04053	.98738	.928	1.11290	8.673		
2-Nitrophenol	.26836	.28347	.27265	.25633	.23891	.939	.26394	6.456	*	
2,4-Dimethylphenol	.52761	.50870	.48147	.45001	.42449	.957	.47846	9.782		
Bis(2-Chloroethoxy)Methane	.71832	.75576	.71265	.65470	.60757	.970	.68980	8.478		
Benzoic Acid	.12667	.22019	.23489	.21182	.20249	.994	.19921	21.216		
2,4-Dichlorophenol	.45693	.41063	.37242	.33031	.31704	.983	.37747	15.284	*	
1,2,4-Trichlorobenzene	.48788	.45115	.40865	.35254	.33119	.994	.40628	16.142		
Naphthalene	1.25986	1.14846	1.03540	.87646	.84544	1.004	1.03312	17.076		
4-Chloroaniline	.55343	.52715	.50982	.47332	.43779	1.020	.50030	9.088		
Hexachlorobutadiene	.26814	.24971	.22227	.18315	.17023	1.039	.21870	19.171	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-I

Contractor: ARDL,INC. Calibration Date: 05/28/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>05397	>05398	>05399	>05400	>05401					
	RF	RF	RF	RF	RF					
Compound	20.00	50.00	80.00	120.00	160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
-Chloro-3-Methylphenol	.46191	.44413	.39606	.35814	.33228	1.111	.39850	13.815	*	
2-Methylnaphthalene	.75509	.71057	.64077	.56837	.53275	1.126	.64151	14.550		
,2,3,4-Tetrachlorobenzene	.43509	.40186	.37172	.31826	.30977	.886	.36734	14.612		
exachlorocyclopentadiene	.48473	.55373	.54982	.45866	.44774	.890	.49493	9.128		**
2,4,6-Trichlorophenol	.58251	.58565	.54640	.48522	.47426	.901	.53481	9.858	*	
2,4,5-Trichlorophenol	.58138	.57972	.56910	.45948	.46070	.906	.53008	12.085		
-Fluorobiphenyl (Surr 4)	1.35219	1.52202	1.65441	1.65350	1.72090	.913	1.58060	9.280		(Conc=50.0,50.0,50.0,50.0
-Chloronaphthalene	1.59237	1.49617	1.35725	1.12847	1.10121	.923	1.33510	16.325		
1,2,4,5-Tetrachlorobenzene	.86132	.72809	.62575	.50628	.49777	.925	.64384	23.934		
oluenediamine	.21777	.22350	.26156	.23991	.20781	.926	.23011	9.164		
-Nitroaniline	.45107	.47540	.50284	.48217	.46390	.944	.47508	4.106		
1,3-Dinitrobenzene	.30500	.29063	.27131	.27816	.25706	.974	.28043	6.532		
imethyl Phthalate	1.88496	1.77489	1.49085	1.18344	1.17633	.976	1.50209	21.797		
,6 itrotoluene	.41156	.42031	.39264	.35494	.34044	.982	.38398	9.110		
Hz ene	2.00305	2.01844	1.92748	1.74162	1.68780	1.098	1.87568	8.110		
Acenaphthylene	2.37741	2.24805	2.00012	1.57515	1.56624	.979	1.95339	19.185		
-Nitroaniline	.51764	.48852	.52318	.52001	.51977	1.000	.51382	2.780		
cenaphthene	1.39856	1.30994	1.23205	1.05677	1.01315	1.005	1.20209	13.666	*	
2,4-Dinitrophenol	.10928	.15126	.18322	.19641	.18772	1.013	.16558	21.621		**
-Nitrophenol	.10770	.09317	.09550	.10136	.09724	1.028	.09900	5.772		**
ibenzofuran	1.90288	1.69730	1.62781	1.45750	1.37928	1.027	1.61296	12.787		
2,4-Dinitrotoluene	.50416	.47514	.46545	.44104	.43417	1.034	.46399	6.054		
iethylphthalate	1.78532	1.45514	1.20417	.93434	.92788	1.072	1.26137	28.953		
-Chlorophenyl-phenylether	.86014	.77571	.67910	.56370	.54373	1.076	.68448	19.818		
2,3,4,6-Tetrachlorophenol	.18309	.15464	.15825	.13714	.13420	1.051	.15346	12.785		
Fluorene	1.41566	1.12799	.96663	.74468	.74006	1.073	.99900	28.446		
-Nitroaniline	.25130	.24577	.23881	.24702	.25576	1.084	.24773	2.562		
,4,6-Tribromophenol (Surr 5)	.26713	.28453	.27655	.29836	.29456	1.108	.28423	4.512		(Conc=100.0,100.0,100.0,1
3,6-Dinitro-2-Methylphenol	.12914	.16595	.16698	.15071	.15301	.910	.15316	9.997		
-Nitrosodiphenylamine	.71137	.74117	.65839	.55667	.54187	.913	.63789	14.862	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

as[illegible]: Instrument ID: HP-1

ntractor: ARDL,INC. Calibration Date: 05/28/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>05397	>05398	>05399	>05400	>05401					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
4-Bromophenyl-phenylether	.33522	.36335	.32815	.28040	.26610	.952	.31464	12.819		
Hexachlorobenzene	.46342	.47874	.42843	.35929	.34207	.967	.41439	14.782		
Pentachlorophenol	.20085	.22573	.21683	.20412	.19619	.988	.20875	5.844	*	
Phenanthrene	1.31092	1.23176	1.11478	.95616	.94926	1.003	1.11258	14.541		
Anthracene	1.33774	1.27538	1.14105	.99901	.97905	1.008	1.14644	13.997		
[illegible]ole	1.14640	.95928	.87267	.75764	.75537	1.027	.89827	18.135		
Di-n-butylphthalate	1.97861	1.82292	1.50368	1.26125	1.27000	1.079	1.56729	20.690		
Fluoranthene	1.27777	1.21629	.97392	.83457	.83923	1.138	1.02836	20.271	*	
Pyrene	2.62247	2.50690	2.75012	2.25433	2.37753	.894	2.50227	7.814		
p-Terphenyl (Surr 6)	1.45509	1.55259	1.75751	1.64731	1.76490	.911	1.63548	8.157		(Conc=50.0,50.0,50.0,50.0
Butylbenzylphthalate	1.16303	1.20805	1.11245	.94300	.97727	.958	1.08076	10.717		
3,3'-Dichlorobenzidine	.41815	.46271	.44859	.41404	.42342	.999	.43338	4.890		
Benzo(a)Anthracene	1.37938	1.38696	1.34263	1.18314	1.24058	.999	1.30654	6.916		
bis(2-Ethylhexyl)Phthalate	1.66645	1.66598	1.54854	1.38793	1.39859	1.012	1.53350	8.920		
Chrysene	1.33551	1.34344	1.27875	1.16625	1.16950	1.002	1.25869	6.879		
Di-n-Octyl Phthalate	2.78770	2.81593	2.89898	2.24985	2.40581	.943	2.63165	10.857	*	
Benzo(b)Fluoranthene	1.26257	1.30056	1.39620	1.12322	1.19705	.968	1.25592	8.235		
Benzo(k)Fluoranthene	1.15876	1.34322	1.28604	1.00662	.90578	.970	1.14009	16.151		
Benzo(a)Pyrene	1.10295	1.17656	1.27978	1.09110	1.12713	.995	1.15551	6.648	*	
Indeno(1,2,3-cd)Pyrene	1.12165	1.18311	1.22566	1.12179	1.19628	1.113	1.16970	3.969		
Dibenzo(a,h)Anthracene	.94688	1.00935	1.05555	.96769	1.01438	1.116	.99877	4.259		
Benzo(g,h,i)Perylene	.93733	1.01507	1.05157	.91948	.97699	1.145	.98009	5.552		

RF_x - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

ne: ARDL, INC. Contract: --------

Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

File ID: >529SV DFTPP Injection Date: 5/29/91

strument ID: HP- 1 DFTPP Injection Time: 16:21

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	56.4
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	56.
70	Less than 2.0% of mass 69	.2(.4)1
27	40.0 - 60.0% of mass 198	41.5
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
99	5.0 - 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	19.8
365	Greater than 1.00% of mass 198	1.50
41	Present, but less than mass 443	10.0
42	Greater than 40.0% of mass 198	65.5
443	17.0 - 23.0% of mass 442	12.5(19.1)2

1-Value is % mass 69 2-Value is % mass 442

S TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	20 NG STD	>D5424	5/29/91	16:48
02	BNA STD	160 NG STD	>D5425	5/29/91	17:40
03	BNA STD	50 NG STD	>D5426	5/29/91	18:33
04	BNA STD	80 NG STD	>D5427	5/29/91	20:27
05	BNA STD	120 NG STD	>D5428	5/29/91	21:20
06	LO-01MW05S-GWRE	111908-7RE	>D5433	5/30/91	02:00
07	LO-1G105S-FDRE	111908-8RE	>D5434	5/30/91	02:53
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

400006

FORM V SV 1/87 Rev.

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

Contractor: AROL,INC. Calibration Date: 05/31/91

Contract No: 29

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>05424	>05426	>05427	>05428	>05425					
	RF	RF	RF	RF	RF					
Compound	20.00	50.00	80.00	120.00	160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
yridine	1.35829	1.53421	1.18376	1.28762	1.31937	.416	1.33665	9.579		
n-Nitrosodimethylamine	1.08524	.86822	.90648	.88227	.95525	.424	.93949	9.361		
-Picoline	1.76644	1.56279	1.58016	1.56001	1.58725	.589	1.61133	5.428		
-Fluorophenol (Surr 1)	1.03636	1.06682	1.07882	1.11541	1.17245	.741	1.09397	4.773		(Conc=100.0,100.0,100.0,1
Aniline	2.59004	2.23917	2.19024	2.09792	2.13491	.941	2.25046	8.767		
05 henol (Surr 2)	1.55218	1.51905	1.48893	1.43894	1.39009	.953	1.47784	4.354		(Conc=100.0,100.0,100.0,1
h ,	1.88230	1.68271	1.48282	1.41352	1.32495	.956	1.55726	14.415	*	
is(-2-Chloroethyl)Ether	2.02127	1.59561	1.45601	1.26974	1.14410	.960	1.49735	22.708		
2-Chlorophenol	1.75599	1.45448	1.35885	1.26120	1.19777	.965	1.40566	15.562		
,3-Dichlorobenzene	1.84109	1.56096	1.40196	1.28475	1.17694	.991	1.45314	17.859		
,4-Dichlorobenzene	1.78350	1.49396	1.30738	1.24647	1.07036	1.004	1.38033	19.667	*	
Benzyl Alcohol	.96331	.81031	.82027	.85078	.83977	1.049	.85689	7.186		
,2-Dichlorobenzene	1.58697	1.30244	1.19335	1.09425	.98954	1.044	1.23331	18.588		
- lphenol	1.54928	1.22131	1.06160	.89651	.86755	1.083	1.11925	24.938		
b. hloroisopropyl)Ether	2.92413	2.98749	2.12902	2.07032	2.30072	1.081	2.48234	17.766		
4-Methylphenol	1.36399	1.07964	.95268	.94261	.97111	1.118	1.06201	16.710		
-Nitroso-Di-n-Propylamine	1.41878	1.02980	1.10489	1.15745	1.25666	1.117	1.19352	12.616	**	
exachloroethane	.64020	.51534	.52421	.49869	.46524	1.113	.52874	12.530		
05 Nitrobenzene (Surr 3)	.47649	.46578	.48928	.46672	.49381	.878	.47842	2.676		(Conc=50.0,50.0,50.0,50.0
itrobenzene	.53017	.47913	.47423	.44759	.46506	.882	.47924	6.450		
sophorone	1.13457	1.00910	1.07698	1.02621	1.03214	.927	1.05580	4.799		
2-Nitrophenol	.27198	.24812	.24579	.22731	.21964	.938	.24257	8.410	*	
mechylphenol	.47364	.42079	.40175	.37792	.39783	.958	.41439	8.798		
is(-2-Chloroethoxy)Methane	.72605	.57734	.60769	.53624	.45821	.971	.58111	16.958		
Benzoic Acid	.21677	.20914	.21768	.21353	.22632	.999	.21669	2.925		
2,4-Dichlorophenol	.39131	.33994	.31490	.25700	.24304	.983	.30924	19.684	*	
,2,4-Trichlorobenzene	.44937	.39703	.36805	.33299	.31626	.994	.37274	14.231		
aphthalene	1.32292	1.07657	1.00565	.83731	.79839	1.004	1.00817	20.863		
4-Chloroaniline	.59569	.53233	.51267	.46851	.46313	1.022	.51447	10.498		
exachlorobutadiene	.21942	.19769	.18831	.16841	.15027	1.041	.18482	14.411	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

Contractor: ARDL,INC. Calibration Date: 05/31/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>05424	>05426	>05427	>05428	>05425					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
-Chloro-3-Methylphenol	.42063	.36950	.34903	.33621	.31551	1.116	.35818	11.181	*	
2-Methylnaphthalene	.81026	.68397	.63428	.54616	.53766	1.129	.64246	17.438		
1,2,3,4-Tetrachlorobenzene	.39118	.34071	.32316	.28882	.26835	.884	.32244	14.806		
exachlorocyclopentadiene	.42491	.39289	.38526	.35000	.33673	.888	.37796	9.319		**
,4,6-Trichlorophenol	.51941	.44070	.44015	.41181	.40087	.900	.44259	10.476	*	
2,4,5-Trichlorophenol	.59496	.48875	.46423	.40924	.36765	.906	.46496	18.638		
-Fluorobiphenyl (Surr 4)	1.29425	1.39336	1.45180	1.45415	1.44210	.912	1.40713	4.815		(Conc=50.0,50.0,50.0,50.0
-Chloronaphthalene	1.43764	1.08496	.88250	.75693	.64015	.922	.96044	32.649		
1,2,4,5-Tetrachlorobenzene	.77629	.63768	.54147	.45612	.39506	.924	.56133	26.892		
oluenediamine	.23865	.39325	.39273	.41922	.35105	.926	.35898	19.935		
-Nitroaniline	.59391	.52552	.54097	.49809	.46471	.944	.52464	9.221		
1,3-Dinitrobenzene	.34820	.31613	.31697	.36207	.28797	.975	.32627	8.960		
imethyl Phthalate	1.82815	1.33162	1.11992	.84283	.76366	.978	1.17724	36.380		
,6-Dinitrotoluene	.45031	.41570	.38637	.36759	.32314	.984	.38862	12.370		
ene	2.50402	2.04967	1.84447	1.70036	1.38400	1.100	1.89650	22.001		
cenaphthylene	2.60144	1.92873	1.65021	1.24033	1.06886	.979	1.69791	35.789		
-Nitroaniline	.59952	.55164	.53158	.53976	.46260	1.001	.53702	9.168		
cenaphthene	1.58816	1.24441	1.12927	.98069	.86366	1.005	1.16124	24.025	*	
2,4-Dinitrophenol	.18157	.17652	.18194	.18765	.16819	1.014	.17917	4.073		**
-Nitrophenol	.13185	.10802	.09709	.10139	.08384	1.030	.10444	16.939		**
benzofuran	2.08536	1.72149	1.61402	1.43155	1.28656	1.027	1.62780	18.767		
,4-Dinitrotoluene	.55476	.51113	.45406	.43340	.34141	1.036	.45895	17.700		
ethylphthalate	1.76946	1.24002	1.03549	.84466	.59917	1.076	1.09776	40.431		
-Chlorophenyl-phenylether	.80022	.61188	.56834	.46129	.38764	1.078	.56587	27.906		
,3,4,6-Tetrachlorophenol	.20348	.16713	.15596	.14048	.12622	1.052	.15865	18.567		
luorene	1.50932	1.15116	.99666	.80814	.74519	1.074	1.04209	29.388		
-Nitroaniline	.24873	.29021	.30059	.29409	.25460	1.087	.27764	8.678		
,4,6-Tribromophenol (Surr 5)	.24847	.23383	.23711	.23833	.19728	1.110	.23100	8.497		(Conc=100.0,100.0,100.0,1
,6-Dinitro-2-Methylphenol	.15848	.14590	.13264	.13411	.13230	.910	.14069	8.121		
-Nitrosodiphenylamine	.70822	.54465	.51450	.45198	.44238	.913	.53234	20.134	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

Lab. Name: ARDL,INC. Calibration Date: 05/31/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>D5424	>D5426	>D5427	>D5428	>D5425					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
-Bromophenyl-phenylether	.29311	.23492	.23504	.22447	.24446	.952	.24640	10.979		
Hexachlorobenzene	.38161	.34217	.28546	.29836	.28757	.967	.31907	13.130		
Pentachlorophenol	.16245	.14576	.13134	.14370	.14470	.988	.14559	7.617	*	
henanthrene	1.40623	1.14683	.95235	.93899	.94476	1.003	1.07783	18.863		
Anthracene	1.48772	1.18945	1.03064	.94884	.94536	1.008	1.12040	20.344		
Carbazole	1.13740	.99846	.78814	.75379	.72474	1.028	.88051	20.376		
Butylphthalate	1.91883	1.42463	1.14193	1.04018	.98841	1.082	1.30279	29.430		
luoranthene	1.15687	.93350	.69127	.65928	.63644	1.139	.81587	27.519	*	
Pyrene	4.60575	3.74684	3.90437	3.62035	3.11442	.893	3.79835	14.210		
14 Terphenyl (Surr 6)	2.13807	2.16421	2.22317	2.17936	1.99117	.911	2.13919	4.129		(Conc=50.0,50.0,50.0,50.0
utylbenzylphthalate	1.32194	1.07319	1.02628	1.00341	1.05422	.959	1.09581	11.788		
3,3'-Dichlorobenzidine	.38424	.39295	.39736	.44456	.50429	.999	.42468	11.845		
Benzo(a)Anthracene	1.53073	1.34557	1.30376	1.33651	1.42080	.999	1.38747	6.546		
is(2-Ethylhexyl)Phthalate	1.51938	1.32909	1.35840	1.40047	1.48402	1.014	1.41827	5.728		
e	1.39821	1.20907	1.21508	1.26721	1.29207	1.002	1.27633	6.000		
Di-n-Octyl Phthalate	3.52190	2.55171	2.57428	2.33957	2.45124	.949	2.64774	14.660	*	
enzo(b)Fluoranthene	1.58803	1.44260	1.48798	1.41969	1.51432	.971	1.49053	4.424		
enzo(k)Fluoranthene	1.59391	1.25475	1.22940	1.21744	1.07995	.973	1.27509	14.960		
Benzo(a)Pyrene	1.32293	1.18940	1.17867	1.15210	1.21952	.996	1.21253	5.466	*	
Indeno(1,2,3-cd)Pyrene	1.14223	1.19688	1.21860	1.23236	1.31246	1.102	1.22051	5.065		
ibenzo(a,)Anthracene	.95047	1.04313	1.03797	.99549	1.08070	1.105	1.02155	4.386		
Benzo(g,h,i)Perylene	.92874	1.01541	1.03349	.99921	1.09264	1.131	1.01390	5.846		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

b ne: ARDL, INC. Contract: ----

o Code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

o File ID: >SV530 DFTPP Injection Date: 5/30/91

strument ID: HP- 1 DFTPP Injection Time: 21:11

n/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	49.1
68	Less than 2.0% of mass 69	.7(1.3)1
69	Mass 69 relative abundance	57.
70	Less than 2.0% of mass 69	.2(.4)1
127	40.0 - 60.0% of mass 198	40.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
199	5.0 - 9.0% of mass 198	6.3
275	10.0 - 30.0% of mass 198	19.9
365	Greater than 1.00% of mass 198	2.17
441	Present, but less than mass 443	14.6
442	Greater than 40.0% of mass 198	97.0
443	17.0 - 23.0% of mass 442	18.1(18.7)2

1-Value is % mass 69 2-Value is % mass 442

IS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	50 NG STD	>D5441	5/30/91	23:10
02	LO-TANK/001	111898-1	>D5449	5/31/91	05:41
03	LO-1G105S-FDDL	111908-8DL	>D5451	5/31/91	07:18
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/30/91

Con or: ARDL,INC. Time: 23:10

Contract No: Laboratory ID: >05441

Instrument ID: HP-1 Initial Calibration Date: 05/31/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
yridine	1.33665	1.59130	19.05			
-Nitrosodimethylamine	.93949	.99534	5.95			
2-Picoline	1.61133	1.66409	3.27			
-Fluorophenol (Surr 1)	1.09397	1.02195	6.58			(Conc=100.00)
niline	2.25046	2.12595	5.53			
05 Phenol (Surr 2)	1.47784	1.37010	7.29			(Conc=100.00)
h	1.55726	1.46873	5.68	*		
is(-2-Chloroethyl)Ether	1.49735	1.52460	1.82			
2-Chlorophenol	1.40566	1.42544	1.41			
,3-Dichlorobenzene	1.45314	1.49439	2.84			
,4-Dichlorobenzene	1.38033	1.42011	2.88	*		
enzyl Alcohol	.85689	.79314	7.44			
1,2-Dichlorobenzene	1.23331	1.24814	1.20			
-Methylphenol	1.11925	1.05835	5.44			
loroisopropyl)Ether	2.48234	2.09663	15.54			
4-Methylphenol	1.06201	.93652	11.82			
-Nitroso-Di-n-Propylamine	1.19352	1.04069	12.80		**	
exachloroethane	.52874	.52211	1.25			
05 Nitrobenzene (Surr 3)	.47842	.44608	6.76			(Conc=50.00)
itrobenzene	.47924	.46140	3.72			
sophorone	1.05580	.99979	5.31			
-Nitrophenol	.24257	.24390	.55	*		
2,4-Dimethylphenol	.41439	.39479	4.73			
-Chloroethoxy)Methane	.58111	.58261	.26			
enzoic Acid	.21669	.15619	27.92			
2,4-Dichlorophenol	.30924	.33746	9.13	*		
,2,4-Trichlorobenzene	.37274	.39657	6.39			
aphthalene	1.00817	1.01031	.21			
4-Chloroaniline	.51447	.49136	4.49			
Hexachlorobutadiene	.18482	.20372	10.22	*		
-Chloro-3-Methylphenol	.35818	.31152	13.03	*		
-Methylnaphthalene	.64246	.62674	2.45			

F - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

LO-IG-1055-FDDL

mislabeled

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/30/91

Contractor: ARDL,INC. Time: 23:10

Contract No: Laboratory ID: >05441

Instrument ID: HP-1 Initial Calibration Date: 05/31/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
,2,3,4-Tetrachlorobenzene	.32244	.38824	20.41			
Hexachlorocyclopentadiene	.37796	.50012	32.32		**	
?,4,6-Trichlorophenol	.44259	.47452	7.22	*		
,4,5-Trichlorophenol	.46496	.47749	2.69			
2-Fluorobiphenyl (Surr 4)	1.40713	1.49181	6.02			(Conc=50.00)
2-Chloronaphthalene	.96044	1.14845	19.58			
,2,4,5-Tetrachlorobenzene	.56133	.67313	19.92			
.oluenediamine	.35898	.26749	25.49			
3-Nitroaniline	.52464	.47993	8.52			
,3-Dinitrobenzene	.32627	.24678	24.36			
imethyl Phthalate	1.17724	1.34434	14.19			
2,6-Dinitrotoluene	.38862	.37107	4.52			
'zobenzene	1.89650	1.63896	13.58			
of thylene	1.69791	1.91159	12.58			
-n aniline	.53702	.41055	23.55			
Acenaphthene	1.16124	1.20895	4.11	*		
,4-Dinitrophenol	.17917	.13064	27.09		**	
-Nitrophenol	.10444	.07386	29.28		**	
Dibenzofuran	1.62780	1.67397	2.84			
,4-Dinitrotoluene	.45895	.38392	16.35			
iethylphthalate	1.09776	1.09116	.60			
4-Chlorophenyl-phenylether	.56587	.62844	11.06			
?,3,4,6-Tetrachlorophenol	.15865	.13662	13.89			
luorene	1.04209	1.03855	.34			
4-Nitroaniline	.27764	.23575	15.09			
2,4,6-Tribromophenol (Surr 5)	.23100	.21499	6.93			(Conc=100.00)
,6-Dinitro-2-Methylphenol	.14069	.14220	1.08			
-Nitrosodiphenylamine	.53234	.64685	21.51	*		
4-Bromophenyl-phenylether	.24640	.28864	17.14			
exachlorobenzene	.31907	.36033	12.93			
entachlorophenol	.14559	.14324	1.62	*		
Phenanthrene	1.07783	1.11857	3.78			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400616

Continuing Calibration Check
HSL Compounds

ase No: Calibration Date: 05/30/91

or: AROL,INC. Time: 23:10

ontract No: Laboratory ID: >05441

nstrument ID: HP-1 Initial Calibration Date: 05/31/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
nthracene	1.12040	1.17988	5.31			
arbazole	.88051	.91709	4.15			
Di-N-Butylphthalate	1.30279	1.25694	3.52			
luoranthene	.81587	.89473	9.67	*		
yrene	3.79835	2.10665	44.54			
014 Terphenyl (Surr 6)	2.13919	1.29284	39.56			(Conc=50.00)
u nzylphthalate	1.09581	.85149	22.30			
,3'-ichlorobenzidine	.42468	.45200	6.43			
Benzo(a)Anthracene	1.38747	1.34184	3.29			
is(2-Ethylhexyl)Phthalate	1.41827	1.28131	9.66			
hrysene	1.27633	1.21601	4.73			
i-n-Octyl Phthalate	2.64774	2.33980	11.63	*		
Benzo(b)Fluoranthene	1.49053	1.33283	10.58			
enzo(k)Fluoranthene	1.27509	1.28644	.89			
e ,Pyrene	1.21253	1.18660	2.14	*		
Indeno(1,2,3-cd)Pyrene	1.22051	1.00301	17.82			
ibenzo(a,h)Anthracene	1.02155	1.00520	1.60			
enzo(g,h,i)Perylene	1.01390	.97986	3.36			

F - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

b ne:ARDL, INC. Contract:--------

b Code: ----- Case No.: ------ SAS No.: ----- SDG No.: -----

b File ID: >604SV DFTPP Injection Date: 6/04/91

strument ID: HP-1 DFTPP Injection Time: 13:09

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	47.5
68	Less than 2.0% of mass 69	.8(1.5)1
69	Mass 69 relative abundance	55.
70	Less than 2.0% of mass 69	.4(.8)1
127	40.0 - 60.0% of mass 198	40.7
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
199	5.0 - 9.0% of mass 198	6.4
275	10.0 - 30.0% of mass 198	19.7
365	Greater than 1.00% of mass 198	2.25
441	Present, but less than mass 443	13.1
442	Greater than 40.0% of mass 198	87.4
443	17.0 - 23.0% of mass 442	17.5(20.1)2

1-Value is % mass 69 2-Value is % mass 442

HIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	20 NG STD	>D5500	6/04/91	13:32
02	BNA STD	160 NG STD	>D5501	6/04/91	14:22
03	BNA STD	120 NG STD	>D5502	6/04/91	15:34
04	BNA STD	80 NG STD	>D5503	6/04/91	16:23
05	BNA STD	50 NG STD	>D5504	6/04/91	17:12
06	BLANK B1339	BLANK B1339	>D5505	6/04/91	18:11
07	LO-1G102D-GW	111897-1	>D5506	6/04/91	18:59
08	LO-1G102L-GW	111897-2	>D5507	6/04/91	19:46
09	LO-1G101D-GW	111897-3	>D5508	6/04/91	20:34
10	LO-1G101M-GW	111897-4	>D5509	6/04/91	21:21
11	LO-1MW02D-GW	111908-6	>D5510	6/04/91	22:08
12	LO-1G104L-GW	111908-9	>D5511	6/04/91	22:55
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

C ctor: ARDL,INC. Calibration Date: 06/04/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>D5500	>D5504	>D5503	>D5502	>D5501					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Pyridine	1.61532	.92054	.96311	.98781	.89479	.395	1.07631	28.196		
n-Nitrosodimethylamine	1.12314	1.08035	.97227	.94155	.98914	.382	1.02129	7.530		
2-Picoline	-	1.07690	1.06465	1.03804	.97971	.569	1.03982	4.158		
2-Fluorophenol (Surr 1)	1.02259	1.01584	1.04690	1.03192	1.06159	.730	1.03577	1.791		(Conc=100.0,100.0,100.0,1
Aniline	-	1.83430	1.55222	1.39836	1.28726	.940	1.51803	15.625		
D5 Phenol (Surr 2)	1.33597	1.31915	1.22604	1.14773	1.12894	.957	1.23157	7.720		(Conc=100.0,100.0,100.0,1
Phenol	1.72403	1.35788	1.12958	.99703	.97991	.960	1.23769	25.132	*	
bi(-Chloroethyl)Ether	1.31577	1.31145	1.13585	.99583	1.03258	.960	1.15829	13.019		
2-Chlorophenol	1.63199	1.46437	1.21476	1.08637	1.02400	.965	1.28430	20.044		
1,3-Dichlorobenzene	1.73729	1.54073	1.30213	1.18323	1.10433	.990	1.37354	19.057		
1,4-Dichlorobenzene	1.77024	1.44572	1.26512	1.10872	1.02764	1.004	1.32349	22.401	*	
Benzyl Alcohol	.65483	.93315	.80300	.76057	.78363	1.056	.78703	12.673		
1,2-Dichlorobenzene	1.73088	1.50220	1.28585	1.16777	1.07515	1.047	1.35257	19.601		
2-Methylphenol	1.50335	1.29197	1.02662	.91021	.88504	1.094	1.12344	23.736		
bis(2-chloroisopropyl)Ether	3.06128	2.88651	2.42390	2.29224	2.93176	1.088	2.71914	12.467		
4 yiphenol	1.55608	1.32808	1.12003	1.02438	1.00572	1.131	1.20686	19.341		
N-Nitroso-Di-n-Propylamine	1.57425	1.41696	1.21529	1.05045	1.13304	1.126	1.27800	16.773	**	
Hexachloroethane	.76834	.66893	.55859	.51543	.45372	1.119	.59300	21.182		
D5 Nitrobenzene (Surr 3)	.46765	.48039	.45609	.48070	.47586	.873	.47214	2.204		(Conc=50.0,50.0,50.0,50.0
Nitrobenzene	.52592	.50352	.45542	.44795	.44173	.877	.47491	7.899		
Isophorone	1.01428	.99244	.93182	.90017	.88222	.925	.94419	6.078		
2-Nitrophenol	.26186	.27075	.23435	.23110	.22072	.936	.24375	8.788	*	
2,4-Dimethylphenol	.45101	.43993	.38089	.37432	.35691	.960	.40061	10.499		
bis(2-Chloroethoxy)Methane	.70012	.61578	.54606	.50309	.49179	.973	.57137	15.204		
Benzoic Acid	.20062	.21082	.19388	.19484	.21270	1.006	.20257	4.343		
2,4-Dichlorophenol	.38134	.35080	.29204	.28165	.25629	.985	.31242	16.582	*	
1,2,4-Trichlorobenzene	.45037	.42554	.36754	.35814	.32651	.994	.38562	13.199		
Naphthalene	1.30530	1.06949	.89064	.83324	.78121	1.004	.97598	21.903		
4-Chloroaniline	.55353	.46338	.38177	.36468	.32350	1.032	.41737	21.930		
Hexachlorobutadiene	.24697	.24680	.20332	.19645	.16794	1.044	.21230	16.133	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

CC Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400561

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

C ctor: ARDL,INC. Calibration Date: 06/04/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>D5500	>D5504	>D5503	>D5502	>D5501					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
4-Chloro-3-Methylphenol	.37249	.37456	.30900	.29717	.28305	1.126	.32726	13.210	*	
2-Methylnaphthalene	.76810	.69834	.57661	.53008	.47981	1.135	.61059	19.593		
1,2,3,4-Tetrachlorobenzene	.41229	.37521	.33422	.31211	.28639	.881	.34404	14.583		
Hexachlorocyclopentadiene	.47588	.52124	.43625	.43884	.40494	.886	.45543	9.784		**
2,4,6-Trichlorophenol	.49198	.48456	.42295	.38838	.36440	.898	.43045	13.194	*	
2,4,5-Trichlorophenol	.57755	.55993	.48390	.43962	.40881	.904	.49396	14.892		
2-Fluorobiphenyl (Surr 4)	1.39265	1.43378	1.43603	1.41940	1.42534	.910	1.42144	1.225		(Conc=50.0,50.0,50.0,50.0
Diethyladipate	.74437	1.31686	.46189	.36208	.29806	.921	.63665	65.466		
2-Chloronaphthalene	1.38511	1.09249	.99851	.82993	.74111	.919	1.00943	24.883		
1,2,4,5-Tetrachlorobenzene	.77062	.39626	.52981	.45470	.38347	.922	.50697	31.231		
Toluenediamine	-	.12441	.11991	.12929	.07641	.928	.11251	21.656		
3-Nitroaniline	.52894	.54378	.48546	.45715	.43190	.943	.48945	9.628		
Azobenzene	2.08682	1.82797	1.61887	1.44778	1.31573	1.104	1.65943	18.467		
Acenaphthylene	2.22662	1.78705	1.56272	1.38356	1.25017	.978	1.64202	23.378		
1,3-Dinitrobenzene	.29431	.28557	.31950	.35608	.31215	.975	.31352	8.734		
D yl Phthalate	1.54149	1.29279	1.15476	1.02455	.96743	.979	1.19620	19.249		
2,6-Dinitrotoluene	.39814	.40486	.35745	.33113	.32169	.984	.36265	10.446		
2-Nitroaniline	.56499	.61794	.56443	.50217	.44487	1.003	.53888	12.369		
Acenaphthene	1.43532	1.26649	1.07062	.92476	.82125	1.005	1.10369	22.623	*	
2,4-Dinitrophenol	.18162	.19926	.20011	.18566	.18252	1.016	.18943	4.957		**
4-Nitrophenol	.11948	.12217	.11615	.10124	.09816	1.035	.11144	9.855		**
Dibenzofuran	1.97095	1.81390	1.50161	1.36455	1.23485	1.0[illegible]	1.57717	19.522		
2,4-Dinitrotoluene	.48394	.48205	.44255	.40578	.36456	1.038	.43578	11.745		
Diethylphthalate	1.71317	1.43983	1.17522	.93796	.79743	1.080	1.21272	30.615		
4-Chlorophenyl-phenylether	.75579	.61931	.51283	.41934	.37791	1.082	.55703	28.603		
2,3,4,6-Tetrachlorophenol	.17989	.15824	.15568	.13508	.13361	1.055	.15250	12.502		
Fluorene	1.52804	1.26387	1.08904	.96181	.89062	1.077	1.14667	22.329		
4-Nitroaniline	.31580	.33894	.31408	.27776	.26033	1.092	.30138	10.523		
2,4,6-Tribromophenol (Surr 5)	.26516	.26962	.26092	.23888	.23137	1.114	.25319	6.708		(Conc=100.0,100.0,100.0,1
4,6-Dinitro-2-Methylphenol	.17237	.17435	.16683	.16291	.16093	.908	.16748	3.472		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

C - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400562

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

Contractor: ARDL,INC. Calibration Date: 06/04/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >D5500 RF 20.00	>D5504 RF 50.00	>D5503 RF 80.00	>D5502 RF 120.00	>D5501 RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
N-Nitrosodiphenylamine	.69837	.58489	.53887	.47212	.43113	.912	.54508	19.117	*		
4-Bromophenyl-phenylether	.30141	.26965	.24686	.24259	.23671	.952	.25944	10.242			
Hexachlorobenzene	.40595	.36855	.33797	.31852	.29995	.966	.34619	12.121			
Pentachlorophenol	.18795	.16178	.16992	.15641	.17018	.989	.16925	7.064	*		
Phenanthrene	1.41019	1.12138	1.04113	.96711	.92263	1.003	1.09249	17.665			
Anthracene	1.45919	1.16739	1.11168	.99215	.95704	1.009	1.13749	17.513			
Carbazole	1.17318	.92432	.92759	.81191	.78102	1.030	.92360	16.695			
Butylphthalate	1.78728	1.48598	1.34445	1.17095	1.14449	1.087	1.38663	18.989			
Fluoranthene	1.27264	.99807	.93067	.80404	.78208	1.143	.95750	20.625	*		
Pyrene	2.61179	2.80267	3.40494	3.21806	3.20388	.890	3.04827	10.220			
Benzidine	.21260	.73295	.79182	.65568	.55300	.888	.58921	38.820			
d14 Terphenyl (Surr 6)	1.50511	1.70836	2.26517	2.18776	2.28769	.910	1.99082	18.074			(Conc=50.0,50.0,50.0,50.0
Butylbenzylphthalate	1.09052	1.10177	1.12517	1.03209	1.04267	.960	1.07844	3.680			
Bis-2-ethylhexyladipate	1.67151	4.06590	2.00263	1.92106	1.87376	.972	2.30697	42.949			
3,3'-Dichlorobenzidine	.36803	.36340	.39067	.36386	.42087	1.001	.38137	8.495			
Benzo(a)Anthracene	1.39659	1.31134	1.39000	1.22107	1.31403	.999	1.32661	5.389			
Bis(2-Ethylhexyl)Phthalate	1.39038	1.27137	1.42959	1.26466	1.40326	1.017	1.35185	5.760			
Chrysene	1.37954	1.25657	1.32192	1.22632	1.24303	1.002	1.28548	4.968			
Di-n-Octyl Phthalate	3.12825	2.82321	2.82951	2.61245	2.43121	.954	2.76493	9.469	*		
Benzo(b)Fluoranthene	1.56921	1.44266	1.51854	1.42024	1.47327	.973	1.48478	4.033			
Benzo(k)Fluoranthene	1.56554	1.49113	1.40999	1.41370	1.37162	.975	1.45039	5.352			
Benzo(a)Pyrene	1.32230	1.21573	1.24953	1.17187	1.24846	.996	1.24158	4.440	*		
Indeno(1,2,3-cd)Pyrene	1.01326	1.08102	1.11809	.96365	1.06085	1.093	1.04738	5.746			
Dibenzo(a,h)Anthracene	.88617	.93194	.95217	.98336	1.09085	1.096	.96890	7.923			
Benzo(g,h,i)Perylene	.87350	.87585	.90645	.92420	1.05541	1.120	.92708	8.071			

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

* - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400563

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

ab Name: ARDL, INC. Contract: ----

ab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

ab File ID (Standard): >D5367 Date Analyzed: 05/23/91

nstrument ID: HP- 1 Time Analyzed: 14:24

		IS1(DCB)			IS2(NAP)			IS3(ACE)		
		AREA	#	RT	AREA	#	RT	AREA	#	RT
	12 HOUR STD	35461		11.08	129582		14.24	61008		18.72
	UPPER LIMIT	70922		11.58	259164		14.74	122016		19.22
	LOWER LIMIT	17731		10.58	64791		13.74	30504		18.22
	EPA SAMPLE NO.									
1	LO-1G101L-GWRE	45938		11.06	159213		14.21	78208		18.70
2	BLANK B1341	43235		11.06	149697		14.20	71917		18.69
3	LO-1MW04D-GW	45609		11.06	162393		14.21	81664		18.69
	LO-1G104D-GW	42249		11.05	143939		14.20	65446		18.68
	LO-1GW2-FB	39155		11.05	136560		14.20	63609		18.69
6	LO-1MW07D-GW	31714		11.05	110306		14.20	54628		18.69
7	LO-1MW07S-GW	31021		11.05	114655		14.20	59180		18.68
8	LO-1MW05D-GW	29717		11.06	96169		14.21	49168		18.69
9	LO-1G106DR-GW	27465		11.06	96340		14.21	50204		18.70
10	LO-G10GDR-MS/MSD	27654		11.05	94504		14.20	50915		18.68
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21										
22										

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

L Name: ARDL, INC. Contract: ----

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5367 Date Analyzed: 05/23/91

Instrument ID:HP- 1 Time Analyzed: 14:24

		IS4(PHN)		IS5(CHR)		IS6(PER)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	77659	22.43	32750	29.19	24771	32.83
	UPPER LIMIT	155318	22.93	65500	29.69	49542	33.33
	LOWER LIMIT	38829	21.93	16375	28.69	12386	32.33
	EPA SAMPLE NO.						
1	LO-1G101L-GWRE	104797	22.42	44691	29.17	27758	32.82
2	BLANK B1341	94867	22.41	39901	29.17	20956	32.82
3	LO-1MW04D-GW	113454	22.42	52733	29.16	28562	32.82
4	LO-1G104D-GW	85112	22.40	34539	29.16	15595	32.82
5	LO-1GW2-FB	91376	22.41	41901	29.16	23261	32.81
6	LO-1MW07D-GW	81757	22.40	34259	29.16	17293	32.82
7	LO-1MW07S-GW	93919	22.40	36830	29.16	17271	32.81
9	LO-1MW05D-GW	65884	22.42	26554	29.17	14943	32.82
10	LO-1G106DR-GW	71954	22.42	28766	29.17	13782	32.82
11	LO-G106DR-MS/MSD	70130	22.41	29591	29.16	18737	32.81
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22							

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

SR

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: ----

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5398 Date Analyzed: 05/26/91

Instrument ID: HP-1 Time Analyzed: 18:32

		IS1(DCB)		IS2(NAP)		IS3(ACE)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	50234	11.19	186944	14.36	96902	18.85
	UPPER LIMIT	100468	11.69	373888	14.86	193804	19.35
	LOWER LIMIT	25117	10.69	93472	13.86	48451	18.35
	EPA SAMPLE NO.						
1	LO-TANK/002	46030	11.18	158097	14.33	85974	18.84
2	LO-TANK/002MS	44653	11.17	160189	14.33	88119	18.84
3	LO-TAMK/002MSD	45106	11.18	161021	14.34	89794	18.84
4	LO-G106DR-MS/MSDMS	43144	11.19	157574	14.34	84206	18.84
5	LO-G106DR-MS/MSDMSD	47393	11.18	165475	14.32	89683	18.83
6	LO-1MW05S-GW	41873	11.21	89199 *	14.38	37763 *	18.91
7	LO-1G105S-FD	35357	11.22	68019 *	14.39	27459 *	18.95
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22							

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk *

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: ----

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5398 Date Analyzed: 05/26/91

Instrument ID: HP-1 Time Analyzed: 18:32

	IS4(PHN) AREA	#	RT	IS5(CHR) AREA	#	RT	IS6(PER) AREA	#	RT
12 HOUR STD	125004		22.60	58126		29.37	50316		33.10
UPPER LIMIT	250008		23.10	116252		29.87	100632		33.60
OWER LIMIT	62502		22.10	29063		28.87	25158		32.60
EPA SAMPLE NO.									
1 LO-TANK/002	116810		22.58	50728		29.36	31243		33.09
2 LO-TANK/002MS	120012		22.58	68052		29.36	50521		33.09
3 `-TANK/002MSD	134732		22.58	62142		29.37	38905		33.09
4 -G106SDR-MS/MSDMS	114168		22.58	58702		29.36	41978		33.09
5 LO-G106SDR-MS/MSDMSD	119128		22.57	49462		29.35	30228		33.08
6 LO-1MW05S-GW	41996	*	22.63	20163	*	29.39	20290	*	33.16
7 LO-1G105S-FD	36732	*	22.66	18456	*	29.44	22158	*	33.25
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22									

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: ---------

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5426 Date Analyzed: 05/29/91

Instrument ID: HP- 1 Time Analyzed: 18:33

		IS1(DCB) AREA #	RT	IS2(NAP) AREA #	RT	IS3(ACE) AREA #	RT
	12 HOUR STD	56807	10.75	208373	13.88	117219	18.33
	UPPER LIMIT	113614	11.25	416746	14.38	234438	18.83
	LOWER LIMIT	28404	10.25	104186	13.38	58610	17.83
	EPA SAMPLE NO.	.15991	10.91	.249716	13.96	.52382	
1	LO-1MW04S-FD	65860	10.80	252873	13.87	143248	18.32
2	LO-1MW07S-GWRE	67155	10.74	243368	13.86	135254	18.31 H4
3	LO-1G10SS-FDRE	56110	10.83	105582	13.98	28592 *	18.45
4	LO-1GW3-FB	73334	10.75	268705	13.88	148371	18.33
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22							

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: ----

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5426 Date Analyzed: 05/29/91

Instrument ID:HP- 1 Time Analyzed: 18:33

		IS4(PHN)			IS5(CHR)			IS6(PER)	
		AREA #	RT		AREA #	RT		AREA #	RT
	12 HOUR STD	176627	22.02		42139	28.71		22796	32.20
	UPPER LIMIT	353254	22.52		84278	29.21		45592	32.70
	LOWER LIMIT	88313	21.52		21069	28.21		11398	31.70
	EPA SAMPLE NO.								
1	LO-1MW04S-FD	186106	22.02		45659	28.71		37153	32.21
2	LO-1MW05S-GWRE	45000 *	22.07		24918	28.74		24646	32.28
3	LO-1G105S-FDRE	33136 *	22.10		23223	28.81		21719	32.37
4	LO-1GW3-FB	204040	22.03		47199	28.72		34642	32.24
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22									

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

ab Name: ARDL, INC. Contract: ----

ab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

ab File ID (Standard): >D5441 Date Analyzed: 05/30/91

nstrument ID: HP-1 Time Analyzed: 23:10

	IS1(DCB) AREA #	RT	IS2(NAP) AREA #	RT	IS3(ACE) AREA #	RT
12 HOUR STD	45495	10.74	162665	13.88	77508	18.34
UPPER LIMIT	90990	11.24	325330	14.38	155016	18.84
LOWER LIMIT	22748	10.24	81333	13.38	38754	17.84
EPA SAMPLE NO.						
LO-1MW06D-GW	41571	10.71	139576	13.85	76888	18.30
LO-1MW06S-GW	38122	10.71	128961	13.84	69507	18.30
LO-1MW04S-GW	31816	10.70	109648	13.84	58599	18.30
1MW02S-MS/MSD	35278	10.71	120883	13.84	66410	18.30
1MW02S-MS/MSDMS	39246	10.71	135052	13.84	74199	18.31
LO-1MW02S-MS/MSDMSD	38904	10.71	134640	13.85	76149	18.31
LO-TANK/001	36491	10.71	130040	13.84	70182	18.30
BLANK B1366	34325	10.71	115473	13.83	65432	18.30
LO-1G105S-FDDL	40468	10.72	96690	13.87	33493 *	18.33

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenapnthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

* Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

ab Name: ARDL, INC. Contract: ----

ab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

ab File ID (Standard): >D5441 Date Analyzed: 05/30/91

nstrument ID: HP-1 Time Analyzed: 23:10

	IS4(PHN)		IS5(CHR)		IS6(PER)	
	AREA #	RT	AREA #	RT	AREA #	RT
12 HOUR STD	88685	22.04	36216	28.75	31785	32.28
UPPER LIMIT	177370	22.54	72432	29.25	63570	32.78
LOWER LIMIT	44343	21.54	18108	28.25	15893	31.78
EPA SAMPLE NO.						
LO-1MW06D-GW	100294	22.01	35866	28.73	25019	32.26
LO-1MW06S-GW	83549	22.00	25113	28.73	19675	32.25
LO-1MW04S-GW	63074	22.00	21586	28.73	18398	32.25
[illegible] 1MW02S-MS/MSD	82085	22.00	42635	28.72	41739	32.27
[illegible] 1MW02S-MS/MSDMS	96552	22.01	47263	28.73	44023	32.26
LO-1MW02S-MS/MSDMSD	88875	22.01	32542	28.73	25899	32.26
LO-TANK/001	74556	21.99	20948	28.72	16034	32.25
BLANK B1366	85683	22.00	44094	28.73	40425	32.26
LO-1G105S-FDDL	34450 *	22.02	15145 *	28.73	14957 *	32.28

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

* Column used to flag internal standard area values with an asterisk

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

.a ame: ARDL, INC Contract: ---------

.ab code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

.ab File ID (Standard): >D5504 Date Analyzed: 06/04/91

Instrument ID: HP-1 Time Analyzed: 17:12

	IS1(DCB) AREA	#	RT	IS2(NAP) AREA	#	RT	IS3(ACE) AREA	#	RT
12 HOUR STD	37750		10.16	130874		13.28	68932		17.71
UPPER LIMIT	75500		10.66	261748		13.78	137864		18.21
LOWER LIMIT	18875		9.66	65437		12.78	34466		17.21
EPA SAMPLE NO.									
BLANK B1339	51341		10.14	181132		13.26	97438		17.67
LO-1G102D-GW	31279		10.13	108873		13.25	59416		17.68
LO-1G102L-GW	41615		10.15	145567		13.26	77044		17.70
LO-1G101D-GW	40560		10.13	134969		13.24	75117		17.68
LO-1G101M-GW	43381		10.13	145650		13.25	78501		17.68
1MW02D-GW	36640		10.12	127944		13.24	67380		17.67
LO-1G104L-GW	37330		10.15	126573		13.27	66686		17.70
BLANK B1349	36243		10.13	122909		13.25	65421		17.67

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC Contract: --------

Lab code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

Lab File ID (Standard): >D5504 Date Analyzed: 06/04/91

Instrument ID: HP-1 Time Analyzed: 17:12

	IS4(PHN) AREA #	RT	IS5(CHR) AREA #	RT	IS6(PER) AREA #	RT
12 HOUR STD	100039	21.38	34818	28.07	16474	31.43
UPPER LIMIT	200078	21.88	69636	28.57	32948	31.93
LOWER LIMIT	50020	20.88	17409	27.57	8237	30.93
EPA SAMPLE NO.						
1 BLANK B1339	134232	21.36	51704	28.04	26399	31.43
2 LO-1G102D-GW	82578	21.35	25907	28.04	10274	31.43
3 LO-1G102L-GW	109556	21.37	47450	28.05	18429	31.44
4 LO-1G101D-GW	102649	21.36	39840	28.03	21432	31.42
5 LO-1G101M-GW	117738	21.36	54374	28.04	22004	31.42
6 LO-1MW02D-GW	94803	21.34	42735	28.03	21524	31.41
7 LO-1G104L-GW	95394	21.38	47281	28.07	20807	31.45
8 BLANK B1349	91313	21.35	42233	28.04	17293	31.41
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-G106DR-MS/MSDMS

me: ARDL, INC. Contract: LENZ OIL

o Code: ------ Case No.: 111908 SAS No.: ----- SDG No.: -----

trix: (soil/water) WATER Lab Sample ID: 111908-12MS

mple wt/vol: 1000.0 (g/mL) mL Lab File ID:)D5407

vel: (low/med) LOW Date Received: 5/08/91

Moisture: not dec. --- dec. --- Date Extracted: 5/10/91

traction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/27/91

C Cleanup: (Y/N) N pH: 6.4 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	62.	
111-44-4	bis(-2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	99.	
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	74.	
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	82.	
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(-2-Chloroethoxy)Methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	70.	
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	110.	
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethyl Phthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-G106DR-MS/MSDMS

b e: ARDL, INC. Contract: LENZ OIL

b Code: ------ Case No.: 111908 SAS No.: ----- SDG No.: -----

trix: (soil/water) WATER Lab Sample ID: 111908-12MS

mple wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5407

vel: (low/med) LOW Date Received: 5/08/91

Moisture: not dec. --- dec. --- Date Extracted: 5/10/91

traction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/27/91

C Cleanup: (Y/N) N pH: 6.4 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	86.	
51-28-5	2,4-Dinitrophenol	69.	
100-02-7	4-Nitrophenol	50.	U
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	70.	
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	120.	
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	68.	
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-Octyl_Phthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)Anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

400563

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-G106DR-MS/MSDMSD

b me: ARDL, INC. Contract: LENZ OIL

b Code: ------ Case No.: 111908 SAS No.: ----- SDG No.: -----

trix: (soil/water) WATER Lab Sample ID: 111908-12MSD

mple wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5408

vel: (low/med) LOW Date Received: 5/08/91

Moisture: not dec. --- dec. --- Date Extracted: 5/10/91

traction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/27/91

C Cleanup: (Y/N) N pH: 6.4 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	51.	
111-44-4	bis(-2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	100.	
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	38.	
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	55.	
67-72-1	Hexachloroethane	10.	U
8-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(-2-Chloroethoxy)Methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	41.	
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	110.	
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethyl Phthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-G106DR-MS/MSDMSD

e: ARDL, INC. Contract: LENZ OIL

Code: ------ Case No.: 111908 SAS No.: ----- SDG No.: -----

trix: (soil/water) WATER Lab Sample ID: 111908-12MSD

mple wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5408

vel: (low/med) LOW Date Received: 5/08/91

Moisture: not dec. --- dec. --- Date Extracted: 5/10/91

traction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/27/91

Cleanup: (Y/N) N pH: 6.4 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	65.	
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	43.	J
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	54.	
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	130.	
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	67.	
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	10.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-Octyl_Phthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)Anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

QUANT REPORT

p tor ID: KAREN Quant Rev: 6 Quant Time: 910528 12:42
u. : File: ^D5409::D1 Injected at: 910527 03:47
ata File: >D5409::D5 Dilution Factor: 2.00000
ame: 111908-7 (10mL) GW
isc: HP-1 SEMIVOLATILES BTL#11

D File: IDDMA::SC
itle: Semi-volatile Target Compounds
ast Calibration: 910528 12:05

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*D4 1,4-Dichlorobenzene(ISTD1)	11.21	827	41873	40.00	ug/L	93
5)	2-Fluorophenol (Surr 1)	8.34	520	1943	3.18	ug/L	88
0)	*D8 Naphthalene (ISTD2)	14.38	1164	89199	40.00	ug/L	83
1)	D5 Nitrobenzene (Surr 3)	12.63	978	8068	15.30	ug/L	79
0)	Naphthalene	14.43	1170	154091	133.77	ug/L	97
4)	2-Methylnaphthalene	16.27	1365	226929M	317.26	ug/L	93
5)	*D10 Acenaphthene (ISTD3)	18.91	1644	37763	40.00	ug/L	93
0)	2-Fluorobiphenyl (Surr 4)	17.24	1467	6055	8.12	ug/L	99
4)	Dibenzofuran	19.41	1697	31158	40.92	ug/L	79
9)	Fluorene	20.30	1790	33249	70.51	ug/L	95
2)	*D10 Phenanthrene (ISTD4)	22.63	2036	41996	40.00	ug/L	74
8)	Phenanthrene	22.68	2041	102282	175.13	ug/L	98
9)	Anthracene	22.79	2053	4729	7.86	ug/L	94
3)	*D12 Chrysene (ISTD 5)	29.39	2745	20163	40.00	ug/L	95
4	Pyrene	26.27	2418	6848	10.86	ug/L	97
75)	D14 Terphenyl (Surr 6)	26.77	2471	2979	7.23	ug/L	81
9)	bis(2-Ethylhexyl)Phthalate	29.75	2782	11321	29.29	ug/L	96
1)	*D12 Perylene (ISTD 6)	33.16	3137	20290	40.00	ug/L	95

* Compound is ISTD

400126

QUANT REPORT

perator ID: KAREN Quant Rev: 6 Quant Time: 910530 11:01
u' t File: ^D5433::D1 Injected at: 910530 02:00
a. File: >D5433::D5 Dilution Factor: 2.00000
ame: 111908-7 GWB
isc: HP-1 SEMIVOLATILES BTL# 5

D File: IDDMA::SC
itle: Semi-volatile Target Compounds
ast Calibration: 910530 10:25

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*D4 1,4-Dichlorobenzene(ISTD1)	10.81	783	75901	40.00	ug/L	92
5)	2-Fluorophenol (Surr 1)	7.92	474	5852	5.64	ug/L	91
20)	*D8 Naphthalene (ISTD2)	13.96	1117	149716	40.00	ug/L	93
21)	D5 Nitrobenzene (Surr 3)	12.19	930	14302	15.97	ug/L	79
30)	Naphthalene	14.01	1123	200709	106.38	ug/L	95
34)	2-Methylnaphthalene	15.87	1320	223255M	185.68	ug/L	98
35)	*D10 Acenaphthene (ISTD3)	18.44	1591	52322	40.00	ug/L	96
4	2-Fluorobiphenyl (Surr 4)	16.79	1417	7840	8.52	ug/L	97
54)	Dibenzofuran	18.93	1643	36006	33.82	ug/L	78
59)	Fluorene	19.78	1732	39416	57.83	ug/L	92
62)	*D10 Phenanthrene (ISTD4)	22.07	1973	45000	40.00	ug/L	71
68)	Phenanthrene	22.13	1979	138140	228.31	ug/L	98
69)	Anthracene	22.23	1990	7492	11.91	ug/L	89
73)	*D12 Chrysene (ISTD 5)	28.74	2672	24918	40.00	ug/L	99
74)	Pyrene	25.64	2348	6957	5.88	ug/L	91
7	bis(2-Ethylhexyl)Phthalate	29.16	2716	16956	38.38	ug/L	84
81)	*D12 Perylene (ISTD 6)	32.28	3040	24646	40.00	ug/L	90

* Compound is ISTD

400168

QUANT REPORT

Operator ID: KAREN Quant Rev: 6 Quant Time: 910528 12:50
Output File: ^D5410::D1 Injected at: 910527 04:38
Data File: >D5410::D5 Dilution Factor: 2.00000
Name: 111908-8 (10mL) FD
Misc: HP-1 SEMIVOLATILES BTL#12

ID File: IDDMA::SC
Title: Semi-volatile Target Compounds
Last Calibration: 910528 12:05

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*D4 1,4-Dichlorobenzene(ISTD1)	11.22	828	35357	40.00	ug/L	93
5)	2-Fluorophenol (Surr 1)	8.39	525	4939	9.58	ug/L	87
20)	*D8 Naphthalene (ISTD2)	14.39	1165	68019	40.00	ug/L	74
21)	D5 Nitrobenzene (Surr 3)	12.62	977	7963	19.81	ug/L	72
30)	Naphthalene	14.46	1172	159403	181.47	ug/L	98
34)	2-Methylnaphthalene	16.31	1368	183947M	337.25	ug/L	93
35)	*D10 Acenaphthene (ISTD3)	18.95	1647	27459	40.00	ug/L	89
40)	2-Fluorobiphenyl (Surr 4)	17.26	1469	4799	8.85	ug/L	90
54)	Dibenzofuran	19.45	1700	36303	65.57	ug/L	81
59)	Fluorene	20.33	1793	29863	87.09	ug/L	95
62)	*D10 Phenanthrene (ISTD4)	22.66	2038	36732	40.00	ug/L	68
68)	Phenanthrene	22.72	2044	117291	229.60	ug/L	99
69)	Anthracene	22.82	2055	7636	14.51	ug/L	96
72)	Fluoranthene	25.74	2361	3545	7.51	ug/L	93
7	*D12 Chrysene (ISTD 5)	29.44	2747	18456	40.00	ug/L	94
74)	Pyrene	26.29	2419	9115	15.79	ug/L	96
75)	D14 Terphenyl (Surr 6)	26.80	2472	4068	10.78	ug/L	84
79)	bis(2-Ethylhexyl)Phthalate	29.79	2783	18483	52.24	ug/L	92
81)	*D12 Perylene (ISTD 6)	33.25	3142	22158	40.00	ug/L	98

* Compound is ISTD

400208

QUANT REPORT

C ator ID: KAREN Quant Rev: 6 Quant Time: 910530 11:21
C put File: ^D5434::D3 Injected at: 910530 02:53
Data File: >D5434::D5 Dilution Factor: 2.00000
Name: 111908-8 DOE
Misc: HP-1 SEMIVOLATILES BTL# 6

ID File: IDDMA::SC
Title: Semi-volatile Target Compounds
Last Calibration: 910530 10:25

	Compound	R.T.	Scan#	Area	Conc	Units	Q
1)	*D4 1,4-Dichlorobenzene(ISTD1)	10.83	787	56110	40.00	ug/L	92
5)	2-Fluorophenol (Surr 1)	8.02	487	10957	14.28	ug/L	91
20)	*D8 Naphthalene (ISTD2)	13.98	1121	105582	40.00	ug/L	95
21)	D5 Nitrobenzene (Surr 3)	12.23	936	15071	23.87	ug/L	59
30)	Naphthalene	14.04	1128	144603	108.68	ug/L	94
34)	2-Methylnaphthalene	15.89	1324	188272M	222.04	ug/L	86
	*D10 Acenaphthene (ISTD3)	18.45	1594	28592	40.00	ug/L	95
40)	2-Fluorobiphenyl (Surr 4)	16.80	1420	4176	8.30	ug/L	91
54)	Dibenzofuran	18.95	1647	39020	67.07	ug/L	72
59)	Fluorene	19.80	1736	34822	93.50	ug/L	94
62)	*D10 Phenanthrene (ISTD4)	22.10	1978	33136	40.00	ug/L	78
68)	Phenanthrene	22.17	1985	160500	360.25	ug/L	99
69)	Anthracene	22.27	1996	9558	20.64	ug/L	82
72)	Fluoranthene	25.14	2297	4285	12.71	ug/L	94
	*D12 Chrysene (ISTD 5)	28.81	2679	23223	40.00	ug/L	96
74)	Pyrene	25.69	2354	10892	9.88	ug/L	91
75)	D14 Terphenyl (Surr 6)	26.21	2409	4705	7.58	ug/L	87
79)	bis(2-Ethylhexyl)Phthalate	29.21	2721	21887	53.16	ug/L	96
81)	*D12 Perylene (ISTD 6)	32.37	3048	21719	40.00	ug/L	99

* Compound is ISTD

2E

WATER PESTICIDE SURROGATE RECOVERY

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: Case No.: 111908 SAS No.: SDG No.:

EPA SAMPLE NO.	S1 (DBC) #	OTHER
LO-1MW04D-GW	96	
LO-1G104D-GW	74	
LO-1GW2-FB	93	
LO-1MW07D-GW	89	
LO-1MW07S-GW	80	
LO-1MW02D-GW	76	
LO-1MW05S-GW	46	
LO-1G105S-FD	55	
LO-1G104L-GW	93	
LO-1MW05D-GW	92	
LO-1G106DR-GW	72	
LO-1G106DR-MS/MSD	127	
LO-1G106DR-MS/MSD-MS	76	
LO-1G106DR-MS/MSD-MSD	79	
111908-B1340	98	

Advisory QC Limits (24-154)

S1 (DBC) = Dibutylchlorendate
= Column used to flag recovery values
* = Values outside QC Limits
D = Surrogates diluted out

3E

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: Case No.: 111908 SAS No.: - SDG No.: -
Matrix Spike Sample Number : LO-G106DR-MS/MSD

Compound	Spike Added (ug/L)	Sample Conc. (ug/L)	MS Conc. (ug/L)	MS % Rec #	QC Limits Rec
Lindane	0.40	-	0.49	122	56-123
Heptachlor	0.40	-	0.35	88	40-131
Aldrin	0.40	-	0.34	85	40-120
Dieldrin	1.0	-	0.92	92	52-126
Endrin	1.0	-	1.1	110	56-121
4,4'-DDT	1.0	-	0.64	64	38-127

Compound	Spike Added (ug/L)	MSD Conc. (ug/L)	MSD % Rec #	% RPD #	QC Limits RPD	QC Limits REC
Lindane	0.40	0.47	118	4.2	15	56-123
Heptachlor	0.40	0.44	110	23 *	20	40-131
Aldrin	0.40	0.30	75	12	22	40-120
Dieldrin	1.0	1.0	100	8.3	18	52-126
Endrin	1.0	1.2	120	8.7	21	56-121
4,4'-DDT	1.0	0.75	75	16	27	38-127

= Column to be used to flag recovery and RPD values with an asterisk
* = Values outside QC Limits

RPD : 1 out of 6 outside limits
Spike Recovery : 0 out of 12 outside limits

Comments :

PESTICIDE EVALUATION STANDARDS SUMMARY

Name: AROL, INC Contract: LANE OIL

Lab Code: ----- Case No.: 11908 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A DET. #2 GC Column ID: DB 5 0.53mm x 30m 5% diphenyl polysiloxane

Dates of Analyses: 05-16-91 to 05-18-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (+/- 10.0%)	
ALDRIN	3431547	3437816	3247514	1.5	
ENDRIN	2473334	2573333	2401150	2.5	
4,4'-DDT	2110750	2249151	2155937	1.3	(1)
DSC	1707347	1725271	1725548	0.5	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown (percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-16-91	0822	5.4	0.38	3.2
02	EVAL MIX B	05-17-91	0031	7.1	1.3	4.5
03	EVAL MIX B	05-17-91	1939	5.0	1.8	3.6
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
10	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form instructions.

BE

PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

Name: ARDL, INC Contract: LEDOC

Lab Code: ----- Case No.: 111908 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A DET #2 GC Column ID: DB5 0.53mm x 30m 5% diphenyl polysiloxane

Dates of Analyses: 05-16-91 to 05-18-91

36.761

	SAMPLE NO.	LAS SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVAL B	EVAL B	05-16-91	0822	—	
02	EVAL A	EVAL A	05-16-91	0912	0.25	
03	EVAL C	EVAL C	05-16-91	1007	0.23	
04	INDA	INDA	05-16-91	1120	0.19	
05	INDB	INDB	05-16-91	1311	0.36	
06	AR1660	AR1660	05-16-91	1333	0.35	
07	AR1221	AR1221	05-16-91	1423	0.42	
08	AR1232	AR1232	05-16-91	1514	0.39	
09	AR1242	AR1242	05-16-91	1605	1.22	
10	AR1248	AR1248	05-16-91	1655	0.22	
11	AR1254	AR1254	05-16-91	1746	1.24	
12	TOXAPH	TOXAPH	05-16-91	1837	0.18	
13	ZZZZ	111800-7BLK	05-16-91	2018	0.12	
14	ZZZZ	111800-5	05-16-91	2103	0.19	
15	ZZZZ	111800-5 5ml->1ml	05-16-91	2159	0.19	
16	ZZZZ	111800-4 5ml->1ml	05-16-91	2250	0.16	
17	ZZZZ	111800-6	05-16-91	2340	0.19	
18	EVAL B	EVAL B	05-17-91	0031	0.13	
19	PBLK1323	200212-B1323	05-17-91	0620	0.11	
20	FLYASH	200212-1	05-17-91	0729	0.19	
21	FLYASHMS	200212-1MS	05-17-91	0819	0.33	
22	FLYASHMSD	200212-1MSD	05-17-91	0910	0.34	
23	FEED	200212-2	05-17-91	1001	0.04	
24	INDA	INDA ✓	05-17-91	1142	0.48	
25	PBLK	200215-B	05-17-91	1723	0.33	
26	PBLK1340	111908-BLK	05-17-91	1617	0.26	
27	LO-1MW040-GW	111908-1	05-17-91	1707	0.21	
28	LO-1C-1MW-GW	111908-2	05-17-91	1752	0.08	
29	LO-1GW02-#3	111908-3	05-17-91	1848	0.12	
30	EVALB	EVALB	05-17-91	1939	0.10	
31	LO-1MW07D-GW	111908-4	05-17-91	2030	0.06	
32	LO-1MW07S-GW	111908-5	05-17-91	2120	0.11	
33	ASH	200212-3(100x)	05-17-91	2211	0.04	
34	X102	200215-3(10x)	05-17-91	2301	0.17	
35	X101	200215-4(10x)	05-17-91	2352	0.17	
36	INDB	INDB ENDSEQ	05-18-91	0043	0.11	
37	INDA	INDA ENDSEQ	05-18-91	0133	0.10	
38						

* Values outside of QC limits (2.0% for packed columns, 0.5% for capillary columns) 1.5 for megabore

5000814

PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 1198 SAS No.: ----- SDG No.: -----

5% diphenyl polysiloxane

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 .53mm X 30m

DATE(S) OF ANALYSIS FROM: 05-16-91 DATE OF ANALYSIS 05-17-91

TO: 05-18-91 TIME OF ANALYSIS 1142

TIME(S) OF ANALYSIS FROM: 0822 EPA SAMPLE NO. (STANDARD) INDA

TO: 0133

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	13.72	13.45	13.99	2253400				
beta-BHC	14.64	14.37	14.91	1053200				
delta-BHC	15.77	15.50	16.04	1741000				
gamma-BHC	14.93	14.81	15.05	2249800	15.01	2579400	Y	14.7
Heptachlor	18.08	17.96	18.20	2157900	18.17	2761400	Y	9.4
Aldrin	19.84	19.72	19.96	2214500	19.94	2292400	Y	3
Hept. epoxide	21.87	21.75	21.99	1874800	21.97	1969300	Y	5.0
Endosulfan I	24.00	23.88	24.12	1938300	24.10	2055500	Y	6.1
Dieldrin	25.56	25.44	25.68	1807400	25.67	1877900	Y	3.9
4,4'-DDE	25.24	24.94	25.54	1580400				
Endrin	27.05	26.75	27.35	1094600				
Endosulfan II	27.48	27.36	27.60	1589100	27.57	1653500	Y	4.1
4,4'-DDD	27.89	27.62	28.16	1130200				
Endo.sulfate	30.34	30.04	30.64	1224400				
4,4'-DDT	30.37	30.25	30.49	1577200	30.48	1647700	Y	4.5
Methoxychlor	34.32	34.23	34.41	894620	34.43	1007350	Y	13
Endrin ketone	33.66	33.36	33.96	1656250				
a. chlordane	24.19	23.89	24.49	1788300				
g. chlordane	23.27	22.97	23.57	1771800				
Toxaphene	24.42	23.25	25.59	1021081				
Aroclor-1016	15.30	15.21	15.39	835133				
Aroclor-1221	12.67	13.46	13.88	175422				
Aroclor-1232	17.26	17.08	17.44	526173				
Aroclor-1242	22.21	22.03	22.39	836715				
Aroclor-1248	23.19	23.04	23.34	1010940				
Aroclor-1254	27.41	27.32	27.50	1300345				
Aroclor-1260	35.64	35.55	35.73	1653845				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

Lab Name: ARDL, INC Contract: LEND 01

Lab Code: ----- Case No.: 11902 SAS No.: ----- SDG No.: -----

5% diphenyl dimethyl

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm X 30m

DATE(S) OF ANALYSIS FROM: 05-16-91 DATE OF ANALYSIS 05-18-91

TO: 05-18-91 TIME OF ANALYSIS 0043

TIME(S) OF ANALYSIS FROM: 0822 EPA SAMPLE NO. (STANDARD) INDENDOSE

TO: 0133

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	13.72	13.45	13.99	2253400	13.70	2626200	Y	
beta-BHC	14.64	14.37	14.91	1053200	14.62	1247100	N	X
delta-BHC	15.77	15.50	16.04	1741000	15.75	2113000	N	21
gamma-BHC	14.93	14.81	15.05	2249800				
Heptachlor	18.08	17.96	18.20	2159200				
Aldrin	19.91	19.79	20.03	1960900	19.85	2093200	N	20
Hept. epoxide	21.87	21.75	21.99	1874800				
Endosulfan I	24.00	23.88	24.12	1938300				
Dieldrin	25.56,	26.44	25.68	1807400				
4,4'-DDE	25.24	24.94	25.54	1580400	25.16	1932300	N	25
Endrin	27.05	26.75	27.35	1094600	26.97	1479600	N	25
Endosulfan II	27.48	27.36	27.60	1589100				2
4,4'-DDD	27.89	27.62	28.16	1130200	27.83	1438300	N	27
Endo.sulfate	30.34	30.04	30.64	1224400	30.26	1536550	N	25
4,4'-DDT	30.37	30.25	30.49	1577200				
Methoxychlor	34.32	34.23	34.41	894020				
Endrin ketone	33.66	33.36	33.96	1656250	33.57	2019550	N	22
a. chlordane	24.19	23.89	24.49	1788300	24.11	2027300	N	13
g. chlordane	23.27	22.97	23.57	1771800	23.21	2005300	N	13
Toxaphene	24.--	23.25	25.59	1021081				
Aroclor-1016	15.20	15.21	15.39	935133				
Aroclor-1221	12.67	13.46	13.88	175422				
Aroclor-1232	17.26	17.08	17.44	526173				
Aroclor-1242	22.21	22.23	22.39	836715				
Aroclor-1248	23.19	23.04	23.34	1010240				
Aroclor-1254	27.41	27.32	27.50	1300345				
Aroclor-1260	25.64	25.55	25.73	1653845				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ 01

Lab Code: ----- Case No.: 1908 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Data for #2 GC Column ID: DB5 .53mm X 30m 5% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 05-16-91 TO: 05-18-91

DATE OF ANALYSIS 05-18-91

TIME(S) OF ANALYSIS FROM: 0822 TO: 0133

TIME OF ANALYSIS 0133

EPA SAMPLE NO. (STANDARD) LIND A EPA SS6

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	13.72	13.45	13.99	2253400				
beta-BHC	14.64	14.37	14.91	1053200				
delta-BHC	15.77	15.50	16.04	1741000				
gamma-BHC	14.93	14.81	15.05	2249800	14.94	2601000	N	16
Heptachlor	18.08	17.96	18.20	2157900	18.08	2305000	N	2
Aldrin	19.84	19.72	19.96	2214500	19.85	2259400	N	2
Hept. epoxide	21.87	21.75	21.99	1874800	21.86	2047200	N	9.2
Endosulfan I	24.00	23.88	24.12	1938300	23.99	2073800	N	7.0
Dieldrin	25.56	25.44	25.68	1807400	25.56	1996700	N	10
4,4'-DDE	25.24	24.94	25.54	1580400				
Endrin	27.05	26.75	27.35	1094600				
Endosulfan II	27.48	27.36	27.60	1589100	27.46	1686800	N	6.1
4,4'-DDD	27.89	27.62	28.16	1130200				
Endo.sulfate	30.34	30.04	30.64	1224400				1
4,4'-DDT	30.37	30.25	30.49	1577200	30.34	849350	N	46
Methoxychlor	34.32	34.23	34.41	894620	34.29	936670	N	4.8
Endrin ketone	33.66	33.36	33.96	1656250				
a. chlordane	24.19	23.89	24.49	1788300				
g. chlordane	23.27	22.97	23.57	1771800				
Toxaphene	24.42	23.25	25.59	1021081				
Aroclor-1016	15.20	15.21	15.39	835133				
Aroclor-1221	12.67	13.46	13.88	175422				
Aroclor-1232	17.26	17.08	17.44	526173				
Aroclor-1242	22.21	22.03	22.39	836715				
Aroclor-1248	23.19	23.04	23.34	1010940				
Aroclor-1254	27.41	27.32	27.50	1300345				
Aroclor-1260	25.64	35.55	35.73	1653845				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

PESTICIDE EVALUATION STANDARDS SUMMARY

Name: AROL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111908 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Det. #2 GC Column ID: DB5 0.53mm x 30m 5% diphenyl polysiloxane

Dates of Analyses: 05-20-91 to 05-21-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (</= 10.0%)
ALDRIN	3141452	3082672	3075309	1.2
ENDRIN	2443392	2448594	2424724	0.51
4,4'-DDT	2053562	2054243	2127411	2.0
DBC	1705678	1748951	1711232	1.9

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-20-91	0913	3.6	0.50	2.2
02	EVAL MIX B	05-20-91	2215	4.3	0.86	2.8
03	EVAL MIX B					
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form instructions.

500061

BE

PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111908 SAS No.: ----- SDG No.: -----

Instrument ID: SC-14A DET #2 GC Column ID: DB5 0.53mm X 30m 5% diphenyl polysiloxane

Dates of Analyses: 05-20-91 to 05-21-91

36.829

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVAL B	EVAL B	05-20-91	0913	—	
02	EVAL A	EVAL A	05-20-91	1009	0.32	
03	EVAL C	EVAL C	05-20-91	1100	0.36	
04	IND A	IND A	05-20-91	1156	0.23	
05	IND B	IND B	05-20-91	1247	0.24	
06	TOXAPH	TOXAPH	05-20-91	1337	2.53	
07	AR 1242	AR1242	05-20-91	1428	0.40	
08	AR 1248	AR1248	05-20-91	1519	0.22	
09	AR 1254	AR1254	05-20-91	1609	0.29	
10	AR 1260	AR1260	05-20-91	1700	0.21	
11	ZZZZ	915-BLK1356	05-20-91	1802	0.18	
12	LO-MW02D-GW	111908-6	05-20-91	1853	0.25	
13	LO-GIOLL-GW	111908-9	05-20-91	1943	0.22	
14	LO-MW05D-GW	111908-10	05-20-91	2034	0.20	
15	LO-GIO6DR-GW	111908-11	05-20-91	2125	0.09	
16	EVALB	EVALB	05-20-91	2215	0.06	
17	LO-GIO6DR-MS/MSD	111908-12	05-20-91	2306	0.02	
18	LO-GIO6DR-MS/MSD-MS	111908-12MS	05-20-91	2357	0.00	
19	LO-GIO6DR-MS/MSD-MSD	111908-12MSD	05-21-91	0047	0.04	
20	ZZZZ	915-7	05-21-91	0138	0.03	
21	ZZZZ	915-8	05-21-91	0228	0.00	
22	INDA	INDA ENDSEQ	05-21-91	0319	0.08	
23	INDB	INDB ENDSEQ	05-21-91	0409	0.02	
24						
25						
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38						

* Values outside of QC limits (2.0% for packed columns, 0.5% for capillary columns) .5 for mcgabee

500086

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 11190Z SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Det. #2 GC Column ID: DB5 0.53mmx30m 5% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 05-20-91 DATE OF ANALYSIS 05-21-91

TO: 05-21-91 TIME OF ANALYSIS 0319

TIME(S) OF ANALYSIS FROM: 0913 EPA SAMPLE NO. (STANDARD) INDAENDSEQ

TO: 0409

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	13.76	13.49	14.03	250 7400				
beta-BHC	14.68	14.41	14.95	1240400				
delta-BHC	15.81	15.54	16.08	2189200				
gamma-BHC	15.02	14.90	15.14	2425800	14.96	2904200	N	20
Heptachlor	18.18	18.06	18.30	2206400	18.11	2655600	N	20
Aldrin	19.95	19.83	20.07	2413700	19.89	2815800	N	17
Hept. epoxide	21.99	21.87	22.11	2059900	21.92	2547900	N	24
Endosulfan I	24.13	24.01	24.25	2156700	24.05	2679900	N	24
Dieldrin	25.71	25.59	25.83	2003300	25.63	2556200	N	28
4,4'-DDE	25.27	24.97	25.57	3012900				
Endrin	27.08	26.78	27.38	1503000				
Endosulfan II	27.59	27.47	27.71	1799200	27.52	2232000	N	24
4'-DDD	27.94	27.67	28.21	1499900				
Endo.sulfate	30.37	30.07	30.67	1716200				
4,4'-DDT	30.50	30.28	30.62	1911800	30.43	2008700	N	21
Methoxychlor	34.44	34.35	34.53	990620	34.37	1211920	N	22
Endrin Ketone	33.67	33.37	33.97	2182000				
a. chlordane	24.23	23.93	24.53	2007700				
g. chlordane	23.31	23.01	23.61	2053000				
Toxaphene	26.79	25.82	28.16	1043092				
Aroclor-1016	17.29	17.20	17.38	770812				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.20	17.12	17.48	523920				
Aroclor-1242	17.28	17.10	17.46	796337				
Aroclor-1248	23.26	23.11	23.41	1021322				
Aroclor-1254	27.49	27.40	27.58	1290677				
Aroclor-1260	35.66	35.57	35.75	1559120				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

Lab Name: ARDL, INC Contract: LENE OIL

Lab Code: ----- Case No.: 11908 SAS No.: ----- SDG No.: -----

5% diphenyl polysiloxa

strument ID: GC-14A Det. #2 GC Column ID: DB5 0.53mm x 30m

DATE(S) OF ANALYSIS	FROM: 05-20-91	DATE OF ANALYSIS	05-21-91
	TO: 05-21-91	TIME OF ANALYSIS	0409
TIME(S) OF ANALYSIS	FROM: 0913	EPA SAMPLE NO. (STANDARD)	IND B END SE
	TO: 0409		

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	13.76	13.49	14.03	2507400	13.72	3061400	N	22
beta-BHC	14.68	14.41	14.95	1240400	14.63	1526800	N	23
delta-BHC	15.81	15.54	16.08	2189200	15.77	2702200	N	23
gamma-BHC	15.02	14.90	15.14	2425800				
Heptachlor	18.18	18.06	18.30	2206400				
Aldrin	19.95	19.83	20.07	2413700	19.89	2552500	N	5.8
Hept. epoxide	21.99	21.87	22.11	2059900				
Endosulfan I	24.13	24.01	24.25	2156700				
Dieldrin	25.71	25.59	25.83	2003300				
4,4'-DDE	25.27	24.97	25.57	2012900	25.21	2427500	N	21
Endrin	27.08	26.78	27.38	1508000	27.03	1879500	N	25
Endosulfan II	27.59	27.47	27.71	1799300				
4,4'-DDD	27.94	27.67	28.21	1499000	27.86	1826150	N	22
Endo.sulfate	30.37	30.07	30.67	1716200	30.31	2028700	N	18
4,4'-DDT	30.50	30.38	30.62	1911800				
Methoxychlor	34.44	34.35	34.53	990630				
Endrin ketone	33.67	33.37	33.97	2183000	33.59	2681600	N	23
a. chlordane	24.23	23.93	24.53	2097700	24.16	2589900	N	23
g. chlordane	23.31	23.01	23.61	2083000	23.27	2549800	N	20
Toxaphene	26.99	25.82	28.16	1043092				
Aroclor-1016	17.29	17.20	17.38	770812				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	17.28	17.10	17.46	796337				
Aroclor-1248	23.26	23.11	23.41	1021322				
Aroclor-1254	27.49	27.40	27.58	1290677				
Aroclor-1260	35.66	35.57	35.75	1559120				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

PESTICIDE EVALUATION STANDARDS SUMMARY

Name: ARDL, INC Contract: LENZ O[illegible]

Lab Code: ----- Case No.: 111908 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm x 30m 5% diphenyl polysiloxane

Dates of Analyses: 05-21-91 to 05-22-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (+/- 10.0%)
ALDRIN	3197226	3325350	3196636	2.3
ENDRIN	2605054	2746260	2530983	4.2
4,4'-DDT	2229838	2411340	2237010	4.5
DBC	1788584	1993032	1826431	5.3

(1)

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-21-91	0927	5.2	0.85	3.2
02	EVAL MIX B	05-21-91	2143	4.2	1.1	2.8
03	EVAL MIX B	05-22-91	1248	5.7	3.9	4.9
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form instructions.

500060

BE

PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: ARDL, INC Contract: LEAD OIL

Lab Code: ----- Case No.: 111908 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm x 30m 5% diphenyl polysiloxane

Dates of Analyses: 05-21-91 to 05-22-91

36.873

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALA	EVALA	05-21-91	0837	—	
02	EVALB	EVALB	05-21-91	0927	0.23	
03	EVALC	EVALC	05-21-91	1021	0.30	
04	INDA	INDA	05-21-91	1122	0.05	
05	INDB	INDB	05-21-91	1212	0.15	
06	TOXAPH	TOXAPH	05-21-91	1303	0.15	
07	Ar1242	Ar1242	05-21-91	1354	0.12	
08	Ar1248	Ar1248	05-21-91	1444	0.07	
09	Ar1254	Ar1254	05-21-91	1535	0.17	
10	Ar1660	Ar1660	05-21-91	1639	0.12	
11	ZZZZ	111897-B1338	05-21-91	1720	0.07	
12	ZZZZ	111914-B1352	05-21-91	1820	0.10	
13	LD-1MW01D-GW	111897-6	05-21-91	1911	0.24	
14	LD-1MW01S-GW	111897-7	05-21-91	2002	0.05	
15	LD-1MW03SGW	111897-8	05-21-91	2052	0.00	
16	EVALB	EVALB	05-21-91	2143	0.04	
17	SW CORNER	111914-2	05-21-91	2233	0.12	
18	CENTER	111914-3	05-21-91	2324	0.17	
19	NW CORNER	111914-4	05-22-91	0015	0.01	
20	LD-1MWC55-GW	111908-7(10X)	05-22-91	0105	0.10	
21	LD-1GI055-FD	111908-8(10X)	05-22-91	0156	0.00	
22	IND B	INDB	05-22-91	0337	0.04	
23	1MW03D-GW	111897-9	05-22-91	0834	0.01	
24	LD-1MW35-FD	111897-10	05-22-91	0924	0.11	
25	LD-1GW1-FB	111897-11	05-22-91	1015	0.26	
26	ZZZZ	B1348	05-22-91	1107	0.12	
27	LD-1MW025-MS/MSD	111918-7	05-22-91	1158	0.26	
28	EVALB	EVALB	05-22-91	1248	0.21	
29	COMP	111922-1	05-22-91	1339	0.22	
30	IND A	INDA ENDSLO.	05-22-91	1508	0.12	
31	IND B	INDA ENDSLO	05-22-91	1559	0.30	
32						
33						
34						
35						
36						
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns) for analytes

FORM VIII PEST-2

500085

1/87 Rev.

PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111908 SAS No.: ----- SDG No.: -----

5% diphenyl polysiloxane

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53 mm X 30 m

DATE(S) OF ANALYSIS FROM: 05-21-91 TO: 05-22-91

TIME(S) OF ANALYSIS FROM: 0837 TO: 1559

DATE OF ANALYSIS 05-22-91

TIME OF ANALYSIS 0337

EPA SAMPLE NO. (STANDARD) INDBV

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	13.78	13.51	14.05	2464400	13.72	2674600	Y	8.5
beta-BHC	14.69	14.42	14.96	1257600	14.64	1315800	Y	4.6
delta-BHC	15.83	15.56	16.10	2163200	15.77	2436400	Y	13
gamma-BHC	15.00	14.88	15.12	2194600				
Heptachlor	18.15	18.03	18.27	2112300				
Aldrin	19.92	19.80	20.04	2259000	19.89	2226800	Y	1.4
Hept. epoxide	21.95	21.83	22.07	2001800				
Endosulfan I	24.09	23.97	24.21	2097400				
Dieldrin	25.66	25.54	25.78	1905300				
4,4'-DDE	25.27	24.97	25.57	2162100	25.19	2214800	Y	2.4
Endrin	27.09	26.79	27.39	1525000	27.01	1655300	Y	8.5
Endosulfan II	27.56	27.44	27.68	1732160				
4,4'-DDD	27.93	27.66	28.20	1495550	27.85	1667450	Y	11
Endo.sulfate	30.37	30.07	30.67	1826600	30.28	1802250	Y	1.3
4,4'-DDT	30.47	30.35	30.59	1753900				
Methoxychlor	34.41	34.32	34.50	978960				
Endrin ketone	33.68	33.38	33.98	2267300	33.59	2432600	Y	7.3
a. chlordane	24.23	23.93	24.53	2049500	24.16	2213800	Y	8.0
g. chlordane	23.32	23.02	23.62	2044700	23.25	2213900	Y	8.3
Toxaphene	27.00	25.83	28.17	804925				
Aroclor-1016	17.25	17.16	17.34	816092				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	17.76	17.58	17.94	813198				
Aroclor-1248	23.27	23.12	23.42	1080960				
Aroclor-1254	25.85	25.76	25.94	1340080				
Aroclor-1260	35.66	35.57	35.75	1725801				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

FORM IX PEST 8/87 Re

500072

PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 11908 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53 mm x 30m 5% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 05-21-91 TO: 05-22-91

TIME(S) OF ANALYSIS FROM: 0837 TO: 1559

DATE OF ANALYSIS 05-22-91

TIME OF ANALYSIS 1508

EPA SAMPLE NO. (STANDARD) TUDA Ed SEQ

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	13.78	13.51	14.05	2464400				
beta-BHC	14.69	14.42	14.96	1257600				
delta-BHC	15.83	15.56	16.10	2163200				
gamma-BHC	15.00	14.88	15.12	2194600	14.98	4422000	N	
Heptachlor	18.15	18.03	18.27	2112300	18.13	3434200	N	[illegible]
Aldrin	19.92	19.80	20.04	2259000	19.90	3329000	N	47
Hept. epoxide	21.95	21.83	22.07	2001800	21.95	3099800	N	55
Endosulfan I	24.09	23.97	24.21	2097400	24.07	3236700	N	54
Dieldrin	25.66	25.54	25.78	1905300	25.65	3181100	N	67
4,4'-DDE	25.27	24.97	25.57	2162100				
Endrin	27.09	26.79	27.39	1525000				
Endosulfan II	27.56	27.44	27.68	1732160	27.56	2666750	N	54
4,4'-DDD	27.93	27.66	28.20	1495550				
Endo.sulfate	30.37	30.07	30.67	1826600				
4,4'-DDT	30.47	30.35	30.59	1753900	30.47	2261350	N	29
Methoxychlor	34.41	34.32	34.50	978960	34.41	1455460	N	49
Endrin ketone	33.68	33.38	33.98	2267300				
a. chlordane	24.23	23.93	24.53	2049500				
g. chlordane	23.32	23.02	23.62	2044700				
Toxaphene	27.00	25.83	28.17	804925				
Aroclor-1016	17.25	17.16	17.34	816092				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	17.76	17.58	17.94	813198				
Aroclor-1248	23.27	23.12	23.42	1080960				
Aroclor-1254	25.85	25.76	25.94	1340080				
Aroclor-1260	35.66	35.57	35.75	1725801				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Code: ----- Case No.: 111908 SAS No.: ----- SDG No.: -----

5% diphenyl polysiloxane

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53 mm x 30 m

DATE(S) OF ANALYSIS FROM: 05-21-91 TO: 05-22-91

TIME(S) OF ANALYSIS FROM: 0837 TO: 1559

DATE OF ANALYSIS 05-22-91

TIME OF ANALYSIS 1559

EPA SAMPLE NO. (STANDARD) INDB End Seq.

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	13.78	13.51	14.05	2464400	13.77	3971600	N	61
beta-BHC	14.69	14.42	14.96	1257600	14.69	1909100	N	52
delta-BHC	15.83	15.56	16.10	2163200	15.82	3569400	N	65
gamma-BHC	15.00	14.88	15.12	2194600				
Heptachlor	18.15	18.03	18.27	2112300				
Aldrin	19.92	19.80	20.04	2259000	19.96	3109800	N	38
Hept. epoxide	21.95	21.83	22.07	2001800				
Endosulfan I	24.09	23.97	24.21	2097400				
Dieldrin	25.66	25.54	25.78	1905300				
4,4'-DDE	25.27	24.97	25.57	2162100	25.29	3142100	N	45
Endrin	27.09	26.79	27.39	1525000	27.13	2281600	N	50
Endosulfan II	27.56	27.44	27.68	1732100				
4,4'-DDD	27.93	27.66	28.20	1495550	27.97	2363500	N	58
Endo.sulfate	30.37	30.07	30.67	1826600	30.42	2582450	N	41
4,4'-DDT	30.47	30.35	30.59	1753900				
Methoxychlor	34.41	34.32	34.50	978960				
Endrin ketone	33.68	33.38	33.98	2267300	33.73	3287000	N	45
a. chlordane	24.23	23.93	24.53	2049500	24.26	3099100	N	51
g. chlordane	23.32	23.02	23.62	2044700	23.35	3056400	N	49
Toxaphene	27.00	25.83	28.17	804925				
Aroclor-1016	17.25	17.16	17.34	816092				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	17.76	17.58	17.94	813198				
Aroclor-1248	23.27	23.12	23.42	1080960				
Aroclor-1254	25.85	25.76	25.94	1340080				
Aroclor-1260	35.66	35.57	35.75	1725801				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

page 1 of 1

FORM IX PEST 8/87 Re

500074

PESTICIDE EVALUATION STANDARDS SUMMARY

Name: AROL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 11908 SAS No.: ----- SDG No.: -----

Instrument ID: HP#25890 GC Column ID: DB 608 0.53mm X 30m 35% diphenyl polysiloxane

Dates of Analyses: 05-22-91 to 05-23-91

Confirmation Only

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (+/- 10.0%)	
ALDRIN	1313540	1268632	1637962	14	
ENDRIN	944262	894033	1193598	16	
4,4'-DDT	953996	824532	1124266	18	(1)
DBC	933916	804591	1022344	14.3	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-22-91	1218	6.4%	4.8%	5.6%
02	EVAL MIX B	05-23-91	0304	11	9.9	11
03	EVAL MIX B					
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form Instructions.

500062

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PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

Name: AROL, INC Contract: LEN2 01

Lab Code: ----- Case No.: 111908 SAS No.: ----- SDG No.: -----

Instrument ID: HP2 5890 GC Column ID: DB 608 0.53mm x 30m 35% diphenyl polysiloxa

Dates of Analyses: 05-22-91 to 05-23-91

Confirmation Only 23.435

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALB	EVALB	05-22-91	1318	—	
02	EVALA	EVALA	05-22-91	1447	0.02	
03	EVALC	EVALC	05-22-91	1533	0.03	
04	INDA	INDA	05-22-91	1840	0.19	
05	INDB	INDB	05-22-91	1925	0.26	
06	AR1242	AR1242	05-22-91	2011	0.22	
07	AR1248	AR1248	05-22-91	2057	0.45	
08	AR1254	AR1254	05-22-91	2142	0.55	
09	AR1660	AR16600	05-22-91	2229	1.07	
10	NWCORNER	111914-4	05-22-91	2314	0.33	
11	Center	111914-3	05-23-91	0000	0.03	
12	SWCorner	111914-2	05-23-91	0046	1.21	
13	IMW055-GW	111908-7 (10X)	05-23-91	0132	0.04	
14	IG1055-FD	111908-8 (10X)	05-23-91	0218	0.31	
15	EVALB	EVAL B	05-23-91	0304	0.18	
16	INDA	INDA-ENDSEQ	05-23-91	1024	0.02	
17	INDB	INDB END SEQ	05-23-91	1110	0.08	
18						
19						
20						
21						
22						
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35						
36						
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns) 1.5 for megabore

500067

Lab Name: ARDL, INC Contract: KENZ OIL

Lab Code: ----- Case No.: 902 SAS No.: ----- SDG No.: -----

35% diphenyl polysiloxane

Instrument ID: HP #2 5890 GC Column ID: DB608 0.53mm X 30m

Confirmation Only

DATE(S) OF ANALYSIS FROM: 05-22-91 TO: 05-23-91

TIME(S) OF ANALYSIS FROM: 1318 TO: 1110

DATE OF ANALYSIS 05-23-91

TIME OF ANALYSIS 1024

EPA SAMPLE NO. (STANDARD) IND A END SEQ

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	11.11	11.05	11.17	782400				
beta-BHC	12.84	12.78	12.90	525200				
delta-BHC	14.17	14.11	14.23	670200				
gamma-BHC	12.56	12.50	12.62	825200	12.52	1384800	N	68
Heptachlor	13.72	13.66	13.78	819700	13.69	1344400	N	64
Aldrin	14.92	14.86	14.98	725800	14.87	1383600	N	91
Hept. epoxide	16.91	16.85	16.97	814700	16.87	1309200	N	6
Endosulfan I	18.14	18.08	18.20	837400	18.10	1353800	N	62
Dieldrin	19.20	19.14	19.26	704800	19.16	1134900	N	61
4,4'-DDE	18.94	18.88	19.00	641700				
Endrin	20.48	20.42	20.54	248000				
Endosulfan II	21.07	21.01	21.12	649800	21.04	1160000	N	79
,4'-DDD	20.83	20.77	20.89	477050				
ndo.sulfate	22.61	22.55	22.67	599650				
4,4'-DDT	21.83	21.77	21.89	468550	21.80	625450	N	33
Methoxychlor	24.94	24.85	25.03	371380	24.89	548130	N	48
Endrin ketone	25.52	25.43	25.61	691050				
a. chlordane	18.06	18.00	18.12	796900				
g. chlordane	17.49	17.42	17.55	792600				
Toxaphene								
Aroclor-1016	13.92	13.86	13.98	557479				
Aroclor-1221								
Aroclor-1232								
Aroclor-1242	13.84	13.78	13.90	613762				
Aroclor-1248	13.86	13.80	13.92	723526				
Aroclor-1254	19.56	19.47	19.65	715823				
Aroclor-1260	25.53	25.44	25.62	771245				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

Lab Name: ARDL, INC Contract: 68D90151

Lab Code: ----- Case No.: 11902 SAS No.: ----- SDG No.: -----

Instrument ID: HP#2 5890 GC Column ID: DB608 0.53mm x 30m 35% Aochlor 1260 principle

DATE(S) OF ANALYSIS FROM: 05-22-91 TO: 05-23-91

DATE OF ANALYSIS 05-23-91

TIME(S) OF ANALYSIS FROM: 1318 TO: 1110

TIME OF ANALYSIS 1110

EPA SAMPLE NO. (STANDARD) IND B END SEQ

Confirmation Only

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	11.11	11.05	11.17	753400	11.04	1162000	N	49
beta-BHC	12.84	12.78	12.90	525200	12.78	716300	N	36
delta-BHC	14.17	14.11	14.23	570200	14.11	720100	N	37
gamma-BHC	12.56	12.50	12.62	825200				
Heptachlor	12.78	12.66	12.78	819700				
Aldrin	14.92	14.86	14.45	725800	14.87	1022300	N	41
Hept. epoxide	16.91	16.75	16.97	814700				
Endosulfan I	18.14	18.08	18.20	737400				
Dieldrin	19.20	19.14	19.26	704800				
4,4'-DDE	18.94	18.88	19.00	641700	18.87	813700	N	27
Endrin	20.48	20.42	20.54	526000	20.39	524700	N	112
Endosulfan II	21.07	21.01	21.13	622500				
4,4'-DDD	20.83	20.77	20.89	477050	20.76	634500	N	33
Endo. sulfate	22.61	22.55	22.67	599650	22.53	414950	N	58
4,4'-DDT	21.83	21.77	21.89	468550				
Methoxychlor	24.97	24.95	25.03	371380				
Endrin ketone	25.52	25.42	25.61	691050	25.42	443100	N	36
a. chlordane	19.06	19.00	19.12	796700	18.98	1036300	N	30
g. chlordane	17.49	17.43	17.55	792600	17.42	1143200	N	44
Toxaphene								
Aroclor-1016	13.92	13.86	13.98	557477				
Aroclor-1221								
Aroclor-1232								
Aroclor-1242	13.84	13.78	13.90	613566				
Aroclor-1248	13.86	13.80	13.92	723526				
Aroclor-1254	19.56	19.49	19.65	715823				
Aroclor-1260	25.53	25.44	25.62	777245				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

80

PESTICIDE EVALUATION STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111908 SAS No.: ----- SDG No.: -----

Instrument ID: HP2 5890 GC Column ID: DB608 .53mm X 30m 35% diphenyl polysiloxane

Dates of Analyses: 06-04-91 to 6-5-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (</= 10.0%)	
ALDRIN	1541336	1434710	1479187	3.6	
ENDRIN	912710	949651	897998	2.9	
4,4'-DDT	849394	851197	907969	3.8	(1)
DBC	921538	872448	907567	2.3	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown (percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	06-04-91	0802	7.5	6.9	7.2
02	EVAL MIX B					
03	EVAL MIX B					
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form instructions.

500063

BE

PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111908 SAS No.: ----- SDG No.: -----

Instrument ID: HP 5890 GC Column ID: DB 608 0.53mm X 30m

Dates of Analyses: 06-04-91 to 6-5-91 35% diphenyl polysiloxane

22.85%

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALB	EVALB	06-04-91	0802	—	
02	EVALA	EVALA	06-04-91	0858	0.03	
03	EVALC	EVALC	06-04-91	0914	0.02	
04	INDA	INDA	06-04-91	1006	0.04	
05	INDB	INDB	06-04-91	1043	0.20	
06	TOXAPH	TOX-	06-04-91	1119	0.01	
07	Ar 1242	Ar1242	06-04-91	1155	0.03	
08	Ar1248	Ar1248	06-04-91	1231	0.01	
09	Ar1254	Ar1254	06-04-91	1306	0.02	
10	Ar 1660	Ar1660	06-04-91	1342	0.20	
11	PBLK 1340	111908-B1340	06-04-91	1418	0.02	
12	PBLK 1365	111928-B1365	06-04-91	1454	0.00	
13	LO-1G1060R-MS/MSD	111908-12	06-04-91	1530	0.01	
14	LO-1G1060R-MS/MSD MS	111908-12MS	06-04-91	1606	0.00	
15	LO-1G1060R-MS/MSD MSD	111908-12MSD	06-04-91	1652	0.03	
16	IND A	IND A END SEQ	06-05-91	1342	2.60	
17	IND B	IND B END SEQ	06-05-91	1422	0.58	
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns) 1.5 for mass bort

500063

FORM VIII PEST-2 1/87 Rev.

PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 11908 SAS No.: ----- SDG No.: -----

Instrument ID: HP5890 GC Column ID: DB608 0.53mm X 30m 35% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 06-04-91 DATE OF ANALYSIS 06-05-91

TO: 06-05-91 TIME OF ANALYSIS 1342

TIME(S) OF ANALYSIS FROM: 0802

TO: 1422 EPA SAMPLE NO. (STANDARD) INDA ENDSEQ

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	10.57	10.51	10.63	1292400				
beta-BHC	12.30	12.24	12.36	899400				
delta-BHC	13.60	13.54	13.66	1242500				
gamma-BHC	12.02	11.96	12.08	1065400	11.87	1456600	N	37
Heptachlor	13.16	13.10	13.22	516600	13.01	1202700	N	152
Aldrin	14.32	14.26	14.38	1092200	14.15	1086600	N	2-51
Hept. epoxide	16.32	16.26	16.38	1027700	16.15	1415000	N	31
Endosulfan I	17.52	17.46	17.58	1154500	17.37	2067200	N	79
Dieldrin	18.58	18.52	18.64	955600	18.43	1157000	N	21
4,4'-DDE	18.33	18.27	18.39	1036700				
Endrin	19.81	19.75	19.87	572700				
dosulfan II	20.44	20.38	20.50	949650	20.22	1025500	N	9.0
,4'-DDD	20.21	20.15	20.27	895200				
Endo.sulfate	21.94	21.88	22.00	1353400				
4,4'-DDT	21.21	21.15	21.27	544250	21.02	839550	N	54
Methoxychlor	24.19	24.10	24.28	352780	24.02	539240	N	53
Endrin ketone	24.65	24.56	24.74	1274650				
a. chlordane	17.43	17.32	17.49	1419000				
g. chlordane	16.87	16.81	16.93	1445500				
Toxaphene	20.49	20.05	20.77	402263				
Aroclor-1016	11.96	11.90	12.02	4361116				
Aroclor-1221	11.15	11.06	11.24	1618826				
Aroclor-1232	14.01	13.92	14.10	462153				
Aroclor-1242	13.26	13.20	13.32	479947				
Aroclor-1248	17.57	17.51	17.63	711410				
Aroclor-1254	18.86	18.77	18.95	769024				
Aroclor-1260	19.72	19.63	19.81	6216116				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic the component should be used to establish retention time and %D. entification of such analytes is based primarily on pattern recognition

FORM IX PEST 8/87 Rev.

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PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ 01C

Lab Code: ----- Case No.: 11908 SAS No.: ----- SDG No.: -----

Instrument ID: HP25890 GC Column ID: DB608 0.53mm X 30m 35% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 06-04-91 TO: 06-05-91

TIME(S) OF ANALYSIS FROM: 0802 TO: 1422

DATE OF ANALYSIS 06-05-9

TIME OF ANALYSIS 1422

EPA SAMPLE NO. (STANDARD) INDB ENDSER

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	10.57	10.51	10.63	1292400	10.45	1628210	N	27
beta-BHC	12.30	12.24	12.36	899400	12.50	1094000	N	22
delta-BHC	13.60	13.54	13.66	1242.500	13.47	1527400	N	24
gamma-BHC	12.02	11.96	12.08	1065400				
Heptachlor	13.16	13.10	13.22	5116600				
Aldrin	14.32	14.26	14.38	1092200	14.17	216300	N	2
Hept. epoxide	16.32	16.26	16.38	1077700				
Endosulfan I	17.52	17.46	17.58	1154500				
Dieldrin	18.58	18.52	18.64	955600				
4,4'-DDE	18.33	18.27	18.39	1036700	18.20	1258300	N	21
Endrin	19.81	19.75	19.87	572200	19.66	609900	N	6.6
Endosulfan II	20.44	20.38	20.50	949650				
4,4'-DDD	20.21	20.15	20.27	895200	20.08	1015250	N	13
Endo.sulfate	21.94	21.88	22.00	1253400	21.80	1293400	N	3.2
4,4'-DDT	21.21	21.15	21.27	544250				
Methoxychlor	24.19	24.10	24.28	352780				
Endrin ketone	24.65	24.56	24.74	1204650	24.46	1610000	N	26
a. chlordane	17.43	17.37	17.49	1419000	17.29	1915900	N	35
g. chlordane	16.17	16.81	16.93	1445500	16.72	1714800	N	19
Toxaphene	20.40	20.05	20.77	402263				
Aroclor-1016	11.96	11.90	12.02	436116				
Aroclor-1221	11.15	11.06	11.24	1618296				
Aroclor-1232	14.01	13.92	14.10	462153				
Aroclor-1242	13.26	13.20	13.32	479947				
Aroclor-1248	17.57	17.51	17.63	711410				
Aroclor-1254	18.26	18.77	18.95	769024				
Aroclor-1260	19.72	19.62	19.81	6216616				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic the component should be used to establish retention time and %D. entification of such analytes is based primarily on pattern recognition

FORM IX PEST 3/87 Rev.

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1D

PESTICIDE ORGANIC ANALYSIS

Customer Sample No.

LO-1G106DR-MS/MSD-MS

Lab Name: ARDL, Inc. Contract: LENZ OIL

Lab Code: _____ Case No.: 111908 SAS No.: ____ SDG No.: ____

Matrix (SOIL/WATER) : WATER Lab Sample ID : 111908-12MS

Sample wt/vol : 500 (g/mL) mL Lab File ID :

Level (LOW/MED) : LOW Date Received : 05/08/91

% Moisture (not dec): --- dec. - Date Extracted : 05/10/91

Extraction (SEPF/CONT/SONC): SEPF Date Analyzed : 05/20/91

GPC Cleanup (Y/N): N pH: 6.4 Dilution Factor: 1.0

CAS No.	Compound	Concentration Units: ug/L (ug/L or ug/Kg)	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC(Lindane)	0.49	
76-44-8	Heptachlor	0.35	
309-00-2	Aldrin	0.34	
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.92	
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	1.1	
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.64	
72-43-5	Methoxychlor	1.0	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	1.0	U
5103-74-2	gamma-Chlordane	1.0	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor 1016	1.0	U
11104-28-2	Aroclor 1221	1.0	U
11141-16-5	Aroclor 1232	1.0	U
53469-21-9	Aroclor 1242	1.0	U
12672-29-6	Aroclor 1248	1.0	U
11097-69-1	Aroclor 1254	2.0	U
11096-82-5	Aroclor 1260	2.0	U

1D

PESTICIDE ORGANIC ANALYSIS

Customer Sample No.

LD-13106DR-MS/MSD-MSD

Lab Name: ARDL, Inc. Contract: LENZ OIL

Lab Code: _____ Case No.: 111908 SAS No.: ____ SDG No.: ____

Matrix (SOIL/WATER) : WATER Lab Sample ID : 111908-12MSD

Sample wt/vol : 500 (g/mL) mL Lab File ID :

Level (LOW/MED) : LOW Date Received : 05/08/91

% Moisture (not dec): --- dec. - Date Extracted : 05/10/91

Extraction (SEPF/CONT/SONC): SEPF Date Analyzed : 06/04/91

GPC Cleanup (Y/N): N pH: 6.4 Dilution Factor: 1.0

CAS No.	Compound	Concentration Units: ug/L (ug/L or ug/Kg)	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC(Lindane)	0.47	
76-44-8	Heptachlor	0.44	
309-00-2	Aldrin	0.30	
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	1.0	
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	1.1	
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.75	
72-43-5	Methoxychlor	1.0	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	1.0	U
5103-74-2	gamma-Chlordane	1.0	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor 1016	1.0	U
11104-28-2	Aroclor 1221	1.0	U
11141-16-5	Aroclor 1232	1.0	U
53469-21-9	Aroclor 1242	1.0	U
12672-29-6	Aroclor 1248	1.0	U
11097-69-1	Aroclor 1254	2.0	U
11096-82-5	Aroclor 1260	2.0	U

EVALUATION OF CONFIRMATIONS OF GC ANALYSES

TRAFFIC REPORT NUMBER	COMPOUND	COLUMN #1 DB-5 TYPE: RT/RRT Sample	RT/RRT Standard	AREA RATIOS Sample	AREA RATIOS Standard	COLUMN #2 DB-608 TYPE: RT/RRT Sample	RT/RRT Standard	AREA RATIOS Sample	AREA RATIOS Standard	COMMENTS Area Ratio DB-5	COMMENTS Area Ratio DB-608	CONFIRMATION (2 COL/ GC/MS)	REVIEWER CONFIDENT
10-1MW03-6-W	Aroclor 1248	17.263	17.295	258997	513493	10.491	10.439	16613	9324	0.50	1.7	✓	✓
		18.848	18.88	107186	213590	11.631	11.696	6992	4851	0.50	1.4		
		20.516	20.61	147017	388547	12.379	12.348	12194	6491	0.38	1.9		
	*	13.693	13.71	41545	13049	12.981	12.828	13289	14551	3.2	0.91		
	*	14.507	14.508	78567	6155	*10.398	10.439	5881	9324	12.8	0.54		
		19.099	20.148	93860	143279					0.66			

Aroclor 1248 from DB-5:

$$\frac{607060}{1258819} \times \frac{10\,ng}{2\,ul} \times \frac{10000\,ul}{1\,L} \times \frac{1\,ug}{1000\,ng} \times \underset{\text{Dilution Factor}}{10} = 241\ ug/L$$

Aroclor 1248 from DB-608:

$$\frac{35217}{48488} \times \frac{10\,ng}{2\,ul} \times \frac{10000\,ul}{1\,L} \times \frac{1\,ug}{1000\,ng} \times \underset{\text{Dilution Factor}}{10} = 363\ ug/L$$

* peak not used to quantitate result

EVALUATION OF CONFIRMATIONS OF GC ANALYSES

TRAFFIC REPORT NUMBER	COMPOUND	COLUMN #1 DB-5 TYPE: RT/RRT Sample	COLUMN #1 DB-5 TYPE: RT/RRT Standard	COLUMN #1 DB-5 AREA RATIOS Sample	COLUMN #1 DB-5 AREA RATIOS Standard	COLUMN #2 DB-608 TYPE: RT/RRT Sample	COLUMN #2 DB-608 TYPE: RT/RRT Standard	COLUMN #2 DB-608 AREA RATIOS Sample	COLUMN #2 DB-608 AREA RATIOS Standard	COMMENTS Area Ratio DB-5	COMMENTS Area Ratio DB-608 **	CONFIRMATION (2 COL/ GC/MS)	REVIEWER CONFIDENT
.0-1MW055-GW	Aroclor 1260												
		29.823	29.928	86009	437210	27.154	28.483	5338	59536	0.20	0.09	✓	
		33.596	33.691	102149	411029	24.556	24.566	13401	253452	0.24	0.05		
		30.805	30.834	181790	861468	26.559	26.581	13009	230244	0.21	0.06		
		34.366	34.421	42794	241127	24.407	24.416	16518	103047	0.18	0.16		
						24.28	24.237	27392	176988		0.15		
						* 24.922	91250	24.703	9525		9.6		
						* 25.60	37466	25648	10162		3.7		
						* 24.922	24.903	91250	9525		9.6		

Aroclor 1260 from DB-5:

$$\frac{412742}{1956834} \times \frac{16ng}{2ul} \times \frac{10000ul}{1L} \times \frac{1ug}{1000ng} \times 10 = 105\ ug/L$$

Dilution Factor

from DB-608

$$\frac{823277}{75658} \times \frac{16ng}{2ul} \times \frac{10000ul}{1L} \times \frac{1ug}{1000ng} \times 10 = 5441 = 5441\ ug/L$$

Dilution Factor

** Very difficult to obtain good area ratios on this column. Only a few peaks are indicative of Aroclor 1260. Note large difference in results from the 2 columns.

* peak not used to quantitate

EVALUATION OF CONFIRMATIONS OF GC ANALYSES

TRAFFIC REPORT NUMBER	COMPOUND	COLUMN #1 TYPE: RT/RRT Sample	COLUMN #1 TYPE: RT/RRT Standard	COLUMN #1 AREA RATIOS Sample	COLUMN #1 AREA RATIOS Standard	COLUMN #2 TYPE: RT/RRT Sample	COLUMN #2 TYPE: RT/RRT Standard	COLUMN #2 AREA RATIOS Sample	COLUMN #2 AREA RATIOS Standard	COMMENTS Area Ratio DB-5	COMMENTS Area Ratio DB-608	CONFIRMATION (2 COL/ GC/MS)	REVIEWER CONFIDENT
0-1mross-ow	Aroclor 1242												
		23.211	23.259	151439	287550	15879	15.863	52874	35774	0.80	1.4	✓	✓
	*	25.801	25.814	141304	82751	16.146	16.119	47188	35385	1.7	0.76		
		22.288	22.273	167108	235886	*16.146	14.21	27188	68365	0.71	0.40		
	*	23.885	23.911	47197	32707	16.362	16.395	137464	106302	1.5	1.4		
		22.685	22.689	37932	27157	17.45	17.51	247723	119642	1.0	1.7		
		25485	25498	25549	28031	15.669	15.666	38894	41943	0.91	0.80		

Aroclor 1242 from DB-5

$$\frac{518630}{402028} \times \frac{10ng}{2ul} \times \frac{10000ul}{1L} \times \frac{1ug}{1000ng} \times \underset{\text{Dilution Factor}}{10} = 1645ug/L$$

from DB608:

$$\frac{339047}{1463713} \times \frac{10ng}{2ul} \times \frac{10000ul}{1L} \times \frac{1ug}{1000ng} \times \underset{\text{Dilution Factor}}{10} = 316ug/L$$

* peak not used to quantitate result

C-R-A CHROMATOPAC CH-1 REPORT 58. 63 CHROMATOGRAM 3 FILE 21 C10 ; 05 21 05 10 39:32

Analysis File : EPS 58 T52.

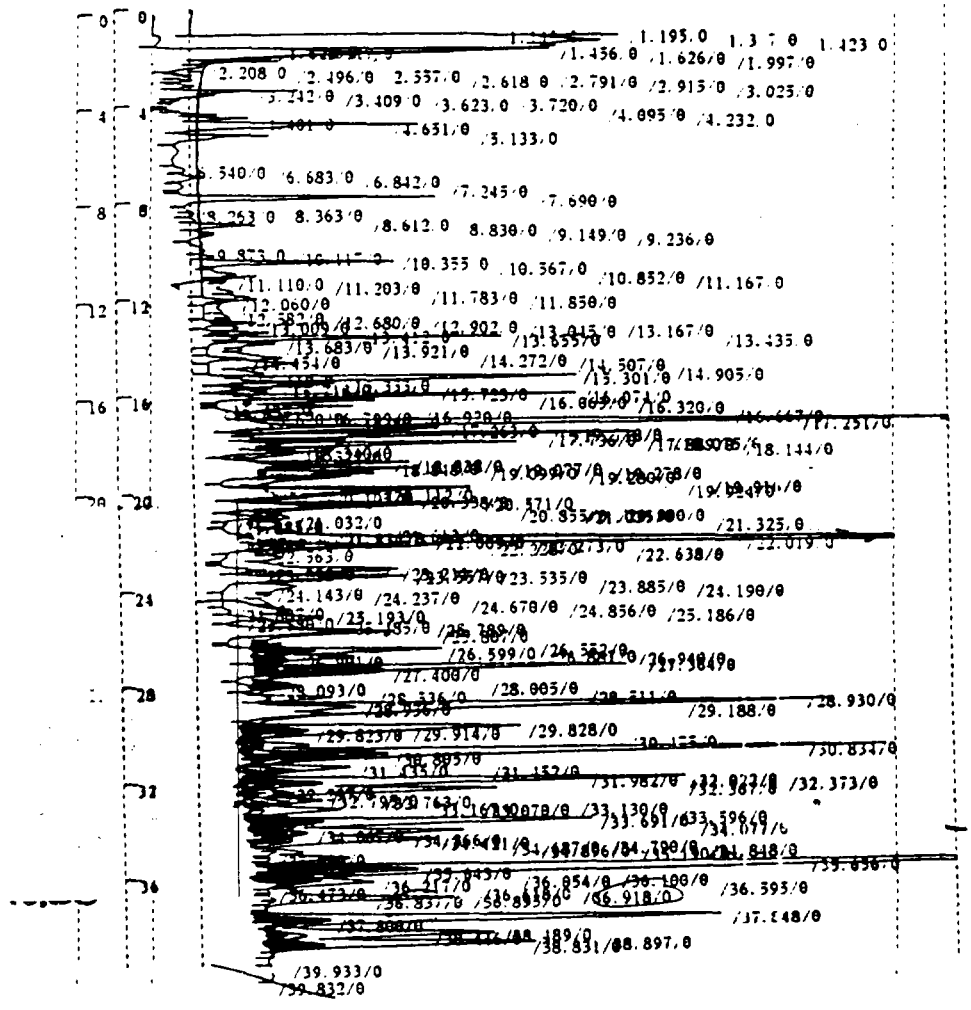
MEGABORE COLUMN ANALYSIS FOR PCB

INSTRUMENT ID : GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30mm

EPA SAMPLE NUMBER : 01MW055-GW INITIAL WT. OR VOL. : 100 mL
LAB SAMPLE NUMBER : 90BR 71(66R) FINAL VOLUME : 10 mL

INJECTION VOLUME : 2 uL

TEMP PROG: 150C 15 C/MIN 225C 2 C/MIN 280C



Ar 1660
10 ng

1260

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
1	2	1.456	48072	34264				
	3	1.517	40825	13544	V			
	4	1.626	313438	25910	V			
	5	1.997	66416	10425	V			
	6	2.208	45068	3803	V			
	7	2.496	5791	1628	V			
	8	2.557	10104	2771	V			
	9	2.618	15927	2698	V			
	10	2.791	17224	2711	V			
	11	2.915	7237	1691	V			
	12	3.025	24367	2795	V			
	13	3.242	69299	11697	V			
	14	3.409	39103	4543	V			
	15	3.623	7360	1392	V			
	16	3.72	2654	699	V			
	17	3.78	2701	580	V			
	19	4.095	5641	1181	V			
	20	4.232	25207	4312	V			
	21	4.401	52897	6988	V			
	22	4.651	225612	21744	V			
	23	5.133	77432	8494	V			
	26	6.54	10392	949				
	27	6.683	2345	633	V			
	28	6.842	23399	2514	V			
	30	7.245	6056	601	V			
	32	7.69	179613	22272				
	33	8.263	3244	610				
	34	8.363	7012	750	V			

500126

500026

Analysis: EPST32.

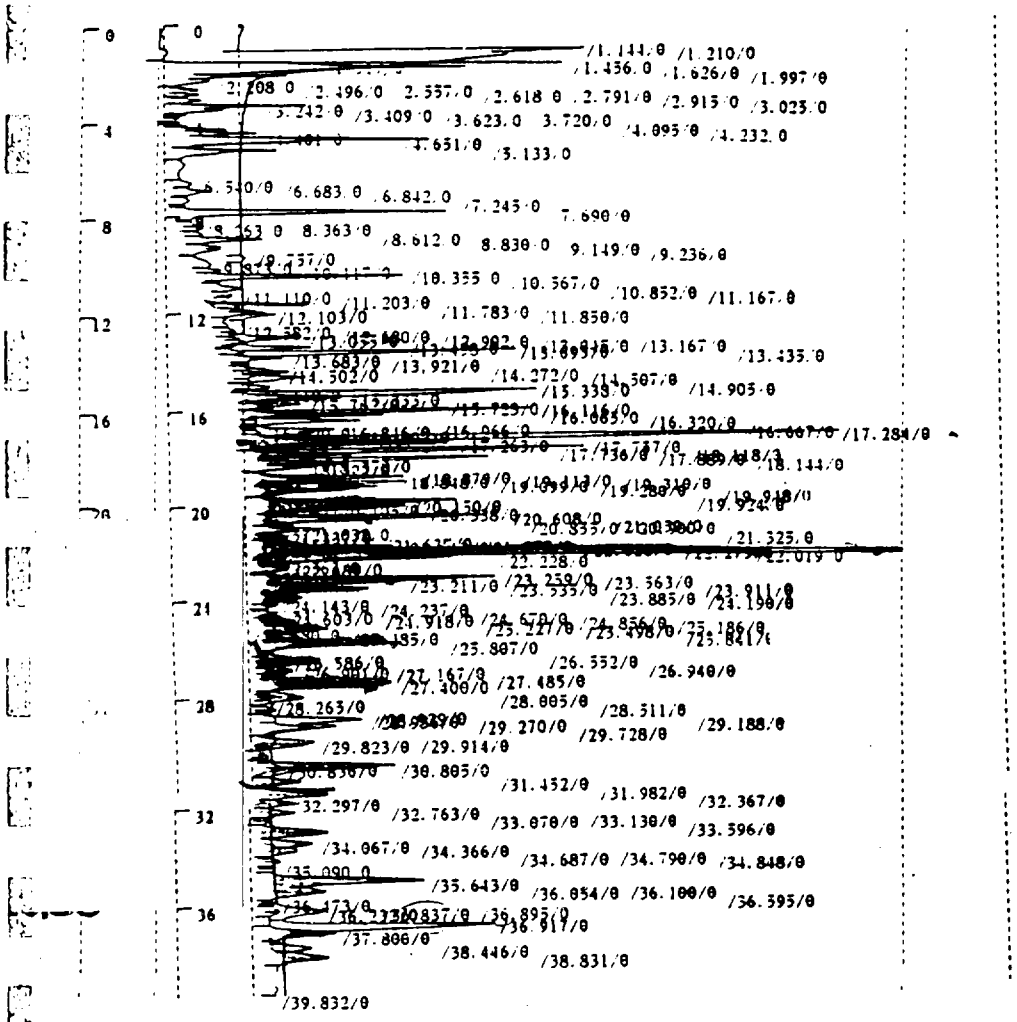
MEGABORE ANALYSIS FOR PESTICIDE, PCB

INSTRUMENT: GC-14A : DETECTOR #2
COLUMN ID: DB 5 0.53mm X 30mm

EPA SAMPLE: INITIAL WT. OR VOL.
LAB SAMPLE: FINAL VOLUME

INJECTION VOLUME : 2 uL

TEMP PROG: 150C ---- 150C ---> 225C ---> 225C ---> 280C ---> 280C



Ar 124
10

1242

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
1	2	1.456	48072	34264				
	3	1.517	40825	13544	V			
	4	1.626	313438	25910	V			
	5	1.997	66416	10425	V			
	6	2.208	45088	3803	V			
	7	2.496	5791	1628	V			
	8	2.557	10104	2771	V			
	9	2.618	15927	2698	V			
	10	2.791	17224	2711	V			
	11	2.915	7237	1691	V			
	12	3.025	24367	2795	V			
	13	3.242	69299	11697	V			
	14	3.409	39103	4543	V			
	15	3.623	7360	1392	V			
	16	3.72	2654	699	V			
	17	3.78	2701	580	V			
	19	4.095	5641	1181	V			
	20	4.232	25207	4312	V			
	21	4.401	52897	6988	V			
	22	4.651	225612	21744	V			
	23	5.133	77432	8494	V			
	26	6.54	10392	949				
	27	6.683	2345	633	V			
	28	6.842	23399	2514	V			
	30	7.245	6056	601	V			
	32	7.69	179613	22272				
	33	8.263	3244	610				
	34	8.363	7012	750				

5001

500026

[illegible] CHROMATOPAC [illegible] REPORT [illegible] CHROMATOGRAM-2 010321.COS [illegible] 91.05.21 14:41:42

Analysis File : 1 EPST52 [illegible]

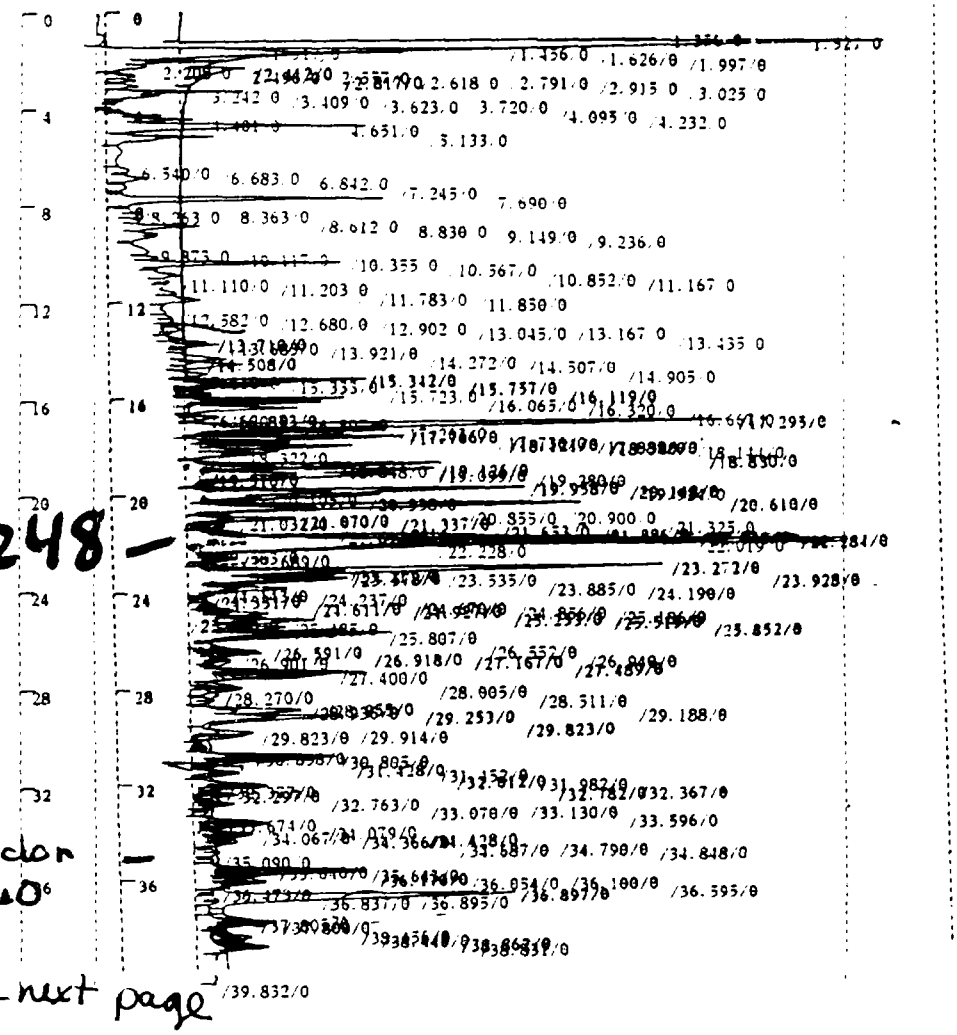
MEGABORE [illegible] ANALYSIS FOR PEST FOR PESTICIDE PCB

INSTRUMENT INSTRUMENT GC 14A DETECTOR DETECTOR #2
COLUMN ID COLUMN ID DB 5 0.5 [illegible] X 30mm

EPA SAMPLE [illegible] NUMBER: [illegible] INITIAL [illegible]
LAB SAMPLE [illegible] FINAL VOLUME [illegible]

INJECTION INJECTION VOLUME : 2 uL

TEMP PROG TEMP PROG 150C-----150C=>225C====>225C=>280C----->280C
#5 C/MIN #5 C/MIN #2 C/MIN #2 C/MIN



See next page

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
1	2	1.456	48072	34264				
	3	1.517	40825	13544	V			
	4	1.626	313438	25910	V			
	5	1.997	66416	10425	V			
	6	2.208	45088	3803	V			
	7	2.496	5791	1628	V			
	8	2.557	10104	2771	V			
	9	2.618	15927	2698	V			
	10	2.791	17224	2711	V			
	11	2.915	7237	1691	V			
	12	3.025	24367	2795	V			
	13	3.242	69299	11697	V			
	14	3.409	39103	4543	V			
	15	3.623	7360	1392	V			
	16	3.72	2654	699	V			
	17	3.78	2701	580	V			
	19	4.095	5641	1181	V			
	20	4.232	25207	4312	V			
	21	4.401	52897	6988	V			
	22	4.651	225612	21744	V			
	23	5.133	77432	8494	V			
	26	6.54	10392	949				
	27	6.683	2345	633	V			
	28	6.842	23399	2514	V			
	30	7.245	6056	601	V			
	32	7.69	179613	22272				
	33	8.263	3244	610				
	34	8.363	7012	750	V			

Ar 1248
10ng

500

500026

Analysis File : 1.EPST52.

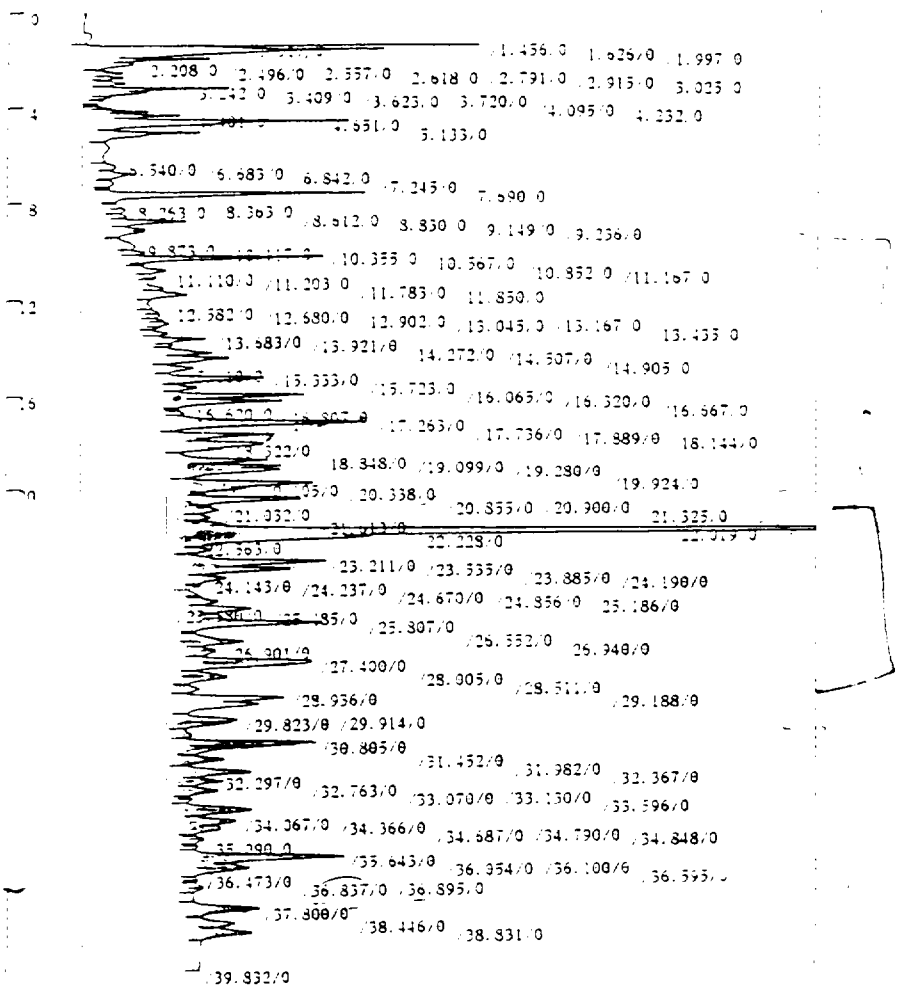
MEGABORE COLUMN ANALYSIS FOR PESTICIDE PCB

INSTRUMENT ID : GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30mm

EPA SAMPLE NUMBER: L04MW055-3W INITIAL WT OR VOL: 1000 mL
LAB SAMPLE NUMBER: 111908-7(10x) FINAL VOLUME : 10 mL

INJECTION VOLUME : 2 uL

TEMP PROG: 150C---$5 C/MIN---->225C---$2 C/MIN---->280C



** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
1	2	1.456	48072	34264				
	3	1.517	40825	13544	V			
	4	1.626	313438	25910	V			
	5	1.997	66416	10425	V			
	6	2.208	45088	3803	V			
	7	2.496	5791	1628	V			
	8	2.557	10104	2771	V			
	9	2.618	15927	2698	V			
	10	2.791	17224	2711	V			
	11	2.915	7237	1691	V			
	12	3.025	24367	2795	V			
	13	3.242	69299	11697	V			
	14	3.409	39103	4543	V			
	15	3.623	7360	1392	V			
	16	3.72	2654	699	V			
	17	3.78	2701	580	V			
	19	4.095	5641	1181	V			
	20	4.232	25207	4312	V			
	21	4.401	52897	6988	V			
	22	4.651	225612	21744	V			
	23	5.133	77432	8494	V			
	26	6.54	10392	949				
	27	6.683	2345	633	V			
	28	6.842	23399	2514	V			
	30	7.245	6056	601	V			
	32	7.69	179613	22272				
	33	8.263	3244	610				
	34	8.363	7012	750				

500026

35	8.912	7292	847	V
36	8.83	50995	5915	V
37	9.149	18134	2258	V
38	9.236	14294	2240	V
39	9.873	20214	1165	
40	10.117	16203	1760	V
41	10.355	133866	17124	V
42	10.567	5937	1257	V
43	10.852	37473	2957	V
44	11.11	14280	1871	V
45	11.167	5275	1758	V
46	11.203	5332	1679	V
47	11.26	10888	1393	V
48	11.385	23328	2055	V
49	11.783	18401	3198	V
50	11.85	32013	3826	V
54	12.382	3987	590	
56	12.68	5674	796	V
57	12.902	6552	1045	V
58	13.045	12915	1505	V
59	13.167	3022	612	V
61	13.435	9971	1307	
62	13.683	41543	4481	V
63	13.921	11452	1616	V
64	14.272	59036	4949	V
65	14.507	78567	6307	V
66	14.905	38237	3146	V
67	15.11	3521	1017	V
68	15.333	117395	9181	V
69	15.723	40010	3203	V
70	15.965	124829	12509	V
71	16.32	108300	10487	V
72	16.62	5384	1300	V
73	16.667	9594	1382	V
74	16.807	15378	1793	V
75	17.253	258997	17427	V
76	17.736	32738	9412	V
77	17.889	22232	3769	V
78	18.144	114852	5329	V
79	18.322	33673	4748	V
80	18.848	2100786	8581	V
81	19.099	93860	9625	V
82	19.28	140871	9500	V
83	19.924	176377	12259	V
84	20.105	55361	6292	V
85	20.338	17675	2569	V
86	20.576	147077	10911	V
87	20.855	15735	3007	V
88	20.9	9843	2993	V
89	21.032	41203	3638	V
90	21.325	36354	2717	V
91	21.513	41036	3934	V
92	22.019	1191659	135950	V MATRIX -
93	22.229	167108	16690	V
94	22.563	2611	1464	V
95	22.685	27932	2427	V
96	23.241	181139	12308	V
97	23.535	115290	9268	V
98	23.885	47797	3441	V
99	24.143	4800	1138	V
100	24.19	3044	1144	V
101	24.237	3869	1012	V
103	24.592	7284	931	
104	24.67	4336	1066	V
105	24.856	32212	2503	V
106	25.186	69517	5219	V
107	25.38	6377	2191	V
108	25.485	25349	2593	V
109	25.807	141305	11244	V
110	26.552	54637	4400	
111	26.901	17422	2126	V
112	26.94	18908	2115	V
113	27.4	206459	19775	V
114	28.305	59536	3433	V
116	28.511	12056	1177	V
117	28.936	112592	8667	
118	29.188	86009	6499	V
119	29.823	50151	4651	V
120	29.914	33067	4125	V
123	30.805	181790	11491	
124	31.432	54905	3423	V
125	31.982	85550	5787	
126	32.297	14232	2550	V
127	32.367	26334	3014	V
128	32.763	37626	2818	V
129	33.07	2626	495	V
130	33.13	3182	576	V
131	33.596	102149	5700	
132	34.061	58699	4242	V
133	34.266	42794	2815	V
134	34.687	2934	651	V
135	34.79	7431	1283	V
136	34.848	10144	1307	V
137	35.09	3296	653	V
138	35.149	3374	729	
139	35.643	226374	13590	V
140	36.054	48740	5059	V
141	36.1	48808	4962	V
142	36.473	3169	373	V
143	36.595	2049	398	V
144	36.837	3848	841	V
145	36.895	2912	891	V
146	36.953	3531	739	V
147	37.8	3365	1133	

908-7(10X)
5-22-91
C105
BC-141P

1243

3811627
-1191659
2619968

1118187

1260

145	~~36.893~~	~~2812~~	891	V	
146	~~36.953~~	~~3531~~	738	V	
149	~~37.8~~	~~85652~~	5499		
150	38.446	43458	2957		
151	38.831	70831	4433	V	
157	39.832	2588	382	V	
	TOTAL	7719026	747053		0

991888

908-7(10X)
5-22-91
0105
GC-14A

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	1	1.042	8264	839				
	2	1.113	2628	745	V			
	3	1.16	4487	603	V			
	4	1.452	45657	34640	V			
	5	1.511	41351	12325	V			
	6	1.634	259352	21163	V			
	7	1.996	83758	12656	V			
	8	2.208	50078	4470	V			
	9	2.493	6060	1594	V			
	10	2.555	10344	2960	V			
	11	2.613	17278	2910	V			
	12	2.79	16678	2615	V			
	13	2.91	7756	1817	V			
	14	3.026	28630	3219	V			
	15	3.239	84875	14134	V			
	16	3.397	40750	4935	V			
	17	3.619	12308	1731	V			
	18	3.767	3711	710	V			
	19	3.966	1460	341	V			
	20	4.093	7119	1307	V			
	21	4.229	31263	5184	V			
	22	4.399	62900	8289	V			
	23	4.649	240380	25873	V			
	24	5.133	84323	10169	V			
	25	5.433	1360	402	V			
	26	5.64	1041	186				
	27	5.744	1568	295	V			
	30	6.53	9634	935	V			
	31	6.661	5723	778	V			
	32	6.842	26921	3130	V			
	33	7.047	2051	510	V			
	34	7.238	7747	720	V			
	36	7.688	205040	26655				
	37	8.269	4566	599				
	38	8.342	2837	462	V			
	39	8.599	3461	614				
	40	8.828	37639	5669	V			
	41	9.146	12505	2371				
	42	9.231	19186	2430	V			
	43	9.733	3727	614				
	44	9.87	7873	757	V			
	45	10.11	9884	1457	V			
	46	10.353	147966	20620	V			
	47	10.836	26316	2832				
	48	11.13	10806	1366	V			
	49	11.197	6549	1199	V			
	50	11.287	3329	753	V			
	51	11.57	14975	1708				
	52	11.852	49701	3947	V			
	53	12.079	4063	533	V			
	54	12.361	4557	665				
	55	12.417	1407	487	V			
	56	12.562	8737	1081	V			
	57	12.693	7533	908	V			
	58	12.879	4547	838	V			
	59	12.937	1210	691	V			
	60	13.034	14452	1676	V			
	61	13.195	2005	537	V			
	62	13.427	8827	1288				
	63	13.578	38517	4640				
	64	13.933	11929	1357	V			
	65	14.27	63016	5584	V			
	66	14.499	90642	7616	V			
	67	14.897	42406	3322	V			
	68	15.113	2982	1110	V			
	69	15.318	128725	10435	V			
	70	15.61	5165	1452	V			
	71	15.726	28930	3145	V			
	72	16.062	143138	14635	V			
	73	16.321	108803	11214	V			
	74	16.661	9105	1408	V			
	75	16.803	20144	2146	V			
	76	17.287	300111	20388	V			
	77	17.73	110704	10797	V			
	78	17.907	21179	4263	V			
	79	18.16	131720	9735	V			
	80	18.299	39073	5409	V			
	81	18.553	2208	355	V			
	82	18.809	109120	9349	V			
	83	19.1	109781	10983	V			
	84	19.265	184285	11067	V			
	85	19.528	209948	14108	V			
	86	20.1	58853	7265	V			
	87	20.29	13521	3074				

111908-8(10X)
5-22-91
0156
GC-14A

196306

500035

58	20.352	12266	2899	V
59	20.596	166529	12913	V
60	20.862	23255	3602	V
61	20.91	12671	3537	V
62	21.025	43693	4547	V
63	21.287	24978	3387	V
64	21.317	23333	3429	V
65	21.527	45553	3821	V
66	22.01	1505802	137976	V
67	22.253	196846	20494	V
68	22.557	3789	1743	V
69	22.699	35018	3080	V
70	23	18520	2763	V
71	23.22	203911	13674	V
72	23.342	146832	11869	V
73	23.896	34940	4204	V
74	24.13	9125	1462	V
75	24.206	6997	1278	V
77	24.558	6154	1155	
78	24.647	7198	1328	V
79	24.863	43451	3380	V
80	25.194	97112	7186	V
81	25.442	17854	3311	V
82	25.503	18847	3437	V
83	25.8	191386	14432	V
84	26.063	1497	488	V
86	26.36	10933	2815	V
87	26.552	73804	5468	V
88	26.913	30658	2800	V
89	27.006	15786	2454	V
90	27.133	2084	1220	V
91	27.45	273641	14626	V
92	28.03	74556	4694	V
93	28.243	1367	441	V
94	28.357	2309	502	V
95	28.507	15626	1530	V
96	28.924	139071	11248	
97	29.193	120018	8681	V
98	29.497	1249	475	V
99	29.812	63630	5567	V
100	29.917	39600	5125	V
101	30.283	1242	341	
102	30.425	10342	1062	V
103	30.807	243504	15578	V
104	31.447	52615	4112	V
105	31.993	98104	6834	
106	32.32	45022	3617	V
107	32.778	46167	3310	V
108	33.112	5165	613	
109	33.32	38864	5890	
110	33.589	32115	6732	V
111	33.643	53121	6584	V
112	34.103	85180	5206	V
113	34.395	53701	4031	V
114	34.837	21310	1402	V
115	35.067	3323	670	V
116	35.15	7853	886	V
117	35.63	277508	17513	V
118	36.078	82941	4775	V
119	36.873	6453	948	
120	36.927	30735	1045	V
121	37.79	114255	7033	S
122	38.444	65235	4306	V
123	38.842	101190	5960	V
124	39.23	1062	259	V
125	39.427	1073	322	V
126	39.473	2293	390	V
127	39.609	1689	431	V
128	39.701	1877	460	V
129	39.833	1649	249	V
	TOTAL	9045256	892105	

AK 1260

DCBC

1041395

MW-21

MW05S-FD

111908-8 (02)

5-22-91

0156

GC-14A

1489567

1194550

MAOZU

223 02000 11 01/21/94

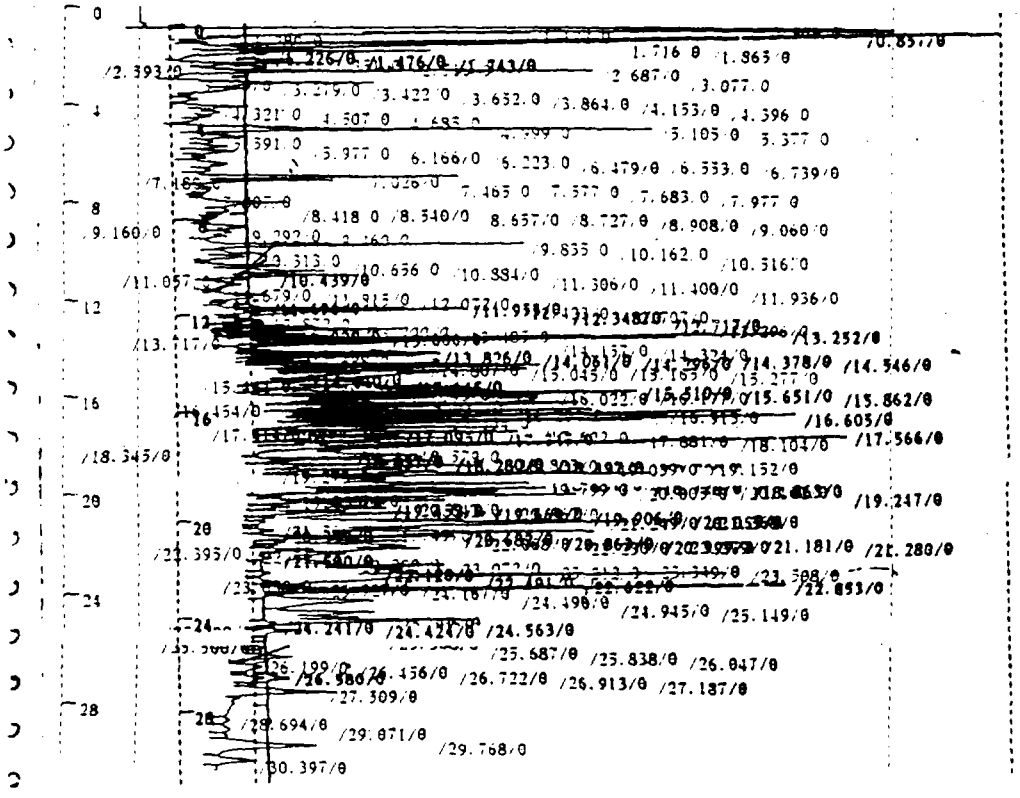
MAOZU

5000:6

C-R4A CHROMATOPAC CH=2 REPORT No.=133 CHROMATOGRAM=2:P90522.C19 91/05/23 02:18:20
C-R4A CHROMATOPAC CH=2 REPORT No.=233 CHROMATOGRAM=2:P10-04.C08 91/06/04 12:31:13
Analysis File : 1:EPST82.
Analysis File : 1:EPST82.

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE PCB ANALYSIS
CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng
PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng
INSTRUMENT ID : HP #2 5890
COLUMN ID INSTRUMENT ID 08 0 HP #2 5890
COLUMN ID 20-1G-1055-13 mm X 30m
EPA SAMPLE NUMBER: INITIAL WT. OR VOL. 1000 ml
LAB SAMPLE NUMBER: FINAL VOLUME INITIAL WT. OR VOL. 10 ml
LAB SAMPLE NUMBER: FINAL VOLUME
INJECTION VOLUME : 2 uL
INJECTION VOLUME : 62 DEG MIN
TEMP PROG: 140 C——————0.6 DEG/MIN
TEMP PROG: 140 C——————>275C



** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	3	0.969	663249	86745				
	4	1.122	163540	32925	V			
	5	1.289	48301	8018	V			
	6	1.403	8492	3893	V			
	7	1.44	8049	4110	V			
	8	1.479	23084	4959	V			
	9	1.716	120064	13402	V			
	10	1.865	161731	23505	V			
	11	2.351	79822	13008	V			
	12	2.516	14819	3961	V			
	13	2.593	23177	5800	V			
	14	2.687	175071	36341	SV			
	16	3.077	17722	5260	V			
	17	3.179	84564	17161	V			
	18	3.279	31353	5749	V			
	19	3.422	55101	8855	V			
	20	3.652	6775	1107	V			
	21	3.864	7866	1291	V			
	22	4.153	32441	5533				
	23	4.321	16245	2758	V			
	24	4.396	19285	3299	V			
	25	4.507	10628	2649	V			
	26	4.553	13034	2676	V			
	27	4.685	12683	1675	V			
	28	4.999	48824	10002				
	29	5.105	187312	40248	V			
	30	5.377	53419	5691	V			
	31	5.591	25739	2815	V			
	32	5.78	32987	4022	V			
	33	5.977	34317	4476	V			
	34	6.166	10600	1946	V			
	35	6.223	10033	2003	V			
	36	6.479	32479	3760	V			
	37	6.553	17934	3507	V			
	38	6.739	22214	2336	V			
	39	7.026	131432	23209	V			

1248

500181

500037

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

C-R4A CHROMATOPAC CH=2 REPORT No.=133 CHROMATOGRAM=2:P90522.C19 91/05/23 02:18:20.

Analysis File : 1:EPST82

PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

INSTRUMENT ID : HP =2 5890

COLUMN ID : DB 608 0.53 mm X 30m

PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng

EPA SAMPLE NUMBER: INITIAL WT. OR VOL. :

LAB SAMPLE NUMBER: AR160 / 10 ng FINAL VOLUME :

INSTRUMENT ID : HP =2 5890

COLUMN ID : DB 608 0.53 mm X 30m

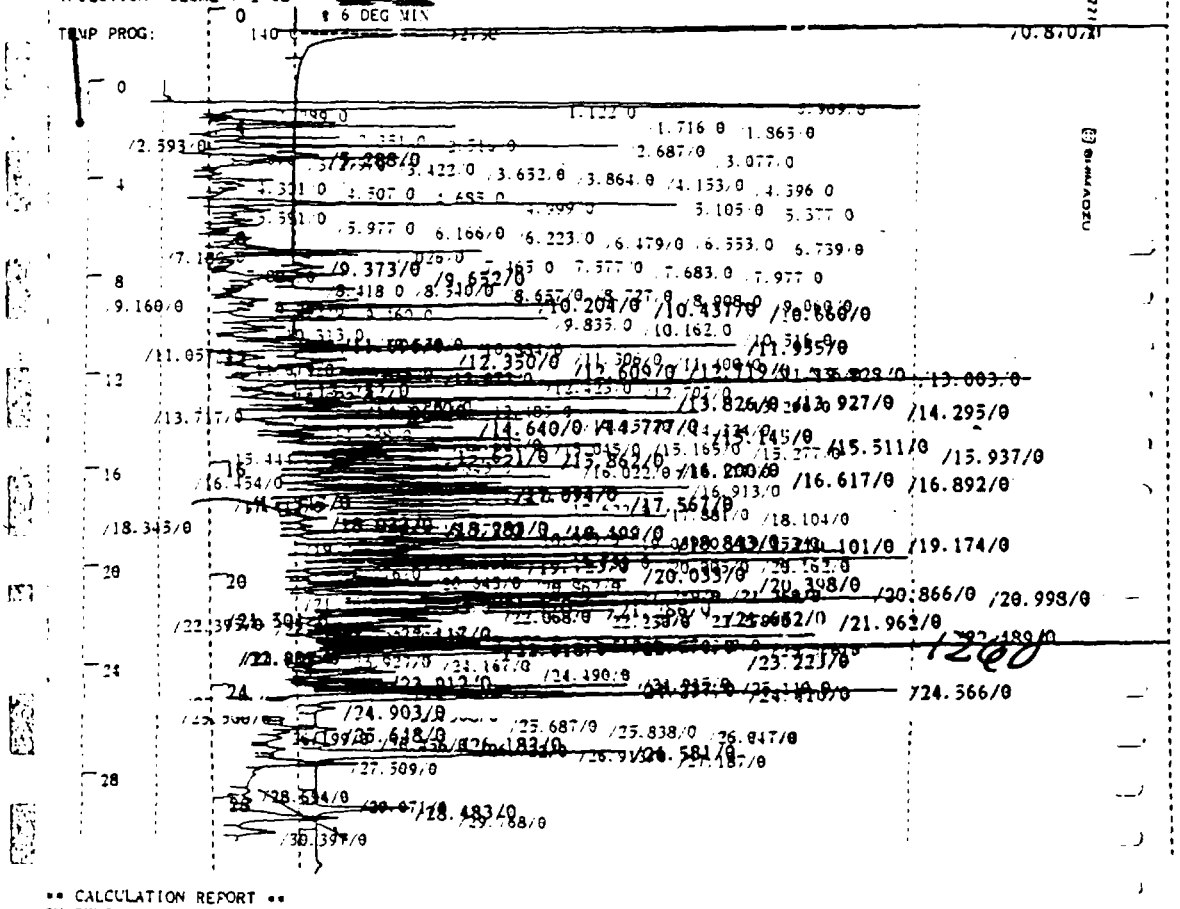
INJECTION VOLUME : 2 uL

EPA SAMPLE NUMBER: LO-12-1055-FD 6 DEG MIN INITIAL WT. OR VOL. 1000 ml

LAB SAMPLE NUMBER: TEMP PROG: 140 FINAL VOLUME >275C 10 ml

INJECTION VOLUME : 2 uL confirm

TEMP PROG: 140 6 DEG MIN



** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	3	0.969	663249	86745				
	4	1.122	163540	32925	V			
	5	1.289	48301	8018	V			
	6	1.403	8492	3893	V			
	7	1.44	8049	4110	V			
	8	1.479	23084	4959	V			
	9	1.716	120064	13402	V			
	10	1.865	161731	23505	V			
	11	2.351	79822	13008	V			
	12	2.516	14819	3961	V			
	13	2.593	23177	5800	V			
	14	2.687	175071	36341	SV			
	16	3.077	17722	5260	V			
	17	3.179	84564	17161	V			
	18	3.279	31353	5749	V			
	19	3.422	55101	5855	V			
	20	3.652	6775	1107	V			
	21	3.864	7866	1291	V			
	22	4.153	32441	5533				
	23	4.321	16245	2758	V			
	24	4.396	19285	3299	V			
	25	4.507	10628	2649	V			
	26	4.553	13034	2676	V			
	27	4.685	12683	1675	V			
	28	4.999	48824	10002				
	29	5.105	187312	40248	V			
	30	5.377	53419	5691	V			
	31	5.591	25739	2815	V			
	32	5.78	32987	4022	V			
	33	5.977	34317	4476	V			
	34	6.166	10600	1946	V			
	35	6.223	10038	2003	V			
	36	6.479	32479	3760	V			
	37	6.553	17934	3507	V			
	38	6.739	22214	2336	V			
	39	7.026	131432	23209	V			

5001

5000

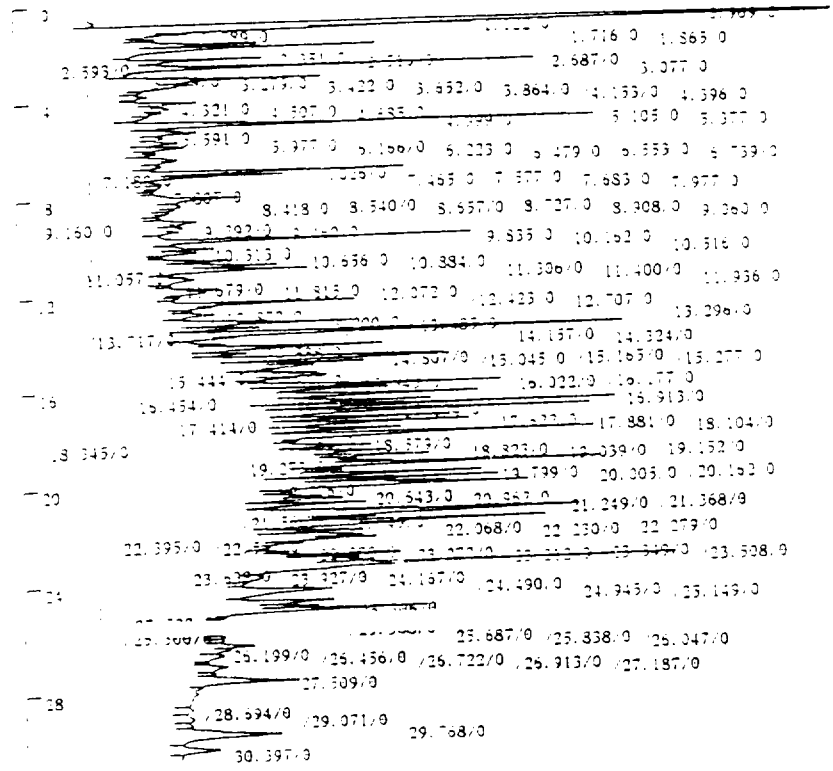
CHR4A CHROMATOPAC CH=2 REPORT No.=33 CHROMATOGRAM=2 P90522.C19 91 05 23 02 18 20

Analysis File : 1 EPST82.

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE PCB ANALYSIS

PEAK LABELED AS FOLLOWS: Name RT(min) total ng

INSTRUMENT ID HP #2 5890
COLUMN ID DB 608 0.53 mm X 30m
EPA SAMPLE NUMBER: LO-1G105S-FD INITIAL WT. OR VOL. 1000 ml
LAB SAMPLE NUMBER: 11903-8-(10X) FINAL VOLUME 10 ml
confirm
INJECTION VOLUME : 2 ul
TEMP PROG. 140 C ---------- 5 DEG MIN ----------> 275C



** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	3	0.969	663249	36745				
	4	1.122	163540	32925	V			
	5	1.289	48301	8018	V			
	6	1.403	8492	3893	V			
	7	1.44	8049	4110	V			
	8	1.479	23084	4959	V			
	9	1.716	120064	13402	V			
	10	1.865	161731	23505	V			
	11	2.351	79822	13008	V			
	12	2.516	14819	3961	V			
	13	2.593	23177	5800	V			
	14	2.687	175071	36341	SV			
	16	3.077	17722	5260	V			
	17	3.179	84564	17161	V			
	18	3.279	31353	5749	V			
	19	3.422	55101	5855	V			
	20	3.652	6775	1107	V			
	21	3.864	7866	1291	V			
	22	4.153	32441	5533				
	23	4.321	16245	2758	V			
	24	4.396	19285	3299	V			
	25	4.507	10628	2649	V			
	26	4.553	13034	2676	V			
	27	4.685	12683	1675	V			
	28	4.999	48824	10002				
	29	5.105	187312	40248	V			
	30	5.377	53419	5691	V			
	31	5.591	25739	2815	V			
	32	5.78	32987	4022	V			
	33	5.977	34317	4476	V			
	34	6.166	10600	1946	V			
	35	6.223	10038	2003	V			
	36	6.479	32479	3760	V			
	37	6.553	17334	3507	V			
	38	6.739	22214	2336	V			
	39	7.026	131432	23209	V			

500037

39	7.926	131432	23209	V
40	7.98	68045	12549	V
41	8.033	18670	2195	V
42	8.087	15384	2031	V
43	8.083	9182	1571	V
44	8.197	9206	1256	V
45	8.197	13231	2408	V
46	8.089	80559	8517	V
47	8.418	38946	3528	V
48	8.54	16893	2945	V
49	8.687	15395	2509	V
50	8.787	11138	2257	V
51	8.908	11626	1782	V
52	9.06	38617	4638	V
53	9.16	16779	3352	V
54	9.292	27678	3516	V
55	9.46	21624	3101	V
56	9.835	169109	28364	V
57	10.162	44768	3870	V
58	10.313	36196	4373	V
59	10.516	8168	1311	V
60	10.956	43678	6904	V
61	10.884	84606	11066	V
62	11.057	98723	13710	V
63	11.306	18757	3254	V
64	11.4	39565	3836	V
65	11.579	10379	1887	V
66	11.815	36365	5635	V
67	11.936	36272	4716	V
68	12.072	11283	2501	V
69	12.156	14222	2382	V
70	12.423	115685	17489	V
71	12.552	31113	5074	V
72	12.727	21868	3371	V
73	12.872	34524	5111	V
74	13.05	62414	9571	V
75	13.296	92338	17078	V
76	13.485	61819	8869	V
77	13.717	308344	40388	V
78	13.884	38978	6778	V
79	14.157	36079	5713	V
80	14.324	161133	19271	V
81	14.568	37882	7450	V
82	14.805	134714	24435	V
83	15.87	122811	23912	V
84	15.045	104987	17367	V
85	15.166	103073	13191	V
86	15.277	58341	10133	V
87	15.444	73168	13382	V
88	15.583	123207	14150	V
89	15.897	72405	11562	V
90	15.843	50559	8698	V
91	16.027	219703	29164	V
92	16.177	135851	19368	V
93	16.279	87031	11036	V
94	16.454	233520	27080	V
95	16.225	233566	22936	V
96	16.813	211369	38893	V
97	17.134	342993	36681	V
98	17.414	171661	24392	V
99	17.622	237597	25960	V
100	17.881	194157	19979	V
101	18.104	322020	36519	V
102	18.28	84691	10921	V
103	18.345	86451	10800	V
104	18.558	191327	17193	V
105	18.823	229957	18576	V
106	19.009	150188	22126	V
107	19.152	88691	15812	V
108	19.273	122494	18855	V
109	19.407	264776	36920	V
110	19.596	123276	14402	V
111	19.799	217159	26445	V
112	20.005	193600	27853	V
113	20.162	135934	23257	V
114	20.276	207149	30366	V
115	20.457	83854	9776	V
116	20.643	100181	12098	V
117	20.76	99627	14124	V
118	20.962	150247	16126	V
119	21.249	137489	20492	V
120	21.368	305829	34208	V
121	21.566	105485	16802	V
122	21.749	223655	31431	V
123	21.857	112527	19310	V
124	22.068	126050	15437	V
125	22.23	64511	14487	V
126	22.279	32690	15372	V
127	22.395	118362	16561	V
128	22.547	70444	10138	V
129	22.676	98863	7200	V
130	22.88	45658	8758	V
131	23.072	131520	18435	V
132	23.212	78443	14723	V
133	23.349	132860	16067	V
134	23.508	189278	21950	V
135	23.658	133212	13168	V
136	23.827	99603	9152	V
137	24.067	44255	4584	V
138	24.49	211759	12076	V
139	24.945	136405	12048	V
140	25.149	99272	10703	V

1568205

3244675

1434185

1260

111908-8(10x)
5-23-91
0218
HP#3

1MW055-FD
1248

5000:1

139	~~25.345~~	~~130403~~	12048	V
140	~~25.449~~	~~23272~~	10703	V
141	25.308	151948	20155	V
142	25.5	17475	2519	V
143	25.687	20840	2489	V
144	25.838	22101	2379	V
145	26.047	44487	4871	V
146	26.199	27000	2882	V
147	26.456	28799	2209	V
148	26.722	9267	844	V
149	26.913	28796	2354	V
150	27.187	10869	1291	V
151	27.309	87341	8419	V
154	28.993	5162	594	
155	29.071	9412	801	
158	29.768	121642	8384	V
159	30.397	30724	3133	
	TOTAL	13619456	1874060	0

111908-8(10x
confirm
5-33-91
0218
LLP#2

C-R4A CHROMATOPAC CH=1 REPORT No.=58 CHROMATOGRAM=2 P10521 C08 91 05 21 14 44 42

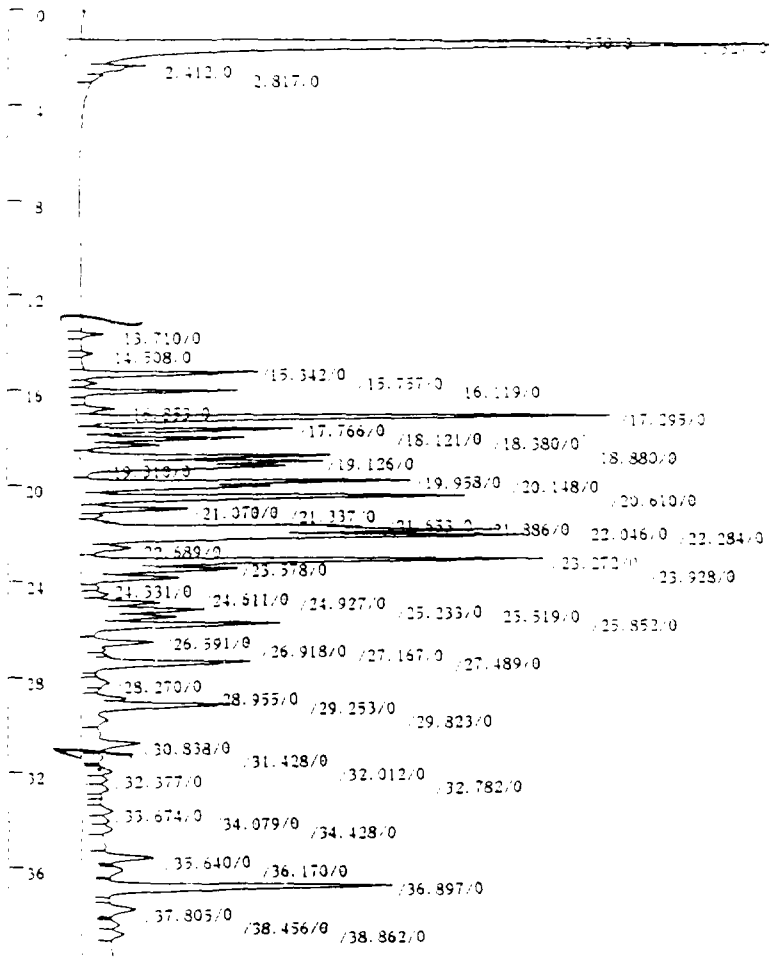
Analysis File 1 EPST52.

MEGABORE COLUMN ANALYSIS FOR PESTICIDE PCB

INSTRUMENT ID GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30mm

EPA SAMPLE NUMBER: INITIAL WT OR VOL.
LAB SAMPLE NUMBER: Ar 1248 FINAL VOLUME

INJECTION VOLUME 2 uL
#5 C/MIN #2 C/MIN
TEMP PROG. 130C---------->225C---------->280C



Ar 1248
10ng

500120

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
1	1	1.35	139115	40566				
	2	1.527	1179413	59862	SV			
	3	2.412	38437	3790	T			
	4	2.817	3820	661	TV			
	5	13.71	13049	1864				
	6	14.508	6153	925				
	7	15.342	148979	15167				
	8	15.757	8647	1159	V			
	9	16.119	103277	13192				
	10	16.853	24106	2528				
	11	17.295	795493	45642	V			
	12	17.766	159972	17936	V			
	13	18.121	128836	13616	V			
	14	18.38	56100	6284	V			
	15	18.88	283590	21152	V			
	16	19.126	285450	20507	V			
	17	19.31	176918	17274	V			
	18	19.958	283331	27999				
	19	20.418	153270	15776	V			
	20	20.981	388977	32800	V			
	21	21.07	86981	8418	V			
	22	21.337	10331	1107	V			
	23	21.653	16186	2402	V			
	24	21.886	125893	23644	V			
	25	22.046	379863	35450	V			
	26	22.284	416251	37657	V			
	27	22.683	33096	5495	V			
	28	23.272	1114741	39458	V			
	29	25.378	154415	12954	V			
	30	25.928	38500	7300	V			
	31	24.031	5035	367	V			
	32	24.611	13538	1221	V			
	33	24.927	66216	5799	V			
	34	25.233	117271	9630	V			
	35	25.519	80582	7153	V			
	36	25.852	196899	16163	V			
	37	26.591	59984	5034				
	38	26.978	10495	976	V			
	39	27.167	10607	1291	V			
	40	27.489	182585	13402	V			
	41	28.27	10929	889				
	42	28.955	29066	2710				
	43	29.253	153492	11589	V			
	44	29.823	14792	995	V			
	45	30.838	52548	3686				
	46	31.428	4698	422				
	47	32.012	14375	1112				
	48	32.377	7801	662	V			
	49	32.782	9314	741	V			
	50	33.674	12844	997				
	51	34.079	8154	626	V			
	52	34.428	12142	856	V			
	53	35.64	57923	4112				
	54	36.17	22856	1267	V			
	55	36.897	560387	24642				
	56	37.805	33590	2261				
	57	38.456	8836	687				
	58	38.862	14981	1111	V			
		TOTAL	7335471	651090			0	

Ar 1848
5-21-91
1444
GC-14A
DB-5

5404798
5404798

MINOSS-FID

500121

GC-14A CHROMATOPAC Ch=1 REPORT No.=02 CHROMATOGRAM=2:P10521.010 91/05/21 16:39:32

Analysis File : EPST52.

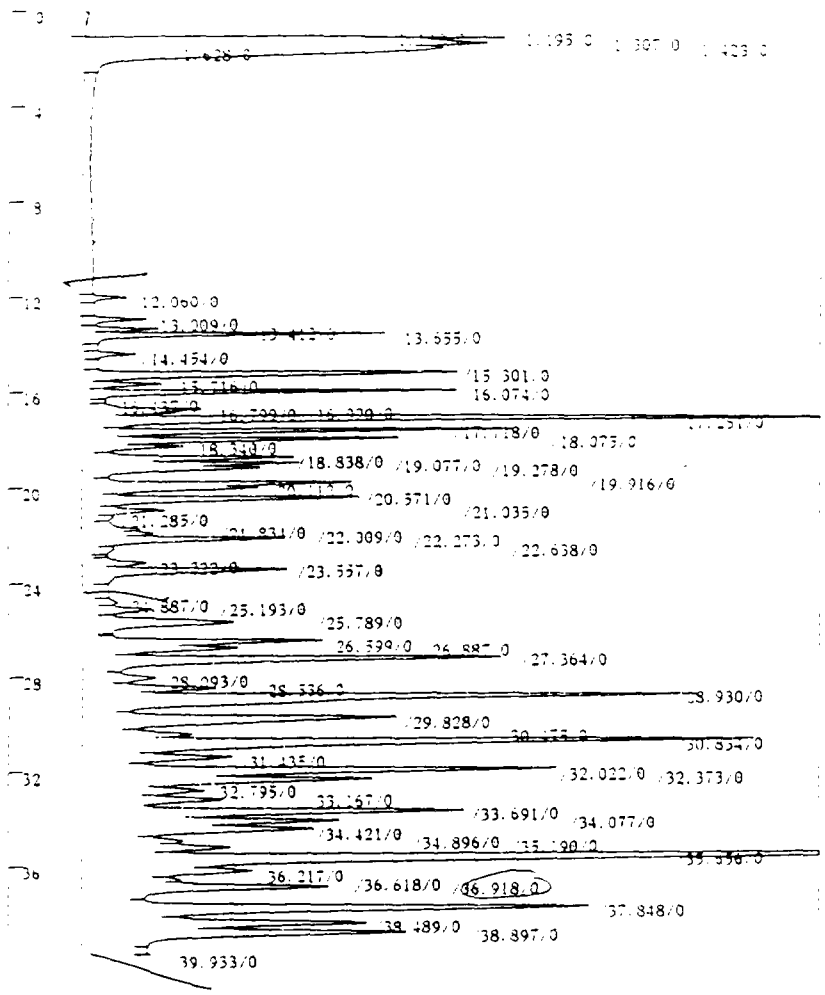
MEGABORE COLUMN ANALYSIS FOR PESTICIDE.PCB

INSTRUMENT ID : GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30m

EPA SAMPLE NUMBER: INITIAL AT OR VOL.
LAB SAMPLE NUMBER: AR 1660 FINAL VOLUME

INJECTION VOLUME : 2 uL

TEMP PROG: 150C @5 C/MIN 225C @2 C/MIN 280C



Ar 1660
10 mg

CH	PKNO	TIME	AREA	HEIGHT	MA	IDNO	CONC	NAME
1	1	1.142	86287	25952				
	2	1.195	112985	36283	V			
	3	1.307	189992	31629	V			
	4	1.423	403314	34604	V			
	5	1.528	701101	30669	V			
	6	12.06	21327	2788				
	8	13.009	33999	4394				
	9	13.412	39323	5479				
	10	13.655	190400	25011	V			
	11	14.454	24193	3276				
	12	15.301	357282	31197				
	13	15.716	45842	5317	V			
	14	16.074	249605	30987	V			
	15	16.437	4045	431	V			
	16	16.799	78858	8573	V			
	17	16.92	43406	6464	V			
	18	17.251	735417	63964	V			
	19	17.718	321741	35572	V			
	20	18.075	240176	25521	V			
	21	18.34	64362	6749	V			
	22	18.838	170576	16262	V			
	23	19.077	154497	16683	V			
	24	19.278	137844	13132	V			
	25	19.916	217608	21116				
	26	20.112	129742	12988	V			
	27	20.571	264243	21832	V			
	28	21.035	51035	4868	V			
	29	21.285	3839	474	V			
	30	21.854	30727	2802				
	31	22.009	40307	4011	V			
	32	22.273	178726	15235	V			
	33	22.538	7122	814	V			
	34	23.222	36585	3360				
	35	23.557	187604	13561	SV			
	37	24.887	6702	675				
	38	25.193	42001	3667	V			
	39	25.789	184783	10569	V			
	40	26.599	228515	18143				
	41	26.887	140641	10686	V			
	42	27.364	472791	33604	V			
	43	28.093	44682	3284	V			
	44	28.536	114698	8429	V			
	45	29.33	551612	50538	V			
	46	29.828	437210	23903	V			
	47	30.475	77479	5849	V			
	48	30.834	861468	54744	V			
	49	31.455	131540	9002	V			
	50	32.022	547853	37201	V			
	51	32.373	289416	21109	V			
	52	32.793	90339	6303	V			
	53	33.162	111907	7748	V			
	54	33.691	417029	28780	V			
	55	34.077	252854	17766	V			
	56	34.421	241127	15441	V			
	57	34.896	52448	3950	V			
	58	35.49	114785	7786	V			
	59	35.936	1604919	89258	V			
	60	36.317	160958	9546	V			
	61	36.618	39265	3312	V			
	62	36.918	241522	16029	V			
	63	37.348	543087	38538				
	64	38.139	309869	19107	V			
	65	38.897	357806	22611	V			
	66	39.733	2724	389				
	TOTAL		14451060	1141766			0	

Ar1660
5-21-91
1639
GC-144

Ar 1016

4080461
4080461 ✓

Ar 1260

8629006
8629006 ✓

-LO-IMWOSS-FD

DB5

SHIMADZU

500135

C-R4A CHROMATOPAC CH#1 REPORT No #56 CHROMATOGRAM#2 P10521 C07 91 05 21 13 54 05

Analysis File : 1 EPST52.

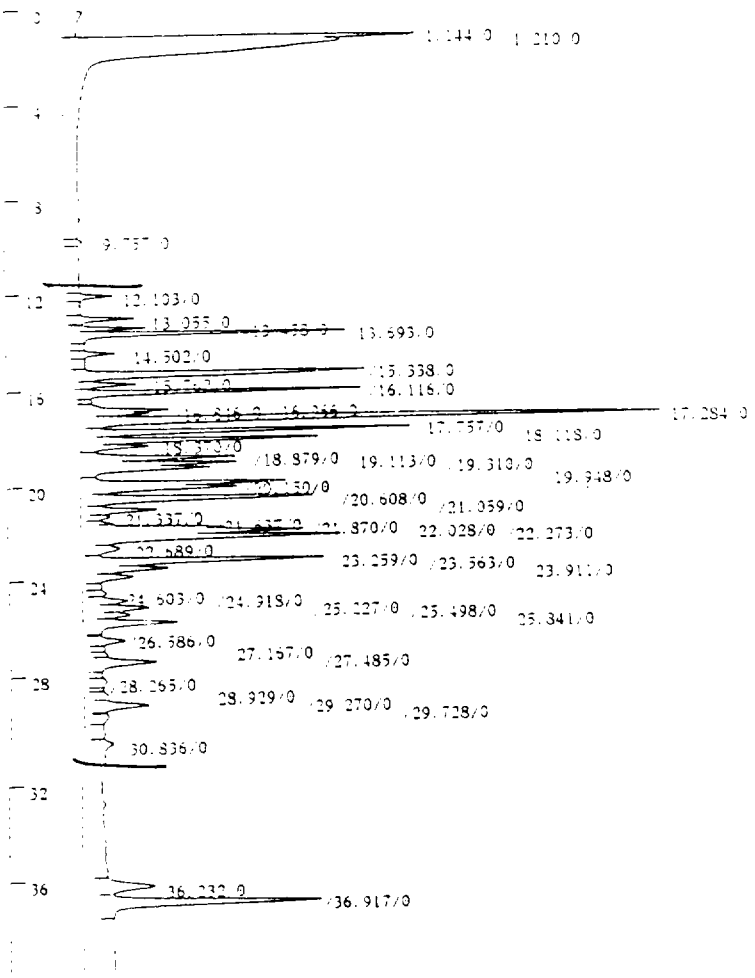
MEGABORE COLUMN ANALYSIS FOR PESTICIDE.PCB

INSTRUMENT ID GC-14A DETECTOR #2
COLUMN ID DB 5 0.53mm X 30mm

EPA SAMPLE NUMBER: INITIAL WT. OR VOL.
LAB SAMPLE NUMBER: Ar1242 FINAL VOLUME

INJECTION VOLUME : 2 uL

TEMP PROG: 150C---------->225C---------->280C
#5 C/MIN #2 C/MIN



Ar1242
10ng

500118

Ar1242
5-21-91
1354
GC-14A

HB-5

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
1	1	1.144	91570	25013				
	2	1.21	70428	17032	V			
	3	9.757	2609	350				
	4	12.103	20095	2729				
	5	13.055	34738	4579				
	6	13.458	37525	5468				
	7	13.693	170491	22710	V			
	8	14.502	18721	2577				
	9	15.338	274259	24184				
	10	15.762	34028	4185	V			
	11	16.115	185676	23538	V			
	12	16.846	59607	6717				
	13	16.966	31746	4984	V			
	14	17.284	560320	49377	V			
	15	17.757	242777	27562	V			
	16	18.118	180132	19476	V			
	17	18.37	44621	4815	V			
	18	18.879	123622	12169	V			
	19	19.113	113784	12274	V			
	20	19.31	100617	9985	V			
	21	19.948	164726	16473	V			
	22	20.15	124884	12221	V			
	23	20.608	228036	18695	V			
	24	21.059	55380	5318	V			
	25	21.337	11560	1163	V			
	26	21.637	10060	1338	V			
	27	21.87	97909	10928	V			
	28	22.028	191525	17777	V			
	29	22.273	235886	20991	V			
	30	22.589	27157	1841	V			
	31	23.259	227550	19416	V			
	32	23.563	72327	5960	V			
	33	23.911	32907	2897	V			
	34	24.603	3824	448				
	35	24.918	26451	2336	V			
	36	25.227	51721	4216	V			
	37	25.498	28037	2567	V			
	38	25.841	82751	6639	V			
	39	26.586	21626	1924				
	40	27.167	3007	346				
	41	27.485	61991	4631	V			
	42	28.265	4041	341				
	43	28.929	6004	461				
	44	29.27	49410	3826	V			
	45	29.728	3229	273				
	46	30.836	11234	787				
	47	36.232	70227	3946				
	48	36.917	271433	18020	V			
		TOTAL	4572253	465502			0	

4065992
4065992 /

C-R4A CHROMATOPAC CH=2 REPORT No.=233 CHROMATOGRAM=2:P90604.C08 91/06.04 12:31:13

Analysis File : 1:EPST82.

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

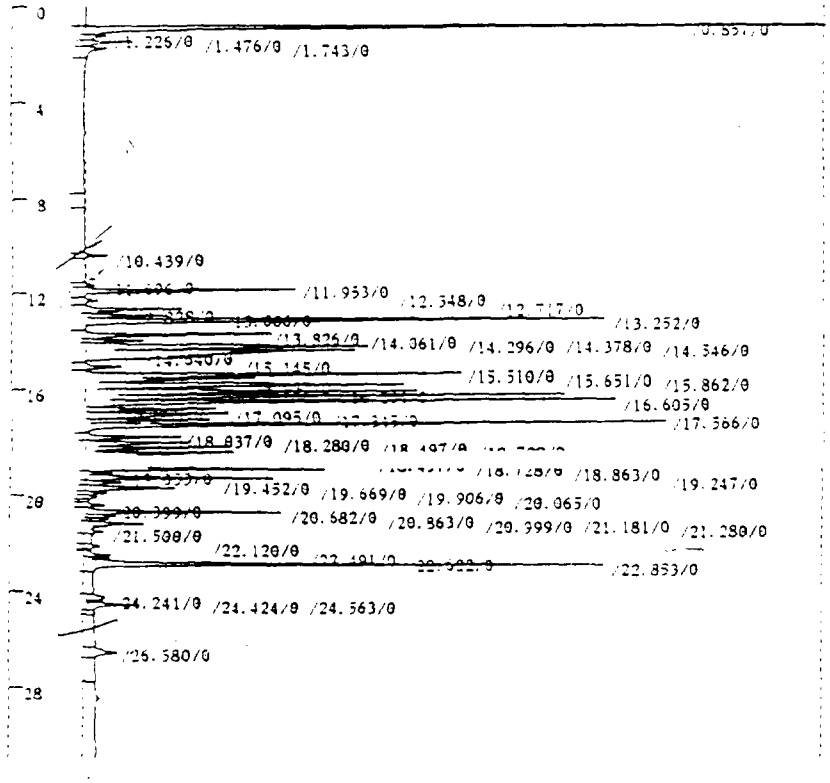
PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng

INSTRUMENT ID : HP #2 5890
COLUMN ID : DB 608 0.53 mm X 30m

EPA SAMPLE NUMBER: INITIAL WT. OR VOL. :
LAB SAMPLE NUMBER: AR.248 / 10ng FINAL VOLUME :

INJECTION VOLUME : 2 uL

TEMP PROG: 140 C —— 6 DEG/MIN ——> 275C



500181

AR1248
6-4-91
1231
AP#2

DIBUS

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	1	0.857	662450	140066	S			
	2	1.226	5020	1170	T			
	3	1.476	15856	3667	T			
	4	1.743	8987	1523	T			
	11	10.439	9324	1992				
	12	11.069	4851	968				
	13	11.953	102017	18214	V			
	14	12.348	6491	1206				
	15	12.717	43376	8356	V			
	16	12.828	24551	3167	V			
	17	13.006	39654	7033	V			
	18	13.252	324586	45183	V			
	19	13.826	88294	16045	V			
	20	14.061	28614	5164	V			
	21	14.296	80977	16193	V			
	22	14.378	130417	24517	V			
	23	14.546	125045	23330	V			
	24	14.64	95471	15914	V			
	25	14.776	56438	10905	V			
	26	15.145	17642	3219	V			
	27	15.50	203987	32574				
	28	15.691	82810	14661	V			
	29	15.862	67067	16526	V			
	30	15.937	145940	27549	V			
	31	16.116	47765	11388	V			
	32	16.204	154480	28680	V			
	33	16.389	214960	41514	V			
	34	16.665	237714	45961	V			
	35	16.888	162329	31123	V			
	36	17.093	90724	12161	V			
	37	17.345	56028	10507	V			
	38	17.566	238763	50191	V			
	39	18.037	47698	7999	V			
	40	18.28	60258	8746	V			
	41	18.497	61568	11891	V			
	42	18.728	66397	12414	V			
	43	18.863	107912	20515	V			
	44	19.053	12990	2283	V			
	45	19.247	90382	15988	V			
	46	19.452	18393	3078	V			
	47	19.669	53029	7513	V			
	48	19.906	8132	1630	V			
	49	20.065	4242	801	V			
	50	20.399	6740	1429				
	51	20.682	83813	16504				
	52	20.863	14558	2413	V			
	53	20.999	10238	1805	V			
	54	21.181	28132	4728	V			
	55	21.28	6535	1586	V			
	56	21.5	5414	1123	V			
	60	22.12	4420	823	V			
	61	22.491	9206	1732				
	62	22.622	10112	1686	V			
	63	22.853	255417	44365	SV			
	65	24.241	8986	1039				
	66	24.424	4750	863	V			
	67	24.563	20086	3250	V			
	68	26.58	18315	1939				
		TOTAL	4523092	828808			0	

3557048

3557047

LMWOFS-FD

500182

C-R4A CHROMATOPAC CH=2 REPORT No.=236 CHROMATOGRAM=2:P90604.C10 91/06/04 13:42:51

Analysis File : 1:EPST82.

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

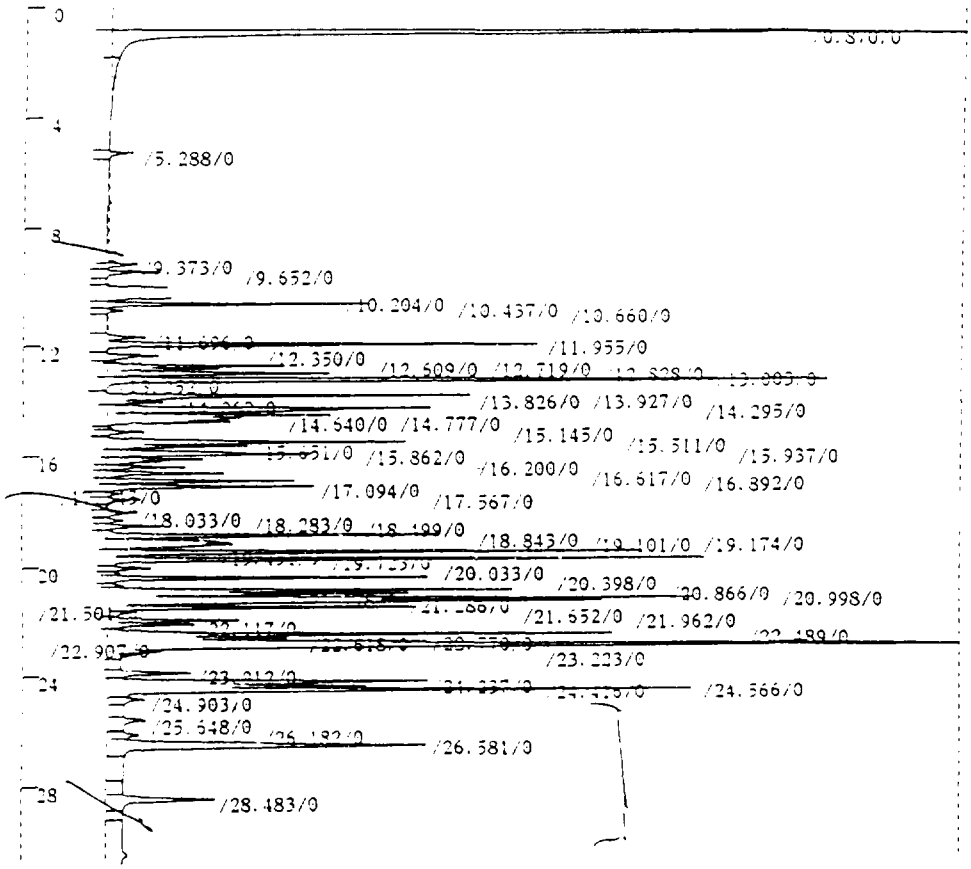
PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng

INSTRUMENT ID : HP-2 5890
COLUMN ID : DB 608 0.53 mm X 30m

EPA SAMPLE NUMBER: INITIAL WT. OR VOL.:
LAB SAMPLE NUMBER: AR1660 / 10 ng FINAL VOLUME :

INJECTION VOLUME : 2 uL

TEMP PROG: 140 C—— 6 DEG/MIN ——>275C



159

223 02000-11

017214A

RHIMADZU

500185

CH	PKNO	TIME	AREA	HEIGHT	MK	TONO	CONC	NAME
2	1	0.87	594313	79806				
	2	5.288	10472	1816				
	5	9.373	12217	2371	V			
	6	9.652	21055	4005				
	7	10.204	23470	4870				
	8	10.437	93065	19630	V			
	9	10.66	5854	1302				
	10	11.696	18238	3053				
	11	11.955	181759	32414	V			
	12	12.35	27186	3969	V			
	13	12.609	4228	1125	V			
	14	12.719	65346	13095	V			
	15	12.828	39707	8509	V			
	16	13.003	103480	16791	V			
	17	13.252	375414	54248	V			
	18	13.826	141083	27406				
	19	13.927	19899	5805	V			
	20	14.062	23432	4349	V			
	21	14.295	125898	24358	V			
	22	14.378	78718	17304	V			
	23	14.548	88110	16774	V			
	24	14.64	64956	9983	V			
	25	14.777	47835	9136	V			
	27	15.145	14295	2740	V			
	28	15.511	140999	22369				
	29	15.651	54297	10426	V			
	30	15.862	35318	9092	V			
	31	15.937	79857	15236	V			
	32	16.117	37261	7099	V			
	33	16.2	16079	3994	V			
	34	16.39	28754	5721	V			
	35	16.617	48305	8607	V			
	36	16.892	77469	13895	V			
	37	17.094	82883	15353	V			
	38	17.343	4114	831	V			
	39	17.567	11782	2438	V			
	40	18.033	8346	1618				
	41	18.283	6034	1147	V			
	42	18.499	19470	3929	V			
	43	18.843	143117	24917				
	44	19.101	69792	8914	V			
	45	19.174	61184	9028	V			
	46	19.451	224250	39940	V			
	47	19.723	230037	44536	V			
	48	20.033	15432	2920	V			
	50	20.398	118900	23671	V			
	52	20.866	162245	29920	V			
	53	20.998	114908	22250	V			
	54	21.178	238182	43565	V			
	55	21.286	182182	36620	V			
	56	21.501	117319	22725	V			
	57	21.652	8055	1532	V			
	58	21.962	45698	9090	V			
	59	22.117	28750	5747	V			
	60	22.489	210198	37187				
	61	22.618	68643	12640	V			
	62	22.77	116270	23222	V			
	63	22.907	630155	100211	V			
	64	23.107	17420	3079	V			
	65	23.223	7216	1462	V			
	66	23.912	32393	5129				
	67	24.237	176998	23050				
	68	24.416	103047	18300	V			
	69	24.566	253452	42765	V			
	70	24.903	9525	1533	V			
	71	25.648	10162	1568				
	72	26.182	7292	1076				
	73	26.581	230244	22683	V			
	74	28.483	59536	6784				
		TOTAL	6523594	1112679				

AR 1016/10ng

area
2180581

area AR 1260/10ng
3738234
3108079
3108071

IMW055-FD

IMW055-GN

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1342
HP25890
AR 1660

DB608

160

223-02000 11 0122144

[c] BHIMADZU

500186

C-R4A CHROMATOPAC CH=2 REPORT No.=232 CHROMATOGRAM=2:P90604.C07 91/06/04 11:55:17

Analysis File : 1:EPST82.

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng

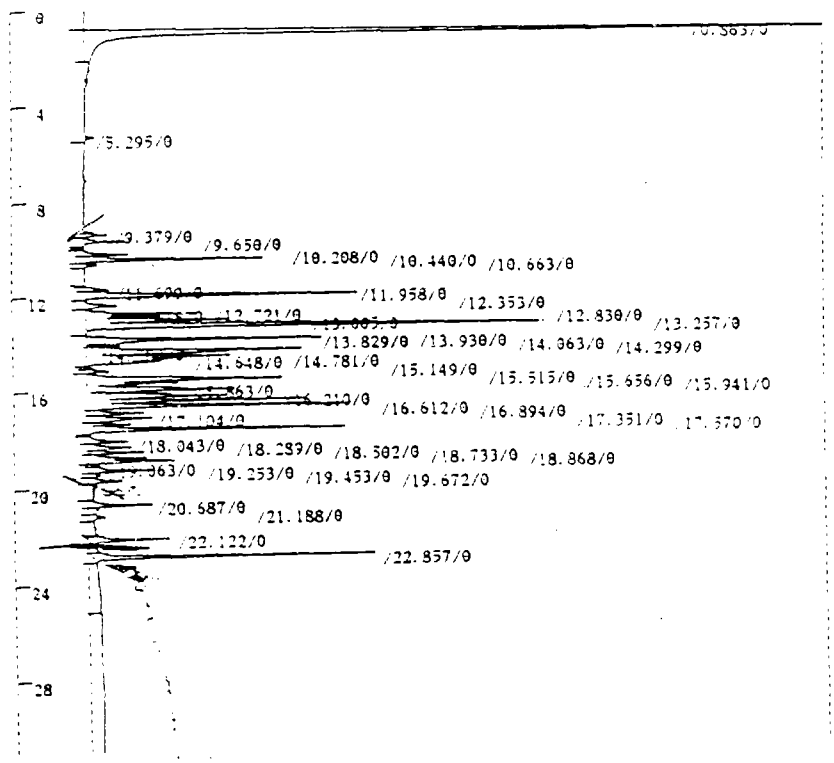
INSTRUMENT ID : HP #2 5890

COLUMN ID : DB 608 0.53 mm X 30m

EPA SAMPLE NUMBER: INITIAL WT. OR VOL. :
LAB SAMPLE NUMBER: BR 1243 / 10ng FINAL VOLUME :

INJECTION VOLUME : 2 uL

TEMP PROG: 140 C —— 6 DEG/MIN ——> 275C



153

223-02000-11

01221A

SHIMADZU

5001

AR1242

6-4-91

1155

HP #2

DIBOOS

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	1	0.863	761648	113696				
	3	5.295	5146	864				
	6	9.379	10309	2054	V			
	7	9.65	21873	3676	V			
	8	10.208	21156	3953				
	9	10.44	84315	15525	V			
	10	10.663	5253	1166	V			
	11	11.699	14493	2168				
	12	11.958	150748	23686	V			
	13	12.353	22617	2923	V			
	14	12.618	7947	1898	V			
	15	12.721	50356	9902	V			
	16	12.83	33106	6641	V			
	17	13.085	83548	12617	V			
	18	13.257	306355	39508	V			
	19	13.829	120207	20531				
	20	13.93	16816	4550	V			
	21	14.063	17150	3147	V			
	22	14.299	109366	18751	V			
	23	14.384	59035	12350	V			
	24	14.55	70686	12542	V			
	25	14.648	49356	7582	V			
	26	14.781	34270	6590	V			
	28	15.149	10751	1964	V			
	29	15.315	133636	16872	V			
	30	15.656	47943	7929	V			
	31	15.863	35775	8106	V			
	32	15.941	68605	12733	V			
	33	16.119	35385	7292	V			
	34	16.22	68355	12124	V			
	35	16.395	100302	18692	V			
	36	16.612	133673	22476	V			
	37	16.894	30526	4763	V			
	38	17.104	41887	5480	V			
	39	17.351	18718	3619	V			
	40	17.57	119642	22175	V			
	41	18.043	20607	3390				
	42	18.289	26092	3550	V			
	43	18.502	23533	4664	V			
	44	18.735	27864	4932	V			
	45	18.868	37787	7293	V			
	46	19.063	4244	829	V			
	47	19.253	33824	5530	V			
	48	19.453	3585	831	V			
	49	19.672	16333	2587	V			
	54	20.687	28162	5225				
	57	21.188	6182	1002	V			
	59	22.127	35910	6438	V			
	61	23.897	161259	24086	V			
		TOTAL	3287782	541000			3	

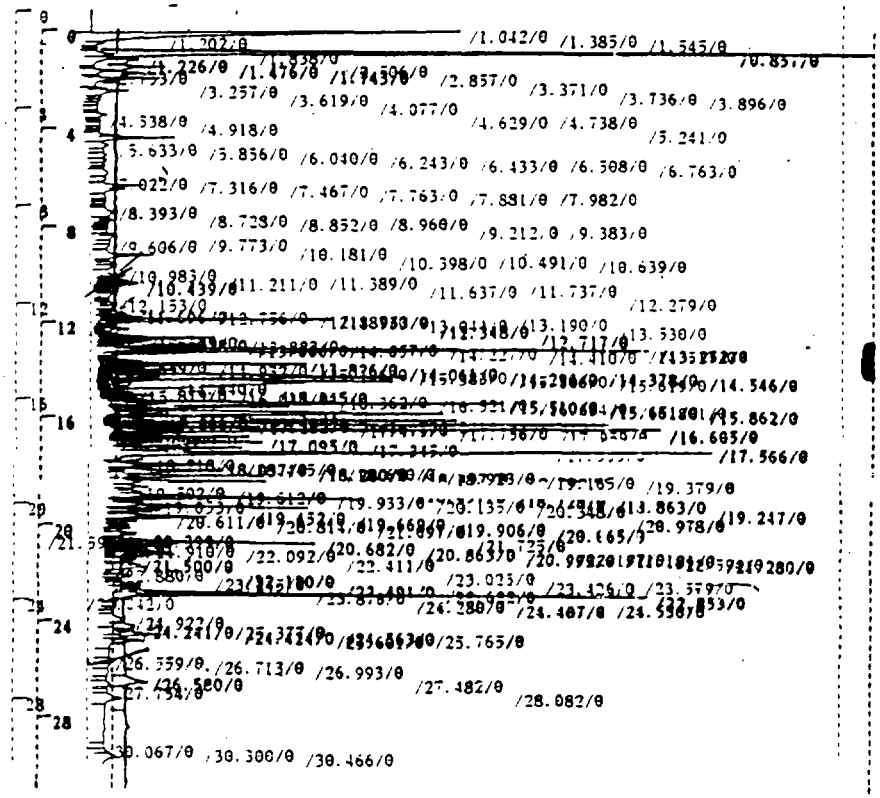
500180

C-R4A CHROMATOPAC CH=2 REPORT No.=150 CHROMATOGRAM=2:P90522.C18 91/05/23 01:32:20
C-R4A CHROMATOPAC CH=2 REPORT No.=233 CHROMATOGRAM=2:P90604.C08 91/06/04 12:31:13
Analysis File : 1:EPST82.
Analysis File : 1:EPST82.

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS
CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng
PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng
INSTRUMENT ID : HP #2 5890
INSTRUMENT ID : DB 608 0.53 mm X 30m
COLUMN ID : DB 608 0.53 mm X 30m
EPA SAMPLE NUMBER: 11908-7(10x)
LAB SAMPLE NUMBER: 11249 / 10ml
INJECTION VOLUME : 2 uL
INJECTION VOLUME : 2 uL 6 DEG/MIN
TEMP PROG: 140 C------ 6 DEG/MIN 275C
TEMP PROG: 140 C----------> 275C

INITIAL WT. OR VOL.: 1000 ml
FINAL VOLUME
INITIAL WT. OR VOL.: 10 ml
FINAL VOLUME :
Conf. Only



1248

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	3	1.042	907798	125590				
	4	1.202	107668	22980	V			
	5	1.385	25943	4616	V			
	6	1.545	6350	1626	V			
	7	1.585	9010	2132	V			
	8	1.707	5051	1636	V			
	9	1.838	58050	7731	V			
	10	1.995	80299	14070	V			
	11	2.506	38642	6576				
	12	2.753	7521	1905	V			
	13	2.857	114229	22537	SV			
	15	3.257	14725	4216				
	16	3.371	76991	11614	V			
	17	3.619	14419	2055	V			
	18	3.736	9344	1601	V			
	19	3.896	5990	885	V			
	20	4.077	5669	702	V			
	22	4.377	22503	3541	V			
	23	4.538	5841	1039	V			
	24	4.629	7136	1267	V			
	25	4.738	10876	1287	V			
	26	4.918	5071	803	V			
	28	5.241	39633	7446	V			
	29	5.359	127320	26181	V			
	30	5.633	36174	3793	V			
	31	5.856	16712	1793	V			
	32	6.04	21983	2601	V			
	33	6.243	18863	2533	V			
	34	6.433	11073	1573	V			
	35	6.508	7005	1408	V			
	36	6.763	31895	2621	V			
	37	7.022	13782	1454	V			
	39	7.316	76809	13698	V			
	40	7.467	41671	7992	V			
	41	7.763	11078	1108	V			
	42	7.881	5325	951	V			

500181

500020

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng

CHROMATOPAC CH=2 REPORT No.=150 CHROMATOGRAM=2:P90522.C18 91/05/23 01:32:20

Analysis File : 1:EPST82

INSTRUMENT ID : HP 2-5890

COLUMN ID DB 608 0.53 mm X 30m

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

EPA SAMPLE NUMBER: INITIAL WT. OR VOL.:

LAB SAMPLE NUMBER: AR160 / 10.0 ml FINAL VOLUME :

PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng

INJECTION VOLUME : 2 ul

INSTRUMENT ID : HP 2-5890

COLUMN ID : DB 608 0.53 mm X 30m

TEMP PROG: 140 C ---------->275C

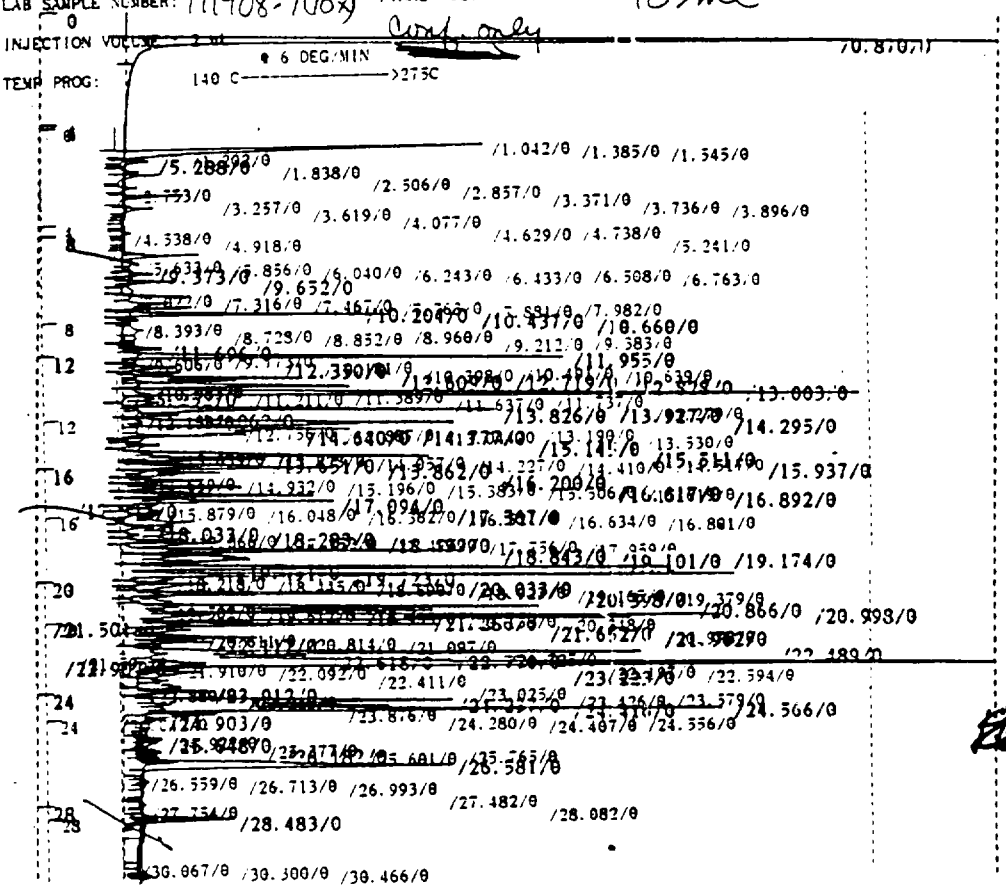
EPA SAMPLE NUMBER: INITIAL WT. OR VOL.: 1000 ml

LAB SAMPLE NUMBER: 111908-7(10x) FINAL VOLUME : 10 ml

Conf. only

INJECTION VOLUME : 2 ul

TEMP PROG: 140 C ---------->275C



Eg 12.60

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	3	1.042	907798	125590				
	4	1.202	107668	22980	V			
	5	1.385	25943	4616	V			
	6	1.545	6350	1626	V			
	7	1.595	9010	2132	V			
	8	1.707	5051	1636	V			
	9	1.838	58050	7731	V			
	10	1.995	80299	14070	V			
	11	2.506	38642	6576				
	12	2.753	7521	1905	V			
	13	2.857	114229	22537	SV			
	15	3.257	14725	4216				
	16	3.371	76991	11614	V			
	17	3.619	14419	2055	V			
	18	3.736	9344	1601	V			
	19	3.896	5996	885	V			
	20	4.077	5669	702	V			
	22	4.377	22503	3541	V			
	23	4.538	5841	1039	V			
	24	4.629	7136	1267	V			
	25	4.738	10876	1287	V			
	26	4.918	5071	803	V			
	28	5.241	39633	7446	V			
	29	5.359	127320	26181	V			
	30	5.633	36174	3793	V			
	31	5.856	16712	1793	V			
	32	6.04	21983	2601	V			
	33	6.243	19863	2533	V			
	34	6.433	11073	1573	V			
	35	6.508	7005	1408	V			
	36	6.763	31535	2621	V			
	37	7.022	[illegible]	[illegible]	V			
	39	7.316	6809	[illegible]	V			
	40	7.467	11671	7992	V			
	41	7.763	11078	1108	V			
	42	7.881	5325	951	V			

C-R4A CHROMATOPAC CH=2 REPORT No.=236 CHROMATOGRAM=2:P90604.C10 91/06/04 13:42:51

Analysis File : 1:EPST82

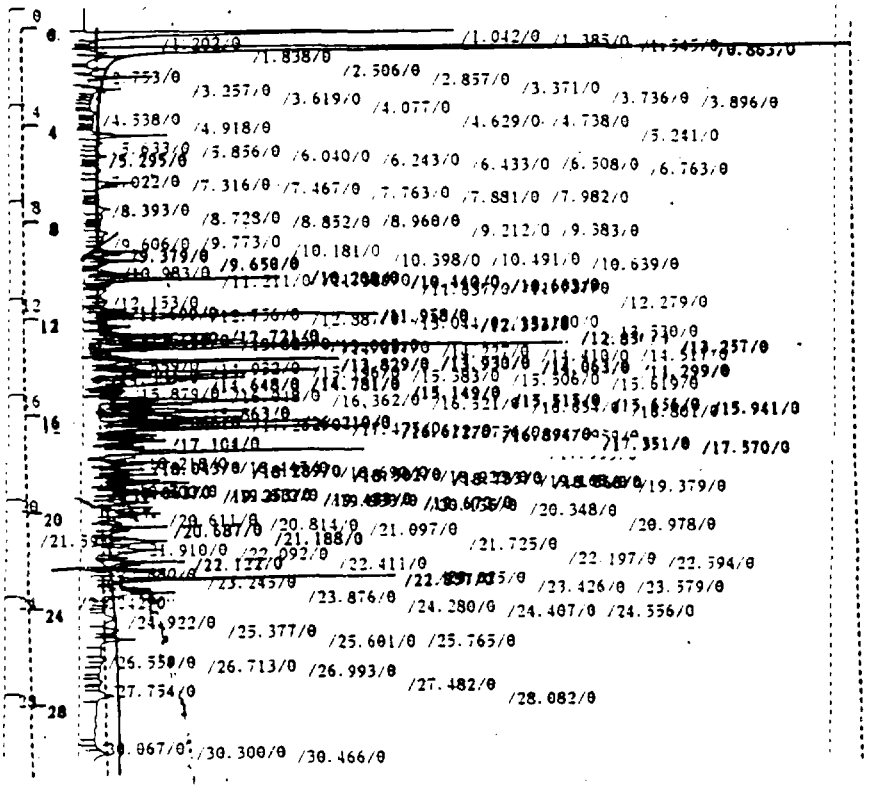
500185

CERBACHROMATOGRAC CHRO 2 REPORT No. 1232 CHROMATOGRAM 2:F90523.C18 91/05/23 01:33:29
Analysis File: 18F90523.

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

PEAK LABELED AS FOLLOWS: Aldr / Dield / Endrin

INSTRUMENT ID : HP5890
COLUMN ID : DB 608 0.53 mm X 30m
COLUMN ID : DB-608 0.53 mm X 30m
EPA SAMPLE NUMBER:
LEPAS SAMPLE NUMBER: 49087602
LAB SAMPLE NUMBER: NX/273/10mg
INJECTION VOLUME : 2 uL
INJECTION VOLUME : 2 uL @ 6 DEG/MIN
TEMP PROG: 140 C——@ 6 DEG/MIN——>275C
TEMP PROG: 140 C——————>275C
INITIAL WT. OR VOL. : 1000 ml
FINAL VOLUME OR VOL. : 10 ml
FINAL VOLUME : Used only



CALCULATION REPORT

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	3	1.042	907798	125590				
	4	1.292	107668	22980	V			
	5	1.385	25943	4616	V			
	6	1.545	6350	1626	V			
	7	1.595	9010	2132	V			
	8	1.737	5051	1636	V			
	9	1.838	58050	7731	V			
	10	1.995	80299	14070	V			
	11	2.506	38642	6576				
	12	2.753	7521	1905	V			
	13	2.857	114229	22537	SV			
	15	3.257	14725	4216				
	16	3.371	76991	11614	V			
	17	3.619	14419	2055	V			
	18	3.736	9344	1601	V			
	19	3.896	5990	885	V			
	20	4.077	5669	702	V			
	22	4.377	22503	3541	V			
	23	4.538	5841	1039	V			
	24	4.629	7136	1267	V			
	25	4.738	10876	1287	V			
	26	4.918	5071	803	V			
	28	5.241	39633	7446	V			
	29	5.359	127320	26181	V			
	30	5.633	36174	3793	V			
	31	5.856	16712	1793	V			
	32	6.04	21983	2601	V			
	33	6.243	18863	2535	V			
	34	6.433	11073	1573	V			
	35	6.508	7005	1408	V			
	36	6.763	31895	2621	V			
	37	7.022	13782	1454	V			
	39	7.316	76809	13698	V			
	40	7.467	41671	7992	V			
	41	7.763	11078	1108	V			
	42	7.881	5525	951	V			

1242

5001[illegible]

5000[illegible]

C-R4A CHROMATOPAC CH=1 REPORT No.=77 CHROMATOGRAM=2:P10521.C21 91/05/22 01:56:19

Analysis File : 1:EPST52.

MEGABORE COLUMN ANALYSIS FOR PESTICIDE/PCB

C-R4A CHROMATOPAC CH=1 REPORT No.=38 CHROMATOGRAM=2:P10521.C08 91/05/21 14:44:42

Analysis File : 1:EPST52.

INSTRUMENT ID : GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30mm

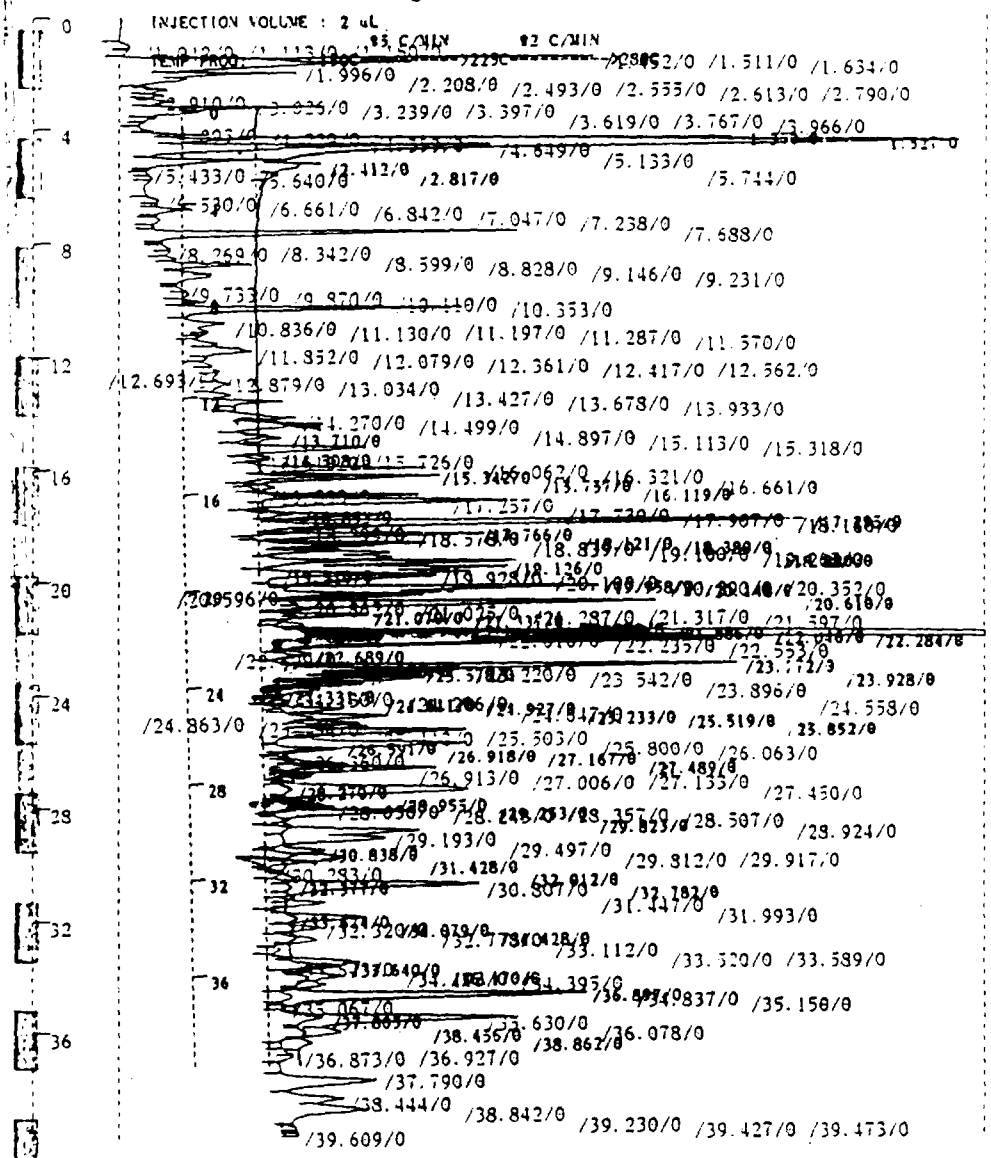
MEGABORE COLUMN ANALYSIS FOR PESTICIDE/PCB

EPA SAMPLE NUMBER: LO-1G1055-FD INITIAL WT. OR VOL.: 1000mL
LAB SAMPLE NUMBER: 11A08-8 (10x) FINAL VOLUME : 10 mL

INJECTION VOLUME : 2 uL INSTRUMENT ID : GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30mm

TEMP PROG: 150C---------->225C---------->250C
EPA SAMPLE NUMBER: INITIAL WT. OR VOL.:
LAB SAMPLE NUMBER: Ar 1248 FINAL VOLUME :

INJECTION VOLUME : 2 uL



Ar 1248
10ng

1248

500034

C-R4A CHROMATOPAC CH=1 REPORT No.=77 CHROMATOGRAM=2:P10521.C21 91/05.22 01:56:19

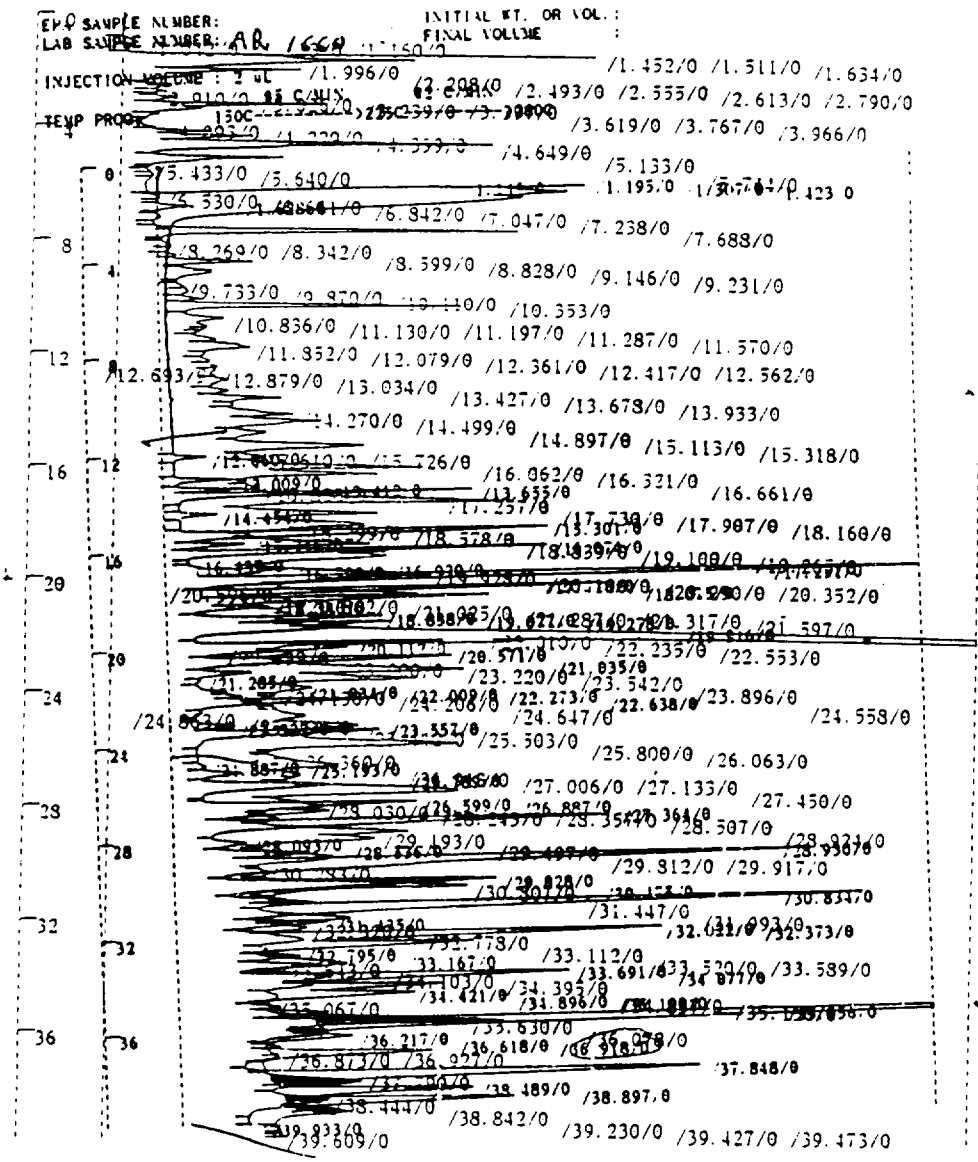
Analysis File : 1:EPST52.

MEGABORE COLUMN ANALYSIS FOR PESTICIDE/PCB

C-R4A CHROMATOPAC CH=1 REPORT No.=62 CHROMATOGRAM=2:P10521.C10 91/05/21 16:39:32

INSTRUMENT ID : GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30mm
Analysis File : 1:EPST52.
EPA SAMPLE NUMBER: LO-1G1055-FD INITIAL WT. OR VOL.: 1000mL
LAB SAMPLE NUMBER: (1808-8/106) FINAL VOLUME : 10 mL
MEGABORE COLUMN ANALYSIS FOR PESTICIDE/PCB
INJECTION VOLUME : 2 uL
TEMP PROG: 150C---------->225C---------->250C
#5 C/MIN #2 C/MIN

INSTRUMENT ID : GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30mm
EPA SAMPLE NUMBER: INITIAL WT. OR VOL.:
LAB SAMPLE NUMBER: AR 1660 FINAL VOLUME :
INJECTION VOLUME : 2 uL
TEMP PROG: 150C---------->225C---------->250C
#5 C/MIN #2 C/MIN



1260

Ar 1660
10 ng

500034

C-R4A CHROMATOPAC CH#1 REPORT No.#77 CHROMATOGRAM#2 P10521 C21 91 05 22 01 56.19

Analysis File 1:EPST52.

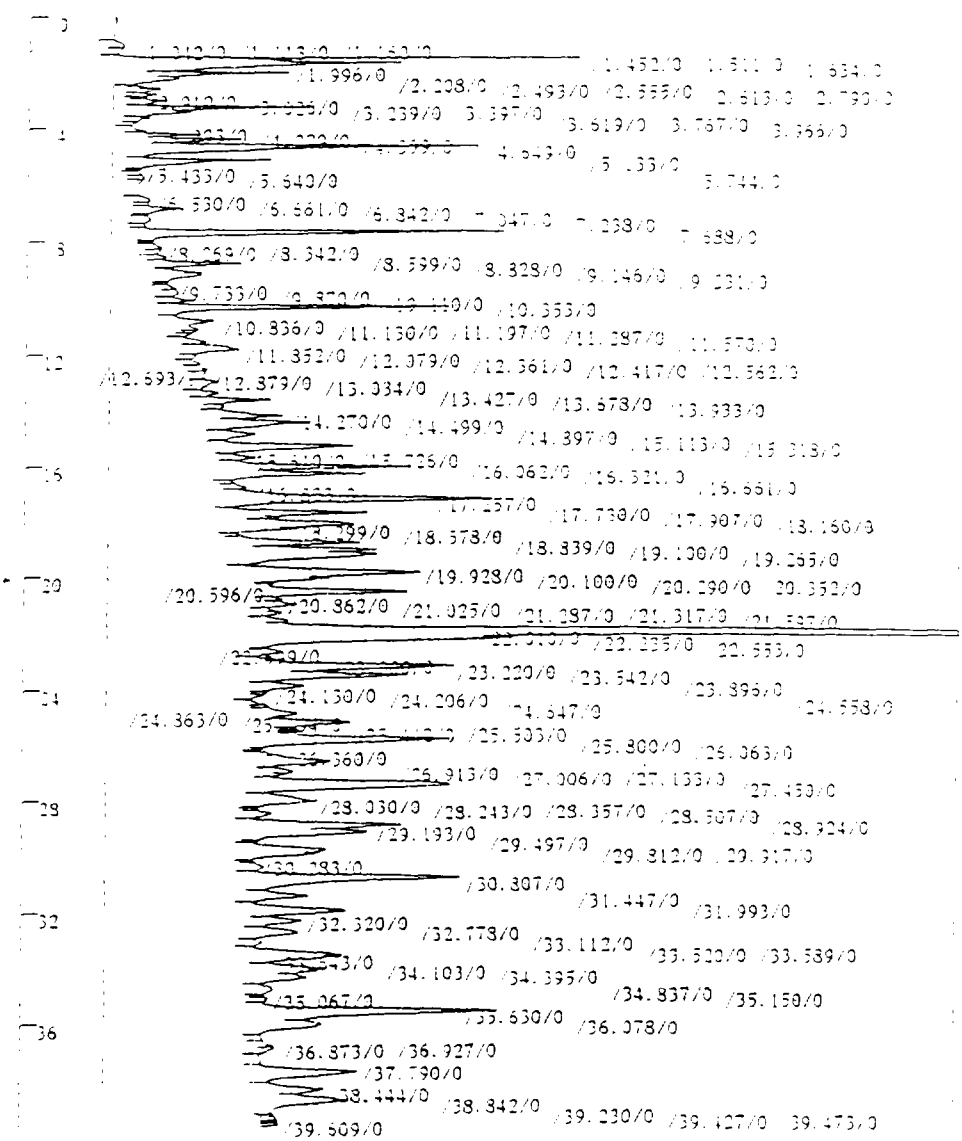
MEGABORE COLUMN ANALYSIS FOR PESTICIDE/PCB

INSTRUMENT ID : GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30mm

EPA SAMPLE NUMBER: LO-1G1055-FD INITIAL WT. OR VOL. : 1000 mL
LAB SAMPLE NUMBER: 11A08-8 (10X) FINAL VOLUME : 10 mL

INJECTION VOLUME : 2 uL

TEMP PROG: 150C---------->225C---------->250C
(#5 C/MIN, #2 C/MIN)



155

500034

C. CASE 111918

PROJECT NAME: Lenz Oil

SUPPORT DOCUMENTATION FOR THE REVIEW OF ORGANIC ANALYSIS LAB DATA PACKAGE

TYPE OF ANALYSIS: CLP Volatiles (VOA) CLP Semivolatiles (BNA) CLP Pesticide/PCB (P/PCB)

APPLICABLE SAMPLE NO's.: refer to Table 1

CONTRACT LABORATORY: ARISL

REVIEWER: MPiccone

REVIEW DATE: June 1991

THE FOLLOWING TABLE INDICATES AREAS WHICH WERE EXAMINED IN DETAIL, THE IDENTIFIED PROBLEM AREAS, AND SUPPORT DOCUMENTATION ATTACHMENTS:

	AREAS EXAMINED IN DETAIL (CHECK (V) IF YES OR FOOTNOTE LETTER FOR COMMENTS BELOW)				PROBLEM AREAS IDENTIFIED (CHECK (V) IF YES OR FOOTNOTE NUMBER FOR COMMENTS BELOW)				SUPPORT DOCUMENTATION ATTACHMENTS (CHECK (V) IF YES — OR IDENTIFY ATTACHMENT NO.)			
	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB
HOLDING TIMES	✓											
BLANK ANALYSIS RESULTS: TARGET COMPOUNDS	✓					✓			✓			
BLANK ANALYSIS RESULTS: TENTATIVE [a,]		✓	✓			✓	✓			✓	✓	
SURROGATE SPIKE RESULTS	✓					✓	✓		✓			
MATRIX SPIKE RESULTS	✓						✓		✓			
DUPLICATE ANALYSIS RESULTS	✓											
TARGET COMPOUND MATCHING QUALITY	✓											
TENTATIVELY IDENTIFIED COMPOUNDS[a]		✓	✓									
DFTPP & BFB SPECTRUM TUNE RESULTS	•	✓	✓				✓			✓	✓	
GC INSTRUMENT PERFORMANCE	✓						✓		✓			
INITIAL CALIBRATIONS	✓					✓	✓		✓			
CONTINUING CALIBRATIONS	✓					✓	✓	✓	✓			
QUANTITATION OF RESULTS	✓											
OTHERS sample identification	✓				✓				✓			

COMMENTS: Data is acceptable, unless otherwise qualified.

Support documentation is arranged by fraction (VOA, BNA, P/PCB).

BLANK ANALYSIS RESULTS FOR [illegible]

FRACTION	TYPE/ MATRIX	SAMPLE #	SOURCE	CONTAMINANT (CONCENTRATION)
VOA	Method / Aq	BLK 5/22/91 (HP-2)	ARDL	5 ug/L acetone
VOA	Method/Aq	BLK 5/22/91 (HP-4)	ARDL	11 ug/L methylene chloride
VOA	Method/Aq	BLK 5/28/91	ARDL	6 ug/L methylene chloride
VOA	Method/Aq	BLK 6/3/91	ARDL	9 ug/L methylene chloride
VOA	Field / Aq	LO-16W3FB	–	8 ug/L methylene chloride
VOA	Trip / Aq	LO-16WTRB2	–	6 ug/L methylene chloride
BNA	Method / Aq	Blank B1349	ARDL	none
P/PCB	Method / Aq	PBLK1348	ARDL	none
BNA	Field / Aq	LO-16W3-FB	–	5ug/L butylbenzylphthalate
P/PCB	↓	↓	↓	none

LABORATORY REPORTED FIELD BLANK IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN THE SAMPLE ANALYTICAL DATA SUMMARY. TICs IN BLANKS ARE LISTED ON A SEPERATE FORM.

COMMENTS:

(1) RESULT REPORTED BY THE LABORATORY AND CONFIRMED BY REVIEWER

(2) RESULT INFERED FROM QUANTITATION LIST, CHROMATOGRAM AND/OR SPECTRUM

Case 111918

BLANK ANALYSIS RESULTS FOR TENTATIVELY IDENTIFIED COMPOUNDS

ALL TENTATIVELY IDENTIFIED COMPOUNDS FOUND IN THE BLANK ANALYSES ARE LISTED BELOW

SAMPLE NUMBER	FRACTION	SCAN	ESTIMATED CONCENTRATION	COMPOUND NAME/ COMMENTS
3-22-91 (MP-2)	VOA			none
BLK 3-22-91 (MP-4)	VOA	312	10	unknown RT 13.25
BLK 3/28/91	VOA			none
BLK 4/3/91	VOA			none
LO-LGW3-FB	VOA	539	5	unknown RT 22.0
LO-LGW-TB2	VOA			none
Blank B1349	BNA	257	4	unknown RT 5.35
		816	4	2-ethyl-1-hexanol RT 10.56
		1056	2	unknown RT 12-81
		1165	2	dimethyl phenol RT 1800
		1735	2	unknown RT - 19.12
LO-LGW3-FB	BNA			refer to data tables
	P/PCB			NA
PBLK 1348	P/PCB			NA

2A

WATER VOLATILE SURROGATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------- Case No.: 111918 SAS No.: ------ SDG No.: ------

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	LO-1MW06D-GW	100	98	98		0
02	LO-1MW04S-FD	103	98	104		0
03	LO-1MW04S-FDMS	97	102	113		0
04	LO-1MW04S-FDMSD	98	103	110		0
05	LO-1MW02S-GW	110	100	100		0
06	LO-1GW3-FB	97	112	110		0
07	LO-1MW06S-GW	102	91	102		0
08	LO-1MW04S-GW	95	130 *	114		1
09	LO-1MW04S-GWRE	101	104	100		0
10	LO-1MW02S-MS/MSD	109	97	109		0
11	LO-1GW-TB2	99	99	105		0
12	BLK 5/22/91 (HP-2)	101	110	103		0
13	BLK 5/22/91 (HP-4)	100	94	102		0
14	BLK 5/28/91	101	106	103		0
15	BLK 6/03/91	97	104	105		0
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromofluorobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

ɔ ne: ARDL, INC. Contract: LENZ OIL

ɔ Code: ------ Case No.: 111918 SAS No.: ------ SDG No.: ------

trix Spike - EPA Sample No.: LO-1MW04S-FD

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0.00	46.00	93	61-145
Trichloroethene	50.00	0.00	44.00	89	71-120
Benzene	50.00	0.00	46.00	92	76-127
Toluene	50.00	0.00	45.00	90	76-125
Chlorobenzene	50.00	0.00	46.00	92	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	46.00	92	1	14	61-145
Trichloroethene	50.00	45.00	90	1	14	71-120
Benzene	50.00	47.00	94	2	11	76-127
Toluene	50.00	45.00	89	1	13	76-125
Chlorobenzene	50.00	45.00	91	1	13	75-130

Column to be used to flag recovery and RPD values with an asterisk
Values outside of qc limits

D: 0 out of 5 outside limits
ike Recovery: 0 out of 10 outside limits

MMENTS: _____

_____

FORM III VOA-1 1/87 Rev.

200008

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

ne: ARDL, INC. Contract: -------

Code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

File ID: >429HF BFB Injection Date: 4/29/91

strument ID: HP- 4 BFB Injection Time: 15:37

trix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	21.7
75	30.0 - 60.0% OF MASS 95	59.5
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.6
17	Less than 2.0% of mass 174	0.0(0.0)1
17	Greater than 50.0% of mass 95	74.3
175	5.0 - 9.0% of mass 174	6.3(8.5)1
176	Greater than 95.0%, but less than 101.0% of mass 174	72.6(97.7)1
177	5.0 - 9.0% of mass 176	6.4(8.8)2

1-Value is % mass 174 2-Value is % mass 176

IF TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>H6911	4/29/91	16:32
02	VOA STD	20 NG STD	>H6912	4/29/91	17:37
03	VOA STD	100 NG STD	>H6914	4/29/91	18:58
04	VOA STD	150 NG STD	>H6915	4/29/91	19:40
05	VOA STD	200 NG STD	>H6916	4/29/91	20:21
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: ---------- Instrument ID: HF-4 ----------

C... actor: ARDL,INC Calibration Date: 04/29/91 ----------

Contract No: ----------

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >H6912 RF 20.00	>H6911 RF 50.00	>H6914 RF 100.00	>H6915 RF 150.00	>H6916 RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Chloromethane	.60441	.51215	.57041	.57393	.57101	.152	.56638	5.910		**	
Bromomethane	1.67058	1.34939	1.57433	1.53042	1.57189	.244	1.53932	7.664			
Dichlorodifluoromethane	.17211	.19558	.10897	.08251	.07010	.312	.12586	44.013			
Vinyl Chloride	.98499	.91808	.92176	1.22526	1.21370	.319	1.05276	14.681	*		
Chloroethane	.67492	.57662	.62833	.65496	.67873	.429	.64271	6.537			
Iodomethane	3.19658	3.24501	3.20664	3.40983	3.49397	.602	3.31040	4.041			
Methylene Chloride	1.37199	1.24725	1.91046	1.60710	1.46650	.664	1.52066	16.740			
Acetone	.32844	.21479	.24124	.22377	.22889	.768	.24742	18.707			
2-Propenal	.00388	.00620	.01138	.00894	.00652	.772	.00738	38.797			
Carbon Disulfide	2.20841	2.55774	2.40093	2.67779	2.62541	.826	2.49406	7.643			
Acrylonitrile	.10122	.11417	.10802	.12309	.11347	.834	.11199	7.227	*		
Trichlorofluoromethane	1.87563	1.97327	1.72452	1.86317	1.80805	.895	1.84893	4.951			(Conc=40.0,100.0,200.0,50
1,1-Dichloroethene	1.08002	1.05236	1.02172	1.10529	1.07380	.963	1.06664	2.944	*		
1,1-Dichloroethane	2.41613	2.49898	2.63151	2.79166	2.74135	1.082	2.61592	6.058		**	
-1,2-Dichloroethene	1.13631	1.17316	1.23521	1.23825	1.22969	1.159	1.20252	3.795			
...roform	4.00966	3.90868	4.10525	4.15560	4.03938	1.209	4.04372	2.337	*		
1,2-Dichloroethane-d4	2.71801	2.67599	2.75012	2.81391	2.92017	1.273	2.77564	3.430			(Conc=50.0,50.0,50.0,50.0
1,1,2-Trichlorotrifluoroethane	5.02952	2.55592	2.78395	2.51837	2.21688	1.243	3.02093	37.764			
1,2-Dichloroethane	2.81992	2.95590	3.06650	3.11697	3.09782	1.284	3.01140	4.115			
Tetrahydrofuran	.07170	.06804	.06772	.06046	.06153	1.098	.06593	7.233			
2-Butanone	.01216	.01360	.01660	.01590	.01697	652	.01505	13.799			
Dibromomethane	.46785	.45675	.45121	.44834	.44661	.650	.45415	1.887			
Ethyl Ether	.12839	.13619	.12720	.11887	.10625	.605	.12338	9.217			
Propane, 2-methoxy-2-methyl-	.75876	.76821	.73660	.72700	.72646	.696	.74341	2.564			
1,1,1-Trichloroethane	.92947	.98154	.99884	.96572	.97947	.702	.97101	2.681			
Carbon Tetrachloride	.93000	.99373	.97953	.96705	.98352	.720	.97077	2.546			
Ethyl Acetate	.10972	.11688	.11895	.11913	.11278	.723	.11549	3.565			
Vinyl Acetate	.25120	.26297	.22775	.21266	.04740	.738	.20039	43.790			
Bromodichloromethane	.89073	.96334	.98155	.96829	.99422	.747	.95963	4.205			
1,2-Dichloropropane	.29441	.29859	.32252	.30413	.31958	.812	.30784	4.087	*		

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300110

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-4

Co. actor: ARDL,INC Calibration Date: 04/29/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30%

Laboratory ID: >H6912 >H6911 >H6914 >H6915 >H6916

Compound	RF 20.00	RF 50.00	RF 100.00	RF 150.00	RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
cis-1,3-Dichloropropene	.65899	.61933	.63084	.61614	.65294	.824	.63565	3.061			(Conc=28.0,70.0,140.0,210
Trichloroethene	.47618	.49149	.49566	.46389	.55178	.853	.49580	6.806			
Benzene	.67056	.66135	.69937	.68596	.72831	.879	.68911	3.816			
Dibromochloromethane	.66758	.75881	.76494	.74324	.79033	.877	.74498	6.259			
trans-1,3-Dichloropropene	.55143	.46620	.50691	.50563	.53339	.896	.51271	6.300			(Conc=12.0,30.0,60.0,90.0
1,1,2-Trichloroethane	.31066	.29896	.31844	.30022	.30550	.884	.30675	2.612			
C ethylvinylether	.07443	.07042	.07523	.07128	.07307	.937	.07289	2.794			(Conc=40.0,100.0,200.0,30
Bromoform	.43469	.51977	.50220	.54679	.55943	1.002	.51258	9.553		**	
4-Methyl-2-Pentanone	.21967	.25993	.24459	.23533	.22815	.841	.23753	6.534			
Paraldehyde	.06842	.04232	.04541	.04570	.04362	.892	.04909	22.181			
1,2,3-Trichloropropane	.38701	.41290	.39993	.40342	.39902	.897	.40045	2.325	*		
2-Hexanone	.28038	.25467	.24215	.23749	.20579	.901	.24410	11.112			
Tetrachloroethene	.54417	.57657	.55887	.58773	.58612	.911	.57069	3.286			
trans-1,4-Dichloro-2-butene	.06849	.07641	.07958	.08718	.09841	.920	.08201	13.844			
2-Tetrachloroethane	.35836	.38239	.39430	.40916	.36037	.906	.37692	7.424		**	
ne-d8	1.04017	1.08300	1.06194	1.11148	1.10109	.955	1.07954	2.683			(Conc=50.0,50.0,50.0,50.0
Ethyl methacrylate	.40164	.39598	.39209	.40967	.37707	.957	.39529	3.072			
Toluene	.55778	.59923	.59388	.62347	.61171	.963	.59721	4.160	*		
Chlorobenzene	.88564	.94218	.95664	1.02804	1.00893	1.004	.96429	5.864		**	
Ethylbenzene	.40088	.42627	.42878	.43617	.42378	1.073	.42318	3.142	*		
Bromofluorobenzene	1.06659	1.08613	1.11373	1.08539	1.12056	1.153	1.09448	2.033			(Conc=50.0,50.0,50.0,50.0
Styrene	.90608	.94138	.98124	.94232	1.01397	1.199	.95700	4.335			
m-Xylene	.57497	.54871	.56635	.53987	.56780	1.209	.55954	2.616			
o -Xylene	.65943	.54709	.56831	.54684	.57909	1.239	.58015	8.006			(Conc=40.0,100.0,200.0,30

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

* - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300111

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

b me: ARDL, INC. Contract: -------

b Code: ------- Case No.: ------- SAS No.: ------ SDG No.: -------

b File ID: >HF522 BFB Injection Date: 5/22/91

strument ID: HP- 4 BFB Injection Time: 9:07

trix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	20.6
75	30.0 - 60.0% OF MASS 95	59.8
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.9
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	75.9
175	5.0 - 9.0% of mass 174	6.7(8.8)1
176	Greater than 95.0%, but less than 101.0% of mass 174	72.7(95.7)1
177	5.0 - 9.0% of mass 176	6.4(8.9)2

1-Value is % mass 174 2-Value is % mass 176

:I UNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
50 NG STD	VOA STD	>H7293	5/22/91	9:47
BLK 5/22/91(HP-4)	BLK 5/22/91(HP-4)	>H7294	5/22/91	10:46
LO-1GW-TB2	111918-8	>H7295	5/22/91	11:38
9119AFT019WA	917-2	>H7297	5/22/91	13:00
9119AFT020WA	917-3	>H7298	5/22/91	13:41
9119AFT023WA	917-4	>H7299	5/22/91	14:30
LO-1MW06D-GW	111918-1	>H7300	5/22/91	15:11
LO-1MW04S-FD	111918-2	>H7301	5/22/91	15:53
LO-1MW06S-GW	111918-5	>H7304	5/22/91	17:56
09SWG1201	915-7	>H7305	5/22/91	18:36
09SWG2601	915-8	>H7306	5/22/91	19:17
09SWG2101	915-9	>H7307	5/22/91	19:58
09SWB2103	915-12	>H7308	5/22/91	20:39

ge 1 of 1

300008

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/22/91

C tor: HRDL,INC | Time: 09:47

Contract No: | Laboratory ID: >H7293

Instrument ID: HP-4 | Initial Calibration Date: 04/30/91

Minimum $\overline{RF}$ for SPCC is 0.3 | Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.56638	.44060	22.21		**	
Bromomethane	1.53932	1.52417	.98			
Dichlorodifluoromethane	.12586	1.60181	1172.73			
Vinyl Chloride	1.05276	.80359	23.67	*		
Chloroethane	.64271	.60799	5.40			
Iodomethane	3.31040	2.74310	17.14			
Methylene Chloride	1.52066	1.61783	6.39			
A ne	.24742	.79105	219.71			
2-rropenal	.00738	.00593	19.62			
Carbon Disulfide	2.49406	1.65735	33.71			
Acrylonitrile	.11199	.11248	.43			
Trichlorofluoromethane	1.84893	1.45228	21.45			(Conc=100.00)
1,1-Dichloroethene	1.06664	.91598	14.12	*		
1,1-Dichloroethane	2.61592	2.52917	3.32		**	
trans-1,2-Dichloroethene	1.20252	1.17802	2.04			
sform	4.04372	4.34033	7.34	*		
1,_ Dichloroethane-d4	2.77564	3.19163	14.99			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	3.02093	4.05152	34.11			
1,2-Dichloroethane	3.01140	3.30644	9.80			
Tetrahydrofuran	.06593	.06501	1.39			
2-Butanone	.01505	.00906	39.79			
Dibromomethane	.45415	.57843	27.36			
Ethyl Ether	.12338	.18161	47.20			
Propane, 2-methoxy-2-methyl-	.74341	.99001	33.17			
.-Trichloroethane	.97101	1.23422	27.11			
Carbon Tetrachloride	.97077	1.21845	25.51			
Ethyl Acetate	.11549	.12231	5.91			
Vinyl Acetate	.20039	.29445	46.94			
Bromodichloromethane	.95963	1.22868	28.04			
1,2-Dichloropropane	.30784	.34634	12.50	*		
cis-1,3-Dichloropropene	.63565	.72776	14.49			(Conc=70.00)
Trichloroethene	.49580	.56341	13.64			

LO-1GW-TB2
LO-1MOWD-GW
LO-1MW04S-FD
LO-1MW06S-GW

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300164

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/22/91

Laboratory: ARDL,INC Time: 09:47

Contract No: Laboratory ID: >H7293

Instrument ID: HP-4 Initial Calibration Date: 04/30/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Benzene	.68911	.73960	7.33			
Dibromochloromethane	.74498	.89382	19.98			
trans-1,3-Dichloropropene	.51271	.58621	14.33			(Conc=30.00)
1,1,2-Trichloroethane	.30675	.38401	25.18			
Chloroethylvinylether	.07289	.07256	.45			(Conc=100.00)
Bromoform	.51258	.54155	5.65		**	
4-Methyl-2-Pentanone	.23753	.18678	21.36			
Paraldehyde	.04909	.03657	25.51			
1,2,3-Trichloropropane	.40045	.47266	18.03			
2-Hexanone	.24410	.06194	74.62			
Tetrachloroethene	.57069	.65404	14.60			
trans-1,4-Dichloro-2-butene	.08201	.03678	55.16			
1,1,2,2-Tetrachloroethane	.37692	.37805	.30		**	
Toluene-d8	1.07954	1.26453	17.14			(Conc=50.00)
methacrylate	.39529	.37724	4.57			
[illegible]zene	.59721	.65618	9.87	*		
Chlorobenzene	.96429	1.09794	13.86		**	
Ethylbenzene	.42318	.48675	15.02	*		
Bromofluorobenzene	1.09448	1.28851	17.73			(Conc=50.00)
Styrene	.95700	1.09803	14.74			
m-Xylene	.55954	.64785	15.78			
o & p-Xylene	.58015	.65881	13.56			(Conc=100.00)

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

* - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300165

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

ɔ ne: ARDL,INC Contract: -------

ɔ Code: ------- Case No.: ----- SAS No.: ------ SDG No.: -------

ɔ File ID: >B519F BFB Injection Date: 5/19/91

strument ID: HP- 2 BFB Injection Time: 14:44

trix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	20.1
75	30.0 - 60.0% OF MASS 95	51.6
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.1
17[illegible]	Less than 2.0% of mass 174	1.1(1.2)1
17	Greater than 50.0% of mass 95	91.6
175	5.0 - 9.0% of mass 174	6.5(7.1)1
176	Greater than 95.0%, but less than 101.0% of mass 174	91.2(99.6)1
177	5.0 - 9.0% of mass 176	7.7(8.4)2

1-Value is % mass 174 2-Value is % mass 176

I[illegible] UNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	20 NG STD	>V9140	5/19/91	15:57
02	VOA STD	50 NG STD	>V9141	5/19/91	16:48
03	VOA STD	100 NG STD	>V9142	5/19/91	17:38
04	VOA STD	150 NG STD	>V9143	5/19/91	18:29
05	VOA STD	200 NG STD	>V9144	5/19/91	19:19
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-2

Co. tor: ARDL, INC. Calibration Date: 05/20/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>V9140	>V9141	>V9142	>V9143	>V9144					
Compound	RF 20.00	RF 50.00	RF 100.00	RF 150.00	RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Chloromethane	.53741	.59510	.51149	.51349	.58860	.148	.54922	7.337		**
Bromomethane	1.08959	1.12508	.93658	.98067	1.06477	.239	1.03934	7.534		
Dichlorodifluoromethane	.05848	.04216	.01910	.01797	.02022	.309	.03159	57.189		
Vinyl Chloride	1.01610	1.07195	.74055	.77547	.82760	.314	.88634	16.762	*	
Chloroethane	.69032	.70813	.62738	.69623	.74688	.422	.69379	6.222		
Iodomethane	3.21760	3.11720	2.84419	3.09947	3.28399	.598	3.11249	5.391		
Methylene Chloride	1.57537	1.12978	1.03881	1.10748	1.18497	.664	1.20708	17.598		
Acetone	.21843	.60659	.21546	.22221	.20522	.761	.29358	59.639		
2-Propenal	.11925	.07180	.06313	.05727	.06127	.771	.07454	34.272		
Carbon Disulfide	3.08254	2.41111	2.22045	2.38250	2.53198	.819	2.52572	13.085		
Acrylonitrile	.23366	.16884	.16404	.17278	.15442	.829	.17875	17.598		
Trichlorofluoromethane	1.46684	1.09211	.98153	1.07537	1.14017	.877	1.15120	16.122		(Conc=40.0,100.0,200.0,30
Methane, oxybis[chloro-	3.86372	3.83327	5.69255	3.82597	.87990	.977	3.61908	47.761		
1,1-Dichloroethene	1.25954	.92438	.84548	.90177	.94974	.955	.97618	16.699	*	
1 hloroethane	3.09131	2.31130	2.19950	2.37084	2.56082	1.076	2.50675	14.043		**
Te .udrofuran	.11051	.08643	.00439	.08213	.07348	1.063	.07139	55.877		
trans-1,2-Dichloroethene	1.46541	1.10148	1.03477	1.10033	1.17259	1.153	1.17492	14.431		
Chloroform	4.36649	3.31727	3.16606	3.40779	3.69587	1.206	3.59070	13.221	*	
1,2-Dichloroethane-d4	5.54208	2.32821	1.07075	.81119	.64083	1.268	2.07861	98.439		
1,1,2-Trichlorotrifluoroethane	2.51905	2.13230	1.74518	1.86692	1.95847	1.235	2.04438	14.703		
1,2-Dichloroethane	3.27074	2.51724	2.40036	2.53949	2.67276	1.276	2.68012	12.837		
2-Butanone	.02313	.04444	.02483	.02458	.02242	.650	.02788	33.394		
Dibromomethane	.73134	.68097	.74129	.68455	.65210	.655	.69805	5.343		
Ethyl Ether	.19125	.16694	.17334	.15832	.15423	.606	.16882	8.636		
Propane,2-methoxy-2-methyl-	.82548	.76714	.81713	.75096	.72067	.697	.77627	5.727		
1,1,1-Trichloroethane	1.13164	.85348	.94244	.90892	.95780	.704	.95886	10.904		
Carbon Tetrachloride	1.08124	.81828	.89787	.87993	.92174	.723	.91981	10.658		
Ethyl Acetate	.29839	.23179	.26478	.54313	.22093	.725	.31181	42.596		
Vinyl Acetate	.70132	.40034	.52844	.54313	.42518	.739	.51968	22.928		
Bromodichloromethane	1.29934	.98431	1.10268	1.06381	1.10419	.751	1.11087	10.446		

add conc.

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

C - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300137

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-2

Contractor: ARDL, INC. Calibration Date: 05/20/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >V9140 RF 20.00	>V9141 RF 50.00	>V9142 RF 100.00	>V9143 RF 150.00	>V9144 RF 200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
,2-Dichloropropane	.50756	.37660	.41148	.39293	.40557	.814	.41883	12.266	*		
is-1,3-Dichloropropene	.93698	.69771	.79111	.75613	.77585	.827	.78956	11.247			(Conc=28.0,70.0,140.0,210
richloroethene	.77469	.56445	.59702	.56842	.58784	.855	.61848	14.285			
enzene	1.09420	.80874	.87701	.83172	.86298	.878	.89493	12.798			
ibromochloromethane	1.28181	.96053	1.06743	1.00978	.99922	.881	1.06375	12.011			
rans-1,3-Dichloropropene	2.13628	1.62799	1.92259	1.76429	1.81032	.827	1.84230	11.247			(Conc=12.0,30.0,60.0,90.0
,1 Trichloroethane	.54509	.39539	.43354	.39654	.38388	.886	.43089	15.458			
hlo. ethylvinylether	.13618	.01615	.11276	.06092	.08544	.939	.08229	56.59			(Conc=40.0,100.0,200.0,30
romoform	1.06624	.78867	.87711	.83388	.77740	1.006	.86866	13.505		**	
-Methyl-2-Pentanone	.42666	.35386	.37229	.32223	.28337	.840	.35168	15.303			
araldehyde	.09613	.00570	.08154	.07206	.06223	.893	.06355	54.563			
,2,3-Trichloropropane	.66533	.56969	.58161	.54770	.49396	.898	.57166	10.885			
-Hexanone	.22901	.37750	.36452	.25640	.21904	.900	.28929	26.264			
etrachloroethene	.92726	.67531	.71472	.67108	.68959	.912	.73559	14.749			
,4-Dichloro-2-butene	.15317	.14747	.16425	.16032	.14427	.921	.15389	5.461			
,2 Tetrachloroethane	.86715	.60803	.65350	.62572	.56758	.908	.66440	17.693		**	
oluene-d8	1.22042	1.22637	1.20713	1.21706	1.20567	.954	1.21533	.726			(Conc=50.0,50.0,50.0,50.0
thyl methacrylate	.59350	.52672	.58341	.53586	.49367	.957	.54663	7.580			
oluene	.93533	.69582	.73040	.70687	.72796	.961	.75928	13.101	*		
hlorobenzene	1.51216	1.11024	1.19202	1.14234	1.18200	1.004	1.22775	13.219		**	
thylbenzene	.66742	.49851	.51890	.48569	.50655	1.074	.53541	13.966	*		
romofluorobenzene	1.08666	1.11775	1.08033	1.08101	1.07503	1.153	1.08816	1.567			(Conc=50.0,50.0,50.0,50.0
tyrene	1.48335	1.15216	1.18841	1.13285	1.17213	1.199	1.22179	12.136			
-X e	.70721	.68222	.70292	.65685	.67755	1.208	.68535	2.981			
& p-Xylene	.82580	.70870	.72625	.68871	.71316	1.237	.73252	7.352			(Conc=40.0,100.0,200.0,30
,4-Dichlorobenzene	1.60233	1.52174	1.57364	1.45723	1.48454	1.380	1.52790	3.946			

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CC Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300138

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, INC. Contract: ------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >B528F BFB Injection Date: 5/28/91

Instrument ID: HP- 2 BFB Injection Time: 15:38

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	26.4
75	30.0 - 60.0% OF MASS 95	59.6
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	9.0
173	Less than 2.0% of mass 174	1.1(1.5)1
174	Greater than 50.0% of mass 95	73.5
175	5.0 - 9.0% of mass 174	5.7(7.7)1
176	Greater than 95.0%, but less than 101.0% of mass 174	70.3(95.7)1
177	5.0 - 9.0% of mass 176	5.3(7.6)2

1-Value is % mass 174 2-Value is % mass 176

THE ABOVE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V9313	5/28/91	15:57
02	BLK 5/28/91	BLK 5/28/91	>V9314	5/28/91	17:05
03	6276A-039RE	300026-6RE	>V9319	5/28/91	21:12
04	LO-1MW04S-GWRE	111918-6RE	>V9320	5/28/91	22:00
05					
06					
07					
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21					

300010

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/28/91

C tor: ARDL, INC. Time: 15:57

Contract No: Laboratory ID: 209313

Instrument ID: HP-2 Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.54922	.32585	40.67		**	
Bromomethane	1.03934	1.29619	24.71			
Dichlorodifluoromethane	.03159	.79488	2416.38			
Vinyl Chloride	.88634	.85531	3.50	*		
Chloroethane	.69379	.59962	13.57			
Iodomethane	3.11249	1.62115	47.91			
Methylene Chloride	1.20708	1.44483	19.70			
Ac ne	.29358	.25505	13.12			
2-Propenal	.07454	.06518	12.56			
Carbon Disulfide	2.52572	2.81885	11.61			
Acrylonitrile	.17875	.19048	6.56			
Trichlorofluoromethane	1.15120	2.29852	99.64			(Conc=100.00)
Methane, oxybis[chloro-	3.61908	.98054	72.91			
1,1-Dichloroethene	.97618	1.11100	13.81	*		
1 hloroethane	2.50675	2.48269	.96		**	
T ydrofuran	.07139	.09357	31.07			
trans-1,2-Dichloroethene	1.17492	1.13061	3.77			
Chloroform	3.59070	3.72106	3.63	*		
1,2-Dichloroethane-d4	2.33669	2.95933	26.65			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.04438	3.72671	82.29			
1,2-Dichloroethane	2.68012	3.21661	20.02			
2-Butanone	.02788	.02428	12.90			
Dibromomethane	.59805	.74283	6.41			
Et Ether	.16882	.19100	13.14			
ropane,2-methoxy-2-methyl-	.77627	.91741	18.18			
1,1,1-Trichloroethane	.95886	1.21043	26.24			
Carbon Tetrachloride	.91981	1.18776	29.13			
Ethyl Acetate	.31181	.27284	12.50			
Vinyl Acetate	.51968	.53347	2.65			
Bromodichloromethane	1.11087	1.25960	13.39			
1,2-Dichloropropane	.41883	.34956	16.54	*		
cis-1,3-Dichloropropene	.78956	.74246	5.96			(Conc=70.00)

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

Diff - % Difference from original average or curve

CC Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

LO-IMW045-GWRE

300178

Continuing Calibration Check
HSL Compounds

ase No: | Calibration Date: 05/28/91

on er: ARDL, INC. | Time: 15:57

ontract No: | Laboratory ID: >09315

Instrument ID: HP-2 | Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 | Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
richloroethene	.61848	.56590	8.50			
enzene	.89493	.78063	12.77			
ibromochloromethane	1.06375	1.11357	4.68			
rans-1,3-Dichloropropene	1.84230	1.73240	5.96			(Conc=30.00)
,1,2-Trichloroethane	.43089	.40542	5.91			
hloroethylvinylether	.08229	.11141	35.39			(Conc=100.00)
romoform	.86866	.93048	7.12		**	
-Methyl-2-Pentanone	.35168	.32958	6.28			
araldehyde	.06353	.09267	45.86			
,2,3-Trichloropropane	.57166	.65505	14.59			
-Hexanone	.28929	.24743	14.47			
etrachloroethene	.73559	.66573	9.50			
rans-1,4-Dichloro-2-butene	.15389	.15806	2.71			
,1,2,2-Tetrachloroethane	.66440	.63464	4.48		**	
oluene-d8	1.21533	1.17192	3.57			(Conc=50.00)
th acrylate	.54663	.55231	1.04			
oluene	.75928	.64515	15.03	*		
hlorobenzene	1.22775	1.05897	13.75		**	
thylbenzene	.53541	.46031	14.03	*		
romofluorobenzene	1.08816	1.16270	6.85			(Conc=50.00)
tyrene	1.22178	1.01283	17.10			
-Xylene	.68535	.63063	7.98			
& p-Xylene	.73252	.58428	20.24			(Conc=100.00)
,4-Dichlorobenzene	1.52790	1.38634	9.26			

F - Response Factor from daily standard file at 50.00 ug/l

$\overline{F}$ - Average Response Factor from Initial Calibration Form VI

Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

ɔ ne: ARDL, INC. Contract: -------

ɔ Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

ɔ File ID: >B5F22 BFB Injection Date: 5/22/91

strument ID: HP- 2 BFB Injection Time: 12:28

trix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	23.9
75	30.0 - 60.0% OF MASS 95	56.5
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.9
17	Less than 2.0% of mass 174	1.3(1.4)1
17±	Greater than 50.0% of mass 95	91.0
175	5.0 - 9.0% of mass 174	7.0(7.7)1
176	Greater than 95.0%, but less than 101.0% of mass 174	90.2(99.1)1
177	5.0 - 9.0% of mass 176	7.1(7.9)2

1-Value is % mass 174 2-Value is % mass 176

I NE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	VOA STD	50 NG STD	>V9189	5/22/91	13:20
2	BLK 5/22/91(HP-2)	BLK 5/22/91(HP-2)	>V9190	5/22/91	14:25
3	018WA	917-1	>V9191	5/22/91	15:48
4	LO-1MW04S-GW	111918-6	>V9192	5/22/91	16:33
5	-1MW02S-MS/MSD	111918-7	>V9193	5/22/91	17:18
6	024WA	917-5	>V9194	5/22/91	18:04
7	025WA	917-6	>V9195	5/22/91	18:49
8	026WA	917-7	>V9196	5/22/91	19:34
9	027WA	917-8	>V9197	5/22/91	20:19
0	028WA	917-9	>V9198	5/22/91	21:05
1	LO-1GW3-FB	111918-4	>V9218	5/22/91	23:08
2	LO-1MW02S-GW	111918-3	>V9219	5/22/91	23:53
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1					
2					

ɟe 1 of 1

FORM V VOA 1/87 Rev.

300003

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/22/91

Co.. ..ctor: ARDL, INC. Time: 13:20

Contract No: Laboratory ID: >U9189

Instrument ID: HP-2 Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.54922	.40580	26.11		**	
Bromomethane	1.03934	1.48698	43.07			
Dichlorodifluoromethane	.03159	1.37239	4244.77			
Vinyl Chloride	.88634	1.08672	22.61	*		
Chloroethane	.69379	.70049	.97			
Iodomethane	3.11249	3.33029	7.00			
Methylene Chloride	1.20708	1.45070	20.18			
Acetone	.29358	.20009	31.84			
2-Propenal	.07454	.07954	6.70			
Carbon Disulfide	2.52572	1.67171	33.81			
Acrylonitrile	.17875	.15291	14.45			
Trichlorofluoromethane	1.15120	1.23650	7.41			(Conc=100.00)
Methane, oxybis[chloro-	3.61908	.97369	73.10			
1,1-Dichloroethene	.97618	.75696	22.46	*		
1 hloroethane	2.50675	2.24673	10.37		**	
Te..ahydrofuran	.07139	.08816	23.50			
trans-1,2-Dichloroethene	1.17492	.97358	17.14			
Chloroform	3.59070	3.82886	6.63	*		
1,2-Dichloroethane-d4	2.33669	3.04386	30.26			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.04438	3.34656	63.70			
1,2-Dichloroethane	2.68012	3.22876	20.47			
2-Butanone	.02788	.01224	56.08			
Dibromomethane	.69805	.76065	8.97			
Ethyl Ether	.16882	.19481	15.40			
Propane,2-methoxy-2-methyl-	.77627	.90771	16.93			
1,1,1-Trichloroethane	.95886	1.18536	23.62			
Carbon Tetrachloride	.91981	1.17335	27.56			
Ethyl Acetate	.31181	.25246	19.03			
Vinyl Acetate	.51968	.06979	86.57			
Bromodichloromethane	1.11087	1.24037	11.66			
1,2-Dichloropropane	.41883	.35565	15.08	*		
cis-1,3-Dichloropropene	.78956	.75879	3.90			(Conc=70.00)

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

C.. Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

LO-1MW04S-GW
LO-1MW02S-MS/MSD
LO-1GW3-FB
LO-1MW02S-GW

300171

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/22/91

Contractor: HRDL, INC. Time: 15:20

Contract No: Laboratory ID: >09189

Instrument ID: HP-2 Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Trichloroethene	.61848	.66533	7.57			
Benzene	.89493	.72697	18.77			
Dibromochloromethane	1.06375	1.19003	11.87			
trans-1,3-Dichloropropene	1.84230	1.77052	3.90			(Conc=30.00)
1,1,2-Trichloroethane	.43089	.42508	1.35			
Chloroethylvinylether	.08229	.11042	34.19			(Conc=100.00)
Bro m	.86866	.96052	10.57		**	
4-Methyl-2-Pentanone	.35168	.29545	15.99			
Paraldehyde	.06353	.09086	43.01			
1,2,3-Trichloropropane	.57166	.62137	8.70			
2-Hexanone	.28929	.16145	44.19			
Tetrachloroethene	.73559	.69365	5.70			
trans-1,4-Dichloro-2-butene	.15389	.14839	3.58			
1,1,2,2-Tetrachloroethane	.66440	.49862	24.95		**	
To 8	1.21533	1.21509	.02			(Conc=50.00)
Ethyl methacrylate	.54663	.50738	7.18			
Toluene	.75928	.66330	12.64	*		
Chlorobenzene	1.22775	1.08640	11.51		**	
Ethylbenzene	.53541	.46790	12.61	*		
Bromofluorobenzene	1.08816	1.19409	9.74			(Conc=50.00)
Styrene	1.22178	1.08171	11.46			
m-Xylene	.68535	.61474	10.30			
o & Xylene	.73252	.66547	9.15			(Conc=100.00)
1,4 chlorobenzene	1.52790	1.37492	10.01			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300172

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

) ie: ARDL, INC. Contract: --------

) Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

) File ID: >B6C03 BFB Injection Date: 6/03/91

:trument ID: HP- 2 BFB Injection Time: 21:06

:rix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

)/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	23.0
75	30.0 - 60.0% OF MASS 95	57.4
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.8
73	Less than 2.0% of mass 174	0.0(0.0)1
74	Greater than 50.0% of mass 95	94.7
75	5.0 - 9.0% of mass 174	6.4(6.8)1
76	Greater than 95.0%, but less than 101.0% of mass 174	92.3(97.5)1
77	5.0 - 9.0% of mass 176	6.6(7.1)2

1-Value is % mass 174 2-Value is % mass 176

:E NE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V9417	6/03/91	21:44
02	BLK 6/03/91	BLK 6/03/91	>V9418	6/03/91	22:44
03	LO-1MW04S-FDMS	111918-2MS	>V9421	6/04/91	1:13
04	LO-1MW04S-FDMSD	111918-2MSD	>V9422	6/04/91	2:00
05	LO-1G104D-GWMS	111908-2MS	>V9423	6/04/91	2:46
06	LO-1G104D-GWMSD	111908-2MSD	>V9424	6/04/91	3:33
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22					

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 06/03/91

Contractor: ARDL, INC. Time: 21:44

Contract No: Laboratory ID: >V9417

Instrument ID: HP-2 Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.54922	.38941	29.10		**	
Bromomethane	1.03934	1.40464	35.15			
Dichlorodifluoromethane	.03159	.24053	661.48			
Vinyl Chloride	.88634	.89536	1.02	*		
Chloroethane	.69379	.60592	12.67			
Iodomethane	3.11249	4.18523	34.47			
Methylene Chloride	1.20708	1.31234	8.72			
Acetone	.29358	.28735	2.12			
2-Propenal	.07454	.04699	36.96			
Carbon Disulfide	2.52572	2.46282	2.49			
Acrylonitrile	.17875	.12353	30.89			
Trichlorofluoromethane	1.15120	1.80944	57.18			(Conc=100.00)
Methane, oxybis[chloro-	3.61908	.74209	79.50			
1,1-Dichloroethene	.97618	.96258	1.39	*		
1,1-Dichloroethane	2.50675	2.20205	12.16		**	
Tetrahydrofuran	.07139	.06908	3.23			
trans-1,2-Dichloroethene	1.17492	1.03299	12.08			
Chloroform	3.59070	3.51536	2.10	*		
1,2-Dichloroethane-d4	2.33669	2.73356	16.98			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.04438	2.40802	17.79			
1,2-Dichloroethane	2.68012	2.99203	11.62			
2-Butanone	.02788	.01981	28.94			
Dibromomethane	.69805	.73469	5.25			
Ethyl Ether	.16882	.16439	2.62			
Propane,2-methoxy-2-methyl-	.77627	.79676	2.64			
1,1,1-Trichloroethane	.95886	1.24634	29.98			
Carbon Tetrachloride	.91981	1.22492	33.17			
Ethyl Acetate	.31181	.22647	27.37			
Vinyl Acetate	.51968	.40912	21.27			
Bromodichloromethane	1.11087	1.29109	16.22			
1,2-Dichloropropane	.41883	.33431	20.18	*		
cis-1,3-Dichloropropene	.78956	.72482	8.20			(Conc=70.00)

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

LO-1MW045-FORMS
-MSP
LO-G1045-GWMS
LO-1G104D-GWMS/D

300185

Continuing Calibration Check
HSL Compounds

ase No: Calibration Date: 06/03/91

...ctor: ARDL, INC. Time: 21:44

ontract No: Laboratory ID: >V9417

nstrument ID: HP-2 Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
richloroethene	.61848	.59862	3.21			
enzene	.89493	.74153	17.14			
ibromochloromethane	1.06375	1.12237	5.51			
rans-1,3-Dichloropropene	1.84230	1.69126	8.20			(Conc=30.00)
,1,2-Trichloroethane	.43089	.37608	12.72			
hloroethylvinylether	.08229	.10003	21.57			(Conc=100.00)
romoform	.86866	.92677	6.69		**	
-Methyl-2-Pentanone	.35168	.27742	21.12			
araldehyde	.06353	.07808	22.91			
,2,3-Trichloropropane	.57166	.56918	.43			
-Hexanone	.28929	.22666	21.65			
etrachloroethene	.73559	.72672	1.21			
rans-1,4-Dichloro-2-butene	.15389	.13596	11.65			
,1 ? ?-Tetrachloroethane	.66440	.54664	17.72		**	
ɔ 38	1.21533	1.18514	2.48			(Conc=50.00)
thyl methacrylate	.54663	.45963	15.92			
oluene	.75928	.64832	14.61	*		
hlorobenzene	1.22775	1.04484	14.90		**	
thylbenzene	.53541	.44740	16.44	*		
romofluorobenzene	1.08816	1.18510	8.91			(Conc=50.00)
tyrene	1.22178	1.01225	17.15			
-Xylene	.68535	.57682	15.84			
& p-Xylene	.73252	.56221	23.25			(Conc=100.00)
,4-Dichlorobenzene	1.52790	1.54462	1.09			

F - Response Factor from daily standard file at 50.00 ug/l

$\overline{F}$ - Average Response Factor from Initial Calibration Form VI

Diff - % Difference from original average or curve

CC Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL,INC. Contract: ----------

Lab code: ------ Case No.: ------ SAS No.: ------ SDG No.: -------

Lab File ID (Standard): >V9189 Date Analyzed: 05/22/91

Instrument ID: HP- 2 Time Analyzed: 13:20

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

		IS1(BCM)		IS2(DFB)		IS3(CHL)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	160724	10.82	515286	21.30	452603	26.15
	UPPER LIMIT	321448	11.32	1030572	21.80	905206	26.65
	LOWER LIMIT	80362	10.32	257643	20.80	226302	25.65
	EPA SAMPLE NO.						
1	BLK 5/22/91(HP-2)	128350	10.86	407086	21.33	358500	26.18
2	LO-1MW04S-GW	105412	10.84	344398	21.31	315414	26.16
	LO-1MW02S-MS/MSD	106987	10.78	312707	21.30	249727	26.15
	LO-1GW3-FB	114687	10.79	382418	21.30	371286	26.16
5	LO-1MW02S-GW	126386	10.84	390235	21.28	294036	26.13
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22							

IS1 (BCM) = Bromochloromethane (ISTD 1)
IS2 (DFB) = 1,4-Difluorobenzene (ISTD 2)
IS3 (CHL) = D5-Chlorobenzene (ISTD 3)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ------- Contract: --------

Lab code: ----- Case No.: ----- SAS No.: ----- SDG No.: -----

Lab File ID (Standard): >V9417 Date Analyzed: 06/03/91

Instrument ID: HP-2 Time Analyzed: 21:44

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

	IS1(BCM) AREA #	IS1(BCM) RT	IS2(DFB) AREA #	IS2(DFB) RT	IS3(CHL) AREA #	IS3(CHL) RT
12 HOUR STD	166183	10.81	506123	21.28	440080	26.13
UPPER LIMIT	332366	11.31	1012246	21.78	880160	26.63
LOWER LIMIT	83092	10.31	253062	20.78	220040	25.63
EPA SAMPLE NO.						
1 BLK 6/03/91	136783	10.81	411910	21.32	368527	26.16
2 LO-1MW04S-FDMS	106151	10.77	329703	21.27	292952	26.12
LO-1MW04S-FDMSD	109907	10.76	321039	21.26	286647	26.11
LO-1G104D-GWMS	94516	10.79	298396	21.30	261482	26.18
5 LO-1G104D-GWMSD	95839	10.80	288342	21.31	254044	26.16
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22						

IS1 (BCM) = Bromochloromethane (ISTD 1)
IS2 (DFB) = 1,4-Difluorobenzene (ISTD 2)
IS3 (CHL) = D5-Chlorobenzene (ISTD 3)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL, INC. Contract: -----

Lab code: ------ Case No.: ----- SAS No.: ----- SDG No.: -----

Lab File ID (Standard): >H7293 Date Analyzed: 05/22/91

Instrument ID: HP-4 Time Analyzed: 09:47

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

	IS1(BCM) AREA	#	RT	IS2(DFB) AREA	#	RT	IS3(CHL) AREA	#	RT
12 HOUR STD	35563		10.69	124182		21.27	116402		26.03
UPPER LIMIT	71126		11.19	248364		21.77	232804		26.53
LOWER LIMIT	17781		10.19	62091		20.77	58201		25.53
EPA SAMPLE NO.									
1 BLK 5/22/91(HP-4)	31464		10.69	123471		21.22	110189		26.07
2 LO-1GW-TB2	32123		10.72	129826		21.26	108525		26.06
3 LO-1MW06D-GW	29491		10.67	100945		21.24	89028		25.05
LO-1MW04S-FD	29458		10.62	112503		21.20	97872		25.04
5 LO-1MW06S-GW	26452		10.67	109927		21.24	95308		26.09
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IS1 (BCM) = Bromochloromethane (ISTD 1)
IS2 (DFB) = 1,4-Difluorobenzene (ISTD 2)
IS3 (CHL) = D5-Chlorobenzene (ISTD 3)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL, INC. Contract: ---------

Lab code: ------ Case No.: ------ SAS No.: ------- SDG No.: ------

Lab File ID (Standard): >V9313 Date Analyzed: 05/28/91

Instrument ID: HP-2 Time Analyzed: 15:57

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

		IS1(BCM) AREA #	IS1(BCM) RT	IS2(DFB) AREA #	IS2(DFB) RT	IS3(CHL) AREA #	IS3(CHL) RT
	12 HOUR STD	147236	10.79	475660	21.30	419584	26.15
	UPPER LIMIT	294472	11.29	951320	21.80	839168	26.65
	LOWER LIMIT	73618	10.29	237830	20.80	209792	25.65
	EPA SAMPLE NO.						
1	BLK 5/28/91	129896	10.81	420043	21.32	371716	26.20
2	6276A-039RE	126643	10.81	400684	21.28	365824	26.14
3	LO-1MW04S-GWRE	121040	10.81	384323	21.32	326431	26.18
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IS1 (BCM) = Bromochloromethane (ISTD 1)
IS2 (DFB) = 1,4-Difluorobenzene (ISTD 2)
IS3 (CHL) = D5-Chlorobenzene (ISTD 3)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1MW04S-FDMS

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111918 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WATER Lab Sample ID: 111918-2MS

Sample wt/vol: 5.0 (g/mL) mL Lab File ID: >V9421

Level: (low/med) LOW Date Received: 5/09/91

% Moisture: not dec. --- Date Analyzed: 6/04/91

Column: (pack/cap) PACK Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene_Chloride	3.	JB
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	46.	
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene_(total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	44.	
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	46.	
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	45.	
108-90-7	Chlorobenzene	46.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
108-38-3	m-Xylene	5.	U
106-42-3	o & p-Xylene	5.	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1MW04S-FDMSD

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111918 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WATER Lab Sample ID: 111918-2MSD

Sample wt/vol: 5.0 (g/mL) mL Lab File ID: >V9422

Level: (low/med) LOW Date Received: 5/09/91

% Moisture: not dec. --- Date Analyzed: 6/04/91

Column: (pack/cap) PACK Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10.	U
74-83-9	Bromomethane	10.	U
75-01-4	Vinyl Chloride	10.	U
75-00-3	Chloroethane	10.	U
75-09-2	Methylene_Chloride	3.	JB
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	46.	
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene_(total)	5.	U
67-66-3	Chloroform	5.	U
107-06-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	10.	U
71-55-6	1,1,1-Trichloroethane	5.	U
56-23-5	Carbon Tetrachloride	5.	U
108-05-4	Vinyl Acetate	10.	U
75-27-4	Bromodichloromethane	5.	U
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	45.	
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	47.	
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	5.	U
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	45.	
108-90-7	Chlorobenzene	45.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
108-38-3	m-Xylene	5.	U
106-42-3	o & p-Xylene	5.	U

300248

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	LO-1MW06D-GW	72	60	93	0 *	0 *	0 *		3
02	LO-1MW06D-GWRE	69	61	57	0 *	0 *	0 *		3
03	LO-1MW04S-FD	66	67	67	43	52	65		0
04	LO-1MW02S-GW	68	66	63	25	33	61		0
05	LO-1MW02S-GWRE	72	68	56	22	27	51		0
06	LO-1GW3-FB	62	52	59	36	48	51		0
07	LO-1MW06S-GW	74	62	105	30	43	62		0
08	LO-1MW04S-GW	62	61	84	32	44	58		0
09	LO-1MW02S-MS/MSD	41	40 *	65	20	28	52		1
10	LO-1MW02S-MS/MSDMS	70	64	75	16	20 *	48		1
11	LO-1MW02S-MS/MSDMSD	75	67	94	29	38	64		0
12	BLANK B1349	65	62	61	33	42	72		0
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl-d14	(33-141)
S4 (PHL)	= Phenol-d5	(10- 94)
S5 (2FP)	= 2-Fluorophenol	(21-100)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

\# Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Matrix Spike - EPA Sample No.: LO-1MW02S-MS/MSD

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200.00	0.00	33.00	16	12- 89
2-Chlorophenol	200.00	0.00	56.00	28	27-123
1,4-Dichlorobenzene	100.00	0.00	60.00	60	36- 97
N-Nitroso-di-n-prop.(1)	100.00	0.00	89.00	89	41-116
1,2,4-Trichlorobenzene	100.00	0.00	62.00	62	39- 98
4-Chloro-3-methylphenol	200.00	0.00	64.00	32	23- 97
Acenaphthene	100.00	0.00	71.00	71	46-118
4-Nitrophenol	200.00	0.00	34.00	17	10- 80
2,4-Dinitrotoluene	100.00	0.00	77.00	77	24- 96
Pentachlorophenol	200.00	0.00	87.00	43	9-103
Pyrene	100.00	0.00	69.00	69	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200.00	60.00	30	61 *	42	12- 89
2-Chlorophenol	200.00	99.00	49	55 *	40	27-123
1,4-Dichlorobenzene	100.00	67.00	67	11	28	36- 97
N-Nitroso-di-n-prop.(1)	100.00	96.00	96	8	38	41-116
1,2,4-Trichlorobenzene	100.00	69.00	69	11	28	39- 98
4-Chloro-3-methylphenol	200.00	99.00	50	44	42	23- 97
Acenaphthene	100.00	75.00	75	5	31	46-118
4-Nitrophenol	200.00	41.00	21	21	50	10- 80
2,4-Dinitrotoluene	100.00	78.00	78	1	38	24- 96
Pentachlorophenol	200.00	124.00	62	36	50	9-103
Pyrene	100.00	88.00	88	24	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of qc limits

RPD: 2 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

No impact

COMMENTS: _____

200009

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ARDL, INC. Contract: --------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >529SV DFTPP Injection Date: 5/29/91

Instrument ID: HP- 1 DFTPP Injection Time: 16:21

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	56.4
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	56.
70	Less than 2.0% of mass 69	.2(.4)1
127	40.0 - 60.0% of mass 198	41.5
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
	5.0 - 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	19.8
365	Greater than 1.00% of mass 198	1.50
441	Present, but less than mass 443	10.0
442	Greater than 40.0% of mass 198	65.5
443	17.0 - 23.0% of mass 442	12.5(19.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	20 NG STD	>D5424	5/29/91	16:48
02	BNA STD	160 NG STD	>D5425	5/29/91	17:40
03	BNA STD	50 NG STD	>D5426	5/29/91	18:33
04	BNA STD	80 NG STD	>D5427	5/29/91	20:27
05	BNA STD	120 NG STD	>D5428	5/29/91	21:20
06	LO-1MW04S-FD	111918-2	>D5431	5/30/91	0:13
07	LO-1MW02S-GW	111918-3	>D5432	5/30/91	1:06
08	LO-01MW05S-GWRE	111908-7RE	>D5433	5/30/91	2:00
09	LO-1G105S-FDRE	111908-8RE	>D5434	5/30/91	2:53
10	LO-1GW3-FB	111918-4	>D5435	5/30/91	3:45
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

Contractor: ARDL,INC. Calibration Date: 5/29/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>05424	>05426	>05427	>05428	>05425					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Pyridine	1.35829	1.53421	1.18376	1.28762	1.31937	.416	1.33665	9.579		
n-Nitrosodimethylamine	1.08524	.86822	.90648	.88227	.95525	.424	.93949	9.361		
2-Picoline	1.76644	1.56279	1.58016	1.56001	1.58725	.589	1.61133	5.428		
2-Fluorophenol (Surr 1)	1.03636	1.06682	1.07882	1.11541	1.17245	.741	1.09397	4.773		(Conc=100.0,100.0,100.0,1
Aniline	2.59004	2.23917	2.19024	2.09792	2.13491	.941	2.25046	8.767		
D5 Phenol (Surr 2)	1.55218	1.51905	1.48893	1.43894	1.39009	.953	1.47784	4.354		(Conc=100.0,100.0,100.0,1
Phenol	1.88230	1.68271	1.48282	1.41352	1.32495	.956	1.55726	14.415	*	
bis(-2-Chloroethyl)Ether	2.02127	1.59561	1.45601	1.26974	1.14410	.960	1.49735	22.708		
2-Chlorophenol	1.75599	1.45448	1.35885	1.26120	1.19777	.965	1.40566	15.562		
1,3-Dichlorobenzene	1.84109	1.56096	1.40196	1.28475	1.17694	.991	1.45314	17.859		
1,4-Dichlorobenzene	1.78350	1.49396	1.30738	1.24647	1.07036	1.004	1.38033	19.667	*	
Benzyl Alcohol	.96331	.81031	.82027	.85078	.83977	1.049	.85689	7.186		
1,2-Dichlorobenzene	1.58697	1.30244	1.19335	1.09425	.98954	1.044	1.23331	18.588		
2-Methylphenol	1.54928	1.22131	1.06160	.89651	.86755	1.083	1.11925	24.938		
(2-chloroisopropyl)Ether	2.92413	2.98749	2.12902	2.07052	2.30072	1.081	2.48234	17.766		
ethylphenol	1.36399	1.07964	.95268	.94261	.97111	1.118	1.06201	16.710		
N-Nitroso-Di-n-Propylamine	1.41878	1.02980	1.10489	1.15745	1.25666	1.117	1.19352	17.616	**	
Hexachloroethane	.64020	.51534	.52421	.49869	.46524	1.113	.52874	12.550		
D5 Nitrobenzene (Surr 3)	.47649	.46578	.48928	.46672	.49581	.878	.47842	2.676		(Conc=50.0,50.0,50.0,50.0
Nitrobenzene	.53017	.47913	.47423	.44759	.46506	.802	.47924	6.450		
Isophorone	1.13457	1.00910	1.07698	1.02621	1.03214	.927	1.05580	4.799		
2-Nitrophenol	.27198	.24812	.24579	.22731	.21964	.938	.24257	8.410	*	
2,4-Dimethylphenol	.47364	.42079	.40175	.37792	.39733	.9 o	.41439	8.798		
bis(-2-Chloroethoxy)Methane	.72605	.57734	.60769	.53624	.45821	.971	.58111	16.958		
Benzoic Acid	.21677	.20914	.21768	.21353	.22632	.999	.21669	2.925		
2,4-Dichlorophenol	.39131	.33994	.31490	.25700	.24304	.983	.30924	19.684	*	
1,2,4-Trichlorobenzene	.44937	.39703	.36805	.33299	.31626	.994	.37274	14.231		
Naphthalene	1.32292	1.07657	1.00565	.83731	.79839	1.004	1.00817	20.863		
4-Chloroaniline	.59569	.53233	.51267	.46851	.46313	1.022	.51447	10.498		
Hexachlorobutadiene	.21942	.19769	.18831	.16841	.15027	1.041	.18482	14.411	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400189

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

Contractor: ARDL,INC. Calibration Date: 3/29/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >05424 RF 20.00	>05426 RF 50.00	>05427 RF 80.00	>05428 RF 120.00	>05425 RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
4-Chloro-3-Methylphenol	.42063	.36950	.34903	.33621	.31551	1.116	.35818	11.181	*		
2-Methylnaphthalene	.81026	.68397	.63428	.54616	.53766	1.129	.64246	17.438			
1,2,3,4-Tetrachlorobenzene	.39118	.34071	.32316	.28882	.26835	.884	.32244	14.806			
Hexachlorocyclopentadiene	.42491	.39289	.38526	.35000	.33673	.888	.37796	9.319		**	
2,4,6-Trichlorophenol	.51941	.44070	.44015	.41181	.40087	.900	.44259	10.476	*		
2,4,5-Trichlorophenol	.59496	.48875	.46423	.40924	.36765	.906	.46496	18.638			
Fluorobiphenyl (Surr 4)	1.29425	1.39336	1.45180	1.45415	1.44210	.912	1.40713	4.815			(Conc=50.0,50.0,50.0,50.0
2-Chloronaphthalene	1.43764	1.08496	.88250	.75693	.64015	.922	.96044	32.649			
1,2,4,5-Tetrachlorobenzene	.77629	.63768	.54147	.45612	.39506	.924	.56133	26.892			
Toluenediamine	.23865	.39325	.39273	.41922	.35105	.926	.35898	19.935			
3-Nitroaniline	.59391	.52552	.54097	.49809	.46471	.944	.52464	9.221			
1,3-Dinitrobenzene	.34820	.31613	.31697	.36207	.28797	.975	.32627	8.968			
Dimethyl Phthalate	1.82815	1.33162	1.11992	.84283	.76366	.978	1.17724	36.380			
2,6-Dinitrotoluene	.45031	.41570	.38637	.36759	.32314	.984	.38862	12.390			
Acenaphthene	2.50402	2.04967	1.84447	1.70036	1.58400	1.000	1.89650	22.001			
Acenaphthylene	2.60144	1.92873	1.65021	1.24033	1.06886	.979	1.69791	35.789			
2-Nitroaniline	.59952	.55164	.53158	.53976	.46260	1.001	.53702	9.168			
Acenaphthene	1.58816	1.24441	1.12927	.98069	.86366	1.005	1.16124	24.025	*		
2,4-Dinitrophenol	.18157	.17652	.18194	.18765	.16819	1.014	.17917	4.073		**	
4-Nitrophenol	.13185	.10802	.09709	.10139	.08384	1.030	.10444	16.959		**	
Dibenzofuran	2.08536	1.72149	1.61402	1.43155	1.28656	1.027	1.62780	18.767			
2,4-Dinitrotoluene	.55476	.51113	.45406	.43340	.34141	1.036	45895	17.700			
Diethylphthalate	1.76946	1.24002	1.03549	.84466	.59917	1.076	1.09776	40.431			
4-Chlorophenyl-phenylether	.80022	.61188	.56834	.46129	.38764	1.078	.56587	27.906			
2,3,4,6-Tetrachlorophenol	.20348	.16713	.15596	.14048	.12622	1.052	.15865	18.567			
Fluorene	1.50932	1.15116	.99666	.80814	.74519	1.074	1.34209	29.388			
4-Nitroaniline	.24873	.29021	.30059	.29409	.25460	1.087	.27764	8.678			
2,4,6-Tribromophenol (Surr 5)	.24847	.23383	.23711	.23835	.19728	1.110	.23100	8.497			(Conc=100.0,100.0,100.0,1
4,6-Dinitro-2-Methylphenol	.15848	.14590	.13264	.13411	.13230	.910	.14069	8.121			
N-Nitrosodiphenylamine	.70822	.54465	.51450	.45198	.44238	.913	.53234	20.134	*		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

* - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400190

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

ractor: ARDL,INC. Calibration Date: 5/29/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>05424	>05426	>05427	>05428	>05425					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
4-Bromophenyl-phenylether	.29311	.23492	.23504	.22447	.24446	.952	.24640	10.979		
Hexachlorobenzene	.38181	.34217	.28546	.29836	.28757	.967	.31907	13.130		
Pentachlorophenol	.16245	.14576	.13134	.14370	.14470	.988	.14559	7.617	*	
Phenanthrene	1.40623	1.14683	.95235	.93899	.94476	1.003	1.07783	18.863		
Anthracene	1.48772	1.18945	1.03064	.94884	.94536	1.008	1.12040	20.344		
Carbazole	1.13740	.99846	.78814	.75379	.72474	1.028	.88051	20.376		
Di-N-Butylphthalate	1.91883	1.42463	1.14193	1.04018	.98841	1.082	1.30279	29.430		
Fluoranthene	1.15687	.93350	.69127	.65928	.63844	1.139	.81587	27.519	*	
Pyrene	4.60575	3.74684	3.90437	3.62035	3.11442	.893	3.79835	14.210		
014 Terphenyl (Surr 6)	2.13807	2.16421	2.22317	2.17936	1.99117	.911	2.13919	4.129		(Conc=50.0,50.0,50.0,50.0
Butylbenzylphthalate	1.32194	1.07319	1.02628	1.00341	1.05422	.959	1.09581	11.788		
3,3'-Dichlorobenzidine	.38424	.39295	.39736	.44456	.50429	.999	.42468	11.845		
Benzo(a)Anthracene	1.53073	1.34557	1.30376	1.33651	1.42080	.999	1.38747	6.546		
bis(2-Ethylhexyl)Phthalate	1.51938	1.32909	1.35840	1.40047	1.48402	1.014	1.41827	5.728		
ene	1.39821	1.20907	1.21508	1.26721	1.29207	1.002	1.27633	6.000		
.-Octyl Phthalate	3.32190	2.55171	2.57428	2.33957	2.45124	.949	2.64774	14.660	*	
Benzo(b)Fluoranthene	1.58803	1.44260	1.48798	1.41969	1.51432	.971	1.49053	4.424		
Benzo(k)Fluoranthene	1.59391	1.25475	1.22940	1.21744	1.07995	.973	1.27509	14.960		
Benzo(a)Pyrene	1.32293	1.18940	1.17867	1.15210	1.21952	.996	1.21253	5.466	*	
Indeno(1,2,3-cd)Pyrene	1.14223	1.19688	1.21860	1.23236	1.31246	1.102	1.22051	5.065		
Dibenzo(a,h)Anthracene	.95047	1.04313	1.03797	.99549	1.08070	1.105	1.02155	4.886		
Benzo(g,h,i)Perylene	.92874	1.01541	1.03349	.99921	1.09264	1.131	1.01390	5.846		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400191

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ARDL, INC. Contract: ----

Lab Code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID: >SV530 DFTPP Injection Date: 5/30/91

Instrument ID: HP- 1 DFTPP Injection Time: 21:11

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	49.1
68	Less than 2.0% of mass 69	.7(1.3)1
69	Mass 69 relative abundance	57.
70	Less than 2.0% of mass 69	.2(.4)1
127	40.0 - 60.0% of mass 198	40.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
9	5.0 - 9.0% of mass 198	6.3
275	10.0 - 30.0% of mass 198	19.9
365	Greater than 1.00% of mass 198	2.17
441	Present, but less than mass 443	14.6
442	Greater than 40.0% of mass 198	97.0
443	17.0 - 23.0% of mass 442	18.1(18.7)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1	BNA STD	50 NG STD	>D5441	5/30/91	23:10
2	LO-1MW06D-GW	111918-1	>D5443	5/31/91	0:48
3	LO-1MW06S-GW	111918-5	>D5444	5/31/91	1:37
4	LO-1MW04S-GW	111918-6	>D5445	5/31/91	2:26
5	LO-1MW02S-MS/MSD	111918-7	>D5446	5/31/91	3:15
6	LO-1MW02S-MS/MSDMS	111918-7MS	>D5447	5/31/91	4:04
7	LO-1MW02S-MS/MSDMSD	111918-7MSD	>D5448	5/31/91	4:52
8	LO-TANK/001	111898-1	>D5449	5/31/91	5:41
9	LO-1G105S-FDDL	111908-8DL	>D5451	5/31/91	7:18
10					
11					
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17					
18					
19					
20					
21					
22					

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/30/91

Contractor: ARDL,INC. Time: 23:10

Contract No: Laboratory ID: >05441

Instrument ID: HP-1 Initial Calibration Date: 05/29/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Pyridine	1.33665	1.59130	19.05			
n-Nitrosodimethylamine	.93949	.99534	5.95			
2-Picoline	1.61133	1.66409	3.27			
2-Fluorophenol (Surr 1)	1.09397	1.02195	6.58			(Conc=100.00)
Aniline	2.25046	2.12595	5.53			
D5 Phenol (Surr 2)	1.47784	1.37010	7.29			(Conc=100.00)
Phenol	1.55726	1.46873	5.68	*		
bis(-2-Chloroethyl)Ether	1.49735	1.52460	1.82			
2-Chlorophenol	1.40566	1.42544	1.41			
1,3-Dichlorobenzene	1.45314	1.49439	2.84			
1,4-Dichlorobenzene	1.38033	1.42011	2.88	*		
Benzyl Alcohol	.85689	.79314	7.44			
1,2-Dichlorobenzene	1.23331	1.24814	1.20			
2-Methylphenol	1.11925	1.05835	5.44			
bis(2-chloroisopropyl)Ether	2.48234	2.09663	15.54			
4-Methylphenol	1.06201	.93652	11.82			
N-Nitroso-Di-n-Propylamine	1.19352	1.04069	12.80		**	
Hexachloroethane	.52874	.52211	1.25			
D5 Nitrobenzene (Surr 3)	.47842	.44608	6.76			(Conc=50.00)
Nitrobenzene	.47924	.46140	3.72			
Isophorone	1.05580	.99979	5.31			
2-Nitrophenol	.24257	.24390	.55	*		
2,4-Dimethylphenol	.41439	.39479	4.73			
bis(-2-Chloroethoxy)Methane	.58111	.58261	.26			
Benzoic Acid	.21669	.15619	27.92			
2,4-Dichlorophenol	.30924	.33746	9.13	*		
1,2,4-Trichlorobenzene	.37274	.39657	6.39			
Naphthalene	1.00817	1.01031	.21			
4-Chloroaniline	.51447	.49136	4.49			
Hexachlorobutadiene	.18482	.20372	10.22	*		
4-Chloro-3-Methylphenol	.35818	.31152	13.03	*		
2-Methylnaphthalene	.64246	.62674	2.45			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400318

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/30/91

Contractor: ARDL,INC. Time: 23:10

Contract No: Laboratory ID: >05441

Instrument ID: HP-1 Initial Calibration Date: 05/29/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
1,2,3,4-Tetrachlorobenzene	.32244	.38824	20.41			
Hexachlorocyclopentadiene	.37796	.50012	32.32		**	
2,4,6-Trichlorophenol	.44259	.47452	7.22	*		
2,4,5-Trichlorophenol	.46496	.47749	2.69			
2-Fluorobiphenyl (Surr 4)	1.40713	1.49181	6.02			(Conc=50.00)
2-Chloronaphthalene	.96044	1.14845	19.58			
1,4,5-Tetrachlorobenzene	.56133	.67313	19.92			
2-Toluenediamine	.35898	.26749	25.49			
3-Nitroaniline	.52464	.47993	8.52			
1,3-Dinitrobenzene	.32627	.24678	24.36			
Dimethyl Phthalate	1.17724	1.34434	14.19			
2,6-Dinitrotoluene	.38862	.37107	4.52			
Azobenzene	1.89650	1.63896	13.58			
Acenaphthylene	1.69791	1.91159	12.58			
2-Nitroaniline	.53702	.41055	23.55			
Acenaphthene	1.16124	1.20895	4.11	*		
2,4-Dinitrophenol	.17917	.13064	27.09		**	
4-Nitrophenol	.10444	.07386	29.28		**	
Dibenzofuran	1.62780	1.67397	2.84			
2,4-Dinitrotoluene	.45895	.38392	16.35			
Diethylphthalate	1.09776	1.09116	.60			
4-Chlorophenyl-phenylether	.56587	.62944	11.06			
2,3,4,6-Tetrachlorophenol	.15865	.13662	13.89			
Fluorene	1.04209	1.03855	.34			
4-Nitroaniline	.27764	.23575	15.09			
2,4,6-Tribromophenol (Surr 5)	.23100	.21499	6.93			(Conc=100.00)
4,6-Dinitro-2-Methylphenol	.14069	.14220	1.08			
N-Nitrosodiphenylamine	.55234	.64685	21.51	*		
4-Bromophenyl-phenylether	.24640	.28864	17.14			
Hexachlorobenzene	.31907	.36033	12.93			
Pentachlorophenol	.14559	.14324	1.62	*		
Phenanthrene	1.07783	1.11857	3.78			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

* - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/30/91

Contractor: ARDL,INC. Time: 23:10

Contract No: Laboratory ID: >05441

Instrument ID: HP-1 Initial Calibration Date: 05/29/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Anthracene	1.12040	1.17988	5.31			
Carbazole	.88051	.91709	4.15			
Di-N-Butylphthalate	1.30279	1.25694	3.52			
Fluoranthene	.81587	.89473	9.67	*		
Pyrene	3.79835	2.10665	44.54			
D14 Terphenyl (Surr 6)	2.13919	1.29284	39.56			(Conc=50.00)
Butylbenzylphthalate	1.09581	.85149	22.30			
3,3'-Dichlorobenzidine	.42468	.45200	6.43			
Benzo(a)Anthracene	1.38747	1.34184	3.29			
bis(2-Ethylhexyl)Phthalate	1.41827	1.28131	9.66			
Chrysene	1.27633	1.21601	4.73			
Di-n-Octyl Phthalate	2.64774	2.33980	11.63	*		
Benzo(b)Fluoranthene	1.49053	1.33283	10.58			
Benzo(k)Fluoranthene	1.27509	1.28644	.89			
o(a)Pyrene	1.21253	1.18660	2.14	*		
Indeno(1,2,3-cd)Pyrene	1.22051	1.00301	17.82			
Dibenzo(a,h)Anthracene	1.02155	1.00520	1.60			
Benzo(g,h,i)Perylene	1.01390	.97986	3.36			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

* - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400320

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

L Name: ARDL, INC. Contract: --------

Lab Code: ----- Case No.: ------ SAS No.: ----- SDG No.: -----

Lab File ID: >604SV DFTPP Injection Date: 6/04/91

Instrument ID: HP-1 DFTPP Injection Time: 13:09

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	47.5
68	Less than 2.0% of mass 69	.8(1.5)1
69	Mass 69 relative abundance	55.
70	Less than 2.0% of mass 69	.4(.8)1
127	40.0 - 60.0% of mass 198	40.7
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
99	5.0 - 9.0% of mass 198	6.4
275	10.0 - 30.0% of mass 198	19.7
365	Greater than 1.00% of mass 198	2.25
441	Present, but less than mass 443	13.1
442	Greater than 40.0% of mass 198	87.4
443	17.0 - 23.0% of mass 442	17.5(20.1)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	20 NG STD	>D5500	6/04/91	13:32
02	BNA STD	160 NG STD	>D5501	6/04/91	14:22
03	BNA STD	120 NG STD	>D5502	6/04/91	15:34
04	BNA STD	80 NG STD	>D5503	6/04/91	16:23
05	BNA STD	50 NG STD	>D5504	6/04/91	17:12
06	BLANK B1339	BLANK B1339	>D5505	6/04/91	18:11
07	LO-1G102D-GW	111897-1	>D5506	6/04/91	18:59
08	LO-1G102L-GW	111897-2	>D5507	6/04/91	19:46
09	LO-1G101D-GW	111897-3	>D5508	6/04/91	20:34
10	LO-1G101M-GW	111897-4	>D5509	6/04/91	21:21
11	LO-1MW02D-GW	111908-6	>D5510	6/04/91	22:08
12	LO-1G104L-GW	111908-9	>D5511	6/04/91	22:55
13	BLANK B1349	BLANK B1349	>D5512	6/04/91	23:42
14	LO-1MW06D-GWRE	111918-1RE	>D5513	6/05/91	0:28
15					
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

actor: AROL,INC. Calibration Date: 06/04/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>05500	>05504	>05503	>05502	>05501					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Pyridine	1.61532	.92054	.96311	.98781	.89479	.395	1.07631	28.196		
n-Nitrosodimethylamine	1.12314	1.08035	.97227	.94155	.98914	.382	1.02129	7.530		
2-Picoline	-	1.07690	1.06465	1.03804	.97971	.569	1.03982	4.158		
2-Fluorophenol (Surr 1)	1.02259	1.01584	1.04690	1.03192	1.06159	.730	1.03577	1.791		(Conc=100.0,100.0,100.0,1
Aniline	-	1.83430	1.55222	1.39836	1.28726	.940	1.51803	15.625		
D5 Phenol (Surr 2)	1.33597	1.31915	1.22604	1.14773	1.12894	.957	1.23157	7.720		(Conc=100.0,100.0,100.0,1
Phenol	1.72403	1.35788	1.12958	.99703	.97991	.960	1.23769	25.132	*	
bis(-2-Chloroethyl)Ether	1.31577	1.31145	1.13585	.99583	1.03258	.960	1.15829	13.019		
2-Chlorophenol	1.63199	1.46437	1.21476	1.08637	1.02400	.965	1.28430	20.044		
1,3-Dichlorobenzene	1.73729	1.54073	1.30213	1.18323	1.10433	.990	1.37354	19.057		
1,4-Dichlorobenzene	1.77024	1.44572	1.26512	1.10872	1.02764	1.004	1.32349	22.401	*	
Benzyl Alcohol	.65483	.93315	.80300	.76057	.78363	1.056	.78703	12.673		
1,2-Dichlorobenzene	1.73088	1.50220	1.28585	1.16777	1.07515	1.047	1.35237	19.601		
2-Methylphenol	1.50335	1.29197	1.02662	.91021	.88504	1.094	1.12344	23.736		
bis(2-chloroisopropyl)Ether	3.06128	2.88651	2.42390	2.29224	2.93176	1.088	2.71914	12.467		
ethylphenol	1.55608	1.32808	1.12003	1.02438	1.00572	1.131	1.20686	19.341		
N-Nitroso-Di-n-Propylamine	1.57425	1.41696	1.21529	1.05045	1.13304	1.126	1.27800	16.773		**
Hexachloroethane	.76834	.66893	.55859	.51543	.45372	1.119	.59300	21.182		
D5 Nitrobenzene (Surr 3)	.46765	.48039	.45609	.48070	.47586	.873	.47214	2.204		(Conc=50.0,50.0,50.0,50.0
Nitrobenzene	.52592	.50352	.45542	.44795	.44173	.877	.47491	7.899		
Isophorone	1.01428	.99244	.93182	.90017	.88222	.925	.94419	6.078		
2-Nitrophenol	.26186	.27075	.23435	.23110	.22072	.936	.24375	8.788	*	
2,4-Dimethylphenol	.45101	.43993	.38089	.37432	.35691	.960	.40061	10.499		
bis(-2-Chloroethoxy)Methane	.70012	.61578	.54606	.50309	.49179	.77.	.57137	15.204		
Benzoic Acid	.20062	.21082	.19368	.19484	.21270	1.006	.20257	4.343		
2,4-Dichlorophenol	.38134	.35080	.29204	.28165	.25629	.985	.31242	16.582	*	
1,2,4-Trichlorobenzene	.45037	.42554	.36754	.35814	.32651	.994	.38562	13.199		
Naphthalene	1.30530	1.06949	.89064	.83324	.78121	1.004	.97598	21.903		
4-Chloroaniline	.55353	.46338	.38177	.36468	.32350	1.032	.41737	21.930		
Hexachlorobutadiene	.24697	.24680	.20332	.19645	.16794	1.044	.21230	16.133	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400232

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

actor: ARDL,INC. Calibration Date: 06/04/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>05500	>05504	>05503	>05502	>05501					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
4-Chloro-3-Methylphenol	.37249	.37456	.30900	.29717	.28305	1.126	.32726	13.210	*	
2-Methylnaphthalene	.76810	.69834	.57661	.53008	.47981	1.135	.61059	19.593		
1,2,3,4-Tetrachlorobenzene	.41229	.37521	.33422	.31211	.28639	.881	.34404	14.583		
Hexachlorocyclopentadiene	.47588	.52124	.43625	.43884	.40494	.886	.45543	9.784		**
2,4,6-Trichlorophenol	.49198	.48456	.42295	.38838	.36440	.898	.43045	13.194	*	
2,4,5-Trichlorophenol	.57755	.55993	.48390	.43962	.40881	.904	.49396	14.892		
2-Fluorobiphenyl (Surr 4)	1.39265	1.43378	1.43603	1.41940	1.42534	.910	1.42144	1.225		(Conc=50.0,50.0,50.0,50.0
hyladipate	.74437	1.31686	.46189	.36208	.29806	.921	.63665	65.466		
2-Chloronaphthalene	1.38511	1.09249	.99851	.82993	.74111	.919	1.00943	24.883		
1,2,4,5-Tetrachlorobenzene	.77062	.39626	.52981	.45470	.38347	.922	.50697	31.231		
Toluenediamine	-	.12441	.11991	.12929	.07641	.928	.11251	21.656		
3-Nitroaniline	.52894	.54378	.48546	.45715	.43190	.943	.48945	9.628		
Azobenzene	2.08682	1.82797	1.61887	1.44778	1.31573	1.104	1.65943	18.467		
Acenaphthylene	2.22662	1.78705	1.56272	1.38356	1.25017	.978	1.64202	23.378		
1,3-Dinitrobenzene	.29431	.28557	.31950	.35608	.31215	.975	.31352	8.734		
thyl Phthalate	1.54149	1.29279	1.15476	1.02455	.96743	.979	1.19620	19.249		
2,6-Dinitrotoluene	.39814	.40486	.35745	.33113	.32169	.984	.36265	10.446		
2-Nitroaniline	.56499	.61794	.56443	.50217	.44487	1.003	.53888	12.369		
Acenaphthene	1.43532	1.26649	1.07062	.92476	.82125	1.005	1.10369	22.623	*	
2,4-Dinitrophenol	.18162	.19926	.20011	.18366	.18252	1.016	.18943	4.957		**
4-Nitrophenol	.11948	.12217	.11615	.10124	.09816	1.035	.11144	9.855		**
Dibenzofuran	1.97095	1.81390	1.50161	1.36455	1.23485	1.028	1.57717	19.522		
2,4-Dinitrotoluene	.48394	.48205	.44255	.40578	.36456	1.038	.43578	11.745		
thylphthalate	1.71317	1.43983	1.17522	.93796	.79743	1.080	1.21272	30.615		
...lorophenyl-phenylether	.75579	.61931	.51283	.41934	.37791	1.082	.53703	28.603		
2,3,4,6-Tetrachlorophenol	.17989	.15824	.15568	.13508	.13361	1.055	.15250	12.502		
Fluorene	1.52804	1.26387	1.08904	.96181	.89062	1.077	1.14667	22.329		
4-Nitroaniline	.31580	.33894	.31408	.27776	.26033	1.092	.30138	10.523		
2,4,6-Tribromophenol (Surr 5)	.26516	.26962	.26092	.23888	.23137	1.114	.25319	6.708		(Conc=100.0,100.0,100.0,1
4,6-Dinitro-2-Methylphenol	.17237	.17435	.16683	.16291	.16093	.908	.16748	3.472		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400283

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

ıctor: ARDL,INC. Calibration Date: 06/04/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>05500	>05504	>05503	>05502	>05501					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
N-Nitrosodiphenylamine	.69837	.58489	.53887	.47212	.43113	.912	.54508	19.117	*	
4-Bromophenyl-phenylether	.30141	.26965	.24686	.24259	.23671	.952	.25944	10.242		
Hexachlorobenzene	.40595	.36855	.33797	.31852	.29995	.966	.34619	12.121		
Pentachlorophenol	.18795	.16178	.16992	.15641	.17018	.989	.16925	7.064	*	
Phenanthrene	1.41019	1.12138	1.04113	.96711	.92263	1.003	1.09249	17.665		
Anthracene	1.45919	1.16739	1.11168	.99215	.95704	1.009	1.13749	17.513		
Carbazole	1.17318	.92432	.92759	.81191	.78102	1.030	.92360	16.695		
Di-N-Butylphthalate	1.78728	1.48598	1.34445	1.17095	1.14449	1.087	1.38663	18.989		
Fluoranthene	1.27264	.99807	.93067	.80404	.78208	1.143	.95750	20.625	*	
Pyrene	2.61179	2.80267	3.40494	3.21806	3.20388	.890	3.04827	10.770		
Benzidine	.21260	.73295	.79182	.65568	.55300	.888	.58921	38.820		
D14 Terphenyl (Surr 6)	1.50511	1.70836	2.26517	2.18776	2.28769	.910	1.99082	18.074		(Conc=50.0,50.0,50.0,50.0
Butylbenzylphthalate	1.09052	1.10177	1.12517	1.03209	1.04267	.960	1.07844	3.680		
Bis-2-ethylhexyladipate	1.67151	4.06590	2.00263	1.92106	1.87376	.972	2.30697	42.949		
3,3'-Dichlorobenzidine	.36803	.36340	.39067	.36386	.42087	1.001	.38137	6.495		
(a)Anthracene	1.39659	1.31134	1.39000	1.22107	1.31403	.999	1.32661	5.389		
bis(2-Ethylhexyl)Phthalate	1.39038	1.27137	1.42959	1.26466	1.40326	1.017	1.35185	5.760		
Chrysene	1.37954	1.25657	1.32192	1.22632	1.24303	1.002	1.28548	4.968		
Di-n-Octyl Phthalate	3.12825	2.82321	2.82951	2.61245	2.43121	.954	2.76493	9.469	*	
Benzo(b)Fluoranthene	1.56921	1.44266	1.51854	1.42024	1.47327	.973	1.48478	4.033		
Benzo(k)Fluoranthene	1.56554	1.49113	1.40999	1.41370	1.37162	.975	1.45039	5.352		
Benzo(a)Pyrene	1.32230	1.21573	1.24953	1.17187	1.24846	.996	1.24158	4.440	*	
Indeno(1,2,3-cd)Pyrene	1.01326	1.08102	1.11809	.96365	1.06085	1.093	1.04738	5.746		
Dibenzo(a,h)Anthracene	.88617	.93194	.95217	.98336	1.09085	1.096	.96890	7.923		
Benzo(g,h,i)Perylene	.87350	.87585	.90645	.92420	1.05541	1.120	.92708	8.071		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400234

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ARDL, INC. Contract: ----

Lab Code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID: >S606V DFTPP Injection Date: 6/06/91

Instrument ID: HP- 1 DFTPP Injection Time: 10:05

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	55.9
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	65.
70	Less than 2.0% of mass 69	.4(.6)1
127	40.0 - 60.0% of mass 198	42.8
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
9	5.0 - 9.0% of mass 198	6.4
275	10.0 - 30.0% of mass 198	17.8
365	Greater than 1.00% of mass 198	1.40
441	Present, but less than mass 443	8.3
442	Greater than 40.0% of mass 198	58.7
443	17.0 - 23.0% of mass 442	10.1(17.2)2

1-Value is % mass 69 2-Value is % mass 442

THE TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	160 NG STD	>D5536	6/06/91	14:42
02	BNA STD	20 NG STD	>D5537	6/06/91	15:48
03	BNA STD	50 NG STD	>D5538	6/06/91	16:41
04	BNA STD	80 NG STD	>D5539	6/06/91	18:25
05	BNA STD	120 NG STD	>D5540	6/06/91	19:17
06	LO-1MW02S-GWRE	111918-3RE	>D5541	6/06/91	20:21
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Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

actor: AROL,INC. Calibration Date: 06/06/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >05537 RF 20.00	>05538 RF 50.00	>05539 RF 80.00	>05540 RF 120.00	>05536 RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Pyridine	1.11687	1.31151	1.23800	1.13927	1.22326	.392	1.20578	6.537			
n-Nitrosodimethylamine	.63891	.72310	.65888	.65088	.71589	.397	.67753	5.763			
2-Picoline	1.07842	1.25882	1.19320	1.13285	1.20491	.573	1.17364	5.925			
2-Fluorophenol (Surr 1)	1.00680	1.05770	1.00758	.98854	1.06266	.731	1.02466	3.255			(Conc=100.0,100.0,100.0,1
Aniline	1.69727	1.91693	1.81773	1.75838	1.79738	.938	1.79754	4.507			
05 Phenol (Surr 2)	1.27082	1.28444	1.25565	1.24124	1.29477	.952	1.26939	1.696			(Conc=100.0,100.0,100.0,1
Phenol	1.46763	1.58047	1.50626	1.44787	1.36912	.954	1.47427	5.265	*		
bis(-2-Chloroethyl)Ether	1.41624	1.50500	1.43773	1.37018	1.24092	.958	1.39401	7.059			
2-Chlorophenol	1.34246	1.43318	1.38496	1.30809	1.29092	.963	1.35192	4.285			
1,3-Dichlorobenzene	1.51349	1.56370	1.52209	1.45278	1.38746	.991	1.48791	4.619			
1,4-Dichlorobenzene	1.51423	1.55774	1.52140	1.42825	1.33748	1.004	1.47182	6.037	*		
Benzyl Alcohol	.69258	.78315	.72052	.68485	.71004	1.048	.71823	5.419			
1,2-Dichlorobenzene	1.43739	1.44584	1.35954	1.29954	1.22888	1.046	1.35424	6.812			
2-Methylphenol	1.13323	1.22640	1.08399	1.04927	.95852	1.086	1.09028	9.109			
(2-chloroisopropyl)Ether	2.35471	2.58359	2.43861	2.35987	2.35155	1.085	2.41766	4.118			
Methylphenol	1.11208	1.20302	1.13538	1.07766	1.06378	1.122	1.11839	4.924			
N-Nitroso-Di-n-Propylamine	1.03973	1.08713	1.00180	.95607	.98524	1.119	1.01399	5.015		**	
Hexachloroethane	.59537	.59264	.55445	.54123	.52916	1.117	.56257	5.346			
05 Nitrobenzene (Surr 3)	.36842	.37102	.34393	.35006	.38392	.875	.36347	4.482			(Conc=50.0,50.0,50.0,50.0
Nitrobenzene	.39183	.40800	.38104	.36667	.36971	.879	.38345	4.420			
Isophorone	.81036	.84505	.80158	.79333	.83974	.924	.81801	2.828			
2-Nitrophenol	.19548	.22813	.21895	.21217	.21758	.936	.21446	5.626	*		
2,4-Dimethylphenol	.35228	.38104	.36669	.35133	.34957	.95	.36018	3.753			
bis(-2-Chloroethoxy)Methane	.50627	.52996	.50782	.49769	.47369	.971	.50309	4.035			
Benzoic Acid	.14329	.21781	.19977	.19221	.21894	.992	.19441	15.848			
2,4-Dichlorophenol	.29937	.34395	.32212	.31887	.30477	.983	.31782	5.479	*		
1,2,4-Trichlorobenzene	.38690	.39271	.37502	.35656	.34315	.994	.37087	5.598			
Naphthalene	1.03517	1.05123	1.00352	.96598	.88164	1.004	.98751	6.342			
4-Chloroaniline	.41387	.46462	.44682	.42408	.42350	1.023	.43458	4.763			
Hexachlorobutadiene	.21788	.21162	.20687	.19362	.18180	1.043	.20236	7.188	*		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

ıctor: ARDL,INC. Calibration Date: 06/06/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Laboratory ID: >05537 >05538 >05539 >05540 >05536

Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	RRT	RF	% RSD	CCC	SPCC	
4-Chloro-3-Methylphenol	.27856	.33986	.30926	.30402	.30452	1.122	.30725	7.109	*		
2-Methylnaphthalene	.66020	.68960	.64428	.63030	.57382	1.133	.63964	6.706			
1,2,3,4-Tetrachlorobenzene	.35850	.37398	.34026	.31893	.29428	.882	.33719	7.368			
Hexachlorocyclopentadiene	.26234	.36852	.36092	.34258	.35714	.887	.33830	12.857		**	
2,4,6-Trichlorophenol	.39543	.44810	.43208	.41661	.41215	.899	.42087	4.765	*		
2,4,5-Trichlorophenol	.44551	.47657	.47199	.43757	.42872	.904	.45207	4.686			
2 orobiphenyl (Surr 4)	1.39077	1.39727	1.36908	1.35798	1.36868	.910	1.37676	1.201			(Conc=50.0,50.0,50.0,50.0
D. nyladipate	.49182	.54505	.44237	.41992	.35512	.920	.45086	15.973			
2-Chloronaphthalene	1.23350	1.14734	1.10732	1.02813	.88495	.920	1.08025	12.209			
1,2,4,5-Tetrachlorobenzene	.70257	.72335	.63313	.65720	.56464	.922	.65618	9.510			
Toluenediamine	.01724	.09744	.12295	.10887	.22573	.926	.11444	65.133			
3-Nitroaniline	.34769	.44665	.44696	.40175	.42644	.942	.41390	10.002			
Azobenzene	1.51195	1.67259	1.65676	1.57874	1.47882	1.102	1.57977	5.421			
Acenaphthylene	1.99211	2.00850	1.75275	1.75463	1.42700	.978	1.78700	13.212			
1 Dinitrobenzene	.17807	.24080	.22246	.20634	.23455	.974	.21644	11.625			
. nyl Phthalate	1.46277	1.49518	1.35166	1.32739	1.09481	.977	1.34636	11.706			
2,6-Dinitrotoluene	.33427	.37189	.37136	.35728	.33183	.983	.35333	5.500			
2-Nitroaniline	.32834	.47248	.44668	.45117	.46511	1.001	.43276	13.700			
Acenaphthene	1.20731	1.28188	1.16354	1.14303	1.00839	1.005	1.16083	8.655	*		
2,4-Dinitrophenol	.08298	.16743	.18087	.17054	.19781	1.014	.15993	27.902		**	
4-Nitrophenol	.07750	.10754	.10471	.09858	.11270	1.032	.10021	13.650		**	
Dibenzofuran	1.69350	1.74238	1.67781	1.58936	1.46759	1.028	1.63413	6.626			
2,4-Dini otoluene	.41270	.47807	.47137	.43811	.45262	1.037	.45057	5.853			
; iphthalate	1.51450	1.61948	1.54489	1.44446	1.19342	1.079	1.46335	11.170			
4-Chlorophenyl-phenylether	.64898	.68962	.65558	.60274	.53788	1.080	.62696	9.352			
2,3,4,6-Tetrachlorophenol	.14143	.16650	.15489	.15314	.14031	1.053	.15125	7.133			
Fluorene	1.27540	1.33935	1.20422	1.15748	1.06283	1.076	1.20786	8.824			
4-Nitroaniline	.17076	.29083	.30236	.29014	.29484	1.088	.26778	20.597			
2,4,6-Tribromophenol (Surr 5)	.24906	.25712	.24670	.23809	.25557	1.112	.24931	3.061			(Conc=100.0,100.0,100.0,1
4,6-Dinitro-2-Methylphenol	.10123	.15799	.16989	.16351	.15998	.907	.15052	18.550			

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-1

actor: AROL,INC. Calibration Date: 06/06/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >05537 RF 20.00	>05538 RF 50.00	>05539 RF 80.00	>05540 RF 120.00	>05536 RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
N-Nitrosodiphenylamine	.51609	.56056	.55422	.53943	.44924	.911	.52391	8.610	*		
4-Bromophenyl-phenylether	.23103	.25162	.24510	.23537	.22626	.952	.23788	4.355			
Hexachlorobenzene	.33001	.34830	.33701	.32608	.31772	.966	.33183	3.481			
Pentachlorophenol	.14824	.18859	.19130	.17951	.18906	.989	.17934	10.015	*		
Phenanthrene	1.14313	1.20418	1.10715	1.07056	1.05397	1.003	1.11580	5.397			
Anthracene	1.12512	1.20255	1.10848	1.12216	1.00534	1.008	1.11273	6.333			
Carbazole	.95815	1.04628	1.00591	.97723	.94522	1.029	.98656	4.100			
Di-N-Butylphthalate	1.67234	1.80079	1.73744	1.65593	1.44386	1.085	1.66207	8.110			
Fluoranthene	1.21216	1.24879	1.18674	1.15161	1.05592	1.142	1.17104	6.277	*		
Pyrene	1.88548	2.65029	2.61385	2.90737	3.93945	.891	2.79929	26.513			
Benzidine	.35051	.69853	.69432	.70426	1.14697	.886	.71892	39.359			
3514 Terphenyl (Surr 6)	1.35642	1.70455	1.70148	1.87729	2.68103	.910	1.86415	26.514			(Conc=50.0,50.0,50.0,50.0
Butylbenzylphthalate	.86212	1.12797	1.05838	1.10931	1.49894	.960	1.13134	20.417			
Bis-2-ethylhexyladipate	.89627	1.47900	1.25407	1.32619	1.83263	.971	1.35763	25.112			
3-Dichlorobenzidine	.29077	.37144	.33285	.32981	.48974	1.000	.36292	21.058			
Benzo(a)Anthracene	1.17120	1.50417	1.36361	1.36062	2.21558	.999	1.52304	26.581			
bis(2-Ethylhexyl)Phthalate	1.09253	1.36392	1.32461	1.32303	1.88481	1.016	1.39778	20.933			
Chrysene	1.15407	1.16744	1.03901	1.18926	1.22024	1.002	1.15401	5.978			
Di-n-Octyl Phthalate	3.47635	4.43547	4.18479	4.03193	3.87839	.952	4.00138	8.957	*		
Benzo(b)Fluoranthene	1.65241	2.50453	2.22205	1.82642	2.32831	.972	2.10674	16.876			
Benzo(k)Fluoranthene	1.56769	1.25043	1.20920	1.50770	95074	.973	1.29715	19.174			
Benzo(a)Pyrene	1.13530	1.27312	1.22000	1.23630	1.19945	.995	1.21283	4.210	*		
Indeno(1,2,3-cd)Pyrene	.48631	.83727	.88004	1.07847	.76539	1.097	.80949	26.530			
Dibenzo(a,h)Anthracene	.41134	.68797	.73666	.94610	.74196	1.100	.70480	27.202			
Benzo(g,h,i)Perylene	.38329	.62732	.70693	.90606	.68208	1.124	.66114	28.384			

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400277

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5426 Date Analyzed: 5/29/91

Instrument ID: HP- 1 Time Analyzed: 18:33

		IS1(DCB)		IS2(NAP)		IS3(ACE)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	56807	10.75	208373	13.88	117219	18.33
	UPPER LIMIT	113614	11.25	416746	14.38	234438	18.83
	LOWER LIMIT	28404	10.25	104186	13.38	58610	17.83
	EPA SAMPLE NO.						
1	LO-1MW04S-FD	65860	10.80	252873	13.87	143248	18.32
2	LO-1MW02S-GW	67155	10.74	243368	13.86	135254	18.31
3	LO-1GW3-FB	73334	10.75	268705	13.88	148371	18.33
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IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5426 Date Analyzed: 5/29/91

Instrument ID: HP- 1 Time Analyzed: 18:33

		IS4(PHN) AREA #	RT	IS5(CHR) AREA #	RT	IS6(PER) AREA #	RT
	12 HOUR STD	176627	22.02	42139	28.71	22796	32.20
	UPPER LIMIT	353254	22.52	84278	29.21	45592	32.70
	LOWER LIMIT	88313	21.52	21069	28.21	11398	31.70
	EPA SAMPLE NO.						
1	LO-1MW04S-FD	186106	22.02	45659	28.71	37153	32.21
2	LO-1MW02S-GW	215425	22.01	92301 *	28.71	39096	32.21
3	LO-1GW3-FB	204040	22.03	47199	28.72	34642	32.24
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6				high			
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22							

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5441 Date Analyzed: 5/30/91

Instrument ID: HP-1 Time Analyzed: 23:10

	IS1(DCB) AREA	#	RT	IS2(NAP) AREA	#	RT	IS3(ACE) AREA	#	RT
12 HOUR STD	45495		10.74	162665		13.88	77508		18.34
UPPER LIMIT	90990		11.24	325330		14.38	155016		18.84
LOWER LIMIT	22748		10.24	81332		13.38	38754		17.84
EPA SAMPLE NO.									
LO-1MW06D-GW	41571		10.71	139576		13.85	76888		18.30
LO-1MW06S-GW	38122		10.71	128961		13.84	69507		18.30
LO-1MW04S-GW	31816		10.70	109648		13.84	58599		18.30
LO-1MW02S-MS/MSD	35278		10.71	120883		13.84	66410		18.30
LO-1MW02S-MS/MSDMS	39246		10.71	135052		13.84	74199		18.31
O-1MW02S-MS/MSDMSD	38904		10.71	134640		13.85	76149		18.31
LO-TANK/001	36491		10.71	130040		13.84	70182		18.30
BLANK B1366	34325		10.71	115473		13.83	65432		18.30
LO-1G105S-FDDL	40468		10.72	96690		13.87	33493	*	18.33

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

L Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5441 Date Analyzed: 5/30/91

Instrument ID: HP-1 Time Analyzed: 23:10

	IS4(PHN) AREA	#	RT	IS5(CHR) AREA	#	RT	IS6(PER) AREA	#	RT
12 HOUR STD	88685		22.04	36216		28.75	31785		32.28
UPPER LIMIT	177370		22.54	72432		29.25	63570		32.78
LOWER LIMIT	44342		21.54	18108		28.25	15892		31.78
EPA SAMPLE NO.									
1 LO-1MW06D-GW	100294		22.01	35866		28.73	25019		32.26
2 LO-1MW06S-GW	83549		22.00	25113		28.73	19675		32.25
3 LO-1MW04S-GW	63074		22.00	21586		28.73	18398		32.25
4 LO-1MW02S-MS/MSD	82085		22.00	42635		28.72	41739		32.27
5 LO-1MW02S-MS/MSDMS	96552		22.01	47263		28.73	44023		32.26
LO-1MW02S-MS/MSDMSD	88875		22.01	32542		28.73	25899		32.26
7 LO-TANK/001	74556		21.99	20948		28.72	16034		32.25
8 BLANK B1366	85683		22.00	44094		28.73	40425		32.26
9 LO-1G10SS-FDDL	34450	*	22.02	15145	*	28.73	14957	*	32.28
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

FORM VIII SV-2 1/87 Rev

400010

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL, INC Contract: ---------

Lab code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

Lab File ID (Standard): >D5504 Date Analyzed: 06/04/91

Instrument ID: HP-1 Time Analyzed: 17:12

	IS1(DCB)		IS2(NAP)		IS3(ACE)	
	AREA #	RT	AREA #	RT	AREA #	RT
12 HOUR STD	37750	10.16	130874	13.28	68932	17.71
UPPER LIMIT	75500	10.66	261748	13.78	137864	18.21
LOWER LIMIT	18875	9.66	65437	12.78	34466	17.21
EPA SAMPLE NO.						
1 BLANK B1339	51341	10.14	181132	13.26	97438	17.67
2 LO-1G102D-GW	31279	10.13	108873	13.25	59416	17.68
3 LO-1G102L-GW	41615	10.15	145567	13.26	77044	17.70
4 LO-1G101D-GW	40560	10.13	134969	13.24	75117	17.68
5 LO-1G101M-GW	43381	10.13	145650	13.25	78501	17.68
6 LO-1MW02D-GW	36640	10.12	127944	13.24	67380	17.67
7 LO-1G104L-GW	37330	10.15	126573	13.27	66686	17.70
8 BLANK B1349	36243	10.13	122909	13.25	65421	17.67
9 LO-1MW06D-GWRE	42388	10.12	144630	13.24	83695	17.67
10						
11						
12						
13						
14						
15						
17						
18						
19						
20						
21						
22						

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL, INC Contract: --------

Lab code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

Lab File ID (Standard): >D5504 Date Analyzed: 06/04/91

Instrument ID: HP-1 Time Analyzed: 17:12

	IS4(PHN) AREA #	RT	IS5(CHR) AREA #	RT	IS6(PER) AREA #	RT
12 HOUR STD	100039	21.38	34818	28.07	16474	31.43
UPPER LIMIT	200078	21.88	69636	28.57	32948	31.93
LOWER LIMIT	50020	20.88	17409	27.57	8237	30.93
EPA SAMPLE NO.						
1 BLANK B1339	134232	21.36	51704	28.04	26399	31.43
2 LO-1G102D-GW	82578	21.35	25907	28.04	10274	31.43
3 LO-1G102L-GW	109556	21.37	47450	28.05	18429	31.44
4 LO-1G101D-GW	102649	21.36	39840	28.03	21432	31.42
5 LO-1G101M-GW	117738	21.36	54374	28.04	22004	31.42
6 LO-1MW02D-GW	94803	21.34	42735	28.03	21524	31.41
7 LO-1G104L-GW	95394	21.38	47281	28.07	20807	31.45
8 BLANK B1349	91313	21.35	42233	28.04	17293	31.41
9 LO-1MW06D-GWRE	112293	21.34	54359	28.04	28817	31.42
10						
11						
12						
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18						
19						
20						
21						
22						

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5538 Date Analyzed: 6/06/91

Instrument ID: HP- 1 Time Analyzed: 16:41

		IS1(DCB) AREA #	IS1(DCB) RT	IS2(NAP) AREA #	IS2(NAP) RT	IS3(ACE) AREA #	IS3(ACE) RT
	12 HOUR STD	46814	10.39	170117	13.50	91736	17.94
	UPPER LIMIT	93628	10.89	340234	14.00	183472	18.44
	LOWER LIMIT	23407	9.89	85058	13.00	45868	17.44
	EPA SAMPLE NO.						
1	LO-1MW02S-GWRE	55119	10.38	184569	13.50	98461	17.94
2							
3							
4							
5							
7							
8							
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14							
16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

page __ of __.

400013

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >D5538 Date Analyzed: 6/06/91

Instrument ID: HP- 1 Time Analyzed: 16:11

	IS4(PHN) AREA	#	RT	IS5(CHR) AREA	#	RT	IS6(PER) AREA	#	RT
12 HOUR STD	145762		21.63	67430		28.33	20695		31.74
UPPER LIMIT	291524		22.13	134860		28.83	41390		32.24
LOWER LIMIT	72881		21.13	33715		27.83	10348		31.24
EPA SAMPLE NO.									
1 LO--1MW02S-GWRE	158771		21.62	113232		28.32	55378	*	31.76
2									
3									
4									
5									
7									
8									
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17									
18									
19									
20									
21									
22									

IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

page ___ of ___.

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1MW02S-MS/MSDMSD

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Matrix: (soil/water) WATER Lab Sample ID: 111918-7MSD

Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5448

Level: (low/med) LOW Date Received: 5/09/91

% Moisture: not dec. --- dec. ---- Date Extracted: 5/14/91

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/31/91

GPC Cleanup: (Y/N) N pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	60.	
111-44-4	bis(-2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	99.	
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	67.	
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	96.	
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(-2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	69.	
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	99.	
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethyl Phthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1MW02S-MS/MSDMSD

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Matrix: (soil/water) WATER Lab Sample ID: 111918-7MSD

Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5448

Level: (low/med) LOW Date Received: 5/09/91

% Moisture: not dec. --- dec. ---- Date Extracted: 5/14/91

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/31/91

GPC Cleanup: (Y/N) N pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	75.	
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	41.	J
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	78.	
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	120.	
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	10.	U
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	88.	
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-Octyl_Phthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1MW02S-M3/MSDMS

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Matrix: (soil/water) WATER Lab Sample ID: 111918-7MS

Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5447

Level: (low/med) LOW Date Received: 5/09/91

% Moisture: not dec. --- dec. ---- Date Extracted: 5/14/91

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/31/91

GPC Cleanup: (Y/N) N pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	33.	
111-44-4	bis(-2-Chloroethyl)Ether	10.	U
95-57-8	2-Chlorophenol	56.	
541-73-1	1,3-Dichlorobenzene	10.	U
106-46-7	1,4-Dichlorobenzene	60.	
100-51-6	Benzyl alcohol	10.	U
95-50-1	1,2-Dichlorobenzene	10.	U
95-48-7	2-Methylphenol	10.	U
39638-32-9	bis(2-chloroisopropyl)ether	10.	U
106-44-5	4-Methylphenol	10.	U
621-64-7	N-Nitroso-Di-n-propylamine	89.	
67-72-1	Hexachloroethane	10.	U
98-95-3	Nitrobenzene	10.	U
78-59-1	Isophorone	10.	U
88-75-5	2-Nitrophenol	10.	U
105-67-9	2,4-Dimethylphenol	10.	U
65-85-0	Benzoic acid	50.	U
111-91-1	bis(-2-Chloroethoxy)methane	10.	U
120-83-2	2,4-Dichlorophenol	10.	U
120-82-1	1,2,4-Trichlorobenzene	62.	
91-20-3	Naphthalene	10.	U
106-47-8	4-Chloroaniline	10.	U
87-68-3	Hexachlorobutadiene	10.	U
59-50-7	4-Chloro-3-methylphenol	64.	
91-57-6	2-Methylnaphthalene	10.	U
77-47-4	Hexachlorocyclopentadiene	10.	U
88-06-2	2,4,6-Trichlorophenol	10.	U
95-95-4	2,4,5-Trichlorophenol	50.	U
91-58-7	2-Chloronaphthalene	10.	U
88-74-4	2-Nitroaniline	50.	U
131-11-3	Dimethyl Phthalate	10.	U
208-96-8	Acenaphthylene	10.	U
606-20-2	2,6-Dinitrotoluene	10.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1MW02S-MS/MSDMS

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Matrix: (soil/water) WATER Lab Sample ID: 111918-7MS

Sample wt/vol: 1000.0 (g/mL) mL Lab File ID: >D5447

Level: (low/med) LOW Date Received: 5/09/91

% Moisture: not dec. --- dec. ---- Date Extracted: 5/14/91

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 5/31/91

GPC Cleanup: (Y/N) N pH: 6.7 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	50.	U
83-32-9	Acenaphthene	71.	
51-28-5	2,4-Dinitrophenol	50.	U
100-02-7	4-Nitrophenol	34.	J
132-64-9	Dibenzofuran	10.	U
121-14-2	2,4-Dinitrotoluene	77.	
84-66-2	Diethylphthalate	10.	U
7005-72-3	4-Chlorophenyl-phenylether	10.	U
86-73-7	Fluorene	10.	U
100-01-6	4-Nitroaniline	50.	U
534-52-1	4,6-Dinitro-2-methylphenol	50.	U
86-30-6	N-Nitrosodiphenylamine (1)	10.	U
101-55-3	4-Bromophenyl-phenylether	10.	U
118-74-1	Hexachlorobenzene	10.	U
87-86-5	Pentachlorophenol	87.	
85-01-8	Phenanthrene	10.	U
120-12-7	Anthracene	10.	U
84-74-2	Di-n-butylphthalate	30.	
206-44-0	Fluoranthene	10.	U
129-00-0	Pyrene	69.	
85-68-7	Butylbenzylphthalate	10.	U
91-94-1	3,3'-Dichlorobenzidine	20.	U
56-55-3	Benzo(a)anthracene	10.	U
218-01-9	Chrysene	10.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10.	U
117-84-0	Di-n-Octyl_Phthalate	10.	U
205-99-2	Benzo(b)fluoranthene	10.	U
207-08-9	Benzo(k)fluoranthene	10.	U
50-32-8	Benzo(a)pyrene	10.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10.	U
53-70-3	Dibenzo(a,h)anthracene	10.	U
191-24-2	Benzo(g,h,i)perylene	10.	U

(1) - Cannot be separated from Diphenylamine

WATER PESTICIDE SURROGATE RECOVERY

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: --- Case No.: 111918 SAS No.: --- SDG No.: ---

EPA SAMPLE NO.	S1 (DBC) #	OTHER
LO-1MW06D-GW	115	
LO-1MW04S-FD	89	
LO-1MW02S-GW	70	
LO-1GW3-FB	103	
LO-1MW06S-GW	88	
LO-1MW04S-GW	101	
LO-1MW02S-MS/MSD	112	
LO-1MW02S-MS/MSD-MS	83	
LO-1MW02S-MS/MSD-MSD	76	
PBLK1348	105	

Advisory
QC Limits
(24-154)

S1 (DBC) = Dibutylchlorendate
= Column used to flag recovery values
* = Values outside QC Limits
D = Surrogates diluted out

3E

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: Case No.: 111918 SAS No.: - SDG No.: -
Matrix Spike Sample Number : LD-1MW02S-MS/MSD

Compound	Spike Added (ug/L)	Sample Conc. (ug/L)	MS Conc. (ug/L)	MS % Rec #	QC Limits Rec
Lindane	0.40	-	0.36	90	56-123
Heptachlor	0.40	-	0.29	73	40-131
Aldrin	0.40	-	0.38	95	40-120
Dieldrin	1.0	-	0.83	83	52-126
Endrin	1.0	-	1.1	110	56-121
4,4'-DDT	1.0	-	0.83	83	38-127

Compound	Spike Added (ug/L)	MSD Conc. (ug/L)	MSD % Rec #	% RPD #	QC Limits RPD	QC Limits REC
Lindane	0.40	0.35	88	2.8	15	56-123
Heptachlor	0.40	0.27	68	7.1	20	40-131
Aldrin	0.40	0.35	88	8.2	22	40-120
Dieldrin	1.0	0.77	77	7.5	18	52-126
Endrin	1.0	1.1	110	0.0	21	56-121
4,4'-DDT	1.0	0.78	78	6.2	27	38-127

= Column to be used to flag recovery and RPD values with an asterisk
* = Values outside QC Limits

RPD : 0 out of 6 outside limits
Spike Recovery : 0 out of 12 outside limits

Comments :

PESTICIDE EVALUATION SUMMARY

Lab Name: AROL, INC Contract: LENZ OIL

Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Instrument ID: HP#2 5890 GC Column ID: DB608 0.53mm x 30m

Dates of Analyses: 05-20-91 to 05-21-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (</= 10.0%)
ALDRIN	1739304	1745838	1731287	0.4
ENDRIN	1248192	1312025	1361873	2.6
4,4'-DDT	1096730	1152058	1147050	2.7
DBC	1090096	1104678	1088452	1.1

(1) If > 10.0% RSD, plot a standard curve and determine the conc. for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-20-91	0949	3.0	2.6	2.8
02	EVAL MIX B	05-21-91	0508	5.1	6.0	5.5
03	EVAL MIX B	05-21-91	1619	5.5	6.8	6.1
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form Instructions.

PESTICIDE EVALUATION STANDARDS SUMMARY
Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: ARDL, INC Contract: LENZ OIL

a Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Instrument ID: HP#25890 GC Column ID: DB608 0.53mm X 30m

Dates of Analyses: 05-20-91 to 05-21-91

23,528

	SAMPLE NO.	LAS SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALB	EVALB	05-20-91	0949	—	
02	EVALC	EVALC	05-20-91	1113	0.04	
03	EVALA	EVALA	05-20-91	1613	0.03	
04	INDA	INDA	05-20-91	1958	0.12	
05	INDB	INDB	05-20-91	2044	0.13	
06	TDXAPH	TDX	05-20-91	2130	0.13	
07	Ar1242	Ar1242	05-20-91	2216	0.14	
08	Ar1248	Ar1248	05-20-91	2301	0.16	
09	Ar1254	Ar1254	05-20-91	2347	0.17	
10	Ar1260	Ar1260	05-21-91	0033	0.20	
11	PBLK1348	BLK 1348	05-21-91	0205	0.20	
12	PBLK1352	BLK 1352	05-21-91	0250	0.19	
13	LO-1MW06D-GW	111918-1	05-21-91	0336	0.19	
14	LO-1MW02S-GW	111918-3	05-21-91	0422	0.19	
15	EVALB	EVALB	05-21-91	0508	0.19	
16	LO-1MW04S-FD	111918-2	05-21-91	0553	0.19	
17	ZZZZ	111914-1	05-21-91	0639	0.18	
18	ASH	200212-3(100X)	05-21-91	0725	0.19	
19	X102	200215-5(100X)	05-21-91	0811	0.17	
20	X101	200215-4(100X)	05-21-91	0857	0.19	
21	INDA	INDA ✓	05-21-91	0943	0.19	
22	LO-1MW06S-GW	111918-5	05-21-91	1122	0.14	
23	LO-1MW04S-GW	111918-6	05-21-91	1308	0.15	
24	LO-1MW02S-MS/MSD	111918-7	05-21-91	1254	0.14	
25	LO-1MW02S-MS/MSD-MS	111918-7MS	05-21-91	1340	0.16	
26	LO-1MW02S-MS/MSD-MSD	111918-7MSD	05-21-91	1442	0.12	
27	EVALB	EVALB	05-21-91	1619	0.18	
28	X102	200215-5(10X)	05-21-91	1705	0.15	
29	X101	200215-4(10X)	05-21-91	1750	0.22	
30	X102MS	200215-5MS(10X)	05-21-91	1836	0.25	
31	X102MSD	200215-5MSD(10X)	05-21-91	1922	0.25	
32	ZZZZ	111922-1	05-21-91	2008	0.24	
33	INDB	INDB END SEQ.	05-21-91	2140	0.23	
34	INDA	INDA END SEQ.	05-21-91	2226	0.25	
35						
36						
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.5% for capillary columns) 1.5 for megabore

Lab Name: AROL, INC

Lab Code: ----- Case No.: 11918 SAS No.: ----- SDG No.: -----

Instrument ID: HP#2 5890 GC Column ID: DB608 0.53 mm x 30m

DATE(S) OF ANALYSIS FROM: 05-20-91
TO: 05-21-91

DATE OF ANALYSIS 05-21-91

TIME(S) OF ANALYSIS FROM: 0949
TO: 2226

TIME OF ANALYSIS 0942

EPA SAMPLE NO. (STANDARD) INDAL

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	11.15	11.09	11.21	1275200				
beta-BHC	12.89	12.83	12.95	901800				
delta-BHC	14.21	14.15	14.27	1120700				
gamma-BHC	12.61	12.55	12.67	1404800	12.60	1276800	Y	9.1
Heptachlor	13.78	13.72	13.84	1458400	13.76	1300800	Y	10.8
Aldrin	14.96	14.90	15.02	1423900	14.95	1240500	Y	13.7
Hept. epoxide	16.96	16.90	17.02	1462400	16.94	1277500	Y	8.9
Endosulfan I	18.18	18.12	18.24	1414300	18.17	1298300	Y	8.3
Dieldrin	19.24	19.18	19.30	1186900	19.23	1082600	Y	8.8
4,4'-DDE	18.96	18.90	19.02	923300				
Endrin	20.49	20.43	20.55	752300				
Endosulfan II	21.11	21.05	21.17	1150850	21.09	1053350	Y	8.5
4,4'-DDD	20.85	20.79	20.91	763650				
Endo.sulfate	22.62	22.56	22.68	964600				
4,4'-DDT	21.77	21.81	21.93	3644250	21.85	2466400	Y	15.6
Methoxychlor	24.97	24.88	25.06	678650	24.94	595200	Y	8.3
Endrin ketone	25.54	25.45	25.63	1084050				
a. chlordane	18.08	18.02	18.14	1289900				
g. chlordane	17.52	17.46	17.58	1324800				
Toxaphene	20.38	20.52	21.24	551272				
Aroclor-1016	13.85	13.79	15.91	720994				
Aroclor-1221	11.15	11.06	11.24	161826				
Aroclor-1232	14.01	13.92	14.10	462153				
Aroclor-1242	13.86	13.80	13.92	635159				
Aroclor-1248	17.23	17.17	17.29	573096				
Aroclor-1254	19.50	19.41	19.59	669743				
Aroclor-1260	21.82	21.73	21.91	995099				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

Lab Name: ARDL, INC

Lab Code: ----- Case No.: 11918 SAS No.: ----- SDG No.: -----

Instrument ID: HP#2 5890 GC Column ID: DB608 0.53mm X30m

DATE(S) OF ANALYSIS FROM: 05-20-91 TO: 05-21-91

DATE OF ANALYSIS 05-21-91

TIME(S) OF ANALYSIS FROM: 0949 TO: 2296

TIME OF ANALYSIS 2140

EPA SAMPLE NO. (STANDARD) WIDB ENDSTD

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	11.15	11.09	11.21	1275200	11.13	1247600	N	2.2
beta-BHC	12.89	12.83	12.95	901800	12.87	824800	N	8.5
delta-BHC	14.21	14.15	14.27	1120700	14.19	1065100	N	5.0
gamma-BHC	12.61	12.55	12.67	1404800				
Heptachlor	13.78	13.72	13.84	1458400				
Aldrin	14.96	14.90	15.02	1423900	14.93	1078000	N	24
Hept. epoxide	16.96	16.90	17.02	1462400				
Endosulfan I	18.18	18.12	18.24	1414300				
Dieldrin	19.24	19.18	19.30	1186900				
4,4'-DDE	18.96	18.90	19.02	973300	18.94	928100	N	4.6
Endrin	20.49	20.43	20.55	752300	20.47	731400	N	2.8
Endosulfan II	21.11	21.05	21.17	1150850				
4,4'-DDD	20.85	20.79	20.91	763650	20.83	738500	N	3.3
Endo.sulfate	22.62	22.56	22.68	964600	22.60	933750	N	3.2
4,4'-DDT	21.97	21.81	21.93	3642250				
Methoxychlor	24.97	24.88	25.06	678650				
Endrin ketone	25.54	25.45	25.63	1044050	25.51	949400	N	13.7
a. chlordane	18.08	18.02	18.14	1289800	18.06	1229500	N	4.7
g. chlordane	17.52	17.46	17.58	1324800	17.50	1249500	N	5.7
Toxaphene	20.88	20.52	21.24	551272				
Aroclor-1016	13.85	13.79	13.91	720994				
Aroclor-1221	11.15	11.06	11.24	161826				
Aroclor-1232	14.01	13.92	14.10	462163				
Aroclor-1242	13.96	13.80	13.92	625159				
Aroclor-1248	17.23	17.17	17.29	573096				
Aroclor-1254	19.50	19.41	19.59	669743				
Aroclor-1260	21.82	21.73	21.91	995099				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

Lab Name: ARDL, INC Contract: ---

Lab Code: ----- Case No.: 11918 SAS No.: ----- SDG No.: -----

Instrument ID: HP#2 5890 GC Column ID: DB608 0.53 mm x 30m

DATE(S) OF ANALYSIS FROM: 05-20-91 TO: 05-21-9

TIME(S) OF ANALYSIS FROM: 0949 TO: 2226

DATE OF ANALYSIS 05-21-91

TIME OF ANALYSIS 2226

EPA SAMPLE NO. (STANDARD) INDA END SEQ

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	11.15	11.09	11.21	1275200				
beta-BHC	12.89	12.83	12.95	901800				
delta-BHC	14.21	14.15	14.27	1120700				
gamma-BHC	12.61	12.55	12.67	1404800	12.56	1499200	N	6.7
Heptachlor	13.78	13.72	13.84	1458400	13.75	1493300	N	2.4
Aldrin	14.96	14.90	15.02	1423900	14.93	1500600	N	5.4
Hept. epoxide	16.96	16.90	17.02	1462400	16.93	1488700	N	6.2
Endosulfan I	18.18	18.12	18.24	1414300	18.15	1494900	N	5.7
Dieldrin	19.24	19.18	19.30	1186900	19.21	1251600	N	5.5
4,4'-DDE	18.96	18.90	19.02	923300				
Endrin	20.49	20.43	20.55	752300				
Endosulfan II	21.11	21.05	21.17	1150850	21.08	1217350	N	5.8
4,4'-DDD	20.85	20.79	20.91	2636450				
Endo.sulfate	22.62	22.56	22.68	964600				
4,4'-DDT	21.97	21.81	21.93	3642250	21.83	4552250	N	-7
Methoxychlor	24.97	24.88	25.06	678650	24.93	445050	N	34
Endrin ketone	25.54	25.45	25.63	1284050				
a. chlordane	18.08	18.02	19.14	1289800				
g. chlordane	17.52	17.46	17.58	1324800				
Toxaphene	20.88	20.52	21.24	551272				
Aroclor-1016	13.85	13.79	13.91	720994				
Aroclor-1221	11.15	11.06	11.24	1161826				
Aroclor-1232	14.01	13.92	14.10	462153				
Aroclor-1242	13.86	13.80	13.92	635159				
Aroclor-1248	17.23	17.17	17.29	573096				
Aroclor-1254	19.50	19.41	19.59	669743				
Aroclor-1260	21.82	21.73	21.91	995099				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

PESTICIDE EVALUATION STANDARDS SUMMARY

Lab Name: AROL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm x 30m

Dates of Analyses: 05-21-91 to 05-22-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (+/- 10.0%)	
ALDRIN	2197228	3325350	3196636	2.3	
ENDRIN	2605054	2746260	2530983	4.2	
4,4'-DDT	2229838	2411347	2237010	4.5	(1)
DSC	1788584	1993032	1826431	5.8	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-21-91	0927	5.2	0.8	3.2
02	EVAL MIX B	05-21-91	2143	4.2	1.1	3.8
03	EVAL MIX B	05-22-91	1248	5.7	3.9	4.9
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form Instructions.

BE

PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

b Name: ARDL, INC Contract: LEN2 01L

Lab Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm X 30m

Dates of Analyses: 05-21-91 to 05-22-91

36.873

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALA	EVALA	05-21-91	0837	—	
02	EVALB	EVALB	05-21-91	0927	0.23	
03	EVALC	EVALC	05-21-91	1021	0.30	
04	INDA	INDA	05-21-91	1122	0.05	
05	INDB	INDB	05-21-91	1212	0.15	
06	TOXAPH	TOXAPH	05-21-91	1303	0.15	
07	Ar1242	Ar1242	05-21-91	1354	0.12	
08	Ar1248	Ar1248	05-21-91	1444	0.07	
09	Ar1254	Ar1254	05-21-91	1535	0.17	
10	Ar1660	Ar1660	05-21-91	1639	0.12	
11	PBLK1338	111897-B1338	05-21-91	1730	0.07	
12	PBLK1352	111914-B1352	05-21-91	1820	0.10	
13	LO-1MW01D-GW	111897-6	05-21-91	1911	0.04	
14	LO-1MW01S-GW	111897-7	05-21-91	2002	0.05	
15	LO-1MW03S-GW	111897-8	05-21-91	2052	0.00	
16	EVALB	EVALB	05-21-91	2143	0.04	
17	SW CORNER	111914-2	05-21-91	2233	0.12	
18	CENTER	111914-3	05-21-91	2324	0.17	
19	NW CORNER	111914-4	05-22-91	0015	0.01	
20	LO-1MW05S-GW	111908-7 (10X)	05-22-91	0105	0.10	
21	LO-1G10SS-FD	111908-8 (10X)	05-22-91	0156	0.00	
22	IND B	INDB	05-22-91	0337	0.04	
23	1MW030-GW	111897-9	05-22-91	0834	0.01	
24	LO-1MW35-FD	111897-10	05-22-91	0924	0.11	
25	LO-1GW1-FB	111897-11	05-22-91	1015	0.26	
26	PBLK1348	111918-B1348	05-22-91	1107	0.12	
27	LO-1MW025-MS/MSD	111918-7	05-22-91	1158	0.26	
28	EVALB	EVALB	05-22-91	1248	0.21	
29	COMP	111922-1	05-22-91	1339	0.22	
30	INDA	INDA End SEQ.	05-22-91	1508	0.12	
31	INDB	INDB End SEQ	05-22-91	1559	0.30	
32						
33						
34						
35						
36						
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.5% for capillary columns) .5 for megabore

500031

FORM VIII PEST-2 1/87 Rev.

Lab Name: ARDL, INC Contract: LENZ 01C

Lab Code: ----- Case No.: 11918 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5.0.53mm x 30m

DATE(S) OF ANALYSIS FROM: 05-21-91 TO: 05-22-91

TIME(S) OF ANALYSIS FROM: 0837 TO: 1559

DATE OF ANALYSIS 05-22-91

TIME OF ANALYSIS 0337

EPA SAMPLE NO. (STANDARD) 1100BV

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ED
alpha-BHC	13.78	13.51	14.05	2464400	13.72	2674600	Y	8.5
beta-BHC	14.69	14.42	14.96	1257600	14.64	1315900	Y	4.6
delta-BHC	15.83	15.56	16.10	2163200	15.77	2436400	Y	13
gamma-BHC	15.00	14.88	15.12	2194600				
Heptachlor	18.15	18.03	18.27	2112300				
Aldrin	19.92	19.80	20.04	2259000	19.89	2226800	Y	1.4
Hept. epoxide	21.95	21.83	22.07	2001800				
Endosulfan I	24.09	23.97	24.21	2097400				
Dieldrin	25.66	25.54	25.78	1905300				
4,4'-DDE	25.27	24.97	25.57	2162100	25.19	2214800	Y	2.4
Endrin	27.09	26.79	27.39	1525000	27.01	1655300	Y	8.5
Endosulfan II	27.56	27.44	27.68	1732100				
4,4'-DDD	27.93	27.66	28.20	1495550	27.85	1667450	Y	11.5
Endo.sulfate	30.37	30.07	30.67	1826600	30.28	1802250	Y	1.3
4,4'-DDT	30.47	30.35	30.59	1753900				
Methoxychlor	34.41	34.32	34.50	978960				
Endrin ketone	33.68	33.38	33.98	2267300	33.59	2432600	Y	2.3
a. chlordane	24.23	23.93	24.53	2040500	24.16	2313800	Y	8.0
g. chlordane	23.32	23.02	23.62	2044700	23.25	2213900	Y	8.3
Toxaphene	27.00	25.83	28.17	904043				
Aroclor-1016	17.25	17.16	17.34	816 92				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	17.76	17.58	17.94	813198				
Aroclor-1248	23.27	23.12	23.42	1080960				
Aroclor-1254	25.85	25.76	25.94	1340080				
Aroclor-1260	35.66	35.57	35.75	1725201				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ED must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ED. Identification of such analytes is based primarily on pattern recognition

Lab Name: ARDL, INC Contract: [illegible]

Lab Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53 mm X 30m

DATE(S) OF ANALYSIS FROM: 05-21-91 TO: 05-22-91

TIME(S) OF ANALYSIS FROM: 0837 TO: 1559

DATE OF ANALYSIS 05-22-91

TIME OF ANALYSIS 1508

EPA SAMPLE NO. (STANDARD) INDA [illegible] SE①

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	13.78	13.51	14.05	2464400				
beta-BHC	14.69	14.42	14.96	1257600				
delta-BHC	15.83	15.56	16.10	2163200				
gamma-BHC	15.00	14.88	15.12	2194600	14.98	4422000	N	101
Heptachlor	18.15	18.03	18.27	2112300	18.13	3434200	N	63
Aldrin	19.92	19.80	20.04	2259000	19.90	3329000	N	47
Hept. epoxide	21.95	21.83	22.07	2001800	21.95	3099800	N	55
Endosulfan I	24.09	23.97	24.21	2097400	24.07	3236700	N	54
Dieldrin	25.66	25.54	25.78	1905300	25.65	3181100	N	67
4,4'-DDE	25.27	24.97	25.57	2162100				
Endrin	27.09	26.79	27.39	1525000				
Endosulfan II	27.56	27.44	27.68	1732160	27.56	2666750	N	54
4,4'-DDD	27.93	27.66	28.20	1495550				
Endo.sulfate	30.37	30.07	30.67	1826600				
4,4'-DDT	30.47	30.35	30.59	1753900	30.47	2261350	N	29
Methoxychlor	34.41	34.32	34.50	978960	34.41	1455460	N	49
Endrin ketone	33.68	33.38	33.98	2267300				
a. chlordane	24.23	23.93	24.53	2049500				
g. chlordane	23.32	23.02	23.62	2044700				
Toxaphene	27.00	25.83	28.17	804943				
Aroclor-1016	17.25	17.16	17.34	816092				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	17.76	17.58	17.94	813198				
Aroclor-1248	23.27	23.12	23.42	1080960				
Aroclor-1254	25.85	25.76	25.94	1340080				
Aroclor-1260	35.66	35.57	35.75	1725801				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

Lab Name: ARDL, INC Contract: LEN2 01-

Lab Code: ----- Case No.: 11198 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm x 30m

DATE(S) OF ANALYSIS FROM: 05-21-91 TO: 05-22-91

DATE OF ANALYSIS 05-22-91

TIME(S) OF ANALYSIS FROM: 0837 TO: 1559

TIME OF ANALYSIS 1559

EPA SAMPLE NO. (STANDARD) INDB END 309

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ED
alpha-BHC	13.78	13.51	14.05	2464400	13.77	3971600	N	61
beta-BHC	14.69	14.42	14.96	1257600	14.69	1909100	N	52
delta-BHC	15.83	15.56	16.10	2163200	15.82	3569400	N	65
gamma-BHC	15.00	14.88	15.12	2194600				
Heptachlor	18.15	18.03	18.27	2112300				
Aldrin	19.92	19.80	20.04	2259000	19.96	3109800	N	38
Hept. epoxide	21.95	21.83	22.07	2001800				
Endosulfan I	24.09	23.97	24.21	2097400				
Dieldrin	25.66	25.54	25.78	1905300				
4,4'-DDE	25.27	24.07	25.57	2162100	25.29	3142100	N	45
Endrin	27.09	26.79	27.39	1525000	27.13	2281600	N	50
Endosulfan II	27.56	27.44	27.68	1732100				
4,4'-DDD	27.95	27.66	28.20	1495550	27.97	2363500	N	58
Endo.sulfate	30.37	30.07	30.67	1926600	30.42	2592450	N	41
4,4'-DDT	30.47	30.35	30.59	1753900				
Methoxychlor	34.41	34.32	34.50	978960				
Endrin ketone	33.68	33.38	33.98	2267300	33.73	3287000	N	45
a. chlordane	24.23	23.93	24.53	2049500	24.26	3099100	N	51
g. chlordane	23.32	23.02	23.62	2044700	23.35	3056400	N	49
Toxaphene	27.00	25.83	28.17	6049.43				
Aroclor-1016	17.35	17.16	17.54	816092				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	17.76	17.58	17.94	813198				
Aroclor-1248	22.27	23.12	23.42	1080960				
Aroclor-1254	25.85	25.76	25.94	1340080				
Aroclor-1260	35.66	35.57	35.75	1725801				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ED must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ED. Identification of such analytes is based primarily on pattern recognition

FORM IX PEST 8/87 Re

PESTICIDE EVALUATION STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 11918 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A GC Column ID: DB5 0.53mm X 30m

Dates of Analyses: 05-29-91 to 05-30-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (+/- 10.0%)	
ALDRIN	3278456	3414108	3390418	2.2	
ENDRIN	2391578	2595286	2248661	5.4	
4,4'-DDT	2001620	2209849	2053643	5.1	(1)
DBC	1631630	1897039	1831529	7.5	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown
(percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-29-91	0810	6.2	1.3	4.0
02	EVAL MIX B	05-29-91	2100	16	2.0	9.9
03	EVAL MIX B					
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form Instructions.

PESTICIDE EVALUATION STANDARDS SUMMARY
Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: ARDL, INC Contract: LENZ OIL

Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm x 30m

Dates of Analyses: 05-29-91 to 05-30-91

36.716

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALB	EVALB	05-29-91	0810	----	
02	EVALA	EVALA	05-29-91	0911	0.09	
03	EVALC	EVALC	05-29-91	1002	0.14	
04	INDA	INDA	05-29-91	1053	0.11	
05	INDA	INDB	05-29-91	1143	0.15	
06	AR1242	AR1242	05-29-91	1234	0.22	
07	AR1248	AR1248	05-29-91	1324	0.12	
08	AR1254	AR1254	05-29-91	1415	0.13	
09	AR1660	AR1660	05-29-91	1506	0.45	
10	TOXAPH	TOXAPH	05-29-91	1556	0.48	
11	PBLK1334	200215-B1334	05-29-91	1647	0.20	
12	22222	111928-B1365	05-29-91	1738	0.06	
13	LO-1GW3-FB	111918-4	05-29-91	1828	0.02	
14	G101MS	200215-3MS	05-29-91	1919	0.03	
15	G101MSD	200215-3MSD	05-29-91	2009	0.02	
16	EVALB	EVALB	05-29-91	2100	0.03	
17	ZZZZZ	111918-5	05-29-91	2151	0.08	
18	LO-1G1065-WO	111928-1	05-29-91	2341	0.71	
19	LO-1G1065-WOMS	111928-1MS	05-30-91	0022	0.60	
20	LO-1G1065-WOMSD	111928-1MSD	05-30-91	0204	0.63	
21	INDA	INDA End Seq.	05-30-91	1450	0.10	
22	INDB	INDB End Seq.	05-30-91	1541	0.16	
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.5% for capillary columns) 1.5 for megabore

Lab Name: ARDL, INC

Lab Code: ----- Case No.: 111918 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm X 30m

DATE(S) OF ANALYSIS	FROM: 05-29-91	DATE OF ANALYSIS	05-30-91
	TO: 05-30-91	TIME OF ANALYSIS	1450
TIME(S) OF ANALYSIS	FROM: 0810	EPA SAMPLE NO. (STANDARD)	INDA Ind Sdg
	TO: 0345		

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	ID
alpha-BHC	13.70	13.43	13.97	2385200				
beta-BHC	14.62	14.35	14.89	964700				
delta-BHC	15.75	15.48	16.02	1712300				
gamma-BHC	14.95	14.83	15.07	2980000	14.91	4021800	N	35
Heptachlor	18.09	17.97	18.21	2193100	18.06	2626600	N	29
Aldrin	19.85	19.73	19.97	2306200	19.83	2489900	N	20
Hept. epoxide	21.89	21.77	22.01	1797200	21.87	2360700	N	31
Endosulfan I	24.01	23.89	24.13	1817300	23.98	2406100	N	32
Dieldrin	25.56	25.44	25.68	1702600	25.55	2343300	N	38
4,4'-DDE	25.16	24.86	25.46	1400800				
Endrin	26.97	26.67	27.27	1015200				
Endosulfan II	27.46	27.34	27.58	1388050	27.44	1909150	N	38
4,4'-DDD	27.81	27.54	28.08	1008800				
Endo.sulfate	30.25	29.95	30.55	1099350				
4,4'-DDT	30.36	30.24	30.48	1372800	30.33	1563350	N	14
Methoxychlor	34.28	34.19	34.37	754330	34.27	961610	N	27
Endrin ketone	33.54	33.24	33.84	1479800				
a. chlordane	24.12	23.82	24.42	1663100				
g. chlordane	23.22	22.92	23.52	1701400				
Toxaphene	26.46	25.79	28.13	816781				
Aroclor-1016	17.70	17.61	17.79	801098				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	18.03	17.85	18.21	789230				
Aroclor-1248	23.14	22.99	23.29	916771				
Aroclor-1254	27.32	27.23	27.41	1266974				
Aroclor-1260	35.61	35.52	35.70	1713398				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. ID must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and ID. Identification of such analytes is based primarily on pattern recognition

FORM IX PEST 8/87 Rev

Lab Name: ANALYTICAL

Lab Code: ----- Case No.: 11918 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm X 30m

DATE(S) OF ANALYSIS FROM: 05-29-91 TO: 05-30-91

TIME(S) OF ANALYSIS FROM: 0810 TO: 0345

DATE OF ANALYSIS 05-30-91

TIME OF ANALYSIS 1541

EPA SAMPLE NO. (STANDARD) INDB EOD

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	13.70	13.42	13.97	2385200	13.72	3036020	N	27
beta-BHC	14.62	14.35	14.89	964700	14.65	1325800	N	44
delta-BHC	15.75	15.48	16.02	1712300	15.78	2453100	N	43
gamma-BHC	14.95	14.83	15.07	2980000				
Heptachlor	18.09	17.97	18.21	2193100				
Aldrin	19.85	19.73	19.97	2306300	19.88	2263300	N	1.9
Hept. epoxide	21.89	21.77	22.01	1797200				
Endosulfan I	24.01	23.89	24.13	1812300				
Dieldrin	25.56	25.44	25.68	1702600				
4,4'-DDE	25.16	24.86	25.46	1400800	25.18	2018100	N	44
Endrin	26.97	26.67	27.27	1015200	26.99	1495900	N	46
Endosulfan II	27.46	27.34	27.58	1388050				
4,4'-DDD	27.81	27.54	28.08	1008800	27.82	1544650	N	53
Endo.sulfate	30.25	29.95	30.55	1099350	30.26	1654500	N	50
4,4'-DDT	30.36	30.24	30.48	1322800				
Methoxychlor	34.28	34.19	34.37	254330				
Endrin ketone	33.54	33.24	33.84	1479800	33.56	2091350	N	41
a. chlordane	24.12	23.82	24.42	1663100	24.13	2125200	N	28
g. chlordane	23.22	22.92	23.52	1701400	23.25	2172600	N	28
Toxaphene	26.96	25.79	28.13	816781				
Aroclor-1016	17.70	17.61	17.79	801098				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	18.03	17.85	18.21	289230				
Aroclor-1248	23.14	22.99	23.29	916771				
Aroclor-1254	27.32	27.23	27.41	1266974				
Aroclor-1260	35.61	35.52	35.70	1213398				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

1D

PESTICIDE ORGANIC ANALYSIS

Customer Sample No.
LO-1MW02S-MS/MSD-MSD

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: _____ Case No.: 111918 SAS No.: ____ SDG No.: ____

Matrix (SOIL/WATER) : WATER
Sample wt/vol : 500 (g/mL) mL
Level (LOW/MED) : LOW
% Moisture (not dec): --- dec. -
Extraction (SEPF/CONT/SONC): SEPF
GPC Cleanup (Y/N): N pH: 6.7

Lab Sample ID : 111918-7MSD
Lab File ID :
Date Received : 05/09/91
Date Extracted : 05/14/91
Date Analyzed : 05/21/91
Dilution Factor: 1.0

CAS No.	Compound	Concentration Units: ug/L (ug/L or ug/Kg)	Q
319-84-6	alpha-BHC	0.10	U
319-85-7	beta-BHC	0.10	U
319-86-8	delta-BHC	0.10	U
58-89-9	gamma-BHC(Lindane)	0.35	
76-44-8	Heptachlor	0.27	
309-00-2	Aldrin	0.35	
1024-57-3	Heptachlor epoxide	0.10	U
959-98-8	Endosulfan I	0.10	U
60-57-1	Dieldrin	0.77	
72-55-9	4,4'-DDE	0.20	U
72-20-8	Endrin	1.1	
33213-65-9	Endosulfan II	0.20	U
72-54-8	4,4'-DDD	0.20	U
1031-07-8	Endosulfan sulfate	0.20	U
50-29-3	4,4'-DDT	0.76	
72-43-5	Methoxychlor	1.0	U
53494-70-5	Endrin ketone	0.20	U
5103-71-9	alpha-Chlordane	1.0	U
5103-74-2	gamma-Chlordane	1.0	U
8001-35-2	Toxaphene	2.0	U
12674-11-2	Aroclor 1016	1.0	U
11104-28-2	Aroclor 1221	1.0	U
11141-16-5	Aroclor 1232	1.0	U
53469-21-9	Aroclor 1242	1.0	U
12672-29-6	Aroclor 1248	1.0	U
11097-69-1	Aroclor 1254	2.0	U
11096-82-5	Aroclor 1260	2.0	U

D. CASE 111928

ERM - North [illegible]

PROJECT NAME: Lenz Oil

Case [illegible]

SUPPORT DOCUMENTATION FOR THE REVIEW OF ORGANIC ANALYSIS LAB DATA PACKAGE

TYPE OF ANALYSIS: CLP Volatiles (VOA)
CLP Semivolatiles (BNA)
CLP Pesticide/PCB (P/PCB)

APPLICABLE SAMPLE NO's.: refer to Table 1

CONTRACT LABORATORY: ARDL

REVIEWER: M Liccone

REVIEW DATE: June 1991

THE FOLLOWING TABLE INDICATES AREAS WHICH WERE EXAMINED IN DETAIL, THE IDENTIFIED PROBLEM AREAS, AND SUPPORT DOCUMENTATION ATTACHMENTS:

	AREAS EXAMINED IN DETAIL (CHECK (✓) IF YES OR FOOTNOTE LETTER FOR COMMENTS BELOW)				PROBLEM AREAS IDENTIFIED (CHECK (✓) IF YES OR FOOTNOTE NUMBER FOR COMMENTS BELOW)				SUPPORT DOCUMENTATION ATTACHMENTS (CHECK (✓) IF YES OR IDENTIFY ATTACHMENT NO.)			
	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB	ALL APPLICABLE ANALYSES	VOA	BNA	PEST/PCB
HOLDING TIMES	✓											
BLANK ANALYSIS RESULTS, TARGET COMPOUNDS	✓					✓			✓			
BLANK ANALYSIS RESULTS, TENTATIVE [illegible]		✓	✓			✓	✓			✓	✓	
SURROGATE SPIKE RESULTS	✓					✓	✓		✓			
MATRIX SPIKE RESULTS	✓					✓	✓		✓			
DUPLICATE ANALYSIS RESULTS	✓											
TARGET COMPOUND MATCHING QUALITY	✓							✓				✓
TENTATIVELY IDENTIFIED COMPOUNDS		✓	✓									
DFTPP & BFB SPECTRUM TUNE RESULTS		✓	✓							✓	✓	
GC INSTRUMENT PERFORMANCE	✓					✓	✓		✓			
INITIAL CALIBRATIONS	✓					✓	✓		✓			
CONTINUING CALIBRATIONS	✓					✓	✓	✓	✓			
QUANTITATION OF RESULTS	✓											
OTHERS sample identification	✓				✓				✓			

COMMENTS: Data is acceptable unless otherwise qualified.

Support documentation is arranged by fraction (VOA, BNA, P/PCB)

Transparencies were used in the identification of Aroclor 1242.

BLANK ANALYSIS RESULTS FOR TARGET COMPOUNDS

FRACTION	TYPE/ MATRIX	SAMPLE #	SOURCE	CONTAMINANT (CONCENTRATION)
VOA	Method / Aq	BLK5/23A1	ARDL	3 ug/L methylene chloride
VOA	Method / Aq	BLK 6/4/91	ARDL	none
VOA	Trip / Aq	L016W-TB3	—	4 ug/L methylene chloride 2 ug/L chloroform 3 ug/L benzene 3 ug/L total xylenes
BNA	Method / Soil	BLKB1364	ARDL	none
BNA	Method / Soil	BLKB1366	ARDL	none
P/PCB	Method / Soil	PBLK 1305	ARDL	none

LABORATORY REPORTED FIELD BLANK IS COMPARED WITH THE SAMPLE DATA IN A TABULATION FORM WITHIN THE SAMPLE ANALYTICAL DATA SUMMARY. TICs IN BLANKS ARE LISTED ON A SEPERATE FORM.

COMMENTS:

(1) RESULT REPORTED BY THE LABORATORY AND CONFIRMED BY REVIEWER

(2) RESULT INFERED FROM QUANTITATION LIST, CHROMATOGRAM AND/OR SPECTRUM

Case 11928

BLANK ANALYSIS RESULTS FOR TENTATIVELY IDENTIFIED COMPOUNDS

ALL TENTATIVELY IDENTIFIED COMPOUNDS FOUND IN THE BLANK ANALYSES ARE LISTED BELOW

SAMPLE NUMBER	FRACTION	SCAN	ESTIMATED CONCENTRATION ug/L	COMPOUND NAME/ COMMENTS
BLK 5123191	VOA	317	20	unknown RT 13.36
BLK 10/4/91	VOA	318	92	1,1,2-trichlorotrifluoro ethane RT 13.3
LOIGW783	VOA	354	5	unknown RT 14.8
BLK B13664	BNA	215	16	unknown RT 5.97
		269	20	unknown RT 6.47
		306	9.0	unknown RT 6.81
		1786	5.0	2-methyl-1-(1,1-dimethylethyl) propanoic RT 14.99
		2159	10	hexadecanoic acid (RT 23.98) acid
		2300	12	unknown acid RT 25.30
		2371	10	unknown RT 25.96
		2464	7.0	unknown RT 26.27
		2477	10	unknown O2 comp'd RT 26.44
		2515	6.0	hexadecane RT 27.30
		2574	6.0	unknown O2 comp'd RT 27.85
		2601	6.0	unknown RT 28.10
		2618	420	dioctyl ester hexanedioic acid RT 28.26
↓	↓	2991	12.0	bis(2-ethylhexyl) ester decanedioic acid (RT 31.12)
BLK 13646	BNA	501	4	unknown O2 comp'd RT 8.64
		1723	4	2-methyl-1-(1,1-dimethylethyl) propanoic (RT 14.97)
		2155	5	hexadecanoic acid RT 23.98
		2577	8	mono(2-ethylhexyl)ester hexanedioic acid RT 27.84
↓	↓	2665	490	unknown RT 28.24
PJPCB				NA

2A

WATER VOLATILE SURROGATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: 111928 SAS No.: ------ SDG No.: ------

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	LO-1G106S-WO	100	107	109		0
02	LO-1G106S-WOMS	100	115	123 *	UWSM OK	1
03	LO-1G106S-WOMSD	95	113	126 *		1
04	LO-1GW-TB3	107	98	101		0
05	BLK 5/23/91	99	100	104		0
06	BLK 6/04/91(HP-2)	96	104	102		0
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromofluorobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

Code: ------ Case No.: 111928 SAS No.: ------ SDG No.: ------

Matrix Spike - EPA Sample No.: LO-1G106S-WO

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	500.00	0.00	480.00	96	61-145
Trichloroethene	500.00	0.00	470.00	94	71-120
Benzene	500.00	140.00	610.00	93	76-127
Toluene	500.00	360.00	840.00	97	76-125
Chlorobenzene	500.00	0.00	470.00	94	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	500.00	410.00	83	15 *	14	61-145
Trichloroethene	500.00	450.00	90	4	14	71-120
Benzene	500.00	600.00	91	2	11	76-127
Toluene	500.00	770.00	83	16 *	13	76-125
Chlorobenzene	500.00	440.00	88	7	13	75-130

Column to be used to flag recovery and RPD values with an asterisk
Values outside of qc limits

RPD: 2 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Name: ARDL,INC Contract: -------

Lab Code: ------- Case No.: ----- SAS No.: ------ SDG No.: -------

Lab File ID: >B519F BFB Injection Date: 5/19/91

Instrument ID: nP- 2 BFB Injection Time: 14:44

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	20.1
75	30.0 - 60.0% OF MASS 95	51.6
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	8.1
73	Less than 2.0% of mass 174	1.1(1.2)1
174	Greater than 50.0% of mass 95	91.6
175	5.0 - 9.0% of mass 174	6.5(7.1)1
176	Greater than 95.0%, but less than 101.0% of mass 174	91.2(99.6)1
177	5.0 - 9.0% of mass 176	7.7(8.4)2

1-Value is % mass 174 2-Value is % mass 176

THE TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	20 NG STD	>V9140	5/19/91	15:57
02	VOA STD	50 NG STD	>V9141	5/19/91	16:48
03	VOA STD	100 NG STD	>V9142	5/19/91	17:38
04	VOA STD	150 NG STD	>V9143	5/19/91	18:29
05	VOA STD	200 NG STD	>V9144	5/19/91	19:19
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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300004

Initial Calibration Data
HSL Compounds

Case No: ---------- Instrument ID: HP-2 ----------

Contractor: ARDL, INC. ---------- Calibration Date: 06/12/91 ----------

Contract No: ----------

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30.0%

Laboratory ID:	V9140	V9141	V9142	V9143	V9144						
	RF	RF	RF	RF	RF						
Compound	20.00	50.00	100.00	150.00	200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
Chloromethane	.53741	.59510	.51149	.51349	.58860	.148	.54922	7.337		**	
Bromomethane	1.08959	1.12508	.93658	.98067	1.06477	.239	1.03934	7.534			
Dichlorodifluoromethane	.05848	.04216	.01910	.01797	.02022	.309	.03159	57.189			
Vinyl Chloride	1.01610	1.07195	.74055	.77547	.82760	.314	.88634	16.762	*		
Chloroethane	.69032	.70813	.62738	.69623	.74688	.422	.69379	6.222			
Iodomethane	3.21760	3.11720	2.84419	3.09947	3.28399	.598	3.11249	5.391			
Methylene Chloride	1.57537	1.12878	1.03881	1.10748	1.18497	.664	1.20708	17.598			
Acetone	.21843	.60659	.21546	.22221	.20522	.761	.29358	59.639			
2-Propenal	.11925	.07180	.06313	.05727	.06127	.771	.07454	34.273			
Carbon Disulfide	3.08254	2.41111	2.22045	2.33250	2.53198	.819	2.52572	13.085			
Acrylonitrile	.23366	.16884	.16404	.17278	.15442	.829	.17875	17.598			
Trichlorofluoromethane	1.46684	1.09211	.98153	1.07537	1.14017	.877	1.15120	16.122			Conc=40.0,100.0,200.0,3
Methane, oxybis[chloro-	3.86372	3.83327	5.69255	3.82597	.87990	.977	3.61908	47.761			
1,1-Dichloroethene	1.25954	.92436	.84548	.90177	.94974	.955	.97618	16.679	*		
-Dichloroethane	3.09131	2.31130	2.19950	2.37084	2.56082	1.076	2.50675	14.043		**	
Tetrahydrofuran	.11051	.08643	.00439	.08213	.07348	1.063	.07139	55.877			
trans-1,2-Dichloroethene	1.46541	1.10148	1.03477	1.10033	1.17259	1.153	1.17492	14.431			
Chloroform	4.36649	3.31727	3.16606	3.40779	3.69587	1.206	3.59070	13.221	*		
1,2-Dichloroethane-d4	2.21683	2.32821	2.14150	2.43358	2.56330	1.268	2.33669	7.202			Conc=50.0,50.0,50.0,50.0
1,1,2-Trichlorotrifluoroethane	2.51905	2.13230	1.74518	1.86692	1.95847	1.235	2.04438	14.703			
1,2-Dichloroethane	3.27074	2.51724	2.40036	2.53949	2.67276	1.276	2.68012	12.837			
2-Butanone	.02313	.04444	.02483	.02458	.02242	.650	.02788	33.394			
Dibromomethane	.73134	.68097	.74129	.68455	.65210	.655	.69805	5.343			
Ethyl Ether	.19125	.16694	.17334	.15832	.15423	.606	.16882	8.636			
Propane,2-methoxy-2-methyl-	.82548	.76714	.81713	.75096	.72067	.697	.77627	5.727			
1,1,1-Trichloroethane	1.13164	.85348	.94244	.90892	.95780	.704	.95886	10.904			
Carbon Tetrachloride	1.08124	.81828	.89767	.87993	.92174	.723	.91981	10.658			
Ethyl Acetate	.29839	.23179	.26478	.54313	.22093	.725	.31181	42.596			
Vinyl Acetate	.71132	.40034	.52844	.54313	.42518	.739	.51968	22.928			
Bromodichloromethane	1.29934	.98431	1.10268	1.06381	1.10419	.751	1.11087	10.446			

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

- Calibration Check Compounds *, SPCC - System Performance Check Compounds **

300046

Initial Calibration Data
HSL Compounds

Case No: ---------- Instrument ID: HP-2 ----------

Contractor: ARDL, INC. Calibration Date: 06/12/91 ----------

Contract No: ----------

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % RSD for CCC is 30.0%

Laboratory ID:	>V9140	>V9141	>V9142	>V9143	>V9144						
	RF	RF	RF	RF	RF						
Compound	20.00	50.00	100.00	150.00	200.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
1,2-Dichloropropane	.50756	.37660	.41148	.39293	.40557	.814	.41883	12.266	*		
cis-1,3-Dichloropropene	.93698	.69771	.78111	.75613	.77585	.827	.78956	11.247			(Conc=28.0,70.0,140.0,210
Trichloroethene	.77469	.56445	.59702	.56842	.58784	.855	.61848	14.285			
Benzene	1.09420	.80874	.87701	.83172	.86278	.878	.89493	12.798			
Dibromochloromethane	1.28161	.96053	1.06743	1.00978	.99922	.881	1.06375	12.011			
trans-1,3-Dichloropropene	.75404	.54778	.61349	.57648	.57370	.888	.61310	13.407			(Conc=12.0,30.0,60.0,90.0
1,1,2-Trichloroethane	.54509	.39539	.43354	.39654	.38388	.886	.43089	15.438			
2-Chloroethylvinylether	.13618	.01615	.11276	.06092	.08544	.939	.08229	56.591			(Conc=40.0,100.0,200.0,30
Bromoform	1.06624	.78867	.87711	.83388	.77740	1.006	.86866	13.505		**	
4-Methyl-2-Pentanone	.42666	.35386	.37229	.32223	.28337	.840	.35168	15.703			
Paraldehyde	.09613	.00570	.08154	.07206	.06223	.893	.06353	54.563			
1,2,3-Trichloropropane	.66533	.56969	.58161	.54770	.49396	.898	.57166	10.885			
2-Hexanone	.22901	.37750	.36452	.25640	.21904	.900	.28929	26.264			
Tetrachloroethene	.92726	.67531	.71472	.67108	.68959	.912	.73559	14.749			
trans-1,4-Dichloro-2-butene	.15317	.14747	.16423	.16032	.14427	.921	.15389	5.461			
1,1,2,2-Tetrachloroethane	.86715	.60803	.65350	.62572	.56758	.908	.66440	17.693		**	
Toluene-d8	1.22042	1.22637	1.20713	1.21706	1.20567	.954	1.21533	.726			(Conc=50.0,50.0,50.0,50.0
Ethyl methacrylate	.59350	.52672	.58341	.53586	.49367	.957	.54663	7.580			
Toluene	.93533	.69582	.73040	.70687	.72796	.961	.75928	13.101	*		
Chlorobenzene	1.51216	1.11024	1.19202	1.14234	1.18200	1.004	1.22775	13.219		**	
Ethylbenzene	.66742	.49851	.51890	.48569	.50655	1.074	.53541	13.966	*		
Bromofluorobenzene	1.08666	1.11775	1.08033	1.08101	1.07503	1.153	1.08816	1.567			(Conc=50.0,50.0,50.0,50.0
Styrene	1.48335	1.13216	1.18841	1.13285	1.17213	1.199	1.22178	12.136			
Xylene	.70721	.68222	.70292	.65685	.67755	1.208	.68535	2.981			
o & p-Xylene	.82580	.70870	.72625	.68871	.71316	1.237	.73252	7.352			(Conc=40.0,100.0,200.0,30
1,4-Dichlorobenzene	1.60233	1.52174	1.57364	1.45723	1.48454	1.380	1.52790	3.946			

RF - Response Factor (Subscript is amount in ug/l)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

* - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

300047

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, INC. Contract: -------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >B523F BFB Injection Date: 5/23/91

Instrument ID: HP- 2 BFB Injection Time: 13:03

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	25.7
75	30.0 - 60.0% OF MASS 95	59.1
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	80.6
175	5.0 - 9.0% of mass 174	6.2(7.7)1
176	Greater than 95.0%, but less than 101.0% of mass 174	80.8(100.1)1
177	5.0 - 9.0% of mass 176	5.3(6.6)2

1-Value is % mass 174 2-Value is % mass 176

TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V9246	5/23/91	13:45
02	BLK 5/23/91(HP-2)	BLK 5/23/91(HP-2)	>V9247	5/23/91	14:46
3	LO-1GW-TB3	111928-2	>V9248	5/23/91	15:52
04	029WA	917-10	>V9249	5/23/91	16:38
05	LO-1G106S-WO	111928-1	>V9251	5/23/91	18:10
6	10SSRDH12	915-6	>V9252	5/23/91	19:25
07	TRIP BLANK	200217-8	>V9255	5/23/91	21:42
08	025WARE	917-6RE	>V9258	5/23/91	23:58
9	026WARE	917-7RE	>V9259	5/24/91	00:43
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FORM V VOA 1/87 Rev.

300005

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 05/23/91

Contractor: ARCL, INC. | Time: 13:45

Contract No: | Laboratory ID: >U9246

Instrument ID: HP-2 | Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 | Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
Chloromethane	.54922	.35852	34.72		**
Bromomethane	1.03934	1.40534	35.23		
Dichlorodifluoromethane	.03159	1.15308	3547.34		
Vinyl Chloride	.88634	.85545	3.48	*	
Chloroethane	.63379	.61926	10.74		
Iodomethane	3.11249	2.99833	3.67		
Methylene Chloride	1.20708	1.45809	20.79		
Acetone	.29358	.21789	25.78		
2-Propenal	.07454	.06806	8.70		
Carbon Disulfide	2.52572	3.29510	30.47		
Acrylonitrile	.17875	.17085	4.42		
Trichlorofluoromethane	1.15123	2.51549	118.51		(Conc=100.00)
Methane, oxybis[chloro-	3.61908	.95979	73.48		
1,1-Dichloroethene	.37618	1.20025	22.95	*	
1,1-Dichloroethane	2.50675	2.61265	4.22		**
Tetrahydrofuran	.07139	.08761	22.73		
trans-1,2-Dichloroethene	1.17452	1.19565	1.76		
Chloroform	3.59079	4.19633	16.87	*	
1,2-Dichloroethane-d4	2.33669	3.03365	29.83		(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.04438	2.30365	67.60		
1,2-Dichloroethane	2.60012	3.41159	27.29		
2-Butanone	.02786	.02060	25.04		
Bromomethane	.69805	.78951	12.96		
Ethyl Ether	.16892	.19764	17.07		
Propane,2-methoxy-2-methyl-	.27627	.36759	24.63		
1,1,1-Trichloroethane	.95886	1.32231	37.91		
Carbon Tetrachloride	.91981	1.31823	43.32		
Ethyl Acetate	.31181	.25397	18.56		
Vinyl Acetate	.51968	.51899	.13		
Bromodichloromethane	1.11087	1.37069	23.39		
1,2-Dichloropropane	.41883	.37051	11.54	*	
cis-1,3-Dichloropropene	.79956	.78305	.82		(Conc=70.00)

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

BIK 5/23/91
LO-1GW-TB3
029WA
LO-1G1065-WO
1055RPH19
T.B.
025WARE
026WARE

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 05/23/91

Contractor: ARDL, INC. Time: 13:45

Contract No: Laboratory ID: XU9246

Instrument ID: HP-2 Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Trichloroethene	.61848	.62806	1.55			
Benzene	.89493	.83818	6.34			
Dibromochloromethane	1.06375	1.19197	12.05			
trans-1,3-Dichloropropene	1.84230	1.82712	.82			(Conc=30.00)
1,1,2-Trichloroethane	.43089	.41689	3.25			
Chloroethylvinylether	.09229	.11193	36.03			(Conc=100.00)
Bromoform	.86866	.96615	11.22		**	
4-Methyl-2-Pentanone	.35168	.30104	14.40			
Paraldehyde	.36353	.37405	16.56			
1,2,3-Trichloropropane	.57166	.61887	8.26			
2-Hexanone	.20929	.21289	25.41			
Tetrachloroethene	.73553	.71895	2.25			
trans-1,4-Dichloro-2-butene	.15389	.15070	2.07			
1,1,2,2-Tetrachloroethane	.66440	.59357	10.81		**	
Toluene-d8	1.21533	1.17170	3.59			(Conc=50.00)
Ethyl methacrylate	.54663	.52623	3.73			
Toluene	.75928	.66643	12.23	*		
Chlorobenzene	1.02775	1.00267	11.32		**	
Ethylbenzene	.53541	.47245	11.76	*		
Bromofluorobenzene	1.08916	1.02788	12.84			(Conc=50.00)
Styrene	1.02178	1.04907	14.22			
m-Xylene	.68535	.64276	6.21			
o & p-Xylene	.73252	.60273	17.72			(Conc=100.00)
1,4-Dichlorobenzene	1.52790	1.45680	4.65			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ARDL, INC. Contract: --------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >B604C BFB Injection Date: 6/04/91

Instrument ID: HP- 2 BFB Injection Time: 17:44

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	23.1
75	30.0 - 60.0% OF MASS 95	55.9
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	1.5(1.7)1
174	Greater than 50.0% of mass 95	89.1
175	5.0 - 9.0% of mass 174	6.9(7.7)1
176	Greater than 95.0%, but less than 101.0% of mass 174	88.0(98.7)1
177	5.0 - 9.0% of mass 176	5.9(6.7)2

1-Value is % mass 174 2-Value is % mass 176

TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VOA STD	50 NG STD	>V9435	6/04/91	18:24
02	BLK 6/04/91(HP-2)	BLK 6/04/91(HP-2)	>V9436	6/04/91	19:27
03	6276A-013RE	300025-12RE	>V9437	6/04/91	20:40
04	6276A-014RE	300025-13RE	>V9451	6/04/91	22:00
05	6276A-025RE	300025-19RE	>V9439	6/04/91	22:46
06	6276A-028RE	300025-20RE	>V9440	6/04/91	23:33
07	6276A-035RE	300025-21RE	>V9441	6/04/91	00:20
08	6276A-001MS	300025-1MS	>V9443	6/05/91	01:53
09	6276A-001MSD	300025-1MSD	>V9444	6/05/91	02:48
10	09SWG1201MS	915-7MS	>V9445	6/05/91	03:26
11	LO-1G106S-WOMS	111928-1MS	>V9446	6/05/91	04:13
12	LO-1G106S-WOMSD	111928-1MSD	>V9447	6/05/91	05:00
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Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 06/04/91

Contractor: HAUL, INC. Time: 18:24

Contract No: Laboratory ID: 209435

Instrument ID: HP-2 Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Chloromethane	.54922	.38323	60.22		**	
Bromomethane	1.03934	1.39657	34.37			
Dichlorodifluoromethane	.03159	.23911	657.00			
Vinyl Chloride	.88634	.92096	3.91	*		
Chloroethane	.69379	.62418	10.03			
Iodomethane	3.11249	4.13275	32.78			
Methylene Chloride	1.20708	1.31924	9.29			
Acetone	.29358	.39238	33.65			
2-Propenal	.07454	.04967	33.37			
Carbon Disulfide	2.52572	2.30321	8.81			
Acrylonitrile	.17875	.15585	12.81			
Trichlorofluoromethane	1.15120	2.03233	76.54			(Conc=100.00)
Methane, oxybis[chloro-	3.61908	.86420	76.12			
-Dichloroethene	.97618	.98699	1.11	*		
Dichloroethane	2.50675	2.29884	8.69		**	
Tetrahydrofuran	.07139	.07916	10.89			
trans-1,2-Dichloroethene	1.17492	1.03716	11.72			
Chloroform	3.59070	3.65243	1.72	*		
1,2-Dichloroethane-d4	2.33669	2.87779	23.14			(Conc=50.00)
1,1,2-Trichlorotrifluoroethane	2.04438	5.77193	182.33			
1,2-Dichloroethane	2.68812	3.18219	18.36			
2-Butanone	.02766	.01950	29.49			
Dibromomethane	.08805	.07907	7.31			
Ethyl Ether	.16882	.17024	.85			
Propane,2-methoxy-2-methyl-	.77627	.88026	13.40			
1,1,1-Trichloroethane	.95886	1.27184	32.63			
Carbon Tetrachloride	.91991	1.26339	37.33			
Ethyl Acetate	.31181	.22857	26.69			
Vinyl Acetate	.51908	.45968	11.55			
Bromodichloromethane	1.11087	1.30759	17.71			
1,2-Dichloropropane	.41883	.34957	16.54	*		
cis-1,3-Dichloropropene	.78956	.73746	6.60			(Conc=70.00)

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Form VII Page 1 of 1

BLK 6/4/91
60760-013 RE
14RE
25RE
28RE
35RE
001MS
MSD
09SW01201-MS
LO-16065-WOMS
-MS

300080

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 06/04/91

Contractor: ARDL, INC. | Time: 18:24

Contract No: | Laboratory ID: >09435

Instrument ID: HP-2 | Initial Calibration Date: 05/20/91

Minimum $\overline{RF}$ for SPCC is 0.3 Maximum % Diff for CCC is 25.0%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Trichloroethene	.61848	.59420	3.93			
Benzene	.89493	.75894	15.20			
Dibromochloromethane	1.06375	1.14522	7.66			
trans-1,3-Dichloropropene	1.84230	1.72075	6.60			(Conc=50.00)
1,1,2-Trichloroethane	.43089	.39873	7.46			
Chloroethylvinylether	.08229	.10710	30.15			(Conc=100.00)
Bromoform	.86866	.92498	6.48		**	
4-Methyl-2-Pentanone	.35168	.31878	9.36			
Paraldehyde	.06353	.08377	31.86			
1,2,3-Trichloropropane	.57166	.62667	9.62			
2-Hexanone	.28929	.26865	7.14			
Tetrachloroethene	.73559	.70646	3.96			
trans-1,4-Dichloro-2-Butene	.15389	.13957	9.44			
1,1,2,2-Tetrachloroethane	.66440	.58760	11.56		**	
Toluene-d8	1.21555	1.18139	2.75			(Conc=50.00)
Ethyl methacrylate	.54665	.52089	4.71			
Toluene	.75928	.64852	14.59	*		
Chlorobenzene	1.22775	1.06225	13.48		**	
Ethylbenzene	.53541	.45183	15.61	*		
Bromofluorobenzene	1.08816	1.17371	7.86			(Conc=50.00)
Styrene	1.22178	1.03851	15.00			
o-Xylene	.69555	.61975	9.57			
m,p-Xylene	.73152	.58200	20.55			(Conc=100.00)
1,4-Dichlorobenzene	1.52790	1.45934	4.49			

RF - Response Factor from daily standard file at 50.00 ug/l

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**

300081

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

b Name: ARDL, INC. Contract: LENZ OIL

Lab code: ----- Case No.: ----- SAS No.: ------- SDG No.: -----

Lab File ID (Standard): >V9246 Date Analyzed: 5/23/91

Instrument ID: HP-2 Time Analyzed: 13:45

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

		IS1(BCM)		IS2(DFB)		IS3(CHL)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	148859	10.85	475603	21.32	433398	26.17
	UPPER LIMIT	297718	11.35	951206	21.82	866796	26.67
	LOWER LIMIT	74430	10.35	237802	20.82	216699	25.67
	EPA SAMPLE NO.						
1	BLK 5/23/91	119414	10.84	387547	21.31	352845	26.16
2	LO-1GW-TB3	80591	10.85	355605	21.32	312815	26.17
3	LO-1G106S-WO	104564	10.75	330339	21.30	315957	26.15
4							
5							
6							
7							
8							
9							
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13							
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16							
17							
18							
19							
20							
21							
22							

IS1 (BCM) = Bromochloromethane (ISTD 1)
IS2 (DFB) = 1,4-Difluorobenzene (ISTD 2)
IS3 (CHL) = D5-Chlorobenzene (ISTD 3)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Name: ARDL, INC. Contract: LENZ OIL

Lab code: ------ Case No.: ------ SAS No.: ------ SDG No.: -------

Lab File ID (Standard): >V9435 Date Analyzed: 6/04/91

Instrument ID: HP- 2 Time Analyzed: 18:24

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

		IS1(BCM)		IS2(DFB)		IS3(CHL)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	138302	10.82	424995	21.33	368636	26.22
	UPPER LIMIT	276604	11.32	849990	21.83	737272	26.72
	LOWER LIMIT	69151	10.32	212498	20.83	184318	25.72
	EPA SAMPLE NO.						
1	BLK 6/04/91(HP-2)	122129	10.79	378544	21.37	337553	26.22
2	6276A-013RE	111727	11.01	356364	21.60	317613	26.45
3	6276A-014RE	95354	10.86	297685	21.36	268306	26.25
4	6276A-025RE	94654	10.76	289032	21.35	259367	26.24
5	6276A-028RE	86479	10.78	265521	21.33	241228	26.22
6	6276A-036RE	78304	10.81	245479	21.32	219309	26.21
7	6276A-001MS	72781	10.78	217279	21.36	200166	26.21
8	6276A-001MSD	78953	10.82	238720	21.32	215447	26.21
9	LO-1G106S-WOMS	76013	10.80	228901	21.34	206807	26.19
10	LO-1G106S-WOMSD	69902	10.78	207816 *	21.32	193678	26.21
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (BCM) = Bromochloromethane (ISTD 1)
IS2 (DFB) = 1,4-Difluorobenzene (ISTD 2)
IS3 (CHL) = D5-Chlorobenzene (ISTD 3)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

FORM VIII VOA

1/87 Rev

300008

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G106S-WOMS

Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111928 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WATER Lab Sample ID: 111928-1MS

Sample wt/vol: 0.5 (g/mL) mL Lab File ID: >V9446

Level: (low/med) LOW Date Received: 5/13/91

% Moisture: not dec. --- Date Analyzed: 6/05/91

Column: (pack/cap) PACK Dilution Factor: 10.0000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	100.	U
75-00-3	Chloroethane	22.	J
75-09-2	Methylene Chloride	28.	J
67-64-1	Acetone	110.	
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	480.	
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	470.	
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	610.	
10061-02-6	trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100	U
127-18-4	Tetrachloroethene	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	840.	
108-90-7	Chlorobenzene	470.	
100-41-4	Ethylbenzene	150.	
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	1600.	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
LO-1G106S-WOMSD

Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111928 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WATER Lab Sample ID: 111928-1MSD

Sample wt/vol: 0.5 (g/mL) mL Lab File ID: >V9447

Level: (low/med) LOW Date Received: 5/13/91

% Moisture: not dec. --- Date Analyzed: 5/05/91

Column: (pack/cap) PACK Dilution Factor: 10.0000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	100.	U
74-83-9	Bromomethane	100.	U
75-01-4	Vinyl Chloride	100.	U
75-00-3	Chloroethane	22.	J
75-09-2	Methylene Chloride	29.	J
67-64-1	Acetone	78.	J
75-15-0	Carbon Disulfide	50.	U
75-35-4	1,1-Dichloroethene	410.	
75-34-3	1,1-Dichloroethane	50.	U
540-59-0	1,2-Dichloroethene (total)	50.	U
67-66-3	Chloroform	50.	U
107-06-2	1,2-Dichloroethane	50.	U
78-93-3	2-Butanone	100.	U
71-55-6	1,1,1-Trichloroethane	50.	U
56-23-5	Carbon Tetrachloride	50.	U
108-05-4	Vinyl Acetate	100.	U
75-27-4	Bromodichloromethane	50.	U
78-87-5	1,2-Dichloropropane	50.	U
10061-01-5	cis-1,3-Dichloropropene	50.	U
79-01-6	Trichloroethene	450.	
124-48-1	Dibromochloromethane	50.	U
79-00-5	1,1,2-Trichloroethane	50.	U
71-43-2	Benzene	600.	
10061-02-6	trans-1,3-Dichloropropene	50.	U
75-25-2	Bromoform	50.	U
108-10-1	4-Methyl-2-Pentanone	100.	U
591-78-6	2-Hexanone	100.	U
127-18-4	Tetrachloroethene	50.	U
79-34-5	1,1,2,2-Tetrachloroethane	50.	U
108-88-3	Toluene	770.	
108-90-7	Chlorobenzene	440.	
100-41-4	Ethylbenzene	130.	
100-42-5	Styrene	50.	U
1330-20-7	Xylene (total)	1400.	

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------- Case No.: 111928 SAS No.: ------- SDG No.: -------

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	L0-1G106S-WO	39	42 *	45	38	42	63		1
02	BLANK B1366	50	48	54	31	40	25		0
03									
04									
05									
06									
07									
08									
09									
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28									
29									
30									

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl-d14	(33-141)
S4 (PHL)	= Phenol-d5	(10-94)
S5 (2FP)	= 2-Fluorophenol	(21-100)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

200008

2D

SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

L Code: ------- Case No.: 111928 SAS No.: ------- SDG No.: -------

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	L0-1G106S-WO	0 *	329 *	119	51	40	337 *		3
02	L0-1G106S-WODL	185 D	124 D	47	72	52	28		2
03	L0-1G106S-WODLRE	150 D	132 D	54	67	49	50 25		2
04	L0-1G106S-WOMS	178 *	306 *	126	54	54	0 *		3
05	L0-1G106S-WOMSD	249 *	297 *	80	61	78	287 *		3
06	BLANK B1364	62	63	62	73	58	41		0
07									
08									
09									
10									
11									
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25									
26									
27									
28									
29									
30									

		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(35-114)
S2 (FBP)	= 2-Fluorobiphenyl	(43-116)
S3 (TPH)	= Terphenyl-d14	(33-141)
S4 (PHL)	= Phenol-d5	(10-94)
S5 (2FP)	= 2-Fluorophenol	(21-100)
S6 (TBP)	= 2,4,6-Tribromophenol	(10-123)

\# Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogates diluted out

200009

3D

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ----- Case No.: 111928 SAS No.: ----- SDG No.: -----

Matrix Spike - EPA Sample No.: LO-G106S-WO Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	200000.00	0.00	92000.00	46	26- 90
2-Chlorophenol	200000.00	0.00	100000.00	50	25-102
1,4-Dichlorobenzene	100000.00	0.00	72000.00	72	28-104
N-Nitroso-di-n-prop.(1)	100000.00	0.00	0.00	0 *	41-126
1,2,4-Trichlorobenzene	100000.00	0.00	140000.00	139 *	38-107
4-Chloro-3-methylphenol	200000.00	0.00	210000.00	106 *	26-103
Acenaphthene	100000.00	430000.00	720000.00	290 *	31-137
4-Nitrophenol	200000.00	0.00	150000.00	74	11-11
2,4-Dinitrotoluene	100000.00	0.00	0.00	0 *	28- 89
Pentachlorophenol	200000.00	0.00	170000.00	86	17-109
Pyrene	100000.00	47000.00	130000.00	86	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200000.00	100000.00	50	8	35	26- 90
2-Chlorophenol	200000.00	100000.00	51	2	50	25-102
1,4-Dichlorobenzene	100000.00	84000.00	84	15	27	28-104
N-Nitroso-di-n-prop.(1)	100000.00	120000.00	116	200 *	38	41-126
1,2,4-Trichlorobenzene	100000.00	280000.00	282 *	68 *	23	38-107
4-Chloro-3-methylphenol	200000.00	250000.00	124 *	15	33	26-103
Acenaphthene	100000.00	870000.00	437 *	19 *	19	31-137
4-Nitrophenol	200000.00	0.00	0 *	200 *	50	11-114
2,4-Dinitrotoluene	100000.00	0.00	0 *	0	47	28- 89
Pentachlorophenol	200000.00	190000.00	94	9	47	17-109
Pyrene	100000.00	120000.00	74	15	36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of qc limits

RPD: 4 out of 11 outside limits
Spike Recovery: 10 out of 22 outside limits

COMMENTS: _____

20001Z

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

b Name:ARDL, INC. Contract:------

Lab Code: ----- Case No.: ------ SAS No.: ----- SDG No.: -----

Lab File ID: >603FD DFTPP Injection Date: 6/03/91

Instrument ID: HP-3 DFTPP Injection Time: 18:56

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	46.1
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	67.6
70	Less than 2.0% of mass 69	0.2(0.3)1
127	40.0 - 60.0% of mass 198	49.5
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
199	5.0 - 9.0% of mass 198	5.9
275	10.0 - 30.0% of mass 198	22.1
365	Greater than 1.00% of mass 198	3.4
441	Present, but less than mass 443	12.2(71.6)
442	Greater than 40.0% of mass 198	93.9
443	17.0 - 23.0% of mass 442	17.0(18.2)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	80 NG STD	>B4764	6/03/91	19:17
02	BNA STD	20 NG STD	>B4765	6/03/91	20:36
03	BNA STD	80 NG STD	>B4766	6/03/91	21:27
04	BNA STD	120 NG STD	>B4767	6/03/91	22:19
05	BNA STD	160 NG STD	>B4768	6/03/91	23:11
06	BLANK B1351	BLANK B1351	>B4769	6/04/91	0:02
07	BLANK B1357	BLANK B1357	>B4770	6/04/91	0:53
08	09SSCDH5	915-2	>B4771	6/04/91	1:45
09	09SSCDH5MS	915-2MS	>B4772	6/04/91	2:36
10	09SSCDH5MSD	915-2MSD	>B4773	6/04/91	3:27
11	09SSCDH14	915-5	>B4774	6/04/91	4:18
12	10SSRDH12	915-6	>B4775	6/04/91	5:09
13	09SWG1201	915-7	>B4776	6/04/91	6:00
14	09SWG2601	915-8	>B4777	6/04/91	6:51
16					
17					
18					
19					
20					
21					
22					

Initial Calibration Data
HSL Compounds

Instrument ID: HP-3

r: LABS

Calibration Date: 06/04/91

No:

nimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Compound	Laboratory ID: >84765 RF 20.00	>84764 RF 50.00	>84766 RF 80.00	>84767 RF 120.00	>84768 RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC	
	2.92648	2.59632	2.59419	1.97493	1.69847	.415	2.35808	21.388			
dimethylamine	1.90490	1.78282	1.71763	1.48606	1.39275	.423	1.65683	12.804			
e	2.16892	2.05097	2.25833	2.00876	1.89620	.590	2.07664	6.782			
henol (Surr 1)	1.72662	1.59331	1.73791	1.51557	1.45676	.734	1.60603	7.787			(Conc=100.0,100.0,100.0,1
	2.16642	2.46966	2.37301	2.17423	2.32392	.940	2.30145	5.679			
(Surr 2)	1.97746	1.92553	1.98326	1.92198	1.86843	.942	1.93533	2.426			(Conc=100.0,100.0,100.0,1
	2.23114	2.39344	2.41837	2.21739	2.25314	.945	2.30270	4.146	*		0
loroethyl)Ether	1.69607	1.75117	1.83793	1.70731	1.71428	.957	1.74135	3.320			
henol	1.42119	1.56708	1.50937	1.56815	1.52777	.963	1.51871	3.959			
orobenzene	1.53669	1.59631	1.74099	1.53784	1.50570	.992	1.58351	5.932			,50.0
orobenzene	1.65483	1.64266	1.79369	1.65648	1.51651	1.004	1.65283	5.939	*		
cohol	.70986	.86355	.95364	.90124	.90932	1.043	.86752	10.809			
orobenzene	1.58717	1.59860	1.72987	1.56933	1.43488	1.044	1.58397	6.618			
ne	1.18814	1.36394	1.41199	1.39340	1.44280	1.073	1.36005	7.373			
or ropyl)Ether	1.19475	1.31886	1.07466	1.15621	1.76093	1.077	1.30108	20.884			
henol	1.24640	1.48538	1.48788	1.43268	1.36813	1.107	1.40411	7.175			
-Di-n-Propylamine	1.13590	1.22060	1.39708	1.32921	1.33650	1.113	1.28386	8.127		**	
ethane	.96258	1.03307	1.07270	1.01486	.74243	1.113	.96513	13.536			
enzene (Surr 3)	.55757	.55995	.53865	.54840	.52394	.878	.54570	2.710			(Conc=50.0,50.0,50.0,50.0
ene	.52442	.59394	.53887	.58326	.54034	.881	.55617	5.482			
e	.98067	1.06122	.95058	1.02073	1.01155	.925	1.00495	4.164			
enol	.19567	.22861	.22330	.26100	.25802	.937	.23332	11.572	*		
hylphenol	.44038	.51831	.50309	.51563	.49417	.949	.49432	6.410			
loroethoxy)Methane	.59364	.65388	.60507	.67265	.67975	.967	.64100	6.144			
cid	.10542	.16241	.17404	.21433	.24992	.982	.18122	0.182			
orophenol	.29730	.32651	.33464	.34553	.35570	.980	.33194	6.712	*		
chlorobenzene	.33333	.35775	.35696	.38600	.36297	.993	.35940	5.222			
ne	1.15491	1.30379	1.37062	1.36985	1.26278	1.004	1.29239	6.924			1
niline	.41025	.52461	.49819	.58382	.57552	1.020	.51348	13.529			
obutadiene	.22067	.23207	.20749	.21536	.19099	1.038	.21331	7.196	*		

Response Factor (Subscript is amount in ug/L)

Average Relative Retention Time (RT Std/RT Istd)

Average Response Factor

Percent Relative Standard Deviation

Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400181

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ARDL,INC. Contract: -------

Lab Code: ------ Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >DF605 DFTPP Injection Date: 6/05/91

Instrument ID: HP- 3 DFTPP Injection Time: 9:18

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	51.5
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	71.
70	Less than 2.0% of mass 69	.3(.4)1
127	40.0 - 60.0% of mass 198	48.6
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
199	5.0 - 9.0% of mass 198	5.4
275	10.0 - 30.0% of mass 198	20.9
365	Greater than 1.00% of mass 198	2.55
441	Present, but less than mass 443	9.6
442	Greater than 40.0% of mass 198	73.7
443	17.0 - 23.0% of mass 442	12.8(17.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	50 NG STD	>B4794	6/05/91	11:06
02	018WARE	917-1RE	>B4796	6/05/91	13:13
03	019WARE	917-2RE	>B4797	6/05/91	14:04
04	023WARE	917-4RE	>B4798	6/05/91	14:56
05	024WARE	917-5RE	>B4799	6/05/91	15:48
06	026WARE	917-7RE	>B4800	6/05/91	16:40
07	LC-1G106S-WO	111928-1	>B4804	6/05/91	20:07
08	LC-1G106S-WOMS	111928-1MS	>B4805	6/05/91	20:59
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Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 06/05/91

Contractor: ARDL LABS Time: 11:06

Contract No: Laboratory ID: >84794

Instrument ID: HP-3 Initial Calibration Date: 06/04/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Pyridine	2.35808	1.56943	33.44			
n-Nitrosodimethylamine	1.65683	1.31331	20.73			
2-Picoline	2.07664	1.66415	19.86			
2-Fluorophenol (Surr 1)	1.60603	1.27378	20.69			(Conc=100.00)
Aniline	2.30145	2.25412	2.06			
D5 Phenol (Surr 2)	1.93533	1.81287	6.33			(Conc=100.00)
Phenol	2.30270	2.30145	.05	*		
bis(-2-Chloroethyl)Ether	1.74135	1.74184	.03			
2-Chlorophenol	1.51871	1.49190	1.77			
1,3-Dichlorobenzene	1.58351	1.63753	3.41			
1,4-Dichlorobenzene	1.65283	1.69465	2.53	*		
Benzyl Alcohol	.86752	.90864	4.74			
1,2-Dichlorobenzene	1.58397	1.67259	5.59			
2-Methylphenol	1.36005	1.40104	3.01			
bis(2-chloroisopropyl)Ether	1.30108	1.28882	.94			
4-Methylphenol	1.40411	1.42552	1.53			
N-Nitroso-Di-n-Propylamine	1.28386	1.27607	.61		**	
Hexachloroethane	.96513	.99246	2.83			
D5 Nitrobenzene (Surr 3)	.54570	.49802	8.74			(Conc=50.00)
Nitrobenzene	.55617	.53354	4.07			
Isophorone	1.00495	.98129	2.35			
2-Nitrophenol	.23732	.23049	1.21	*		
2,4-Dimethylphenol	.49432	.46538	5.85			
bis(-2-Chloroethoxy)Methane	.64100	.65062	1.50			
Benzoic Acid	.18122	.15223	16.00			
2,4-Dichlorophenol	.33194	.34058	2.60	*		
1,2,4-Trichlorobenzene	.35940	.37291	3.76			
Naphthalene	1.29239	1.26639	2.01			
4-Chloroaniline	.51848	.52717	1.68			
Hexachlorobutadiene	.21331	.19394	9.08	*		
4-Chloro-3-Methylphenol	.39715	.36261	8.70	*		
2-Methylnaphthalene	.78225	.81323	3.96			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: | Calibration Date: 06/05/91

ontractor: ARDL LABS | Time: 11:06

Contract No: | Laboratory ID: >B4794

Instrument ID: HP-3 | Initial Calibration Date: 06/04/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
1,2,3,4-Tetrachlorobenzene	.24223	.22844	5.69			
Hexachlorocyclopentadiene	.34178	.34446	.79		**	
2,4,6-Trichlorophenol	.33498	.33091	1.21	*		
2,4,5-Trichlorophenol	.33372	.33315	.17			
2-Fluorobiphenyl (Surr 4)	1.17812	1.16844	.82			(Conc=50.00)
2-Chloronaphthalene	1.20929	1.21298	.31			
1,2,4,5-Tetrachlorobenzene	.56778	.54951	3.22			
Toluenediamine	.25722	.19630	23.69			
3-Nitroaniline	.45427	.43936	3.28			
1,3-Dinitrobenzene	.53803	.37827	29.69			
Dimethyl Phthalate	1.51288	1.55981	3.10			
2,6-Dinitrotoluene	.37599	.37729	.35			
Azobenzene	2.86554	2.14578	25.12			
Acenaphthylene	2.19740	2.10208	4.34			
2-Nitroaniline	.57364	.46301	19.28			
Acenaphthene	1.32451	1.24482	6.02	*		
2,4-Dinitrophenol	.18513	.14457	21.91		**	
4-Nitrophenol	.28503	.19396	31.93		**	
Dibenzofuran	2.05552	1.98765	3.30			
2,4-Dinitrotoluene	.53761	.45973	14.49			
Diethylphthalate	2.04813	1.86072	9.15			
4-Chlorophenyl-phenylether	.67783	.67190	.87			
2,3,4,6-Tetrachlorophenol	.26750	.20874	21.97			
Fluorene	1.49468	1.37417	8.06			
4-Nitroaniline	.30909	.25045	18.97			
2,4,6-Tribromophenol (Surr 5)	.25811	.18812	27.12			(Conc=100.00)
4,6-Dinitro-2-Methylphenol	.15711	.16484	4.92			
N-Nitrosodiphenylamine	.63168	.63230	.10	*		
4-Bromophenyl-phenylether	.24494	.24005	2.00			
Hexachlorobenzene	.32115	.31958	.49			
Pentachlorophenol	.17463	.16520	5.40	*		
Phenanthrene	1.30870	1.32658	1.37			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400312

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 06/05/91

Contractor: AROL LABS Time: 11:06

Contract No: Laboratory ID: >84794

Instrument ID: HP-3 Initial Calibration Date: 06/04/91

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
Anthracene	1.33313	1.25462	5.89			
Carbazole	1.09135	.96118	11.93			
Di-N-Butylphthalate	2.28483	2.12426	7.03			
Fluoranthene	1.30062	1.15167	11.45	*		
Pyrene	2.05039	1.97102	3.87			
014 Terphenyl (Surr 6)	1.32725	1.19543	9.93			(Conc=50.00)
Butylbenzylphthalate	1.07905	.93124	13.70			
3,3'-Dichlorobenzidine	.36336	.33132	8.82			
Benzo(a)Anthracene	1.22218	1.28727	5.33			
bis(2-Ethylhexyl)Phthalate	1.77648	1.44062	18.91			
Chrysene	1.23323	1.25784	2.00			
Di-n-Octyl Phthalate	2.87262	2.17663	24.23	*		
Benzo(b)Fluoranthene	1.24705	1.43566	15.12			
Benzo(k)Fluoranthene	1.26756	1.14454	9.70			
Benzo(a)Pyrene	1.04107	1 09645	5.32	*		
Indeno(1,2,3-cd)Pyrene	.98303	.99159	.87			
Dibenzo(a,h)Anthracene	.85985	.95348	10.89			
Benzo(g,h,i)Perylene	96486	1.02385	6.11			

RF - Response Factor from daily standard file at 50.00 ug/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400313

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ARDL, INC. Contract: -------

Lab Code: ------- Case No.: ------ SAS No.: ------ SDG No.: ------

Lab File ID: >DF610 DFTPP Injection Date: 6/10/91

Instrument ID: HP- 3 DFTPP Injection Time: 18:06

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	33.2
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	42.
70	Less than 2.0% of mass 69	0.0(0.0)1
127	40.0 - 60.0% of mass 198	43.4
197	Less than 1.0% of mass 198	.6
198	Base Peak, 100% relative abundance	100.
199	5.0 - 9.0% of mass 198	7.8
275	10.0 - 30.0% of mass 198	21.2
365	Greater than 1.00% of mass 198	2.10
441	Present, but less than mass 443	9.6
442	Greater than 40.0% of mass 198	64.8
443	17.0 - 23.0% of mass 442	11.6(17.9)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	160 NG STD	>B4811	6/10/91	18:26
02	BNA STD	20 NG STD	>B4812	6/10/91	19:29
03	BNA STD	80 NG STD	>B4813	6/10/91	20:22
04	BNA STD	50 NG STD	>B4814	6/10/91	21:13
05	BNA STD	120 NG STD	>B4815	6/10/91	22:04
06	BLANK B1364	BLANK B1364	>B4816	6/10/91	22:59
07	BLANK B1366	BLANK B1366	>B4818	6/11/91	00:39
08	LO-1G106S-WODL	111928-1DL	>B4823	6/11/91	05:26
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20					
21					
22					

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-3

ntractor: ARDL LABS Calibration Date: 06/11/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>B4812	>B4814	>B4813	>B4815	>B4811					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Pyridine	1.17930	1.06171	.96902	.80970	.88886	.409	.98172	14.745		
n-Nitrosodimethylamine	.72103	.79698	.73259	.69094	.73070	.417	.73445	5.273		
2-Picoline	1.26833	1.46638	1.24905	1.19571	1.33573	.587	1.30304	7.993		
2-Fluorophenol (Surr 1)	.90460	.90236	.89253	.89440	1.01206	.732	.92119	5.542		(Conc=100.0,100.0,100.0,1
Aniline	1.72679	1.76753	1.65882	1.54529	1.61446	.939	1.66258	5.314		
D5 Phenol (Surr 2)	1.25832	1.14979	1.11087	1.04193	1.06417	.942	1.12502	7.593		(Conc=100.0,100.0,100.0,1
Phenol	1.66536	1.48030	1.41938	1.27119	1.27624	.945	1.42250	11.477	*	
bis(-2-Chloroethyl)Ether	1.62980	1.52273	1.31394	1.16453	1.17119	.957	1.36044	15.386		
2-Chlorophenol	1.48666	1.46925	1.27873	1.16445	1.08652	.962	1.29712	13.783		
1,3-Dichlorobenzene	1.68015	1.45788	1.29563	1.14466	1.04653	.991	1.32497	19.046		
1,4-Dichlorobenzene	1.63286	1.31738	1.20942	1.07304	.94919	1.004	1.23638	21.155	*	
Benzyl Alcohol	.89654	.87208	.77477	.65543	.63694	1.041	.76715	15.594		
1,2-Dichlorobenzene	1.65969	1.22806	1.12834	.88014	.78838	1.045	1.13692	30.121		
2-Methylphenol	1.34831	1.22079	1.08296	.93575	.89625	1.073	1.09681	17.358		
s(2-chloroisopropyl)Ether	3.57047	3.68195	3.25381	2.91639	2.49737	1.078	3.18400	15.268		
4-Methylphenol	1.45130	1.18487	1.05598	.93995	.85509	1.109	1.09744	21.276		
N-Nitroso-Di-n-Propylamine	1.33805	1.08438	.94220	.94426	.96725	1.114	1.05523	15.975	**	
Hexachloroethane	.76487	.50213	.48205	.38242	.31225	1.114	.48874	35.280		
D5 Nitrobenzene (Surr 3)	.40808	.40715	.38171	.39533	.41859	.877	.40217	3.504		(Conc=50.0,50.0,50.0,50.0
Nitrobenzene	.44703	.40446	.37944	.35522	.37701	.881	.39263	8.929		
Isophorone	.94971	.96315	.86390	.87424	.88992	.925	.90818	4.983		
2-Nitrophenol	.26575	.26685	.22578	.22971	.22197	937	.24201	9.233	*	
2,4-Dimethylphenol	.44269	.41317	.37150	.36265	.35847	.950	.38970	9.425		
bis(-2-Chloroethoxy)Methane	.59296	.55928	.49974	.47413	.47388	.967	.52000	10.315		
Benzoic Acid	.26285	.30737	.28232	.30029	.28588	.982	.28774	6.007		
2,4-Dichlorophenol	.37099	.34472	.31779	.30009	.29012	.980	.32474	10.204	*	
1,2,4-Trichlorobenzene	.45848	.38380	.36069	.32377	.28836	.994	.36302	17.780		
Naphthalene	1.15342	.92186	.82509	.76159	.68703	1.004	.86980	20.748		
4-Chloroaniline	.53023	.50188	.43824	.43174	.42431	1.020	.46528	10.247		
Hexachlorobutadiene	.22271	.19944	.19218	.16799	.14897	1.038	.18626	15.332	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Resoonse Factor

%RSD - Percent Relative Standard Deviation

CC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400295

Initial Calibration Data
HSL Compounds

ase No: Instrument ID: HP-3

.on .cor: ARDL LABS Calibration Date: 06/11/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>84812	>84814	>84813	>84815	>84811					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
4-Chloro-3-Methylphenol	.39315	.38409	.34396	.32514	.31827	1.110	.35292	9.653	*	
2-Methylnaphthalene	.79380	.64088	.58686	.53982	.48784	1.129	.60984	19.249		
1,2,3,4-Tetrachlorobenzene	.31424	.32583	.28876	.29015	.25500	.883	.29480	9.264		
Hexachlorocyclopentadiene	.26975	.33883	.34731	.32063	.33169	.885	.32164	9.518		**
2,4,6-Trichlorophenol	.46265	.50740	.45594	.48570	.45051	.897	.47244	5.016	*	
2 ' 5-Trichlorophenol	.52547	.53295	.50675	.46767	.41878	.902	.49032	9.649		
. Jorobiphenyl (Surr 4)	1.24431	1.30440	1.30524	1.51615	1.56470	.909	1.38696	10.331		(Conc=50.0,50.0,50.0,50.0
2-Chloronaphthalene	1.36857	1.17965	1.02449	1.00237	.88150	.920	1.09132	17.209		
1,2,4,5-Tetrachlorobenzene	.70018	.53701	.50415	.45509	.36860	.923	.51301	23.853		
Toluenediamine	.24857	.24969	.27462	.36341	.34878	.923	.29701	18.577		
3-Nitroaniline	.48780	.63636	.58102	.62084	.59009	.942	.58322	9.923		
1,3-Dinitrobenzene	.25356	.28800	.26844	.38836	.33709	.975	.30709	18.004		
Dimethyl Phthalate	1.53460	1.35059	1.30877	1.23927	1.14331	.974	1.31531	11.066		
' Dinitrotoluene	.43553	.45148	.42163	.42335	.40658	.982	.42772	3.927		
enzene	1.87113	1.82584	1.73985	1.65239	1.43381	1.098	1.70460	10.150		
Acenaphthylene	2.18022	2.02188	1.88906	1.73756	1.36555	.979	1.83886	16.911		
2-Nitroaniline	.44832	.51995	.50673	.53826	.50278	.999	.50321	6.630		
Acenaphthene	1.30581	1.14147	1.07535	1.02690	.88906	1.005	1.08772	14.076	*	
2,4-Dinitrophenol	.13470	.25983	.27899	.28751	.30133	1.013	.25247	26.749		**
4-Nitrophenol	.09749	.16196	.15057	.15673	.13380	1.024	.14011	18.609		**
Dibenzofuran	1.83818	1.81015	1.69290	1.48098	1.23809	1.027	1.61206	15.630		
2,4-Dini.rotoluene	.48210	.57690	.59843	.61539	.55302	1.035	.56517	9.200		
thylphthalate	1.70054	1.60680	1.54458	1.36818	1.11370	1.071	1.46676	15.795		
4-Chlorophenyl-phenylether	.69589	.58530	.57134	.46796	.37521	1.076	.53908	22.653		
2,3,4,6-Tetrachlorophenol	.16746	.18489	.16895	.17693	.16107	1.050	.17186	5.364		
Fluorene	1.37464	1.07342	.99121	.85523	.65334	1.074	.98957	27.041		
4-Nitroaniline	.26705	.42288	.42574	.44372	.39755	1.086	.39139	18.250		
2,4,6-Tribromophenol (Surr 5)	.13564	.13455	.15349	.15856	.15390	1.110	.14723	7.650		(Conc=100.0,100.0,100.0,1
4,6-Dinitro-2-Methylphenol	.14428	.19641	.17099	.16439	.15341	.908	.16590	11.989		
N-Nitrosodiphenylamine	.70448	.64443	.51125	.43533	.36777	.910	.53265	26.407	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400233

5B

SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Name: ARDL, INC. Contract: ----

Lab Code: ----- Case No.: ------ SAS No.: ----- SDG No.: -----

Lab File ID: >DF611 DFTPP Injection Date: 6/11/91

Instrument ID: HP-3 DFTPP Injection Time: 12:17

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	47.8
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	57.
70	Less than 2.0% of mass 69	.2(.4)1
127	40.0 - 60.0% of mass 198	46.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.
199	5.0 - 9.0% of mass 198	6.9
275	10.0 - 30.0% of mass 198	19.1
365	Greater than 1.00% of mass 198	2.42
441	Present, but less than mass 443	8.6
442	Greater than 40.0% of mass 198	49.6
443	17.0 - 23.0% of mass 442	10.7(21.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	BNA STD	50 NG STD	>B4831	6/11/91	13:33
02	BNA STD	20 NG STD	>B4832	6/11/91	14:35
03	BNA STD	80 NG STD	>B4833	6/11/91	15:26
04	BNA STD	120 NG STD	>B4834	6/11/91	16:28
05	BNA STD	160 NG STD	>B4835	6/11/91	17:19
06	BLANK B1360	BLANK B1360	>B4836	6/11/91	18:13
07	027WA	917-8	>B4837	6/11/91	19:04
08	LO-1G106S-WO	111928-1	>B4838	6/11/91	19:55
09	LO-1G106S-WODLRE	111928-1DLRE	>B4839	6/11/91	20:45
10	LO-1G106S-WOMSD	111928-1MSD	>B4840	6/11/91	21:36
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Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-3

tractor: ARDL LABS Calibration Date: 06/11/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>84832	>84831	>84833	>84834	>84835					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Pyridine	.97936	.98403	.83473	.84273	.72311	.409	.87279	12.615		
n-Nitrosodimethylamine	.74655	.74146	.68133	.71489	.66193	.417	.70923	5.219		
2-Picoline	1.32732	1.33591	1.25308	1.28978	1.20419	.586	1.28206	4.257		
2-Fluorophenol (Surr 1)	.96389	.94664	.96227	1.03685	.98315	.732	.97856	3.583		(Conc=100.0,100.0,100.0,1
Aniline	2.03422	1.84890	1.76537	1.70661	1.65242	.939	1.80150	8.277		
D5 Phenol (Surr 2)	1.35318	1.25032	1.25101	1.22004	1.10550	.942	1.23601	7.174		(Conc=100.0,100.0,100.0,1
Phenol	2.01372	1.79901	1.55367	1.45926	1.33636	.945	1.63240	16.692	*	
(-2-Chloroethyl)Ether	1.85189	1.64306	1.45048	1.30562	1.18194	.957	1.48660	17.949		
2-Chlorophenol	1.67310	1.50356	1.34175	1.27752	1.18292	.962	1.39577	13.908		
1,3-Dichlorobenzene	1.69579	1.55670	1.35094	1.24841	1.15149	.992	1.40067	15.932		
1,4-Dichlorobenzene	1.83563	1.51684	1.32673	1.21453	1.12113	1.004	1.40297	20.189	*	
Benzyl Alcohol	1.06667	.92183	.82982	.68564	.65039	1.043	.83087	20.631		
1,2-Dichlorobenzene	1.73305	1.57793	1.19317	.96904	.87620	1.045	1.26988	29.486		
2-Methylphenol	1.59590	1.36845	1.20138	1.05999	.94989	1.074	1.23512	20.685		
bis(2-chloroisopropyl)Ether	4.32167	3.97913	3.69773	3.29252	2.94111	1.078	3.64639	14.972		
ethylphenol	1.69912	1.53040	1.14180	1.04529	.89222	1.109	1.22177	25.419		
n-Nitroso-Di-n-Propylamine	1.57992	1.26911	.98974	.87639	.87488	1.114	1.11801	27.209	**	
Hexachloroethane	.81068	.67158	.50773	.43162	.35083	1.114	.55448	33.511		
D5 Nitrobenzene (Surr 3)	.43634	.42232	.46238	.46420	.45427	.877	.44790	4.031		(Conc=50.0,50.0,50.0,50.0
Nitrobenzene	.49572	.44617	.42064	.40238	.36204	.881	.42939	10.237		
Isophorone	1.01571	.94778	.90035	.77095	.72689	.925	.87234	13.859		
2-Nitrophenol	.29021	.27185	.25139	.24376	.22048	.937	.25554	10.452	*	
2,4-Dimethylphenol	.50099	.43596	.40323	.37857	.35834	.950	.41542	13.461		
bis(-2-Chloroethoxy)Methane	.67801	.58627	.55268	.51301	.47274	.967	.56054	13.959		
Benzoic Acid	.22771	.25683	.28109	.29810	.26443	.982	.26563	9.979		
2,4-Dichlorophenol	.39561	.35078	.31540	.30300	.27568	.980	.32809	14.141	*	
1,2,4-Trichlorobenzene	.40407	.38232	.35101	.32267	.28337	.994	.34869	13.714		
Naphthalene	1.26506	1.04345	.92178	.83249	.71527	1.004	.95561	22.046		
4-Chloroaniline	.59659	.49717	.48298	.43760	.39901	1.020	.48267	15.441		
Hexachlorobutadiene	.19302	.16989	.15268	.15391	.14014	1.038	.16193	12.559	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

* - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400263

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-3

ntractor: ARDL LABS Calibration Date: 06/11/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>84832	>84831	>84833	>84834	>84835					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
4-Chloro-3-Methylphenol	.46913	.39502	.36213	.32754	.29777	1.110	.37032	17.879	*	
2-Methylnaphthalene	.84406	.69928	.59192	.54461	.48861	1.129	.63370	22.217		
1,2,3,4-Tetrachlorobenzene	.28290	.29329	.28268	.29219	.26328	.883	.28287	4.255		
Hexachlorocyclopentadiene	.26871	.28701	.25801	.30312	.28510	.886	.28039	6.228		**
2,4,6-Trichlorophenol	.44791	.42854	.43552	.43751	.45002	.897	.43986	2.041	*	
2,4,5-Trichlorophenol	.51331	.49820	.47424	.45093	.42596	.902	.47253	7.452		
2-Fluorobiphenyl (Surr 4)	1.33179	1.35228	1.50935	1.63023	1.67715	.909	1.50016	10.463		(Conc=50.0,50.0,50.0 50.0
2-Chloronaphthalene	1.38213	1.21633	1.12068	1.12039	1.07727	.921	1.18336	10.328		
1,2,4,5-Tetrachlorobenzene	.58418	.55566	.49324	.47676	.41889	.923	.50575	12.960		
Toluenediamine	.37133	.40547	.34253	.36430	.35160	.922	.36704	6.592		
3-Nitroaniline	.53603	.53830	.54795	.57837	.58845	.942	.55782	4.311		
1,3-Dinitrobenzene	.29399	.26673	.26243	.26828	.28684	.974	.27565	5.033		
Dimethyl Phthalate	1.68463	1.35762	1.28656	1.10551	1.17339	.974	1.32154	17.046		
2,6-Dinitrotoluene	.42175	.39653	.37879	.38037	.38597	.982	.39268	4.500		
obenzene	2.14797	1.98467	1.86784	1.80651	1.69424	1.098	1.90025	9.144		
enaphthylene	2.40667	2.11614	1.98806	1.87512	1.71673	.978	2.02054	12.923		
2-Nitroaniline	.57918	.54432	.51501	.52393	.54124	.999	.54074	4.563		
Acenaphthene	1.41827	1.23016	1.16007	1.07383	1.01731	1.005	1.17993	13.227	*	
2,4-Dinitrophenol	.11077	.15889	.17924	.21534	.23518	1.013	.17989	27.137		**
4-Nitrophenol	.09541	.11532	.13558	.13916	.14213	1.024	.12552	15.802		**
Dibenzofuran	1.94082	1.73469	1.63735	1.54065	1.42972	1.027	1.65665	11.773		
2,4-Dinitrotoluene	.46984	.46941	.44848	.48671	.51083	1.035	.47705	4.873		
Diethylphthalate	1.91472	1.53912	1.46601	1.34197	1.23615	1.071	1.49960	17.302		
4-Chlorophenyl-phenylether	.64897	.57879	.51635	.47051	.43396	1.076	.52972	16.207		
2,3,4,6-Tetrachlorophenol	.16286	.17438	.16470	.16800	.16344	1.050	.17068	4.700		
Fluorene	1.48807	1.19960	1.06880	.96867	.84497	1.074	1.11402	22.115		
4-Nitroaniline	.30326	.31385	.33579	.35344	.36746	1.085	.33476	7.972		
2,4,6-Tribromophenol (Surr 5)	.09995	.09205	.10374	09647	.05313	1.110	.08887	22.979		(Conc=100.0,100.0,100.0,1
4,6-Dinitro-2-Methylphenol	.14079	.17556	.16825	.18047	16178	.907	.16537	9.354		
N-Nitrosodiphenylamine	.76298	.72578	.65087	.59813	.51190	.910	.64993	15.438	*	

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

- Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400269

Initial Calibration Data
HSL Compounds

Case No: Instrument ID: HP-3

ractor: ARDL LABS Calibration Date: 06/11/91

Contract No:

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>84832	>84831	>84833	>84834	>84835					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
4-Bromophenyl-phenylether	.22706	.20410	.17937	.17104	.15400	.950	.18711	15.347		
Hexachlorobenzene	.22444	.21102	.18681	.16922	.17429	.966	.19316	12.326		
Pentachlorophenol	.09366	.12330	.11603	.13222	.12382	.986	.11781	12.447	*	
Phenanthrene	1.37146	1.26076	1.09730	1.08720	.98403	1.003	1.16015	13.288		
Anthracene	1.40337	1.30235	1.15174	1.08518	.98920	1.008	1.18637	14.032		
Carbazole	1.07446	1.09144	1.04434	1.05066	.97391	1.028	1.04696	4.296		
?'-N-Butylphthalate	2.30450	1.95600	1.72486	1.65176	1.47998	1.077	1.82342	17.475		
oranthene	1.04499	1.07554	.98633	.96550	.87867	1.140	.99021	7.716	*	
Pyrene	3.27036	2.81812	2.47525	2.53652	2.55729	.893	2.73151	12.030		
D14 Terphenyl (Surr 6)	1.55951	1.53352	1.47655	1.62153	1.65417	.908	1.56906	4.497		(Conc=50.0,50.0,50.0,50.0
Butylbenzylphthalate	1.99332	1.83277	1.62541	1.54806	1.46548	.955	1.69301	12.773		
3,3'-Dichlorobenzidine	.40058	.38476	.39536	.39260	.34075	.998	.38281	6.320		
Benzo(a)Anthracene	1.45607	1.43388	1.30995	1.32861	1.21395	.999	1.34849	7.308		
bis(2-Ethylhexyl)Phthalate	2.58581	2.36931	2.13713	2.03826	1.93570	1.008	2.21324	11.882		
ysene	1.44246	1.38215	1.24817	1.22011	1.14030	1.002	1.28664	9.576		
-Octyl Phthalate	5.00181	4.54984	4.42037	4.10087	3.94264	.930	4.40311	7.389	*	
Benzo(b)Fluoranthene	1.58125	1.41747	1.46852	1.26963	1.44145	.963	1.43506	7.804		
Benzo(k)Fluoranthene	1.21131	1.16083	1.13481	1.12916	.96210	.965	1.11964	8.383		
Benzo(a)Pyrene	1.23534	1.15735	1.14764	1.13401	1.07029	.994	1.14893	5.139	*	
Indeno(1,2,3-cd)Pyrene	1.05976	1.11897	1.10198	1.04923	1.04199	1.137	1.07439	3.172		
Dibenzo(a,h)Anthracene	.88305	.92477	.89931	.88154	.85172	1.140	.88808	3.012		
Benzo(g,h,i)Perylene	.91659	.90139	.91183	.91111	.85262	1.178	.89871	2.932		

RF - Response Factor (Subscript is amount in ug/L)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

400270

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: -------

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >B4794 Date Analyzed: 6/05/91

Instrument ID: HP- 3 Time Analyzed: 11:06

		IS1(DCB)		IS2(NAP)		IS3(ACE)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	19441	10.92	70257	14.12	49248	18.67
	UPPER LIMIT	38882	11.42	140514	13.62	98496	19.17
	LOWER LIMIT	9720	10.42	35129	13.62	24624	18.17
	EPA SAMPLE NO.						
1	LO-1G106S-WO	14943	10.98	26162 *	14.18	2086 *	18.85
2	LO-1G106S-WOMS	14842	11.00	20746 *	14.20	2018 *	18.82
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IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: ---------

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >B4794 Date Analyzed: 6/05/91

Instrument ID: HP- 3 Time Analyzed: 11:06

		IS4(PHN)		IS5(CHR)		IS6(PER)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	65361	22.46	41029	29.32	34469	33.48
	UPPER LIMIT	130722	22.96	82058	29.82	68939	33.98
	LOWER LIMIT	32681	21.96	20514	28.82	17234	32.98
	EPA SAMPLE NO.						
1	LO-1G106S-WO	15399 *	22.59	15441	29.36	21922	33.55
2	LO-1G106S-WOMS	13369 *	22.58	12833	29.38	22543	33.57
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IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

o Name: ARDL, INC. Contract: ---------

Lab code: ------- Case No.: ------- SAS No.: ------- SDG No.: -------

Lab File ID (Standard): >B4814 Date Analyzed: 06/10/91

Instrument ID: HP-3 Time Analyzed: 21:13

		IS1(DCB) AREA	#	RT	IS2(NAP) AREA	#	RT	IS3(ACE) AREA	#	RT
	12 HOUR STD	42585		10.92	166986		14.12	96592		18.67
	UPPER LIMIT	85170		11.42	333972		14.62	193184		19.17
	LOWER LIMIT	21292		10.42	83493		13.62	48296		18.17
	EPA SAMPLE NO.									
1	BLANK B1364	40167		10.91	147896		14.11	90328		18.67
2	BLANK B1366	37727		10.91	147282		14.10	90808		18.65
3	LO-1G106S-WODL	33543		10.95	80334	*	14.16	21640		18.74
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IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

b Name: ARDL, INC. Contract: ---------

Lab code: ------- Case No.: ------- SAS No.: -------- SDG No.: -------

Lab File ID (Standard): >B4814 Date Analyzed: 06/10/91

Instrument ID: HP-3 Time Analyzed: 21:13

		IS4(PHN)		IS5(CHR)		IS6(PER)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	147021	22.45	48030	29.33	26657	33.47
	UPPER LIMIT	294042	22.95	96060	29.83	53314	33.97
	LOWER LIMIT	73510	21.95	24015	28.83	13328	32.97
	EPA SAMPLE NO.						
1	BLANK B1364	128046	22.45	50202	29.32	27805	33.48
2	BLANK B1366	135563	22.44	43140	29.31	24031	33.46
3	LO-1G106S-WODL	60353	22.51	25006	29.34	21024	33.51
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IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ARDL, INC. Contract: -------

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >B4831 Date Analyzed: 6/11/91

Instrument ID: HP- 3 Time Analyzed: 13:33

		IS1(DCB)		IS2(NAP)		IS3(ACE)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	27291	10.91	104753	14.10	57281	18.65
	UPPER LIMIT	54582	11.41	209506	14.60	114562	19.15
	LOWER LIMIT	13646	10.41	52376	13.60	28641	18.15
	EPA SAMPLE NO.						
1	LO-1G106S-WO	37602	10.93	126061	14.10	56802	18.67
2	LO-1G106S-WODLRE	32030	10.94	76059	14.14	16841 *	18.72
3	LO-1G106S-WOMSD	16260	10.99	10734 *	14.17	1503 *	18.80
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IS1 (DCB) = D4 1,4-Dichlorobenzene(ISTD1) UPPER LIMIT = + 100%
IS2 (NAP) = D8 Naphthalene (ISTD2) of internal standard area.
IS3 (ACE) = D10 Acenaphthene (ISTD3) LOWER LIMIT = - 50%
of internal standard area.

Column used to flag internal standard area values with an asterisk

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

b Name: ARDL, INC. Contract: ---------

Lab code: ------ Case No.: ----- SAS No.: ------ SDG No.: ------

Lab File ID (Standard): >B4831 Date Analyzed: 6/11/91

Instrument ID: HP- 3 Time Analyzed: 13:33

		IS4(PHN)		IS5(CHR)		IS6(PER)	
		AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	67614	22.43	23381	29.30	16799	33.44
	UPPER LIMIT	135228	22.93	46762	29.80	33598	33.94
	LOWER LIMIT	33807	21.93	11691	28.80	8400	32.94
	EPA SAMPLE NO.						
1	LO-1G106S-WO	86159	22.47	20761	29.31	12066	33.46
2	LO-1G106S-WODLRE	61007	22.49	30094	29.33	27810	33.48
3	LO-1G106S-WOMSD	15098 *	22.55	7099 *	29.33	6323 *	33.49
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IS4 (PHN) = D10 Phenanthrene (ISTD4)
IS5 (CHR) = D12 Chrysene (ISTD 5)
IS6 (PER) = D12 Perylene (ISTD 6)

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G106S-WOMS

Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111928 SAS No.: ------ SDG No.: -------

Matrix: (soil/water) WASTE Lab Sample ID: 111928-1MS

Sample wt/vol: 1.0 (g/mL) g Lab File ID: >B4805

Level: (low/med) LOW Date Received: 5/13/91

% Moisture: not dec. ----- dec. ----- Date Extracted: 05/21/90

Extraction: (Sepf/Cont/Sonc) DIL Date Analyzed: 6/05/91

GPC Cleanup: (Y/N) Y pH:--- Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	92000.	
111-44-4	bis(-2-Chloroethyl)Ether	20000.	U
95-57-8	2-Chlorophenol	100000.	
541-73-1	1,3-Dichlorobenzene	20000.	U
106-46-7	1,4-Dichlorobenzene	72000.	
100-51-6	Benzyl alcohol	20000.	U
95-50-1	1,2-Dichlorobenzene	20000.	U
95-48-7	2-Methylphenol	20000.	U
39638-32-9	bis(2-chloroisopropyl)ether	20000.	U
106-44-5	4-Methylphenol	20000.	U
621-64-7	N-Nitroso-Di-n-propylamine	20000.	U
67-72-1	Hexachloroethane	20000.	U
98-95-3	Nitrobenzene	20000.	U
78-59-1	Isophorone	20000.	U
88-75-5	2-Nitrophenol	20000.	U
105-67-9	2,4-Dimethylphenol	20000.	U
65-85-0	Benzoic acid	100000.	U
111-91-1	bis(-2-Chloroethoxy)methane	20000.	U
120-83-2	2,4-Dichlorophenol	20000.	U
120-82-1	1,2,4-Trichlorobenzene	140000.	
91-20-3	Naphthalene	320000.	
106-47-8	4-Chloroaniline	20000.	U
87-68-3	Hexachlorobutadiene	20000.	U
59-50-7	4-Chloro-3-methylphenol	210000.	
91-57-6	2-Methylnaphthalene	910000.	E
77-47-4	Hexachlorocyclopentadiene	20000.	U
88-06-2	2,4,6-Trichlorophenol	20000.	U
95-95-4	2,4,5-Trichlorophenol	100000.	U
91-58-7	2-Chloronaphthalene	20000.	U
88-74-4	2-Nitroaniline	100000.	U
131-11-3	Dimethyl Phthalate	20000.	U
208-96-8	Acenaphthylene	20000.	U
606-20-2	2,6-Dinitrotoluene	20000.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G106S-WOMS

b Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111928 SAS No.: ------ SDG No.: -------

Matrix: (soil/water) WASTE Lab Sample ID: 111928-1MS

Sample wt/vol: 1.0 (g/mL) g Lab File ID: >B4805

Level: (low/med) LOW Date Received: 5/13/91

% Moisture: not dec. ----- dec. ----- Date Extracted: 05/21/90

Extraction: (Sepf/Cont/Sonc) DIL Date Analyzed: 6/05/91

GPC Cleanup: (Y/N) Y pH:--- Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg		Q
99-09-2	3-Nitroaniline	100000.	U	
83-32-9	Acenaphthene	720000.		E
51-28-5	2,4-Dinitrophenol	100000.	U	
100-02-7	4-Nitrophenol	100000.	U	
132-64-9	Dibenzofuran	520000.		E
121-14-2	2,4-Dinitrotoluene	20000.	U	
84-66-2	Diethylphthalate	20000.	U	
7005-72-3	4-Chlorophenyl-phenylether	20000.	U	
86-73-7	Fluorene	20000.	U	
100-01-6	4-Nitroaniline	100000.	U	
534-52-1	4,6-Dinitro-2-methylphenol	100000.	U	
86-30-6	N-Nitrosodiphenylamine (1)	150000.		
101-55-3	4-Bromophenyl-phenylether	20000.	U	
118-74-1	Hexachlorobenzene	20000.	U	
87-86-5	Pentachlorophenol	170000.		
85-01-8	Phenanthrene	530000.		E
120-12-7	Anthracene	20000.	U	
84-74-2	Di-n-butylphthalate	20000.	U	
206-44-0	Fluoranthene	20000.	U	
129-00-0	Pyrene	130000.		
85-68-7	Butylbenzylphthalate	20000.	U	
91-94-1	3,3'-Dichlorobenzidine	40000.	U	
56-55-3	Benzo(a)anthracene	20000.	U	
218-01-9	Chrysene	20000.	U	
117-81-7	bis(2-Ethylhexyl)phthalate	140000.		
117-84-0	Di-n-Octyl_Phthalate	20000.	U	
205-99-2	Benzo(b)fluoranthene	20000.	U	
207-08-9	Benzo(k)fluoranthene	20000.	U	
50-32-8	Benzo(a)pyrene	20000.	U	
193-39-5	Indeno(1,2,3-cd)pyrene	20000.	U	
53-70-3	Dibenzo(a,h)anthracene	20000.	U	
191-24-2	Benzo(g,h,i)perylene	20000.	U	

(1) - Cannot be separated from Diphenylamine

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G106S-WOMSD

Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111928 SAS No.: ------ SDG No.: -------

Matrix: (soil/water) WASTE Lab Sample ID: 111928-1MSD

Sample wt/vol: 1.0 (g/mL) g Lab File ID: >B4840

Level: (low/med) LOW Date Received: 5/13/91

% Moisture: not dec. ----- dec. ----- Date Extracted: 05/21/90

Extraction: (Sepf/Cont/Sonc) DIL Date Analyzed: 6/11/91

GPC Cleanup: (Y/N) Y pH:--- Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	100000.	
111-44-4	bis(-2-Chloroethyl)Ether	20000.	U
95-57-8	2-Chlorophenol	100000.	
541-73-1	1,3-Dichlorobenzene	20000.	U
106-46-7	1,4-Dichlorobenzene	84000.	
100-51-6	Benzyl alcohol	20000.	U
95-50-1	1,2-Dichlorobenzene	20000.	U
95-48-7	2-Methylphenol	20000.	U
39638-32-9	bis(2-chloroisopropyl)ether	20000.	U
106-44-5	4-Methylphenol	20000.	U
621-64-7	N-Nitroso-Di-n-propylamine	120000.	
67-72-1	Hexachloroethane	20000.	U
98-95-3	Nitrobenzene	20000.	U
78-59-1	Isophorone	20000.	U
88-75-5	2-Nitrophenol	20000.	U
105-67-9	2,4-Dimethylphenol	20000.	U
65-85-0	Benzoic acid	100000.	U
111-91-1	bis(-2-Chloroethoxy)methane	20000.	U
120-83-2	2,4-Dichlorophenol	20000.	U
120-82-1	1,2,4-Trichlorobenzene	280000.	
91-20-3	Naphthalene	600000.	E
106-47-8	4-Chloroaniline	20000.	U
87-68-3	Hexachlorobutadiene	20000.	U
59-50-7	4-Chloro-3-methylphenol	250000.	
91-57-6	2-Methylnaphthalene	1400000.	E
77-47-4	Hexachlorocyclopentadiene	20000.	U
88-06-2	2,4,6-Trichlorophenol	20000.	U
95-95-4	2,4,5-Trichlorophenol	100000.	U
91-58-7	2-Chloronaphthalene	20000.	U
88-74-4	2-Nitroaniline	100000.	U
131-11-3	Dimethyl Phthalate	20000.	U
208-96-8	Acenaphthylene	20000.	U
606-20-2	2,6-Dinitrotoluene	20000.	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G106S-WOMSD

Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111928 SAS No.: ------ SDG No.: -------

Matrix: (soil/water) WASTE Lab Sample ID: 111928-1MSD

Sample wt/vol: 1.0 (g/mL) g Lab File ID: >B4840

Level: (low/med) LOW Date Received: 5/13/91

% Moisture: not dec. ----- dec. ----- Date Extracted: 05/21/90

Extraction: (Sepf/Cont/Sonc) DIL Date Analyzed: 6/11/91

GPC Cleanup: (Y/N) Y pH:--- Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	100000.	U
83-32-9	Acenaphthene	870000.	E
51-28-5	2,4-Dinitrophenol	100000.	U
100-02-7	4-Nitrophenol	100000.	U
132-64-9	Dibenzofuran	840000.	E
121-14-2	2,4-Dinitrotoluene	20000.	U
84-66-2	Diethylphthalate	20000.	U
7005-72-3	4-Chlorophenyl-phenylether	20000.	U
86-73-7	Fluorene	1300000.	E
100-01-6	4-Nitroaniline	100000.	U
534-52-1	4,6-Dinitro-2-methylphenol	100000.	U
86-30-6	N-Nitrosodipheny'amine (1)	150000.	
101-55-3	4-Bromophenyl-phenylether	20000.	U
118-74-1	Hexachlorobenzene	20000.	U
87-86-5	Pentachlorophenol	190000.	
85-01-8	Phenanthrene	570000.	
120-12-7	Anthracene	20000.	U
84-74-2	Di-n-butylphthalate	20000.	U
206-44-0	Fluoranthene	20000.	U
129-00-0	Pyrene	120000.	
85-68-7	Butylbenzylphthalate	20000.	U
91-94-1	3,3'-Dichlorobenzidine	40000.	U
56-55-3	Benzo(a)anthracene	20000.	U
218-01-9	Chrysene	20000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	140000.	
117-84-0	Di-n-Octyl Phthalate	20000.	U
205-99-2	Benzo(b)fluoranthene	20000.	U
207-08-9	Benzo(k)fluoranthene	20000.	U
50-32-8	Benzo(a)pyrene	20000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	20000.	U
53-70-3	Dibenzo(a,h)anthracene	20000.	U
191-24-2	Benzo(g,h,i)perylene	20000.	U

(1) - Cannot be separated from Diphenylamine

QUANT REPORT

Operator ID: DAVE
Output File: ^B4831::D3
Data File: >B4831::D5
Name: 50 NG STANDARD
Misc: HP-3 SEMIVOLATILES

Quant Rev: 6 Quant Time: 910611 14:15
Injected at: 910611 13:33
Dilution Factor: 1.00000

BTL#10

ID File: IDDMA::D4
Title: Semi-volatile Target Compounds
Last Calibration: 910611 01:10

	Compound	R.T.	Scan#	Area	Conc	Units	Q
1)	*D4 1,4-Dichlorobenzene(ISTD1)	10.91	747	27291	40.00	ug/L	92
2)	Pyridine	4.45	51	33569M	50.12	ug/L	84
3)	n-Nitrosodimethylamine	4.53	59	25294	50.48	ug/L	68
4)	2-Picoline	6.40	261	45573	51.26	ug/L	69
5)	2-Fluorophenol (Surr 1)	7.98	431	64587	102.76	ug/L	83
6)	Aniline	10.23	674	63073	55.60	ug/L	74
7)	D5 Phenol (Surr 2)	10.27	678	85306	111.14	ug/L	84
8)	Phenol	10.29	681	61371	63.23	ug/L	88
9)	bis(-2-Chloroethyl)Ether	10.42	695	56051	60.39	ug/L	91
10)	2-Chlorophenol	10.49	702	51292	57.96	ug/L	96
11)	1,3-Dichlorobenzene	10.81	737	53105	58.74	ug/L	95
12)	1,4-Dichlorobenzene	10.94	751	51745	61.34	ug/L	96
13)	Benzyl Alcohol	11.36	796	31447	60.08	ug/L	94
14)	1,2-Dichlorobenzene	11.40	800	53829	69.39	ug/L	86
15)	2-Methylphenol	11.70	833	46683	62.38	ug/L	96
16)	bis(2-chloroisopropyl)Ether	11.75	838	135743	62.49	ug/L	91
17)	4-Methylphenol	12.07	872	45385	60.61	ug/L	96
18)	N-Nitroso-Di-n-Propylamine	12.12	878	43294	60.13	ug/L	87
19)	Hexachloroethane	12.14	880	22910	68.70	ug/L	93
20)	*D8 Naphthalene (ISTD2)	14.10	1091	104753	40.00	ug/L	97
21)	D5 Nitrobenzene (Surr 3)	12.36	904	55299	52.50	ug/L	92
22)	Nitrobenzene	12.41	909	58422	56.82	ug/L	97
23)	Isophorone	13.02	975	124103	52.18	ug/L	94
24)	2-Nitrophenol	13.21	995	35597	56.17	ug/L	92
25)	2,4-Dimethylphenol	13.38	1013	57085	55.94	ug/L	96
26)	bis(-2-Chloroethoxy)Methane	13.63	1040	76767	56.37	ug/L	99
27)	Benzoic Acid	13.77	1055	33629	44.63	ug/L	89
28)	2,4-Dichlorophenol	13.81	1060	45931	54.01	ug/L	97
29)	1,2,4-Trichlorobenzene	14.01	1081	50061	52.66	ug/L	86
30)	Naphthalene	14.15	1096	136631	59.98	ug/L	96
31)	4-Chloroaniline	14.37	1120	65100	53.43	ug/L	94
32)	Hexachlorobutadiene	14.64	1149	22246	45.61	ug/L	91
33)	4-Chloro-3-Methylphenol	15.65	1258	51724	55.96	ug/L	93
34)	2-Methylnaphthalene	15.92	1287	91565	57.33	ug/L	96
35)	*D10 Acenaphthene (ISTD3)	18.65	1581	57281	40.00	ug/L	93
36)	1,2,3,4-Tetrachlorobenzene	16.46	1345	21000	49.74	ug/L	85
37)	Hexachlorocyclopentadiene	16.51	1351	20550	44.62	ug/L	90
38)	2,4,6-Trichlorophenol	16.74	1375	30684	45.35	ug/L	94
39)	2,4,5-Trichlorophenol	16.82	1384	35672	50.80	ug/L	94
40)	2-Fluorobiphenyl (Surr 4)	16.95	1398	96825	48.75	ug/L	90
41)	2-Chloronaphthalene	17.1[illegible]	1421	87091	55.73	ug/L	96
42)	1,2,4,5-Tetrachlorobenzene	17.20	1425	39786	54.16	ug/L	78
43)	Toluenediamine	17.18	1423	29032	68.26	ug/L	99

	Compound	R.T.	Scan#	Area	Conc	Units	q
44)	3-Nitroaniline	17.55	1462	38543	46.15	ug/L	97
45)	Azobenzene	20.46	1776	142105	58.22	ug/L	66
46)	Acenaphthylene	18.24	1537	151518	57.54	ug/L	96
47)	1,3-Dinitrobenzene	18.15	1527	19098	43.43	ug/L	81
48)	Dimethyl Phthalate	18.14	1526	97207	51.61	ug/L	98
49)	2,6-Dinitrotoluene	18.30	1543	28392	46.35	ug/L	92
50)	2-Nitroaniline	18.62	1578	38974	54.09	ug/L	96
51)	Acenaphthene	18.73	1590	88081	56.55	ug/L	96
52)	2,4-Dinitrophenol	18.87	1605	11377	31.47	ug/L	88
53)	4-Nitrophenol	19.08	1627	8257	41.15	ug/L	76
54)	Dibenzofuran	19.13	1633	124206	53.80	ug/L	89
55)	2,4-Dinitrotoluene	19.28	1649	33610	41.53	ug/L	85
56)	Diethylphthalate	19.97	1723	110203	52.47	ug/L	97
57)	4-Chlorophenyl-phenylether	20.06	1733	41442	53.68	ug/L	94
58)	2,3,4,6-Tetrachlorophenol	19.58	1681	12486	50.73	ug/L	90
59)	Fluorene	20.03	1729	85893	60.61	ug/L	93
60)	4-Nitroaniline	20.21	1749	22472	40.09	ug/L	82
61)	2,4,6-Tribromophenol (Surr 5)	20.71	1802	13182	62.52	ug/L	74
62)	*D10 Phenanthrene (ISTD4)	22.43	1988	67614	40.00	ug/L	91
63)	4,6-Dinitro-2-Methylphenol	20.32	1761	14838	52.91	ug/L	92
64)	N-Nitrosodiphenylamine	20.40	1769	61341	68.13	ug/L	94
65)	4-Bromophenyl-phenylether	21.31	1867	17250	52.96	ug/L	78
66)	Hexachlorobenzene	21.65	1904	17835	50.13	ug/L	46
67)	Pentachlorophenol	22.12	1955	10421	44.81	ug/L	95
68)	Phenanthrene	22.50	1995	106556	65.22	ug/L	98
69)	Anthracene	22.61	2007	110071	65.99	ug/L	98
70)	Carbazole	23.04	2054	92246	61.94	ug/L	85
71)	Di-N-Butylphthalate	24.17	2175	165316	73.05	ug/L	97
72)	Fluoranthene	25.57	2327	90902	67.49	ug/L	85
73)	*D12 Chrysene (ISTD 5)	29.30	2729	23381	40.00	ug/L	77
74)	Pyrene	26.15	2389	82363	47.37	ug/L	80
75)	D14 Terphenyl (Surr 6)	26.62	2440	44819	42.85	ug/L	69
76)	Butylbenzylphthalate	28.00	2589	53565	71.76	ug/L	85
77)	3,3'-Dichlorobenzidine	29.25	2723	11245	52.91	ug/L	84
78)	Benzo(a)Anthracene	29.26	2724	41907	58.04	ug/L	94
79)	bis(2-Ethylhexyl)Phthalate	29.55	2755	69246	74.59	ug/L	85
80)	Chrysene	29.37	2736	40395	59.17	ug/L	99
81)	*D12 Perylene (ISTD 6)	33.44	3175	16799	40.00	ug/L	98
82)	Di-n-Octyl Phthalate	31.11	2924	95541	64.64	ug/L	95
83)	Benzo(b)Fluoranthene	32.19	3040	29765	53.06	ug/L	81
84)	Benzo(k)Fluoranthene	32.26	3047	24376	48.25	ug/L	86
85)	Benzo(a)Pyrene	33.24	3153	24303	51.07	ug/L	81
86)	Indeno(1,2,3-cd)Pyrene	38.03	3669	23497	60.94	ug/L	63
87)	Dibenzo(a,h)Anthracene	38.13	3680	19419	58.76	ug/L	53
88)	Benzo(g,h,i)Perylene	39.39	3816	18928M	57.07	ug/L	

* Compound is ISTD

QUANT REPORT

Operator ID: BONNIE Quant Rev: 6 Quant Time: 910610 21:55
Output File: ^B4814::D1 Injected at: 910610 21:13
Data File: >B4814::D6 Dilution Factor: 1.00000
Name: 50 NG STANDARD
Misc: HP-3 SEMIVOLATILES BTL# 4

ID File: IDDMA::D4
Title: Semi-volatile Target Compounds
Last Calibration: 910610 15:15

	Compound	R.T.	Scan#	Area	Conc	Units	Q
1)	*D4 1,4-Dichlorobenzene(ISTD1)	10.92	752	42585	40.00	ug/L	92
2)	Pyridine	4.47	56	56516	33.82	ug/L	67
3)	n-Nitrosodimethylamine	4.56	66	42424	30.34	ug/L	54
4)	2-Picoline	6.45	269	78057M	44.06	ug/L	64
5)	2-Fluorophenol (Surr 1)	8.00	437	96067	70.84	ug/L	90
6)	Aniline	10.25	680	94088	39.21	ug/L	66
7)	D5 Phenol (Surr 2)	10.30	685	122410	63.42	ug/L	85
8)	Phenol	10.33	688	78798	32.16	ug/L	
9)	bis(-2-Chloroethyl)Ether	10.45	701	81057	43.71	ug/L	65
10)	2-Chlorophenol	10.50	707	78210	49.24	ug/L	94
11)	1,3-Dichlorobenzene	10.82	741	77605	44.51	ug/L	92
12)	1,4-Dichlorobenzene	10.96	756	70126	38.87	ug/L	97
13)	Benzyl Alcohol	11.38	801	46422	47.99	ug/L	89
14)	1,2-Dichlorobenzene	11.41	805	65371	36.71	ug/L	94
15)	2-Methylphenol	11.72	838	64984	43.57	ug/L	88
16)	bis(2-chloroisopropyl)Ether	11.77	843	195995	142.84	ug/L	91
17)	4-Methylphenol	12.10	879	63072	41.56	ug/L	97
18)	N-Nitroso-Di-n-Propylamine	12.14	883	57723	42.49	ug/L	90
19)	Hexachloroethane	12.16	885	26729	25.30	ug/L	89
20)	*D8 Naphthalene (ISTD2)	14.12	1096	166986	40.00	ug/L	97
21)	D5 Nitrobenzene (Surr 3)	12.33	910	84986	40.88	ug/L	93
22)	Nitrobenzene	12.44	915	84425	37.90	ug/L	88
23)	Isophorone	13.06	982	201040	49.08	ug/L	91
24)	2-Nitrophenol	13.22	1000	55701	57.89	ug/L	
25)	2,4-Dimethylphenol	13.41	1020	86241	44.39	ug/L	
26)	bis(-2-Chloroethoxy)Methane	13.66	1047	116739	42.98	ug/L	98
27)	Benzoic Acid	13.89	1072	64159M	100.96	ug/L	92
28)	2,4-Dichlorophenol	13.84	1066	71954	50.61	ug/L	97
29)	1,2,4-Trichlorobenzene	14.03	1087	80111	51.46	ug/L	95
30)	Naphthalene	14.17	1102	192423	36.40	ug/L	97
31)	4-Chloroaniline	14.40	1126	104759	47.60	ug/L	99
32)	Hexachlorobutadiene	14.66	1154	41630	51.42	ug/L	95
33)	4-Chloro-3-Methylphenol	15.67	1263	80172	52.96	ug/L	90
34)	2-Methylnaphthalene	15.94	1292	133772	39.40	ug/L	97
35)	*D10 Acenaphthene (ISTD3)	18.67	1586	96592	40.00	ug/L	96
36)	1,2,3,4-Tetrachlorobenzene	16.48	1350	39341	71.32	ug/L	93
37)	Hexachlorocyclopentadiene	16.53	1356	40910	49.18	ug/L	95
38)	2,4,6-Trichlorophenol	16.76	1380	61263M	76.67	ug/L	93
39)	2,4,5-Trichlorophenol	16.85	1390	64348	79.98	ug/L	90
40)	2-Fluorobiphenyl (Surr 4)	16.97	1403	157493M	55.82	ug/L	96
41)	2-Chloronaphthalene	17.19	1426	142431	48.63	ug/L	94
42)	1,2,4,5-Tetrachlorobenzene	17.22	1430	64838	48.86	ug/L	85
43)	Toluenediamine	17.24	1432	30147	63.60	ug/L	98

1.82

400242

	Compound	R.T.	Scan#	Area	Conc	Units	Q
44)	3-Nitroaniline	17.58	1468	76834	72.42	ug/L	91
5)	Azobenzene	20.50	1782	220452	42.54	ug/L	66
5)	Acenaphthylene	18.27	1543	244122	48.09	ug/L	96
47)	1,3-Dinitrobenzene	18.20	1535	34773	38.07	ug/L	61
48)	Dimethyl Phthalate	18.18	1533	163070	43.29	ug/L	99
49)	2,6-Dinitrotoluene	18.33	1549	54512	59.83	ug/L	89
50)	2-Nitroaniline	18.65	1583	62779	56.15	ug/L	86
51)	Acenaphthene	18.77	1596	137821	45.85	ug/L	95
52)	2,4-Dinitrophenol	18.91	1611	31372	89.86	ug/L	70
53)	4-Nitrophenol	19.11	1633	19555	41.77	ug/L	95
54)	Dibenzofuran	19.17	1639	218558	45.53	ug/L	92
55)	2,4-Dinitrotoluene	19.32	1655	69655	62.74	ug/L	71
56)	Diethylphthalate	20.00	1728	194005	43.18	ug/L	97
57)	4-Chlorophenyl-phenylether	20.08	1737	70633	43.53	ug/L	85
58)	2,3,4,6-Tetrachlorophenol	19.60	1686	22324	44.29	ug/L	78
59)	Fluorene	20.04	1733	129605	39.06	ug/L	89
60)	4-Nitroaniline	20.26	1756	51059	84.42	ug/L	81
61)	2,4,6-Tribromophenol (Surr 5)	20.72	1806	32490M	71.52	ug/L	
62)	*D10 Phenanthrene (ISTD4)	22.45	1992	147021	40.00	ug/L	76
3)	4,6-Dinitro-2-Methylphenol	20.37	1768	36095	59.57	ug/L	95
64)	N-Nitrosodiphenylamine	20.43	1775	118431	50.96	ug/L	95
65)	4-Bromophenyl-phenylether	21.33	1871	38734	43.90	ug/L	86
66)	Hexachlorobenzene	21.68	1909	39997	34.05	ug/L	64
67)	Pentachlorophenol	22.14	1959	28098	46.28	ug/L	92
68)	Phenanthrene	22.52	1999	196053	40.21	ug/L	97
69)	Anthracene	22.63	2011	205184	44.50	ug/L	97
70)	Carbazole	23.07	2058	191562	54.22	ug/L	84
1)	Di-N-Butylphthalate	24.18	2178	276446	35.41	ug/L	94
72)	Fluoranthene	25.60	2331	169694	40.09	ug/L	94
73)	*D12 Chrysene (ISTD 5)	29.33	2732	48030	40.00	ug/L	91
74)	Pyrene	26.17	2392	163565	69.11	ug/L	98
75)	D14 Terphenyl (Surr 6)	26.64	2443	89522	62.37	ug/L	81
76)	Butylbenzylphthalate	28.02	2591	78104	69.85	ug/L	94
77)	3,3'-Dichlorobenzidine	29.26	2725	22198	55.80	ug/L	90
78)	Benzo(a)Anthracene	29.28	2727	75777	49.02	ug/L	94
9)	bis(2-Ethylhexyl)Phthalate	29.56	2757	98299	56.83	ug/L	91
80)	Chrysene	29.38	2738	71404	47.28	ug/L	96
81)	*D12 Perylene (ISTD 6)	33.47	3178	26657	40.00	ug/L	98
82)	Di-n-Octyl Phthalate	31.13	2926	124144M	85.58	ug/L	76
83)	Benzo(b)Fluoranthene	32.21	3042	46615	48.72	ug/L	88
84)	Benzo(k)Fluoranthene	32.29	3051	39867	52.27	ug/L	92
85)	Benzo(a)Pyrene	33.26	3156	39196	53.64	ug/L	89
86)	Indeno(1,2,3-cd)Pyrene	38.05	3671	27178	41.13	ug/L	76
87)	Dibenzo(a,h)Anthracene	38.17	3684	25637	40.35	ug/L	61
88)	Benzo(g,h,i)Perylene	39.41	3818	26230	38.44	ug/L	60

* Compound is ISTD

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G106S-WODLRE

Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111928 SAS No.: ------ SDG No.: -------

Matrix: (soil/water) WASTE Lab Sample ID: 111928-1DLRE

Sample wt/vol: 1.0 (g/mL) g Lab File ID: >B4839

Level: (low/med) LOW Date Received: 5/13/91

% Moisture: not dec. ----- dec. ----- Date Extracted: 05/21/90

Extraction: (Sepf/Cont/Sonc) DIL Date Analyzed: 6/11/91

GPC Cleanup: (Y/N) Y pH:--- Dilution Factor: 5.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q	
99-09-2	3-Nitroaniline	500000.	U	D
83-32-9	Acenaphthene	160000.		D
51-28-5	2,4-Dinitrophenol	500000.	U	D
100-02-7	4-Nitrophenol	500000.	U	D
132-64-9	Dibenzofuran	210000.		D
121-14-2	2,4-Dinitrotoluene	100000.	U	D
84-66-2	Diethylphthalate	100000.	U	D
7005-72-3	4-Chlorophenyl-phenylether	100000.	U	D
86-73-7	Fluorene	290000.		D
100-01-6	4-Nitroaniline	500000.	U	D
534-52-1	4,6-Dinitro-2-methylphenol	500000.	U	D
86-30-6	N-Nitrosodiphenylamine (1)	95000.		D
101-55-3	4-Bromophenyl-phenylether	100000.	U	D
118-74-1	Hexachlorobenzene	100000.	U	D
87-86-5	Pentachlorophenol	500000.	U	D
85-01-8	Phenanthrene	260000.		D
120-12-7	Anthracene	100000.	U	D
84-74-2	Di-n-butylphthalate	100000.	U	D
206-44-0	Fluoranthene	100000.	U	D
129-00-0	Pyrene	15000.	J	D
85-68-7	Butylbenzylphthalate	100000.	U	D
91-94-1	3,3'-Dichlorobenzidine	200000.	U	D
56-55-3	Benzo(a)anthracene	100000.	U	D
218-01-9	Chrysene	100000.	U	D
117-81-7	bis(2-Ethylhexyl)phthalate	63000.		D
117-84-0	Di-n-Octyl Phthalate	100000.	U	D
205-99-2	Benzo(b)fluoranthene	100000.	U	D
207-08-9	Benzo(k)fluoranthene	100000.	U	D
50-32-8	Benzo(a)pyrene	100000.	U	D
193-39-5	Indeno(1,2,3-cd)pyrene	100000.	U	D
53-70-3	Dibenzo(a,h)anthracene	100000.	U	D
191-24-2	Benzo(g,h,i)perylene	100000.	U	D

(1) - Cannot be separated from Diphenylamine

w/ 5 fld data

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G106S-WCDLRE

Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111928 SAS No.: ------ SDG No.: -------

Matrix: (soil/water) WASTE Lab Sample ID: 111928-1DLRE

Sample wt/vol: 1.0 (g/mL) g Lab File ID: >B4839

Level: (low/med) LOW Date Received: 5/13/91

% Moisture: not dec. ----- dec. ----- Date Extracted: 05/21/90

Extraction: (Sepf/Cont/Sonc) DIL Date Analyzed: 6/11/91

GPC Cleanup: (Y/N) Y pH:--- Dilution Factor: 5.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	100000.	U D
111-44-4	bis(-2-Chloroethyl)Ether	100000.	U D
95-57-8	2-Chlorophenol	100000.	U D
541-73-1	1,3-Dichlorobenzene	100000.	U D
106-46-7	1,4-Dichlorobenzene	100000.	U D
100-51-6	Benzyl alcohol	100000.	U D
95-50-1	1,2-Dichlorobenzene	100000.	U D
95-48-7	2-Methylphenol	100000.	U D
39638-32-9	bis(2-chloroisopropyl)ether	100000.	U D
106-44-5	4-Methylphenol	100000.	U D
621-64-7	N-Nitroso-Di-n-propylamine	100000.	U D
67-72-1	Hexachloroethane	100000.	U D
98-95-3	Nitrobenzene	100000.	U D
78-59-1	Isophorone	100000.	U D
88-75-5	2-Nitrophenol	100000.	U D
105-67-9	2,4-Dimethylphenol	100000.	U D
65-85-0	Benzoic acid	500000.	U D
111-91-1	bis(-2-Chloroethoxy)methane	100000.	U D
120-83-2	2,4-Dichlorophenol	100000.	U D
120-82-1	1,2,4-Trichlorobenzene	100000.	U D
91-20-3	Naphthalene	210000.	D
106-47-8	4-Chloroaniline	100000.	U D
87-68-3	Hexachlorobutadiene	100000.	U D
59-50-7	4-Chloro-3-methylphenol	100000.	U D
91-57-6	2-Methylnaphthalene	700000.	D
77-47-4	Hexachlorocyclopentadiene	100000.	U D
88-06-2	2,4,6-Trichlorophenol	100000.	U D
95-95-4	2,4,5-Trichlorophenol	500000.	U D
91-58-7	2-Chloronaphthalene	100000.	U D
88-74-4	2-Nitroaniline	500000.	U D
131-11-3	Dimethyl Phthalate	100000.	U D
208-96-8	Acenaphthylene	100000.	U D
606-20-2	2,6-Dinitrotoluene	100000.	U D

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G106S-WODLRE

Lab Name: ARDL, INC. Contract: LENZ OIL

Lab Code: ------- Case No.: 111928 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WASTE Lab Sample ID: 111928-1DLRE

Sample wt/vol: 1.0 (g/mL) g Lab File ID: >B4839

Level: (low/med) LOW Date Received: 5/13/91

% Moisture: not dec. ---- dec. ---- Date Extracted: 5/21/91

Extraction: (SepF/Cont/Sonc) OIL Date Analyzed: 6/11/91

GPC Cleanup: (Y/N) Y pH: ---- Dilution Factor: 5.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	100000.	U D
111-44-4	bis(2-Chloroethyl)Ether	100000.	U D
95-57-8	2-Chlorophenol	100000.	U D
541-73-1	1,3-Dichlorobenzene	100000.	U D
106-46-7	1,4-Dichlorobenzene	100000.	U D
100-51-6	Benzyl alcohol	100000.	U D
95-50-1	1,2-Dichlorobenzene	100000.	U D
95-48-7	2-Methylphenol	100000.	U D
39638-32-9	bis(2-chloroisopropyl)ether	100000.	U D
106-44-5	4-Methylphenol	100000.	U D
621-64-7	N-Nitroso-Di-n-propylamine	100000.	U D
67-72-1	Hexachloroethane	100000.	U D
98-95-3	Nitrobenzene	100000.	U D
78-59-1	Isophorone	100000.	U D
88-75-5	2-Nitrophenol	100000.	U D
105-67-9	2,4-Dimethylphenol	100000.	U D
65-85-0	Benzoic acid	500000.	U D
111-91-1	bis(2-Chloroethoxy)methane	100000.	U D
120-83-2	2,4-Dichlorophenol	100000.	U D
120-82-1	1,2,4-Trichlorobenzene	100000.	U D
91-20-3	Naphthalene	410000.	D
106-47-8	4-Chloroaniline	100000.	U D
87-68-3	Hexachlorobutadiene	100000.	U D
59-50-7	4-Chloro-3-methylphenol	100000.	U D
91-57-6	2-Methylnaphthalene	1400000.	D
77-47-4	Hexachlorocyclopentadiene	100000.	U D
88-06-2	2,4,6-Trichlorophenol	100000.	U D
95-95-4	2,4,5-Trichlorophenol	500000.	U D
91-58-7	2-Chloronaphthalene	100000.	U D
88-74-4	2-Nitroaniline	500000.	U D
131-11-3	Dimethyl Phthalate	100000.	U D
208-96-8	Acenaphthylene	100000.	U D
606-20-2	2,6-Dinitrotoluene	100000.	U D

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LO-1G1065-WCDLRE

Lab Name: AROL, INC. Contract: LENZ OIL

Lab Code: ------ Case No.: 111928 SAS No.: ------ SDG No.: ------

Matrix: (soil/water) WASTE Lab Sample ID: 111928-1DLRE

Sample wt/vol: 1.0 (g/mL) g Lab File ID: >B4839

Level: (low/med) LOW Date Received: 5/13/91

% Moisture: not dec. ---- dec. ---- Date Extracted: 5/21/91

Extraction: (Sepf/Cont/Sonc) DIL Date Analyzed: 6/11/91

GPC Cleanup: (Y/N) Y pH: ---- Dilution Factor: 5.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q		
99-09-2	3-Nitroaniline	500000.	U	D	
83-32-9	Acenaphthene	320000.		D	
51-28-5	2,4-Dinitrophenol	500000.	U	D	
100-02-7	4-Nitrophenol	500000.	U	D	
132-64-9	Dibenzofuran	210000.		D	420,000
121-14-2	2,4-Dinitrotoluene	100000.	U	D	
84-66-2	Diethylphthalate	100000.	U	D	
7005-72-3	4-Chlorophenyl-phenylether	100000.	U	D	
86-73-7	Fluorene	570000.		D	
100-01-6	4-Nitroaniline	500000.	U	D	
534-52-1	4,6-Dinitro-2-methylphenol	500000.	U	D	
86-30-6	N-Nitrosodiphenylamine (1)	200000.		D	
101-55-3	4-Bromophenyl-phenylether	100000.	U	D	
118-74-1	Hexachlorobenzene	100000.	U	D	
87-86-5	Pentachlorophenol	500000.	U	D	
85-01-8	Phenanthrene	520000.		D	
120-12-7	Anthracene	100000.	U	D	
84-74-2	Di-n-butylphthalate	100000.	U	D	
206-44-0	Fluoranthene	100000.	U	D	
129-00-0	Pyrene	30000.	J	D	
85-68-7	Butylbenzylphthalate	100000.	U	D	
91-94-1	3,3'-Dichlorobenzidine	200000.	U	D	
56-55-3	Benzo(a)anthracene	100000.	U	D	
218-01-9	Chrysene	100000.	U	D	
117-81-7	bis(2-Ethylhexyl)phthalate	130000.		D	
117-84-0	Di-n-Octyl Phthalate	100000.	U	D	
205-99-2	Benzo(b)fluoranthene	100000.	U	D	
207-08-9	Benzo(k)fluoranthene	100000.	U	D	
50-32-8	Benzo(a)pyrene	100000.	U	D	
193-39-5	Indeno(1,2,3-cd)pyrene	100000.	U	D	
53-70-3	Dibenzo(a,h)anthracene	100000.	U	D	
191-24-2	Benzo(g,h,i)perylene	100000.	U	D	

(1) - Cannot be separated from Diphenylamine

DIL Layer

QUANT REPORT

Operator ID: BONNIE Quant Rev: 6 Quant Time: 910605 11
Output File: B4794::D3 Injected at: 910605 11
Data File: B4794::D5 Dilution Factor: 1.00
Name: 50 NC STD
Misc: HP-3 SEMIVOLATILES BTL# 1

ID File: IDDMA::D4
Title: Semi-volatile Target Compounds
Last Calibration: 910604 13:51

	Compound	R.T.	Scan#	Area	Conc	Uni
1)	*D4 1,4-Dichlorobenzene(ISTD1)	10.32	749	19441	40.00	ug/L
2)	Pyridine	4.49	35	38139	40.85	ug/L
3)	n-Nitrosodimethylamine	4.57	64	21915	46.44	ug/L
4)	2-Picoline	5.43	265	40441	46.05	ug/L
5)	2-Fluorophenol (Surr 1)	8.00	434	61903	93.1	%/L
6)	Aniline	10.25	677	54776	47.	/L
7)	D5 Phenol (Surr 2)	10.29	681	88110	99.76	ug/L
8)	Phenol	10.32	684	85928	80.68	ug/L
9)	bis(-2-Chloroethyl)Ether	10.45	698	42329	47.86	ug/L
10)	2-Chlorophenol	10.60	704	26255	80.40	ug/L
11)	1,3-Dichlorobenzene	10.63	739	39794	48.84	ug/L
12)	1,4-Dichlorobenzene	10.86	753	41182	50.78	ug/L
13)	Benzyl Alcohol	11.38	798	12081	82.59	ug/L
14)	1,2-Dichlorobenzene	11.41	802	40646	50.61	ug/L
15)	2-Metnylphenol	11.72	835	34047	49.24	ug/L
16)	bis(2-chloroisopropyl)Ether	11.77	840	31320	47.75	ug/L
17)	4-Methylphenol	12.09	875	34042	46.87	ug/L
18)	N-Nitroso-Di-n-Propylamine	12.15	881	21210	49.40	ug/L
19)	Hexachloroethane	12.21	882	14118	46.59	ug/L
20)	*D8 Naphthalene (ISTD2)	14.18	1093	70257	40.00	ug/L
21)	D5 Nitrobenzene (Surr 3)	12.38	906	43737	45.48	ug/L
22)	Nitrobenzene	12.43	911	46856	45.85	ug/L
23)	Isophorone	13.03	976	96178	47.30	ug/L
24)	2-Nitrophenol	13.22	996	20242	49.97	ug/L
25)	2,4-Dimethylphenol	13.39	1015	40870	47.87	ug/L
26)	bis(-2-Chloroethoxy)Methane	13.64	1042	57138	50.06	ug/L
27)	Benzoic Acid	13.83	1062	13369	60.63	ug/L
28)	2,4-Dichlorophenol	13.82	1061	29910	52.15	ug/L
29)	1,2,4-Trichlorobenzene	14.03	1083	32749	50.86	ug/L
30)	Naphthalene	14.17	1098	111216	51.11	ug/L
31)	4-Chloroaniline	14.39	1122	46297	50.09	ug/L
32)	Hexachlorobutadiene	14.55	1150	17032	41.88	/L
33)	4-Chloro-3-Methylphenol	14.66	1159	31845	47.81	/L
34)	2-Methylnaphthalene	14.82	1289	71419	49.85	/L
35)	*D10 Acenaphthene (ISTD3)	15.67	1582	49248	40.00	ug/L
36)	1,2,3,4-Tetrachlorobenzene	16.47	1246	14053	49.09	ug/L
37)	Hexachlorocyclopentadiene	16.52	1252	11205	49.82	ug/L
38)	2,4,6-Trichlorophenol	16.76	1277	10371	54.55	ug/L
39)	2,4,5-Trichlorophenol	16.85	1287	10509	48.93	ug/L
40)	2-Fluorobiphenyl (Surr 4)	16.87	1400	71929	50.13	ug/L
41)	2-Chloronaphthalene	17.19	1423	74671	46.87	ug/L
42)	1,2,4,5-Tetrachlorobenzene	17.21	1426	13828	51.56	ug/L
43)	Toluenediamine	17.33	1438	10084	38.50	ug/L

400

QUANT REPORT

Operator ID: BONNIE Quant Rev: 6 Quant Time: 910
Output File: B4804::D3 Injected at: 910
Data File: B4804::D5 Dilution Factor:
111928-1
HP-3 SEMIVOLATILES BTL#

ID File: IDDMA::D4
Title: Semi-volatile Target Compounds
Last Calibration: 910605 13:26

Compound	R.T.	Scan#	Area	Conc	
D4 1,4-Dichlorobenzene(ISTD1)	10.98	748	14943	40.00	
2-Fluorophenol (Surr 1)	7.96	425	18962	89.85	
D5 Phenol (Surr 2)	10.26	670	34622	80.97	ug
D8 Naphthalene (ISTD2	14.18	1089	26152M	40.00	ug
2-Methylnaphthalene	14.20	1304	1931 42M	353.12	
D10 Acenaphthene (ISTD3)	15.83	1565	2066	40.00	ug
2-Fluorobiphenyl (Surr 4)	17.22	1402	10025	164.52	ug
Acenaphthene	15.94	1595	14035	216.22	
Dibenzofuran	16.35	1638	27280	353.18	
Fluorene	16.84	1732	29516	412.15	ug
2,4,6-Tribromophenol (Surr 5)	20.30	1802	22094	227.20	ug
D10 Phenanthrene (ISTD4)	22.59	1980	15399	40.00	
N-Nitrosodiphenylamine	20.58	1768	16561	68.04	ug
Phenanthrene	22.66	1988	130124	254.80	ug
D12 Chrysene (ISTD 5	29.36	2589	15441	40.00	
Pyrene	26.22	2362	17743	23.32	
Terphenyl (Surr 6)	26.67	2409	27401	59.29	ug
Bis(2-ethylhexyl) Phthalate	29.58	2713	32732	58.86	
Chrysene (ISTD 5	29.35	2584	21922	40.00	

Found in ISTD

16.2 - 14.18 = 2.02

2.02
- 1.82
0.2 min × 60 sec / 1 min = 12 sec

14.12 - 15.94 = (1.82)

[illegible] Layer

QUANT REPORT

Operator ID: BONNIE Quant Rev: 6 Quant Time: 910605 20:50
Output File: ^B4804::D3 Injected at: 910605 20:07
Data File: >B4804::D5 Dilution Factor: 1.00000
Name: 111928-1
Misc: HP-3 SEMIVOLATILES BTL#10

ID File: IDDMA::D4
Title: Semi-volatile Target Compounds
Last Calibration: 910605 13:36

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*D4 1,4-Dichlorobenzene(ISTD1)	10.98	748	14943	40.00	ug/L	91
5)	2-Fluorophenol (Surr 1)	7.96	425	18962	39.85	ug/L	75
7)	D5 Phenol (Surr 2)	10.25	670	34522	50.97	ug/L	78
20)	*D8 Naphthalene (ISTD2)	14.18	1089	26162M	40.00	ug/L	59
34)	2-Methylnaphthalene 2.02	16.20	1304	193142M	363.12	ug/L	
35)	*D10 Acenaphthene (ISTD3)	18.85	1585	2086	40.00	ug/L	75
40)	2-Fluorobiphenyl (Surr 4)	17.12	1402	10025	164.52	ug/L	96
51)	Acenaphthene	18.94	1595	14035	216.20	ug/L	93
54)	Dibenzofuran	19.35	1638	27280	263.18	ug/L	84
59)	Fluorene	20.24	1732	29535	412.15	ug/L	87
61)	2,4,6-Tribromophenol (Surr 5)	20.90	1802	3309M	337.30	ug/L	
62)	*D10 Phenanthrene (ISTD4)	22.59	1980	15399	40.00	ug/L	58
64)	N-Nitrosodiphenylamine	20.58	1768	16563	68.04	ug/L	90
3)	Phenanthrene	22.66	1988	130124	254.80	ug/L	95
[illegible])	*D12 Chrysene (ISTD 5)	29.36	2689	15441	40.00	ug/L	93
74)	Pyrene	26.22	2362	17743	23.32	ug/L	94
75)	D14 Terphenyl (Surr 6)	26.67	2409	27401	59.38	ug/L	88
79)	bis(2-Ethylhexyl)Phthalate	29.59	2713	32732	58.86	ug/L	92
81)	*D12 Perylene (ISTD 6)	33.55	3124	21922	40.00	ug/L	95

* Compound is ISTD

QUANT REPORT

Operator ID: BONNIE
Output File: ^B4794::D3
Data File: >B4794::D5
Name: 50 NG STD
Misc: HP-3 SEMIVOLATILES

Quant Rev: 6 Quant Time: 910605 11:48
Injected at: 910605 11:06
Dilution Factor: 1.00000

BTL# 1

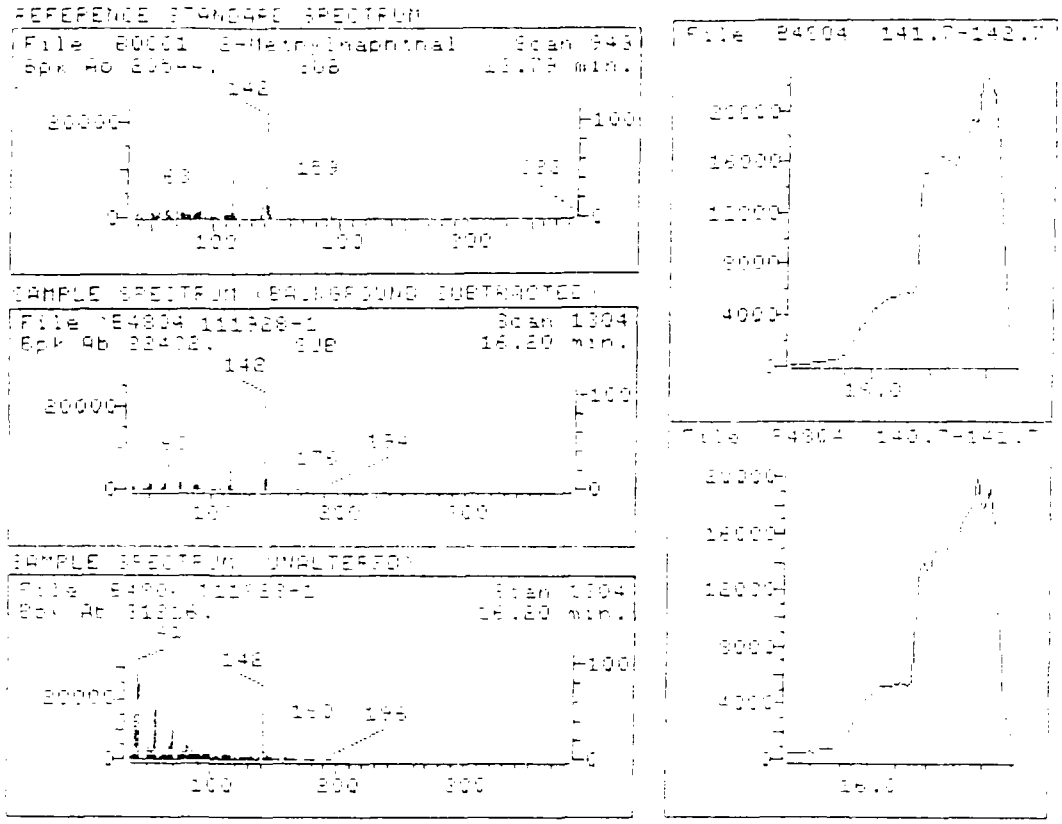
ID File: IDDMA::D4
Title: Semi-volatile Target Compounds
Last Calibration: 910604 13:51

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*D4 1,4-Dichlorobenzene(ISTD1)	10.92	749	19441	40.00	ug/L	94
2)	Pyridine	4.49	55	38139	40.85	ug/L	82
3)	n-Nitrosodimethylamine	4.57	64	31915	46.44	ug/L	54
4)	2-Picoline	6.43	265	40441	46.05	ug/L	87
5)	2-Fluorophenol (Surr 1)	8.00	434	61909	93.13	ug/L	71
6)	Aniline	10.25	677	54778	47.34	ug/L	87
7)	D5 Phenol (Surr 2)	10.29	681	88110	99.76	ug/L	73
8)	Phenol	10.32	684	55928	50.68	ug/L	89
9)	bis(-2-Chloroethyl)Ether	10.45	698	42329	47.96	ug/L	84
10)	2-Chlorophenol	10.50	704	36255	50.40	ug/L	86
11)	1,3-Dichlorobenzene	10.83	739	39794	48.94	ug/L	86
12)	1,4-Dichlorobenzene	10.96	753	41182	51.78	ug/L	91
13)	Benzyl Alcohol	11.38	798	22081	52.59	ug/L	82
14)	1,2-Dichlorobenzene	11.41	802	40646	50.61	ug/L	94
15)	2-Methylphenol	11.72	835	34047	49.24	ug/L	93
16)	bis(2-chloroisopropyl)Ether	11.77	840	31320	47.75	ug/L	73
17)	4-Methylphenol	12.09	875	34642	46.97	ug/L	90
18)	N-Nitroso-Di-n-Propylamine	12.15	881	31010	49.40	ug/L	73
19)	Hexachloroethane	12.16	882	24118	46.59	ug/L	72
20)	*D8 Naphthalene (ISTD2)	14.12	1093	70257	40.00	ug/L	92
21)	D5 Nitrobenzene (Surr 3)	12.38	906	43737	46.48	ug/L	90
22)	Nitrobenzene	12.43	911	46856	45.85	ug/L	92
23)	Isophorone	13.03	976	86178	47.30	ug/L	93
24)	2-Nitrophenol	13.22	996	20242	49.97	ug/L	93
25)	2,4-Dimethylphenol	13.39	1015	40870	47.87	ug/L	98
26)	bis(-2-Chloroethoxy)Methane	13.64	1042	57138	50.36	ug/L	98
27)	Benzoic Acid	13.83	1062	13369	60.63	ug/L	91
28)	2,4-Dichlorophenol	13.82	1061	29910	52.16	ug/L	97
29)	1,2,4-Trichlorobenzene	14.03	1083	32749	50.66	ug/L	85
30)	Naphthalene	14.17	1098	111216	51.11	ug/L	98
31)	4-Chloroaniline	14.39	1122	46297	50.09	ug/L	94
32)	Hexachlorobutadiene	14.65	1150	17032	41.88	ug/L	80
33)	4-Chloro-3-Methylphenol	15.66	1259	31845	47.81	ug/L	92
34)	2-Methylnaphthalene 1.82	15.94	1289	71419	49.85	ug/L	95
35)	*D10 Acenaphthene (ISTD3)	18.67	1583	49248	40.00	ug/L	93
36)	1,2,3,4-Tetrachlorobenzene	16.47	1346	14063	49.29	ug/L	87
37)	Hexachlorocyclopentadiene	16.52	1352	21205	49.92	ug/L	95
38)	2,4,6-Trichlorophenol	16.76	1377	20371	54.55	ug/L	92
39)	2,4,5-Trichlorophenol	16.85	1387	20509	48.93	ug/L	94
40)	2-Fluorobiphenyl (Surr 4)	16.97	1400	71929	50.13	ug/L	99
41)	2-Chloronaphthalene	17.18	1423	74671	46.57	ug/L	97
42)	1,2,4,5-Tetrachlorobenzene	17.21	1426	33828	51.56	ug/L	83
43)	Toluenediamine	17.23	1428	12084	38.50	ug/L	91

400314

	Compound	R.T.	Scan#	Area	Conc	Units	q
4)	3-Nitroaniline	17.59	1467	27047	46.15	ug/L	92
5)	Azobenzene	20.49	1778	132094	41.38	ug/L	64
46)	Acenaphthylene	18.27	1540	129404	49.15	ug/L	92
47)	1,3-Dinitrobenzene	18.18	1530	23286	45.77	ug/L	75
48)	Dimethyl Phthalate	18.17	1529	96022	47.78	ug/L	98
49)	2,6-Dinitrotoluene	18.33	1546	23226	48.57	ug/L	67
50)	2-Nitroaniline	18.65	1581	28503	42.65	ug/L	94
51)	Acenaphthene 6.09	18.76	1592	76631	49.00	ug/L	94
52)	2,4-Dinitrophenol	18.90	1608	8900	80.28	ug/L	85
53)	4-Nitrophenol	19.10	1629	11934M	41.65	ug/L	
54)	Dibenzofuran	19.16	1636	122360	48.30	ug/L	92
55)	2,4-Dinitrotoluene	19.30	1651	28301	41.16	ug/L	92
56)	Diethylphthalate	19.99	1725	114546	48.86	ug/L	94
57)	4-Chlorophenyl-phenylether	20.08	1734	41362	45.30	ug/L	95
58)	2,3,4,6-Tetrachlorophenol	19.60	1683	12850	44.41	ug/L	89
59)	Fluorene	20.06	1732	84594	46.50	ug/L	89
60)	4-Nitroaniline	20.24	1752	15418	40.32	ug/L	76
61)	2,4,6-Tribromophenol (Surr 5)	20.73	1804	23161	73.61	ug/L	84
62)	*D10 Phenanthrene (ISTD4)	22.46	1990	65361	40.00	ug/L	82
63)	4,6-Dinitro-2-Methylphenol	20.36	1764	13468	69.87	ug/L	88
64)	N-Nitrosodiphenylamine	20.42	1771	51660	50.79	ug/L	91
65)	4-Bromophenyl-phenylether	21.32	1868	19612M	55.18	ug/L	
66)	Hexachlorobenzene	21.68	1906	26110	51.68	ug/L	54
67)	Pentachlorophenol	22.15	1957	13497	56.63	ug/L	93
68)	Phenanthrene	22.51	1996	108383	53.77	ug/L	97
69)	Anthracene	22.63	2009	102504	47.70	ug/L	94
70)	Carbazole	23.07	2056	78530	46.93	ug/L	85
71)	Di-N-Butylphthalate	24.18	2176	173555	51.54	ug/L	97
72)	Fluoranthene	25.60	2329	94093	47.37	ug/L	91
73)	*D12 Chrysene (ISTD 5)	29.32	2729	41029	40.00	ug/L	96
74)	Pyrene	26.17	2390	101086	50.68	ug/L	95
75)	D14 Terphenyl (Surr 6)	26.63	2440	61309	46.19	ug/L	81
76)	Butylbenzylphthalate	28.02	2589	47760	44.86	ug/L	76
77)	3,3'-Dichlorobenzidine	29.27	2724	16992	48.64	ug/L	82
78)	Benzo(a)Anthracene	29.28	2725	66019	48.70	ug/L	93
79)	bis(2-Ethylhexyl)Phthalate	29.56	2755	73884	44.23	ug/L	92
80)	Chrysene	29.39	2737	64510	46.93	ug/L	98
81)	*D12 Perylene (ISTD 6)	33.48	3177	34469	40.00	ug/L	97
82)	Di-n-Octyl Phthalate	31.13	2924	93783	41.60	ug/L	97
83)	Benzo(b)Fluoranthene	32.21	3041	61857	57.71	ug/L	87
84)	Benzo(k)Fluoranthene	32.29	3049	49314	47.92	ug/L	87
85)	Benzo(a)Pyrene	33.28	3156	47242	53.36	ug/L	94
86)	Indeno(1,2,3-cd)Pyrene	38.05	3670	42724	43.92	ug/L	77
87)	Dibenzo(a,h)Anthracene	38.17	3683	41082	61.03	ug/L	96
88)	Benzo(g,h,i)Perylene	39.42	3818	44114	51.98	ug/L	87

* Compound is ISTD



Data File: >B4804 Quant Output File: B4804::D3
Name: 111928-1
Misc: HP-3 SEMIVOLATILES BTL#10
Quant Time: 910605 20:50 Quant ID File: IDDMA::D4
Injected at: 910605 20:07 Last Calibration: 910605 13:36

Compound No: 24
Compound Name: 2-Methylnaphthalene
Scan Number: 1304
Retention Time: 16.20 min.
Quant Ion: 142.0
Area: 193142M
Concentration: 360.12 ug/L

QUANT REPORT

Operator ID: BONNIE Quant Rev: 6 Quant Time: 910612 09:18
Output File: ^B4809::D3 Injected at: 910611 20:45
Data File: >B4809::D5 Dilution Factor: 1.00000
Name: 111928-1DL (OIL)
Misc: HP-3 SEMIVOLATILES 1:5DL reanalysis BTL# 4

ID File: IDDMA::D4
Title: Semi-volatile Target Compounds
Last Calibration: 910611 19:15

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*D4 1,4-Dichlorobenzene(ISTD1)	10.94	746	32030	40.00	ug/L	9?
5)	2-Fluorophenol (Surr 1)	7.97	427	7610	9.71	ug/L	84
7)	D5 Phenol (Surr 2)	10.24	671	13255	10.39	ug/L	81
20)	*D8 Naphthalene (ISTD2)	14.14	1088	76059	40.00	ug/L	9?
21)	D5 Nitrobenzene (Surr 3)	12.36	898	12777	15.00	ug/L	92
30)	Naphthalene	14.19	1093	75283	41.44	ug/L	91
34)	2-Methylnaphthalene	16.02	1288	169465M	140.64	ug/L	92
35)	*D10 Acenaphthene (ISTD3)	18.72	1575	16841	40.00	ug/L	95
40)	2-Fluorobiphenyl (Surr 4)	17.00	1392	8361	13.24	ug/L	93
51)	Acenaphthene	18.79	1582	15730	31.66	ug/L	89
54)	Dibenzofuran	19.20	1625	14337	20.56	ug/L	75
59)	Fluorene	20.09	1720	26960	57.48	ug/L	95
61)	2,4,6-Tribromophenol (Surr 5)	20.76	1790	186	4.37	ug/L	87
72)	*D10 Phenanthrene (ISTD4)	22.49	1973	51007	40.00	ug/L	71
74)	N-Nitrosodiphenylamine	20.44	1757	18796	18.96	ug/L	90
68)	Phenanthrene	22.56	1980	92617	52.34	ug/L	95
73)	*D12 Chrysene (ISTD 5)	29.33	2694	30094	40.00	ug/L	92
74)	Pyrene	26.17	2361	6241	3.04	ug/L	79
75)	D14 Terphenyl (Surr 6)	26.64	2410	6382	5.41	ug/L	75
79)	bis(2-Ethylhexyl)Phthalate	29.57	2719	21040	12.64	ug/L	89
81)	*D12 Perylene (ISTD 6)	33.48	3132	17810	40.00	ug/L	90

* Compound is ISTD

should be multiplied by a factor of 2 due to GPC cleanup

2F

SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: Case No.: 111928 SAS No.: SDG No.:
Level (low/med): MED

EPA SAMPLE NO.	S1 (DBC) #	OTHER
LO-1G106S-WO	102	
LO-1G106S-WOMS	92	
LO-1G106S-WOMSD	79	
PBLK1365	138	

Advisory
QC Limits
(20-150)

S1 (DBC) = Dibutylchlorendate
= Column used to flag recovery values
* = Values outside QC Limits
D = Surrogates diluted out

200010

3F

SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: Case No.: 111928 SAS No.: SDG No.:
Matrix Spike Sample Number: LO-1G106S-WO Level (low/med) MED

Compound	Spike Added (ug/Kg)	Sample Conc. (ug/Kg)	MS Conc. (ug/Kg)	MS % Rec #	QC Limits Rec
Lindane	1600	-	1300	81	46-127
Heptachlor	1600	-	3300	206 *	35-130
Aldrin	1600	-	3500	219 *	34-132
Dieldrin	4000	-	7900	198 *	31-134
Endrin	4000	-	7300	182 *	42-139
4,4'-DDT	4000	-	2100	52	23-134

Compound	Spike Added (ug/Kg)	MSD Conc. (ug/Kg)	MSD % Rec #	% RPD #	QC Limits RPD	QC Limits REC
Lindane	1600	1400	88	7.4	50	46-127
Heptachlor	1600	3500	219 *	5.9	31	35-130
Aldrin	1600	3600	225 *	2.8	43	34-132
Dieldrin	4000	8100	202 *	2.5	38	31-134
Endrin	4000	7600	190 *	4.0	45	42-139
4,4'-DDT	4000	2900	72	32	50	23-134

= Column to be used to flag recovery and RPD values with an asterisk
* = Values outside QC Limits

RPD : 0 out of 6 outside limits
Spike Recovery : 8 out of 12 outside limits

Comments :

8E

PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: ARDL, INC Contract: LENZ 01L

Lab Code: ----- Case No.: 111928 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm x 30m 5% diphenyl polysiloxane

Dates of Analyses: 05-29-91 to 05-30-91

36.716

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALB	EVALB	05-29-91	0810	----	
02	EVALA	EVALA	05-29-91	0911	0.09	
03	EVALC	EVALC	05-29-91	1002	0.14	
04	INDA	INDA	05-29-91	1053	0.11	
05	INDA	INDB	05-29-91	1143	0.15	
06	AR1242	AR1242	05-29-91	1234	0.22	
07	AR1248	AR1248	05-29-91	1324	0.12	
08	AR1254	AR1254	05-29-91	1415	0.13	
09	AR1660	AR1660	05-29-91	1506	0.45	
10	TOXAPH	TOXAPH	05-29-91	1556	0.48	
11	PBLK1334	200215-B1334	05-29-91	1647	0.20	
12	PBLK1365	111928-B1365	05-29-91	1738	0.00	
13	LO-1GW3-FB	111918-4	05-29-91	1828	0.02	
14	A101MS	200215-3MS	05-29-91	1919	0.03	
15	G101MSD	200215-3MSD	05-29-91	2009	0.02	
16	EVALB	EVAL 2	05-29-91	2100	0.03	
17	ZZZZ	111918-5	05-29-91	2151	0.08	
18	LO-1G1065-WO	111928-1	05-29-91	2241	0.71	
19	LO-1G1065-WOMS	111928-1MS	05-30-91	0022	0.60	
20	LO-1G1065-WOMSD	111928-1MSD	05-30-91	0204	0.63	
21	INDA	INDA End Seq.	05-30-91	1450	0.10	
22	INDB	INDB End Seq.	05-30-91	1541	0.16	
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns) 1.5 for megabore

2/

PESTICIDE EVALUATION STANDARDS SUMMARY

Lab Name: AROL, INC Contract: Lenz Oil

Lab Code: ----- Case No.: 111928 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A GC Column ID: DB5 0.53mm X 30m 5% diphenyl polysiloxane

Dates of Analyses: 05-29-91 to 05-30-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (+/- 10.0%)	
ALDRIN	3278456	3414108	3390418	2.2	
ENDRIN	2391578	2595286	2348661	5.4	
4,4'-DDT	2001420	2209849	2053643	5.1	(1)
DBC	1637630	1897037	1831529	7.5	

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown (percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	05-29-91	0810	6.2	1.3	4.0
02	EVAL MIX B	05-29-91	2100	16	2.0	9.9
03	EVAL MIX B					
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form Instructions.

Lab Name: ARDL, INC Contract: LENC 01—

Lab Code: ----- Case No.: 111928 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5 0.53mm X 30m, 5% diphenyl polysiloxane

DATE(S) OF ANALYSIS	FROM: 05-29-91	DATE OF ANALYSIS	05-30-91 ✓
	TO: 05-30-91	TIME OF ANALYSIS	1450 ✓
TIME(S) OF ANALYSIS	FROM: 0810	EPA SAMPLE NO. (STANDARD)	INDA 60 ✓
	TO: 0345		46

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	13.70	13.43	13.97	2385200				
beta-BHC	14.62	14.35	14.89	964700				
delta-BHC	15.75	15.48	16.02	1712300				
gamma-BHC	14.95	14.83	15.07	2980000	14.91	4021800	N	35
Heptachlor	18.09	17.97	18.21	2193100	18.06	2626600	N	20
Aldrin	19.85	19.73	19.97	2306200	19.83	2489900	N	8.0
Hept. epoxide	21.89	21.77	22.01	1797200	21.87	2360700 ✓	N	31
Endosulfan I	24.01	23.89	24.13	1877300	23.98	2406100	N	28
Dieldrin	25.56	25.44	25.68	1702600	25.55	2343300	N	38
4,4'-DDE	25.16	24.86	25.46	1400800				
Endrin	26.97	26.67	27.27	1015200				
Endosulfan II	27.46	27.34	27.58	1388050	27.44	1909150	N	38
4,4'-DDD	27.81	27.54	28.08	1008800				
Endo. sulfate	30.25	29.95	30.55	1099350				
4,4'-DDT	30.36	30.24	30.48	1372800	30.33	1563350	N	14
Methoxychlor	34.28	34.19	34.37	254330	34.27	951610	N	27
Endrin ketone	33.54	33.24	33.84	1479800				
a. chlordane	24.12	23.82	24.42	1663100				
g. chlordane	23.22	22.92	23.52	1701400				
Toxaphene	26.96	25.79	28.13	816781				
Aroclor-1016	17.70	17.61	17.79	801098				
Aroclor-1221	13.19	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	18.03	17.85	18.21	789230				
Aroclor-1248	23.14	22.99	23.29	916771				
Aroclor-1254	27.32	27.23	27.41	1266974				
Aroclor-1260	31.99	31.90	32.08	1713398				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

Lab Name: ARDL, INC Contract: LENC OIL

Lab Code: ----- Case No.: 111928 SAS No.: ----- SDG No.: -----

Instrument ID: GC-14A Detector #2 GC Column ID: DB5, 0.53mm X 30m
5% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 05-29-91 TO: 05-30-91	DATE OF ANALYSIS 05-30-91
	TIME OF ANALYSIS 1541
TIME(S) OF ANALYSIS FROM: 0810 TO: 0345	EPA SAMPLE NO. (STANDARD) INDB End Seq.

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	13.70	13.43	13.97	2385200	13.72	3036000	N	27
beta-BHC	14.62	14.35	14.89	964700	14.65	1385800	N	44
delta-BHC	15.75	15.48	16.02	1712300	15.78	2453100	N	43
gamma-BHC	14.95	14.83	15.07	2980000				
Heptachlor	18.09	17.97	18.21	2193100				
Aldrin	19.85	19.73	19.97	2306200	19.88	2263300	N	1.9
Hept. epoxide	21.89	21.77	22.01	1797200				
Endosulfan I	24.01	23.89	24.13	1817300				
Dieldrin	25.56	25.44	25.68	1702600				
4,4'-DDE	25.16	24.86	25.46	1400800	25.18	2018100	N	44
Endrin	26.97	26.67	27.27	1015200	26.99	1485900	N	46
Endosulfan II	27.46	27.34	27.58	1388050				
4,4'-DDD	27.81	27.54	28.08	1008800	27.82	1544650	N	53
Endo.sulfate	30.25	29.95	30.55	1099350	30.26	1654500	N	50
4,4'-DDT	30.36	30.24	30.48	1372800				
Methoxychlor	34.28	34.19	34.37	754330				
Endrin ketone	33.54	33.24	33.84	1479800	33.56	2091350	N	41
a. chlordane	24.12	23.82	24.42	1663100	24.13	2125200	N	28
g. chlordane	23.22	22.92	23.52	1701400	23.25	2172600	N	28
Toxaphene	26.96	25.79	28.13	816781				
Aroclor-1016	17.70	17.61	17.79	801098				
Aroclor-1221	13.69	13.48	13.90	182111				
Aroclor-1232	17.30	17.12	17.48	523920				
Aroclor-1242	18.03	17.85	18.21	789230				
Aroclor-1248	23.14	22.99	23.29	916771				
Aroclor-1254	27.32	27.23	27.41	1266974				
Aroclor-1260	31.99	31.90	32.08	1713398				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

8D

PESTICIDE EVALUATION STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111928 SAS No.: ----- SDG No.: -----

Instrument ID: HP2 5890 GC Column ID: DB608 0.53mm X 30m 35% diphenyl polysiloxane

Dates of Analyses: 06-04-91 to 06-06-91

Evaluation Check for Linearity

PESTICIDE	CALIBRATION FACTOR EVAL MIX A	CALIBRATION FACTOR EVAL MIX B	CALIBRATION FACTOR EVAL MIX C	%RSD (</= 10.0%)
ALDRIN	1541336	1434710	1479187	3.6
ENDRIN	912710	949651	897998	2.9
4,4'-DDT	849394	851197	907969	3.8
DBC	921538	872448	907567	2.8

(1) If > 10.0% RSD, plot a standard curve and determine the ng for each sample in that set from the curve

Evaluation Check for 4,4'-DDT/Endrin Breakdown (percent breakdown expressed as total degradation)

		DATE ANALYZED	TIME ANALYZED	ENDRIN	4,4'-DDT	COMBINED (2)
	INITIAL					
01	EVAL MIX B	06-04-91	0802	7.5	6.9	7.3
02	EVAL MIX B	06-05-91	1504	14	5.0	9.3
03	EVAL MIX B					
04	EVAL MIX B					
05	EVAL MIX B					
06	EVAL MIX B					
07	EVAL MIX B					
08	EVAL MIX B					
09	EVAL MIX B					
00	EVAL MIX B					
11	EVAL MIX B					
12	EVAL MIX B					
13	EVAL MIX B					
14	EVAL MIX B					

(2) See Form Instructions.

5000: J

8E

PESTICIDE EVALUATION STANDARDS SUMMARY

Evaluation of Retention Time Shift for Dibutylchlorendate

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111928 SAS No.: ----- SDG No.: -----

Instrument ID: HP2 5890 GC Column ID: DB 608 0.53mm X 30m 35% diphenyl polysiloxane

Dates of Analyses: 06-04-91 to 06-06-91

22.85

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	% D	*
01	EVALB	EVALB	06-04-91	0802	—	
02	EVALA	EVALA	06-04-91	0838	0.03	
03	EVALC	EVALC	06-04-91	0914	0.02	
04	INDA	INDA	06-04-91	1006	0.04	
05	INDB	INDB	06-04-91	1043	0.00	
06	TOXAPH	TOX	06-04-91	1119	0.01	
07	Ar 1242	Ar1242	06-04-91	1155	0.03	
08	Ar 1248	Ar1248	06-04-91	1231	0.01	
09	Ar 1254	Ar1254	06-04-91	1306	0.02	
10	Ar 1660	Ar1660	06-04-91	1342	0.25	
11	BLK	111908-B1340	06-04-91	1418	0.02	
12	PBLK 1365	111928-B1365	06-04-91	1454	0.00	
13	G-106DR-MS/MSD	111908-12	06-04-91	1530	0.01	
14	G-106DR-MS/MSD-MS	111908-12MS	06-04-91	1606	0.00	
15	G-106DR-MS/MSD-MSD	111908-12MSD	06-04-91	1652	0.03	
16	EVALB	EVALB	06-05-91	1504	0.20	
17	BLK	112025-B1379	06-05-91	1559	0.24	
18	Final	112025-2	06-05-91	1634	0.18	
19	LD-1G106S-WD	111928-1	06-05-91	1730	0.15	
20	LD-1G106S-WD	111928-1MS	06-05-91	1823	0.28	
21	LD-1G106S-WD	111928-1MSD	06-05-91	2116	0.28	
22	IND A	IND A ENDSEQ	06-06-91	1658	0.14	
23	IND B	IND B ENDSEQ	06-06-91	1754	0.02	
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						

* Values outside of QC limits (2.0% for packed columns, 0.3% for capillary columns) 1.5 for mixed form

500016

PESTICIDE/PCB STANDARDS SUMMARY

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 11928 SAS No.: ----- SDG No.: -----

Instrument ID: HP25890 GC Column ID: DB608 0.53mm X 30m 35% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 06-04-91 TO: 06-06-91

TIME(S) OF ANALYSIS FROM: 0802 TO: 1754

DATE OF ANALYSIS 06-06-91

TIME OF ANALYSIS 1658

EPA SAMPLE NO. (STANDARD) IND A ENDSEQ

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	10.57	10.51	10.63	1292400				
beta-BHC	12.30	12.24	12.36	899400				
delta-BHC	13.60	13.54	13.66	1242500				
gamma-BHC	12.02	11.96	12.08	1065400	12.03	2309600	N	120
Heptachlor	13.16	13.10	13.22	516600	13.17	1435500	N	18
Aldrin	14.32	14.26	14.38	1092200	14.31	1093800	N	0
Hept. epoxide	16.32	16.26	16.38	1077200	16.33	2101800	N	195
Endosulfan I	17.52	17.46	17.58	1154500	17.54	2988800	N	160
Dieldrin	18.58	18.52	18.64	955600	18.60	1813900	N	90
4,4'-DDE	18.33	18.27	18.39	1036200				
Endrin	19.81	19.75	19.87	572200				
Endosulfan II	20.44	20.38	20.50	949650	20.46	1697100	N	179
4,4'-DDD	20.21	20.15	20.27	895200				
Endo.sulfate	21.94	21.88	22.00	1253400				
4,4'-DDT	21.21	21.15	21.27	544250	21.25	1016500	N	187
Methoxychlor	24.19	24.10	24.28	352780	24.21	595750	N	69
Endrin ketone	24.65	24.56	24.74	1274650				
a. chlordane	17.43	17.37	17.49	1419000				
g. chlordane	16.17	16.81	16.93	1445500				
Toxaphene	20.40	20.05	20.77	402263				
Aroclor-1016	11.96	11.90	12.02	436116				
Aroclor-1221	11.15	11.06	11.24	1618836				
Aroclor-1232	14.01	13.92	14.10	462153				
Aroclor-1242	14.30	14.24	14.36	479947				
Aroclor-1248	17.57	17.51	17.63	211410				
Aroclor-1254	18.16	18.77	18.95	769024				
Aroclor-1260	19.45	19.36	19.54	6216116				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteri

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

FORM IX PEST 8/87 Re

Lab Name: ARDL, INC Contract: LENZ OIL

Lab Code: ----- Case No.: 111928 SAS No.: ----- SDG No.: -----

strument ID: HP 5890 GC Column ID: DB608 0.53mm X 30m 35% diphenyl polysiloxane

DATE(S) OF ANALYSIS FROM: 06-04-91 DATE OF ANALYSIS 06-06-91

TO: 06-06-91 TIME OF ANALYSIS 1754

TIME(S) OF ANALYSIS FROM: 0802 EPA SAMPLE NO. (STANDARD) INDB ENDSTD

TO: 1754

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
alpha-BHC	10.57	10.51	10.63	1292400	10.58	1226800	N	5.1
beta-BHC	12.30	12.24	12.36	899400	12.32	860100	N	4.4
delta-BHC	13.60	13.54	13.66	1242500	13.62	1142500	N	8.0
gamma-BHC	12.02	11.96	12.08	1065400				
Heptachlor	13.16	13.10	13.22	516600				
.ldrin	14.32	14.26	14.38	1092200	14.29	664200	N	39
Hept. epoxide	16.32	16.26	16.38	1027200				
Endosulfan I	17.52	17.46	17.58	1154500				
Dieldrin	18.58	18.52	18.64	955600				
4,4'-DDE	18.33	18.27	18.39	1036200	18.34	1247900	N	50
Endrin	19.81	19.75	19.87	572200	19.82	402000	N	29
Endosulfan II	20.44	20.38	20.50	949650				
',4'-DDD	20.21	20.15	20.27	895200	20.23	815900	N	8.9
ndo.sulfate	21.94	21.88	22.00	1253400	21.96	1191950	N	4.9
4,4'-DDT	21.21	21.15	21.27	544250				
Methoxychlor	24.19	24.10	24.28	352780				
Endrin ketone	24.65	24.56	24.74	1274650	24.66	1137900	N	11
a. chlordane	17.43	17.37	17.49	1419000	17.44	2013800	N	42
g. chlordane	16.87	16.81	16.93	1545500	16.88	2016100	N	39
Toxaphene	20.49	20.05	20.77	402263				
Aroclor-1016	11.96	11.90	12.02	436116				
roclor-1221	11.15	11.06	11.24	161896				
Aroclor-1232	14.01	13.92	14.10	462153				
Aroclor-1242	14.30	14.24	14.36	479947				
Aroclor-1248	17.57	17.51	17.63	211410				
Aroclor-1254	18.86	18.77	18.95	769024				
Aroclor-1260	19.45	19.36	19.54	621616				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed. %D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition

FORM IX PEST 8/87 Rev.

1D

PESTICIDE ORGANIC ANALYSIS

Customer Sample No.

LO-1G106S-WOMS

Lab Name: ARDL, Inc. Contract: LENZ OIL

Lab Code: _____ Case No.: 111928 SAS No.: ____ SDG No.: ____

Matrix (SOIL/WATER)	: OIL	Lab Sample ID	: 111928-1MS
Sample wt/vol	: 1.0 (g/mL) g	Lab File ID	:
Level (LOW/MED)	: MED	Date Received	: 05/13/91
% Moisture (not dec)	: --- dec. -	Date Extracted	: 05/21/91
Extraction (SEPF/CONT/SONC)	: DILUTION	Date Analyzed	: 05/30/91
GPC Cleanup (Y/N)	: Y pH: 7.0	Dilution Factor	: 1.0

CAS No.	Compound	Concentration Units: ug/Kg (ug/L or ug/Kg)	Q
319-84-6	alpha-BHC	120	U
319-85-7	beta-BHC	120	U
319-86-8	delta-BHC	120	U
58-89-9	gamma-BHC(Lindane)	1300	
76-44-8	Heptachlor	3300	
309-00-2	Aldrin	3500	
1024-57-3	Heptachlor epoxide	300	
959-98-8	Endosulfan I	120	U
60-57-1	Dieldrin	7900	
72-55-9	4,4'-DDE	240	U
72-20-8	Endrin	7300	
33213-65-9	Endosulfan II	240	U
72-54-8	4,4'-DDD	240	U
1013-07-8	Endosulfan sulfate	240	U
50-29-3	4,4'-DDT	2100	
72-43-5	Methoxychlor	3500	
53494-70-5	Endrin ketone	1800	
5103-71-9	alpha-Chlordane	1200	U
5103-74-2	gamma-Chlordane	1200	U
8001-35-2	Toxaphene	2400	U
12674-11-2	Aroclor 1016	1200	U
11104-28-2	Aroclor 1221	1200	U
11141-16-5	Aroclor 1232	1200	U
53469-21-9	Aroclor 1242	1200	U
12672-29-6	Aroclor 1248	1200	U
11097-69-1	Aroclor 1254	2400	U
11096-82-5	Aroclor 1260	2400	U

72 Hour Sequence Worksheet

DB 5 (0.53 mm ID x 30 m)
Inj. Vol. = 1 uL
Shimadzu GC-14A

Sequence Date: 05/29/91 to 05/30/91
Date: 5-30-91
Time: 0022
Analyst: GPC X2

Sample ID: 111938-1MS

COMPOUNDS	RT FROM	WINDOW TO	CF	RT FOUND	AREA	Response	D.F.	V f	1/Vi(Wi)	1/%TS	Conv Factor 1000	Result ug/L or ug/Kg
alpha-BHC	13.43	13.97	2385200									
beta-BHC	14.35	14.89	964700									
delta-BHC	15.48	16.02	1712300									
gamma-BHC	14.83	15.07	2980000	15.15	1987649	0.67						1334
Heptachlor	17.97	18.21	2193100	18.27	3653623	1.67						3332
Aldrin	19.73	19.97	2306200	20.01	4061338	1.76						3522
Hept. epoxide	21.77	22.01	1797200	21.93	275775	0.153						306
Endosulfan I	23.89	24.13	1817300									
Dieldrin	25.44	25.68	1702600	25.72	6696125	3.93						7866
4,4'-DDE	24.86	25.46	1400800									
Endrin	26.67	27.27	1015200	27.10	3692740	3.64						7275
Endosulfan II	27.34	27.58	1388050									
4,4'-DDD	27.54	28.08	1008800									
Endo. Sulfate	29.95	30.55	1099350									
4,4'-DDT	30.24	30.48	1372800	30.52	1469351	1.07						2141
Methoxychlor	34.19	34.37	754330	34.35	1312618	1.74						3480
Endrin ketone	33.24	33.84	1479800	33.68	1300539	0.87						1757
a. Chlordane	23.82	24.42	1663100									
g. Chlordane	22.92	23.52	1701400									
Toxaphene	25.79	28.13	816781									
Aroclor 1016	17.61	17.79	801098									
Aroclor 1221	13.48	13.90	182111									
Aroclor 1232	17.12	17.48	523920									
Aroclor 1242	17.65	18.21	799230									
Aroclor 1248	22.99	23.29	916771									
Aroclor 1254	27.23	27.41	1266974									
Aroclor 1260	31.90	32.08	1713398									
Endrin Aldehy	28.48	28.78	1189200									
DBC	36.67	36.85	1117740	36.94	2047008	1.83/4	x 2	2	92%			

500081

72 Hour Sequence Worksheet

DB 608 0.53mm x 30m
Inj. Vol. = 2 uL
HP #2 5890

Sequence Date: 06/04/91 to 6/6/91
Date: 6-5-91
Time: 1923

Sample ID: 111928-1MS GPC x 2

COMPOUNDS	RT WINDOW FROM	TO	CF	RT FOUND	AREA	Response	D.F.	V f	1/Vi(Wi)	1/ZTS	Conv Factor	Result ug/L or ug/Kg
alpha-BHC	10.51	10.63	1292400									
beta-BHC	12.24	12.36	899400									
delta-BHC	13.54	13.66	1242500									
gamma-BHC	11.96	12.08	1065400	12.18	51422771	4.8	1	1	1	—	1000	9600
Heptachlor	13.10	13.22	516600	13.40	8086439	16						32000
Aldrin	14.26	14.38	1092200	14.52	5201588	4.8						9600
Hept. epoxide	16.26	16.38	1077700	16.27	484754	0.44						899
Endosulfan I	17.46	17.58	1154500									
Dieldrin	18.52	18.64	955600	18.75	6122786	6.4						12800
4,4'-DDE	18.27	18.39	1036700									
Endrin	19.75	19.87	572700	19.97	6497907	11						22000
Endosulfan II	20.38	20.50	949650									
4,4'-DDD	20.15	20.27	895200									
Endo. Sulfate	21.89	22.00	1253400									
4,4'-DDT	21.15	21.27	544250	21.40	8901169	16						32000
Methoxychlor	24.10	24.28	352780	24.18	501501	1.42						2843
Endrin ketone	24.56	24.74	1274650	24.66	421858	0.33						661
a. Chlordane	17.37	17.49	1419000									
g. Chlordane	16.81	16.93	1445500									
Toxaphene	20.05	20.17	402263									
Aroclor 1016	11.90	12.02	436116									
Aroclor 1221	11.06	11.24	161826									
Aroclor 1232	13.92	14.10	462153									
Aroclor 1242	14.24	1436	479947									
Aroclor 1248	17.51	17.63	711410									
Aroclor 1254	18.77	18.95	769024									
Aroclor 1260	19.36	19.54	621616									
Endrin Aldehyde	21.48	21.60	845520									
DBC	22.80	22.92	801620	22.83	3038823	3.78 / 4	x 2	=	1899.01			

500082

1D
PESTICIDE ORGANIC ANALYSIS

Customer Sample No.

LO-1G106S-WOMSD

Lab Name: ARDL, Inc. Contract: LENZ OIL
Lab Code: _____ Case No.: 111928 SAS No.: ____ SDG No.: ____

Matrix (SOIL/WATER) : OIL Lab Sample ID : 111928-1MSD
Sample wt/vol : 1.0 (g/mL) g Lab File ID :
Level (LOW/MED) : MED Date Received : 05/13/91
% Moisture (not dec): --- dec. - Date Extracted : 05/21/91
Extraction (SEPF/CONT/SONC): DILUTION Date Analyzed : 05/30/91
GPC Cleanup (Y/N): Y pH: 7.0 Dilution Factor: 1.0

CAS No.	Compound	Concentration Units: ug/Kg (ug/L or ug/Kg)	Q
319-84-6	alpha-BHC	120	U
319-85-7	beta-BHC	120	U
319-86-8	delta-BHC	120	U
58-89-9	gamma-BHC(Lindane)	1400	
76-44-8	Heptachlor	3500	
309-00-2	Aldrin	3600	
1024-57-3	Heptachlor epoxide	320	
959-98-8	Endosulfan I	120	U
60-57-1	Dieldrin	8100	
72-55-9	4,4'-DDE	240	U
72-20-8	Endrin	7600	
33213-65-9	Endosulfan II	240	U
72-54-8	4,4'-DDD	240	U
1013-07-8	Endosulfan sulfate	240	U
50-29-3	4,4'-DDT	2900	
72-43-5	Methoxychlor	3200	
53494-70-5	Endrin ketone	2500	
5103-71-9	alpha-Chlordane	1200	U
5103-74-2	gamma-Chlordane	1200	U
8001-35-2	Toxaphene	2400	U
12674-11-2	Aroclor 1016	1200	U
11104-28-2	Aroclor 1221	1200	U
11141-16-5	Aroclor 1232	1200	U
53469-21-9	Aroclor 1242	1200	U
12672-29-6	Aroclor 1248	1200	U
11097-69-1	Aroclor 1254	2400	U
11096-82-5	Aroclor 1260	2400	U

72 Hour Sequence Worksheet

DB 5 (0.53 mm ID x 30 m)
Inj. Vol. = 1 uL
Shimadzu GC-14A

Sequence Date: 05/29/91 to 05/30/91
Date: 5-30-91
Time: 0204
Analyst: GPC x 2

Sample ID: 111928-1MSD

COMPOUNDS	RT FROM	WINDOW TO	CF	RT FOUND	AREA	Response	D.F.	V f	1/Vi(Wi)	1/%TS	Conv Factor 1000	Result ug/L or ug/Kg
alpha-BHC	13.43	13.97	2385200									
beta-BHC	14.35	14.89	964700									
delta-BHC	15.48	16.02	1712300									
gamma-BHC	14.83	15.07	2980000	15.16	2060452	0.69						1383
Heptachlor	17.97	18.21	2193100	18.28	3844650	1.75						3506
Aldrin	19.73	19.97	2306200	20.02	4171130	1.81						3617
Hept. epoxide	21.77	22.01	1797200	21.93	291171	0.162 ✓						324
Endosulfan I	23.89	24.13	1817300									
Dieldrin	25.44	25.68	1702600	25.72	6860088	4.03						8058
4,4'-DDE	24.86	25.46	1400800									
Endrin	26.67	27.27	1015200	27.10	3840244	3.78 ✓						7565
Endosulfan II	27.34	27.58	1388050									
4,4'-DDD	27.54	28.08	1008800									
Endo. Sulfate	29.95	30.55	1099350									
4,4'-DDT	30.24	30.48	1372800	30.51	1574860	1.43						2865
Methoxychlor	34.19	34.37	754330	34.35	1208009	1.60 ✓						3203
Endrin ketone	33.24	33.84	1479800	33.73	1840653	1.24 ✓						2487
a. Chlordane	23.82	24.42	1663100									
g. Chlordane	22.92	23.52	1701400									
Toxaphene	25.79	28.13	816781									
Aroclor 1016	17.61	17.79	801098									
Aroclor 1221	13.48	13.90	182111									
Aroclor 1232	17.12	17.48	523920									
Aroclor 1242	17.85	18.21	78230	17.88	31471622	39.9						79753
Aroclor 1248	22.99	23.29	916771									
Aroclor 1254	27.23	27.41	1266974									
Aroclor 1260	31.90	32.08	1713398	31.96	17279478	8.33						16668
Endrin Aldehy	28.48	28.79	1189200									
DBC	36.67	36.85	1117740	36.95	1762737	1.58/4	x2	=	79%			

500090

72 Hour Sequence Worksheet

DB 608 0.53mm x 30mm
Inj. Vol. = 2 uL
HP #2 5000

Sequence Date: 06/04/91 to 6/6/91
Date: 6-5-91
Time: 2116

Sample ID: 11928-1MSD

GPC x 2

COMPOUNDS	RT FROM	WINDOW TO	CF	RT FOUND	AREA	Response	D.F.	V f	1/Vi(Wi)	1/ZTS	Conv Factor 1000	Result ug/L or ug/Kg
alpha-BHC	10.51	10.63	1292400									
beta-BHC	12.24	12.36	899400									
delta-BHC	13.54	13.66	1242500									
gamma-BHC	11.96	12.08	1065400	12.17	5283358	5.0						
Heptachlor	13.10	13.22	516600	13.39	8357434	16						
Aldrin	14.26	14.38	1092200	14.51	5327419	4.9						
Hept. epoxide	16.26	16.38	1077700	16.26	723074	6.67						1341
Endosulfan I	17.46	17.58	1154500									
Dieldrin	18.52	18.64	955600	18.74	6514110	6.8						
4,4'-DDE	18.27	18.39	1036700									
Endrin	19.75	19.87	572700	19.98	6597680	11.52						
Endosulfan II	20.38	20.50	949650									
4,4'-DDD	20.15	20.27	895200									
Endo. Sulfate	21.88	22.00	1253400									
4,4'-DDT	21.15	21.27	544250	21.39	9144921	16.8						
Methoxychlor	24.10	24.28	352780	24.19	585384	1.65						2319
Endrin ketone	24.56	24.74	1274650	24.66	442207	0.35						693
a. Chlordane	17.37	17.49	1419000									
g. Chlordane	16.81	16.93	1445500									
Toxaphene	20.05	20.77	402263									
Aroclor 1016	11.90	12.02	436116									
Aroclor 1221	11.06	11.24	161826									
Aroclor 1232	13.92	14.10	462153									
Aroclor 1242	14.24	14.36	479947	14.26	37009091	77.1						154222
Aroclor 1248	17.51	17.63	711410									
Aroclor 1254	18.77	18.95	769024									
Aroclor 1260	19.36	19.54	621616	19.44	39242038	63.1						126258
Endrin Aldehy	21.48	21.60	845520									
DBC	22.80	22.92	801620	22.90	3500723	4.37/4	x 27		218	70		

500091

EVALUATION OF CONFIRMATIONS OF GC ANALYSES

TRAFFIC REPORT NUMBER	COMPOUND	COLUMN #1 DB5 TYPE: RT/RRT		AREA RATIOS		COLUMN #2 DB608 TYPE: RT/RRT		AREA RATIOS		COMMENTS		CONFIRMATION (2 COL/ GC/MS)	REVIEWER CONFIDENT
		Sample	Standard	Sample	Standard	Sample	Standard	Sample	Standard	Area Ratio	Area Ratio		
10-16-1005-WC	Aroclor 1242												
		17.416	17.197	5897093	5650574	13408	13.257	6569063	3046355	9.4	18	✓	✓
		20.694	20.527	2719127	2221310	15.267	15.515	1147838	1336056	12	8.6		
		23.346	23.164	2391105	2223096	16.58	16.612	1775546	1336073	11	18		
		26.237	26.477	130153	20117	12.117	11.958	2004055	156748	6.5	13		
		13.598		104147	168921	14.496	14.299	1470426	109366	5	13		

GPC cleanup

Aroclor 1242:

DB-5 $\frac{1198548}{10641225} \times \frac{10\,ng}{2\,ul} \times \frac{1000\,ul}{.001\,Kg} \times 2 \times \frac{1\,ug}{1000\,ng} = 1126\,ug/Kg \sim 1130\,ug/kg$

GPC cleanup

DB-608 $\frac{833798}{1196928} \times \frac{10\,ng}{2\,ul} \times \frac{1000\,ul}{0.001\,kg} \times 2 \times \frac{1\,ug}{1000\,ng} = 697\,ug/kg \sim 700\,ug/kg$

C-R4A CHROMATOPAC CH=1 REPORT No.=201 CHROMATOGRAM=2:P10529.C09 91.05/29 22:41:44

Analysis File : 1:EPST52.

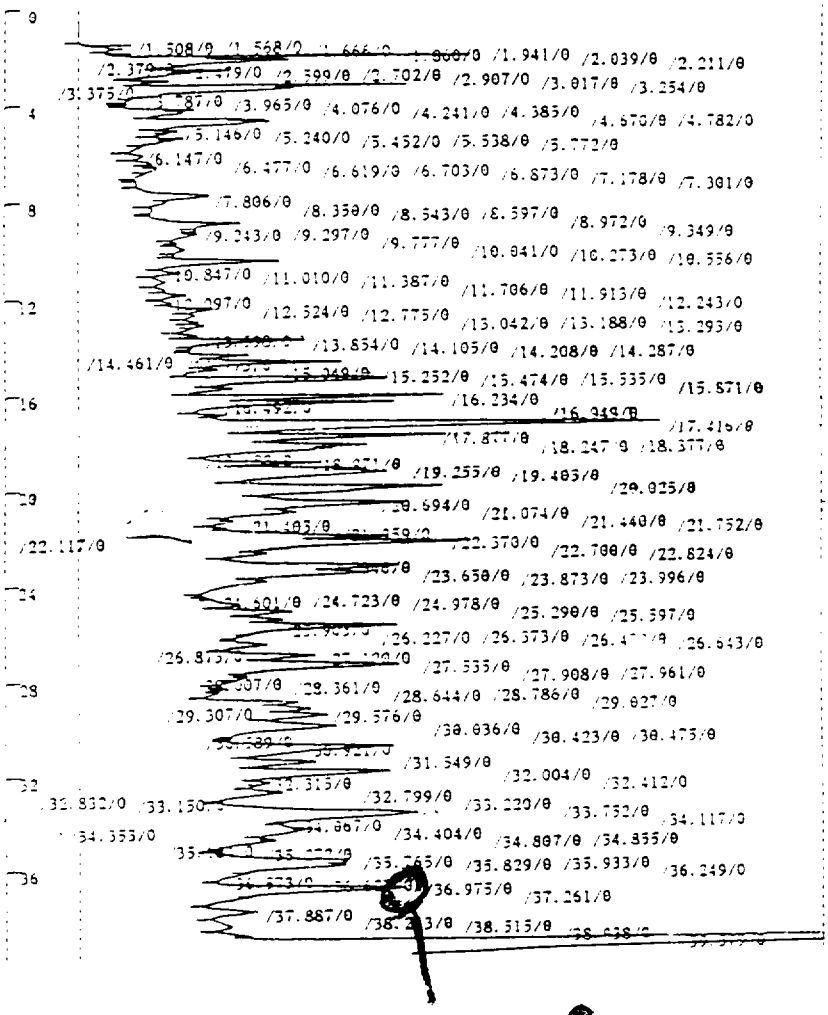
CAPILLARY COLUMN ANALYSIS FOR PESTICIDES/PCBS

INSTRUMENT ID : GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30m

EPA SAMPLE NUMBER: LO-161065-WO INITIAL WT. OR VOL.: 1.0 g
LAB SAMPLE NUMBER: 11928-1 FINAL VOLUME : 1.0 ml

INJECTION VOLUME : 2 uL

TEMP PROG: 150 C ——5 C/MIN——> 225C ——2 C/MIN——> 288 C



DBC

500004

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	5	1.508	56997	35505				
	6	1.568	46123	17067	V			
	7	1.666	245884	28519	V			
	8	1.86	143701	31603	V			
	9	1.941	101031	28958	V			
	10	2.039	1412406	262213	V			
	11	2.211	1402085	136752	V			
	12	2.379	321839	63742	V			
	13	2.479	251198	52185	V			
	14	2.599	600838	90688	V			
	15	2.702	559261	61836	V			
	16	2.907	57278	19144	V			
	17	3.017	397660	43951	V			
	18	3.254	1318465	205004	V			
	19	3.375	1417979	125991	V			
	20	3.787	49402	9384	V			
	21	3.965	19596	5576				
	22	4.076	10126	3087	V			
	23	4.241	341369	50895	V			
	24	4.385	488644	43572	V			
	25	4.67	617151	99683	V			
	26	4.782	1317432	101599	V			
	27	5.146	264756	38085	V			
	28	5.24	229615	31298	V			
	29	5.452	279136	41279	V			
	30	5.538	293898	33610	V			
	31	5.772	127601	12082	V			
	32	6.147	124910	12284				
	33	6.477	168169	16795	V			
	34	6.619	118564	19636	V			
	35	6.703	153521	18407	V			
	36	6.873	84801	10408	V			
	37	7.178	7412	1551				
	38	7.301	16137	2320	V			
	39	7.806	865756	47145				
	40	8.35	41028	4670	V			
	43	8.972	908470	62546	V			
	44	9.243	192092	32589	V			
	45	9.297	69693	31929	V			
	46	9.349	82309	31973	V			
	47	9.395	91675	33254	V			
	48	9.429	335486	33375	V			
	49	9.777	125372	19251	V			
	50	9.807	88240	19231	V			
	51	9.88	27748	17455	V			
	52	10.041	389310	24352	V			
	53	10.273	138458	16561	V			
	54	10.556	1137109	88929	V			
	55	10.847	10691	6812	V			
	56	11.01	187653	20797	V			
	57	11.387	103891	9167				
	58	11.706	67438	7735				
1242	59	11.913	175191	20193	V			
	60	12.097	4091	1347	V			
	61	12.245	56401	7936				
	62	12.524	420931	33329	V			
	63	12.775	226396	19903	V			
	64	13.042	167056	20227	V			
	65	13.188	185532	22324	V			
	66	13.293	82565	12652	V			
	67	[redacted]	[redacted]	13639				
	68	13.854	805336	85488	V			
	69	14.105	26682	5491	V			
	70	14.208	9203	2615	V			
	72	14.461	371331	43357	V			
	73	14.773	1082899	108261	V			
	74	15.049 ✓	196732	22472	V			
	76	15.474	953902	140581				
	77	15.535	1108455	138801	V			
	78	15.871	284671	33009	V			
	79	16.234	1560076	175637				
	80	16.492	1347093	141433	V			
	81	16.949 ✓	154373	22244				
	82	[redacted] ✓	3297693	319958	V			
	83	17.877	2229749	170348	V			
	84	18.247	1231520	116512	V			
	85	18.577	873036	92388	V			
	87	18.971	765761	81794				
	88	19.255	1048618	112063	V			
	89	19.403	2127358	127094	V			
	90	20.025 ✓	3186925	163175	V			
	91	[redacted]	[redacted]	137145	V			
	92	21.074 ✓	910622	62964	V			
	93	21.403	114291	18869	V			
	94	21.44	122563	18803	V			
	95	21.732	105093	15510				

05-29-91
2241
GC-14A
111928-1

sample

used to quantitate

223-02000-11 0122144A SHIMADZU

500095

	22.11	1366167			
98	22.37	2804891	182576	V	
99	22.7	97682	35314	V	
100	22.824	473945	43643	V	
101	23.340	2391105	134967	V	
102	23.65	1659906	117314	V	
103	23.873	71573	35616	V	
104	23.996	772761	47045	V	
105	24.601	8310	2301		
106	24.723	238927	5304	V	
107	24.978	218826	18992	V	
108	25.29	582281	51571		
T 109	25.597	553387	44270	V	
110	25.903	1843556	121208	V	
111	26.229	538153	19540	V	
T 112	26.373	21781	8795	V	
113	26.45	25945	8702	V	
114	26.643	355691	30140	V	
116	27.12	861906	65147	V	
117	27.335	2370059	126171	V	
T 118	27.908	117796	23760	V	
T 119	27.961	82605	24854	V	
120	28.007	132634	24155	V	
121	28.112	148174	19354	V	
122	28.361	48681	10409	V	
123	28.42	36274	11875	V	
124	28.463	59455	13588	V	
125	28.557	35555	10120	V	
126	28.597	26945	10799	V	
127	28.644	46837	10331	V	
129	29.027	740975	63998		
T 130	29.307	1028032	70024	V	
131	29.376	1179052	78698	V	
132	30.036	1680878	80385	V	
133	30.423	9164	4063	V	
T 134	30.475	10735	2979	V	
T 136	30.921	2193622	115004	V	
T 137	31.549	989947	62858	V	
138	32.004	2041607	115033	V	
139	32.315	102719	26422	V	
140	32.412	288746	34666	V	
141	32.508	194616	28283	V	
142	32.799	347432	43635	V	
143	32.832	373864	43734	V	
144	33.15	4022	2060	V	
146	33.752	3578764	137775	V	
147	34.067	163405	49443	V	
148	34.117	188143	45706	V	
149	34.353	680515	65159	V	
T 150	34.404	883486	62731	V	
151	34.807	288023	41582	V	
152	34.855	437077	42755	V	
153	35.184	19994	5824	V	
156	35.765	1169167	92707	V	
157	35.829	360696	92210	V	
158	35.933	1233665	91869	V	
159	36.249	226726	23419	V	
162	36.975	2278445	133473		
163	37.261	283695	30575	V	
165	37.887	467737	53929		
167	38.515	212580	13677	V	
1260 168	38.938	85198	10300		
169	39.379	15967744	840086	V	
	TOTAL	105525488	8802578		0

05-29-91
2241
GC-14A
111928-1

44595476 - Ar1242

2:9a58607
2:9b5860

223-07000-11 0122144A SHIMADZU

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
1	1	0.112	13509	733				
	2	1.136	102014	31376				
	3	1.187	287728	37154	V			
	4	1.427	647450	25504	V			
	5	6.212	2203	279				
	7	6.603	13869	993	V			
	10	8.61	3397	430				
	11	8.777	5472	558	V			
	12	9.712	2376	356				
	13	12.028	19606	2695				
	14	12.97	34228	4670				
	15	13.375	40437	5575	V			
	16	[illegible]	[illegible]	24182	V			
	17	14.423	18294	2571				
	18	14.847	3482	516				
	19	15.265	279615	24854				
	20	15.68	34585	4190	V			
	21	16.032	186667	24583	V			
	23	16.753	58355	6751				
	24	16.883	30193	4872	V			
	25	[illegible]	[illegible]	52665	V			
	26	17.671	237675	29024				
	27	18.028	177093	20601	V			
	28	18.286	40492	4742	V			
	29	18.783	119318	12183				
	30	19.026	110896	12345	V			
	31	19.219	97152	9584	V			
	32	19.857	163910	16974				
	33	20.06	117247	11984	V			
	34	[illegible]	[illegible]	18878	V			
	35	20.963	48230	5034	V			
	36	21.235	8110	983	V			
	37	21.547	7929	1107				
	38	21.777	93725	10957	V			
	39	21.942	188575	17875	V			
	40	22.173	223030	20994	V			
	41	22.604	21834	1557	V			
	42	[illegible]	[illegible]	19803				
	43	23.48	64709	5568	V			
	44	23.827	29522	2659	V			
	45	24.488	3865	414				
	46	24.818	23694	2116	V			
	47	25.119	47770	4006	V			
	48	25.405	25015	2338	V			
	49	25.747	73595	6391	V			
	50	[illegible]	[illegible]	1857				
	51	27.385	51307	4286				
	52	28.168	3262	314				
	53	28.777	8025	540				
	54	29.15	47708	3859	V			
	55	29.584	8481	608	V			
	56	30.731	9952	707				
	57	36.11	54295	3744				
	58	36.796	212513	15051				
	TOTAL		5300921	524590			0	

J 946148

Cf 789230

Ar 1242
5-29-91
1234
GC-14A

10 ng

DB-5

used to quantitate

500033

C-R4A CHROMATOPAC Ch=2 REPORT No.=19 CHROMATOGRAM=2:P90605.C06 91/06/05 17:30:46

Analysis File : 1:EPST82.

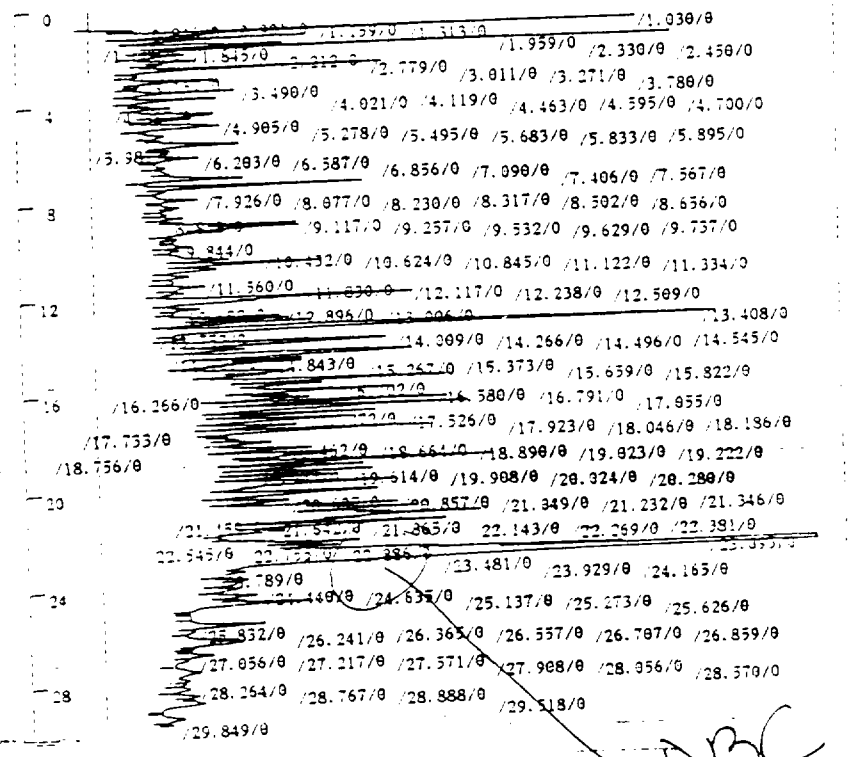
CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng

INSTRUMENT ID : HP 52 5890
COLUMN ID : DB 608 0.53 mm X 30m

EPA SAMPLE NUMBER: L0-IG1065-40 INITIAL WT. OR VOL.: 1.0g
LAB SAMPLE NUMBER: MP25-1 FINAL VOLUME : 1.0 ml

INJECTION VOLUME : 2 uL
TEMP PROG: 140 C —— @ 6 DEG/MIN ——> 275C



DBC

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	3	3.846	123399	57934				
	4	3.901	270430	55062	V			
	5	1.03	2556860	729984	V			
	6	1.159	498670	127566	V			
	7	1.313	677968	253479				
	8	1.366	385758	124327	V			
	9	1.468	40629	17795	V			
	10	1.608	1427448	219869	V			
	11	1.73	2057853	745848	V			
	12	1.845	102937	36424	V			
	13	1.959	437155	73217	V			
	14	2.212	419452	84581				
	15	2.33	290934	43587	V			
	16	2.45	142908	34663	V			
	17	2.537	1415001	346085	V			
	18	2.779	64298	13026				
	19	3.011	867845	123241				
	20	3.157	70909	12197	V			
	21	3.271	40824	10734	V			
	22	3.49	672117	143935				
	23	3.78	628192	120606				
	24	4.021	108095	27974				
	25	4.119	272150	57005	V			
	26	4.387	671186	115333	V			
	27	4.463	438029	107089	V			
	28	4.595	399626	81377	V			
	29	4.7	61722	18263	V			
	30	4.905	1186589	215890	V			
	31	5.278	402144	88552				
	32	5.495	388796	82354	V			
	33	5.683	1251881	138350	V			
	34	5.833	108364	34572	V			
	35	5.895	210796	42610	V			

500007

35	5.893	2161758	52610	V
36	5.987	318658	43411	V
37	6.203	699003	82592	V
38	6.364	112414	26091	V
39	6.587	383150	36548	V
40	6.856	511578	42300	V
41	7.09	1154073	142778	V
42	7.406	1597480	300911	
43	7.567	160322	25402	V
44	7.926	405098	62559	
45	8.077	65063	12363	V
46	8.23	241024	34691	V
47	8.317	117322	25464	V
48	8.502	93973	17046	V
49	8.656	168087	36411	
50	8.848	159042	34656	V
51	8.991	1008435	189195	V
52	9.117	1144699	191605	V
53	9.257	525596	86647	V
54	9.532	98604	18625	
55	9.629	81353	14073	V
56	9.737	48037	12774	V
57	9.844	189584	32119	V
58	10.022	92394	18615	
59	10.432	770248	86062	
60	10.624	1223383	213910	V
61	10.845	563933	68048	V
63	11.122	191077	31172	
64	11.334	116493	13837	
65	11.56	464247	59392	
66	11.83	214053	33086	V
67	[illegible]	[illegible]	344907	
68	12.238	660154	129283	V
69	12.509	263772	46143	
70	12.682	50825	7765	V
71	12.896	648803	154646	
72	13.006	777532	169409	V
73	13.15	992203	197308	V
74	[illegible]	[illegible]	754983	
75	13.752	115907	22966	V
76	14.089	2563772	295782	
77	14.266	584078	94625	V
78	[illegible]	[illegible]	313147	
79	14.545	1411311	308256	V
80	14.721	877954	168015	V
81	14.843	950079	166715	V
82	14.948	257157	60544	V
83	[illegible]	[illegible]	131067	
84	15.373	412758	92074	V
85	15.659	2215779	327238	
86	15.822	1121899	157460	V
87	16.102	1933269	254641	V
88	16.266	638436	108408	V
89	16.39	747839	134864	V
90	[illegible]	[illegible]	321771	
91	16.791	2449347	347508	V
92	17.055	1012260	222522	
93	17.272	1277496	196142	V
94	17.526	762176	122277	
95	17.733	1648322	303784	
96	17.923	94638	22894	
97	18.046	180202	35782	V
98	18.186	455134	75587	V
99	18.462	344093	128106	
100	18.664	784773	188389	
101	18.756	647480	130337	V
102	18.89	342299	72957	V
103	19.023	1816398	363864	V
104	19.222	1077919	184050	
105	19.433	966544	196304	V
106	19.614	807322	150410	
107	19.908	1834774	255347	
108	20.324	174537	43927	V
109	20.28	1652398	217397	
110	20.607	513494	102707	
111	20.857	1657304	251399	V
112	21.349	2405627	278244	V
113	21.232	1678825	240853	V
114	21.346	2328019	363572	V
115	21.459	1087489	198979	V
116	21.642	2190194	315924	V
117	21.865	667378	95571	V
118	22.143	84191	16149	
119	22.269	381320	80402	V
120	22.381	1291918	197401	V
121	22.545	1160285	169977	V
122	22.755	2355730	305811	V
123	22.886	1588193	558844	V
124	23.095	1743611	829444	V
125	23.481	349386	41854	V
126	23.789	324438	46243	
127	23.929	298877	35380	V
128	24.165	248342	33828	V
129	24.44	569190	68870	
130	24.635	377153	61847	V
131	24.775	1165246	158643	V
132	25.137	17353	4127	
133	25.273	69976	6252	V
134	25.626	902369	109822	V
135	25.822	94110	12672	V
136	26.241	579406	74955	
137	26.365	713611	93891	V

1242

1242

1266

1242

- 1232

* 1242

487 43011

used to quantitate

2000 11 012214A 日本ABDZU 221 02000 11 012214A 日本ABDZU

137	26.365	713611	83891	V	
138	26.557	113089	19202	V	
139	26.707	97282	16663	V	
140	26.859	449863	49177	V	
141	27.056	132949	17161	V	
142	27.217	5220	844	V	
143	27.571	553246	38565		
144	27.908	235379	27164	V	
145	28.056	188824	23190	V	
146	28.264	336523	31480	V	
147	28.57	455446	45934	V	
148	28.767	258249	43098	V	
149	28.888	629194	55968	V	
150	29.518	287293	28255		
151	29.849	112816	9631	V	
	TOTAL	122156096	19301286		0

1260

42475974

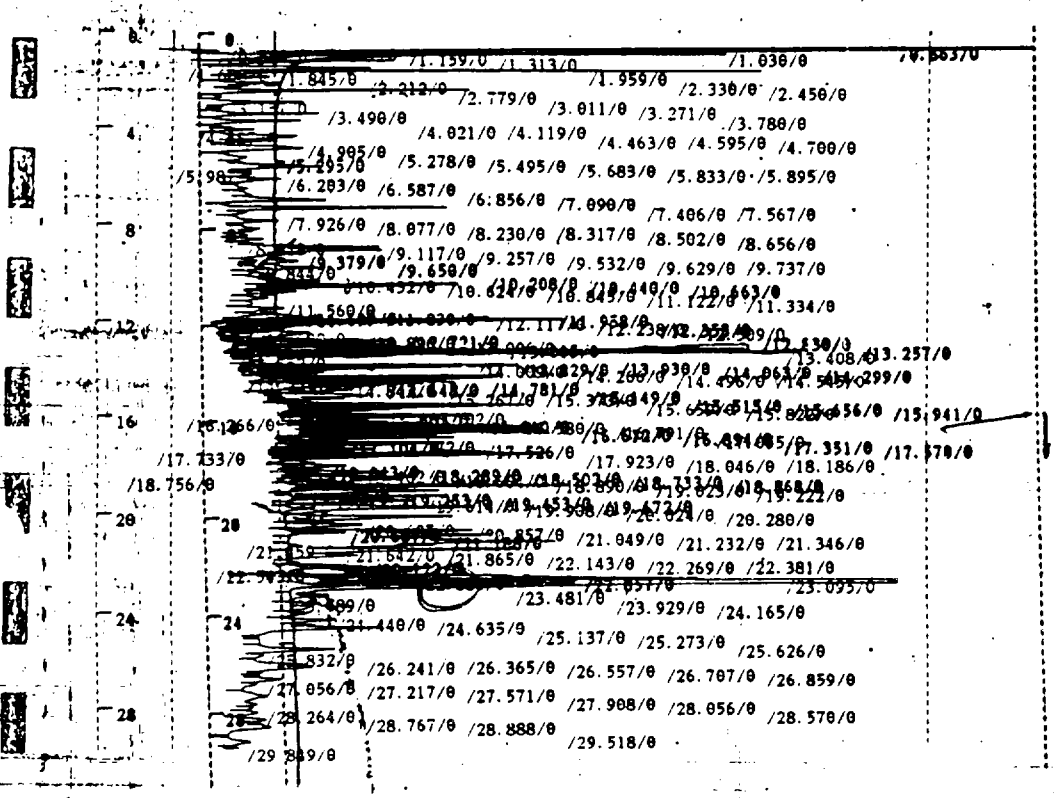
C-R4A CHROMATOPAC CH=2 REPORT No.=232 CHROMATOGRAM=2:P90604.C0 91/06/04 11:55:17
C-R4A CHROMATOPAC CH=2 REPORT No.=19 CHROMATOGRAM=2:P90605.C06 91/06/05 17:30:46
Analysis File : 1:EPST82.
Analysis File : 1:EPST82.

CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS
CAPILLARY COLUMN ANALYSIS FOR PESTICIDE/PCB ANALYSIS

PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng
PEAK LABELED AS FOLLOWS: Name / RT(min) / total ng
INSTRUMENT ID : HP #2 5890
INSTRUMENT ID : HP #2 5890
COLUMN ID COLUMN ID DB 608 : DB 608 X 0.53 mm X 30m

EPA SAMPLE NUMBER: 1.0-1.G106S-W10 INITIAL WT. OR VOL.: 1.0g
LAB SAMPLE NUMBER: Ar 1242 FINAL VOLUME: 1.0 mL

INJECTION VOLUME : 2 uL
TEMP PROG TEMP PROG 140 C ——— 140 C ——— >275C ——— >275C
@ 6 DEG/MIN 6 DEG/MIN



1242

Ar 1242 / 10ng

O DBC

** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	3	0.846	123399	57934				
	4	0.901	270430	55062	V			
	5	1.03	2556860	729984	V			
	6	1.159	498670	127566	V			
	7	1.313	677968	255479				
	8	1.366	385758	124327	V			
	9	1.468	40620	17795	V			
	10	1.608	1427448	219869	V			
	11	1.73	2057853	745848	V			
	12	1.845	102937	36424	V			
	13	1.959	437155	73217	V			
	14	2.212	419452	84581				
	15	2.33	200934	43587	V			
	16	2.45	142908	34663	V			
	17	2.537	1415001	346085	V			
	18	2.779	64298	13026				
	19	3.011	667845	123241				
	20	3.157	70909	12197	V			
	21	3.271	40824	10734	V			
	22	3.49	672117	143935				
	23	3.78	628192	120606				
	24	4.021	108095	27974				
	25	4.119	272150	57005	V			
	26	4.387	671186	113333	V			
	27	4.463	458029	107089	V			
	28	4.595	399626	81377	V			
	29	4.7	61723	18263	V			
	30	4.905	1186589	115890	V			
	31	5.278	402144	38552				
	32	5.495	188796	32354	V			
	33	5.683	1251881	138350	V			
	34	5.833	108354	34572	V			
	35	5.895	210796	42610	V			

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AR1242

6-4-91

1155

HP#2

DB408

•• CALCULATION REPORT ••

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
2	1	0.863	761648	113696				
	3	5.295	5146	864				
	6	9.379	10309	2054	V			
	7	9.65	21873	3676	V			
	8	10.208	21156	3953				
	9	10.44	84315	15525	V			
	10	10.663	5253	1166	V			
	11	11.699	14493	2168				
	12	[illegible]	[illegible]	23686	V			
	13	12.353	22617	2923	V			
	14	12.618	7947	1898	V			
	15	12.721	58356	9902	V			
	16	12.83	33106	6641	V			
	17	13.005	83548	12617	V			
	18	[illegible]	[illegible]	39588	V			
	19	13.829	120207	20531				
	20	13.93	16816	4550	V	[illegible]		
	21	14.063	17150	3147	V	2399733		
	22	[illegible]	[illegible]	18751	V	2399733		
	23	14.384	59035	12350	V			
	24	14.55	70686	12542	V			
	25	14.648	49356	7582	V			
	26	14.781	34270	6598	V			
	28	15.149	10751	1964	V			
	29	[illegible]	[illegible]	16872	V			
	30	15.656	47943	7929	V			
	31	15.863	35775	8106	V			
	32	15.941	68605	12753	V			
	33	16.119	35385	7292	V			
	34	16.21	68355	12124	V			
	35	16.395	100302	18692	V			
	36	[illegible]	[illegible]	22476	V			
	37	16.994	30526	4763	V			
	38	17.104	41887	5480	V			
	39	17.351	18718	3619	V			
	40	17.57	119642	22175	V			
	41	18.943	20687	3390				
	42	18.289	26092	3550	V			
	43	18.502	23533	4664	V			
	44	18.733	27864	4932	V			
	45	18.868	[illegible]	7293	V			
	46	19.063	4244	829	V			
	47	19.253	33024	5530	V			
	48	19.453	5585	831	V			
	49	19.672	16533	2687	V			
	54	20.687	28162	5225				
	57	21.188	6182	1002	V			
	59	22.122	35940	6438	V			
	61	22.857	[illegible]	24086	V			
		TOTAL	3287782	541008			0	

[illegible] used to quantitate

154

223-02000-11

0121114A

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C-R4A CHROMATOPAC CH=1 REPORT No.=175 CHROMATOGRAM=2 P10521.C05 91.05.29 15:06:09

Analysis File : 1:EPST52.

CAPILLARY COLUMN ANALYSIS FOR PESTICIDES/PCBS

1252 NO
1242 NO
1248 NO
1254 NO
1260 NO

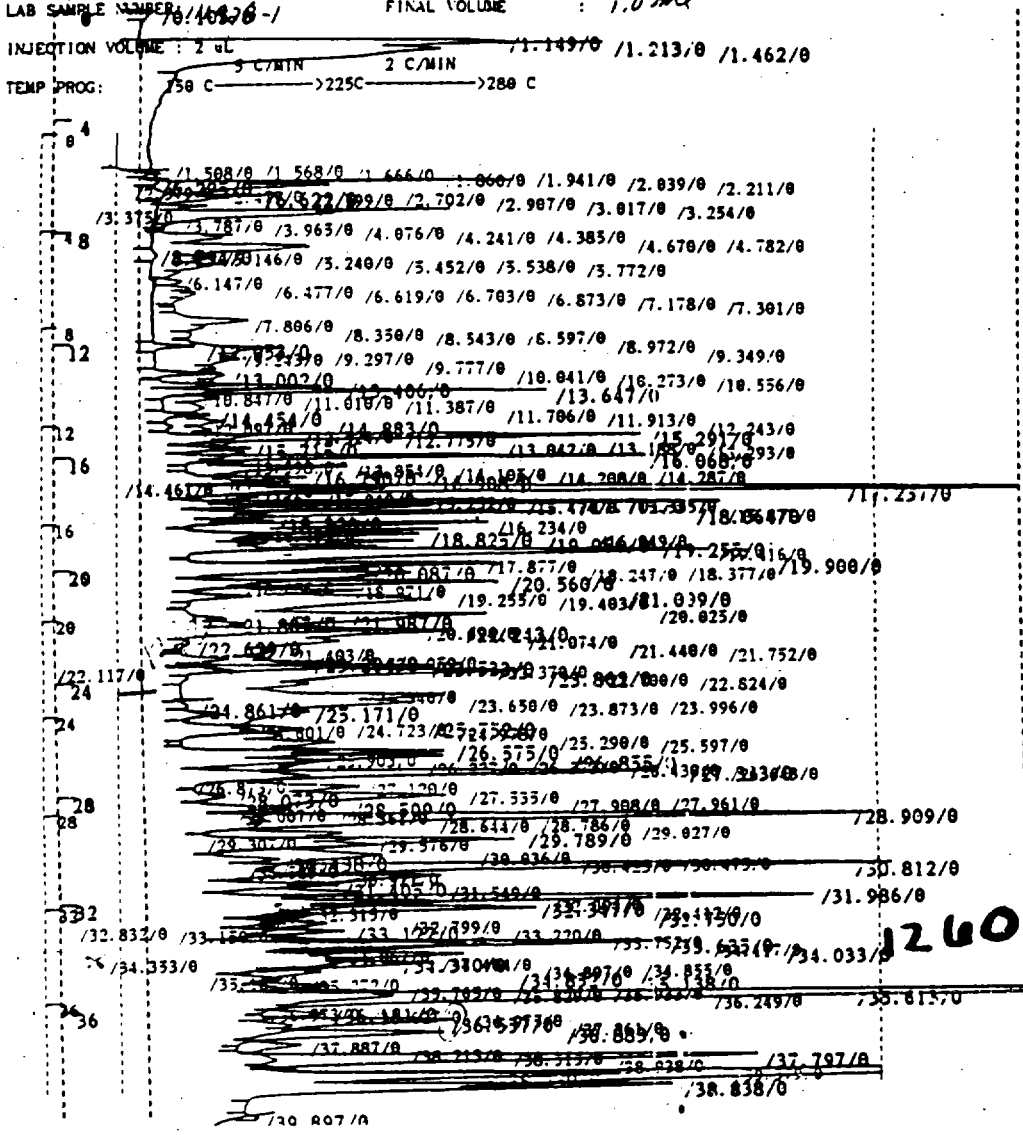
C-R4A CHROMATOPAC CH=1 REPORT No.=201 CHROMATOGRAM=2:P10529.C09 91.05.29 22:41:44

INSTRUMENT ID 1:EPST52 GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30mm

CAPILLARY COLUMN ANALYSIS FOR PESTICIDES/PCBS
EPA SAMPLE NUMBER: INITIAL WT. OR VOL.:
LAB SAMPLE NUMBER: AK1660 FINAL VOLUME :

INJECTION VOLUME : 2 uL
INSTRUMENT ID : GC-14A DETECTOR #2
COLUMN ID : DB 5 0.53mm X 30mm
TEMP PROG: 150 C 5 C/MIN 225C 2 C/MIN >280 C

EPA SAMPLE NUMBER: LO-161065-WO INITIAL WT. OR VOL.: 1.0g
LAB SAMPLE NUMBER: 10526-1 FINAL VOLUME : 1.0ml



Ar 1660 10ng

1260 ?

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1232 NO
1242 NO
1248 NO
1254 NO
1660 NO

C-R4A CHROMATOGRAM CHROMATOPAC REPORT No. - 3 REPORT CHROMATOGRAM CHROMATOPAC.COM : P10 22 1 05 29 14:15:30

Analysis File Analysis EPST52 : 1:EPST52.

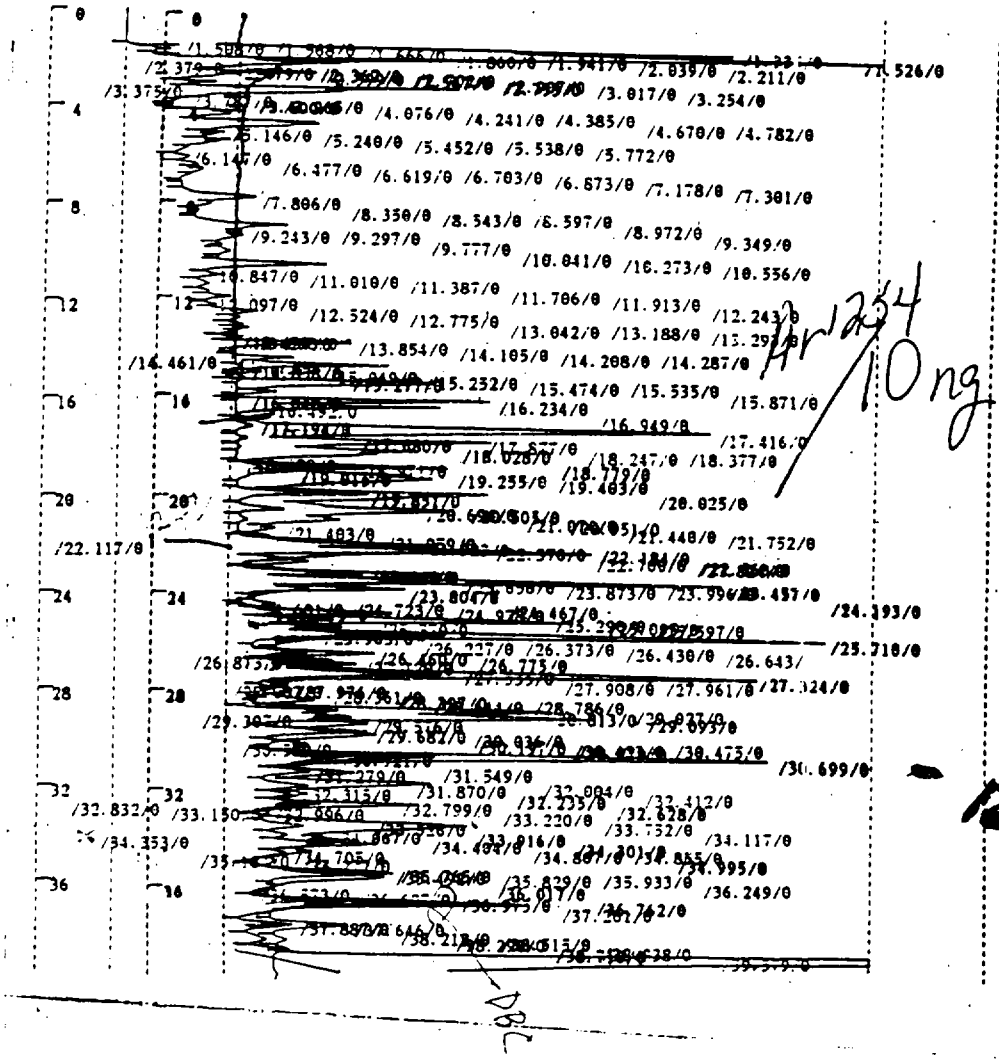
CAPILLARY COLUMN ANALYSIS FOR DESIGNATED PESTICIDES/PCBS

INSTRUMENT INSTRUMENT NO. DETECTOR #2 DETECTOR #2
COLUMN ID COLUMN ID 5 0.53mm DX 30mm 53mm X 30mm

EPA SAMPLE NUMBER SAMPLE NUMBER: 16 1465-WO INITIAL WT. OR VOL. WT. OR VOL. 1.0 g
LAB SAMPLE NUMBER SAMPLE NUMBER: 11 928-1 Ar 1254 FINAL VOLUME FINAL VOLUME 0 ml

INJECTION VOLUME INJECTION VOLUME : 2 uL

TEMP PROG: TEMP PROG: 5 C/MIN 150 C 5 C/MIN 225 C 2 C/MIN 280 C >280 C



Ar 1254 10 ng

- 1254 ?

129

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TABLE 2.1. VOLATILE INTERNAL STANDARDS WITH CORRESPONDING TCL ANALYTES ASSIGNED FOR QUANTITATION

Bromochloromethane	1,4-Difluorobenzene	Chlorobenzene-d_5
Chloromethane	1,1,1-Trichloroethane	2-Hexanone
Bromomethane	Carbon Tetrachloride	4-Methyl-2-Pentanone
Vinyl Chloride	Vinyl Acetate	Tetrachloroethene
Chloroethane	Bromodichloromethane	1,1,2,2-Tetrachloroethane
Methylene Chloride	1,2-Dichloropropane	Toluene
Acetone	trans-1,3-Dichloropropene	Chlorobenzene
Carbon Disulfide	Trichloroethene	Ethylbenzene
1,1-Dichloroethene	Dibromochloromethane	Styrene
1,1-Dichloroethane	1,1,2-Trichloroethane	Xylene(total)
1,2-Dichloroethene(tot.)	Benzene	Bromofluorobenzene (surr)
Chloroform	cis-1,3-Dichloropropene	Toluene-d_8 (surr)
1,2-Dichloroethane	Bromoform	
2-Butanone		
1,2-Dichloroethane-d_4 (surr)		

(surr) = surrogate compound

2.3.1 Using the relative response factors (RRF) from the initial calibration, calculate the percent relative standard deviations (%RSD) for compounds labeled on Form VI as Calibration Check Compounds and shown in Table 2.2 (see 2.6.2), using Equation 2.2 below.

$$\%RSD = \frac{SD}{\bar{x}} \times 100 \qquad \text{Eq. 2.2}$$

where,

RSD = Relative Standard Deviation

SD = Standard Deviation of initial relative response factors (per compound)

where: $$SD = \sqrt{\sum_{i=1}^{N} \frac{(x_i - \bar{x})^2}{N-1}}$$

$\bar{x}$ = mean of initial relative response factors (per compound)

TABLE 2.2. SEMIVOLATILE INTERNAL STANDARDS WITH CORRESPONDING TCL ANALYTES ASSIGNED FOR QUANTITATION

1,4-Dichlorobenzene-d_4	Naphthalene-d_8	Acenaphthene-d_{10}	Phenanthrene-d_{10}	Chrysene-d_{12}	Perylene-d_{12}
Phenol	Nitrobenzene	Hexachlorocyclo-pentadiene	4,6-Dinitro-2-methylphenol	Pyrene	Di-n-octyl Phthalate
bis(2-Chloroethyl) ether	Isophorone	2,4,6-Trichloro-phenol	N-nitrosodi-phenylamine	Butylbenzyl Phthalate	Benzo(b)fluor-anthene
2-Chlorophenol	2-Nitrophenol	2,4,5-Trichloro-phenol	1,2-Diphenylhy-drazine	3,3'-Dichloro-benzidine	Benzo(k)fluor-anthene
1,3-Dichlorobenzene	2,4-Dimethyl-phenol	2-Chloronaphthalene	4-Bromophenyl Phenyl Ether	Benzo(a)-anthracene	Benzo(a)pyrene
1,4-Dichlorobenzene	Benzoic acid	2-Nitroaniline	Hexachloro-benzene	bis(2-ethylhexyl) Phthalate	Indeno(1,2,3-cd) pyrene
Benzyl Alcohol	bis(2-Chloro-ethoxy)methane	Dimethyl Phthalate	Pentachloro-phenol	Chrysene	Dibenz(a,h) anthracene
1,2-Dichlorobenzene	2,4-Dichloro-phenol	Acenaphthylene	Phenanthrene	Terphenyl-d_{14} (surr)	Benzo(g,h,i) perylene
2-Methylphenol	1,2,4-Trichloro-benzene	3-Nitroaniline	Anthracene		
bis(2-Chloroiso-propyl)ether	Naphthalene	Acenaphthene	Di-n-butyl Phthalate		
4-Methylphenol	4-Chloroaniline	2,4-Dinitrophenol	Fluoranthene		
N-nitroso-Di-n-propylamine	Hexachloro-butadiene	4-Nitrophenol			
Hexachloroethane	4-Chloro-3-methylphenol	Dibenzofuran			
2-Fluorophenol (surr)	2-Methylnaphth-alene	2,4-Dinitrotoluene			
Phenol-d_6 (surr)	Nitrobenzene-d_5 (surr)	2,6-Dinitrotoluene			
		Diethyl Phthalate			
		4-Chlorophenyl phenyl ether			
		Fluorene			
		4-Nitroaniline			
		2-Fluorobiphenyl (surr)			
		2,4,6-Tribromo Phenol (surr)			

Surr = surrogate compound