AR TARGET SHEET

The following document was too large to scan as one unit, therefore it has been broken down into sections.

DOCUMENT # 5D-WM-DP-027

EDMC # 0037086

SECTION 1 OF 2

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ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 161057

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.		4. Date
Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	R. L. Shaver, Hanford Analytical Services Management, H4-23, 3-3295		06/29/93
	5. Project Title/No./Work Order No. TANK 241-C-110	6. Bldg./Sys./Fac. No. NA	7. Impact Level 30
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-DP-027, REV 0	9. Related ECN No(s). NA	10. Related PO No. NA

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	NA	NA Cog. Engineer Signature & Date	NA Cog. Engineer Signature & Date

12. Description of Change

The followind addendums are being added to the existing base document and addendums. The addendums being added are as follows:

Addendum 3, "PNL 325 LABORATORIES SINGLE SHELL TANK WASTE CHARACTERIZATION, TANK 241-C-110 CORES 37, 38 AND 39 - DATA PACKAGE"

Addendum 4, "PNL 325 LABORATORIES SINGLE SHELL TANK WASTE CHARACTERIZATION, TANK 241-C-110 CORES 37, 38 AND 39 - VALIDATION SUMMARY"

Addendum 5, "222-S LABORATORIES SINGLE SHELL TANK WASTE CHARACTERIZATION, TANK 241-C-110 CORES 37, 38 AND 39 - RAW DATA"

13a. Justification (mark one)							
	Criteria Change	[]	Design Improvement	[]	Environmental	[X]	
As-Found	[]	Facilitate Const.	[]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

Project 241-C-110 CORES 37, 38 AND 39 has been completed.

14. Distribution (include name, MSIN, and no. of copies)

Please see Distribution for each addendum

JUL 1994 RECEIVED EPIC

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OFFICIAL RELEASE BY WHC 55

DATE JUL 08 1993

Sta. 4

7900-013-2 (06/92) GEF095

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1) 161057

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING		CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[]

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]		[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog Engineer R. L. Shaver R.L. Shaver	6-30-93	PE	
Cog. Mgr. K. N. Pool Ted N. Pool	6-30-93	QA	
QA J. C. Langford James C. Langford 6/28/93		Safety	
Safety		Design	
Security		Environ.	
Environ.		Other	
Projects/Programs			
Tank Waste Remediation System			
Facilities Operations		DEPARTMENT OF ENERGY	
Restoration & Remediation		Signature or Letter No.	
Operations & Support Services			
IRM		ADDITIONAL	
Other			

JUN 8 1993

Date Received: 6/30/93

INFORMATION RELEASE REQUEST

Reference: WHC-CM-3-4

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Purpose

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- [] Full Paper
- [] Summary
- [] Abstract
- [] Visual Aid

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[ ] Poster Session
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(Check only one suffix)

[] Reference
[X] Technical Report
[] Thesis or Dissertation
[] Manual
[] Brochure/Flier
[] Software/Database
[] Controlled Document
[] Other

ID Number (include revision, volume, etc.): ECN 161057

List attachments: WHC-SD-WM-DP-027, REVISION 0-A

Date Release Required: 06/29/93

Title: SINGLE SHELL TANK WASTE CHARACTERIZATION, TANK C-110 CORES 37, 38 AND 39

Unclassified Category: UC-

Impact Level: 3Q

New or novel (patentable) subject matter? [X] No [] Yes
If "Yes", has disclosure been submitted by WHC or other company?
[] No [] Yes Disclosure No(s).

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Group or Society Sponsoring: NA

Date(s) of Conference or Meeting: NA

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Will proceedings be published? [] Yes [X] No
Will material be handed out? [] Yes [X] No

Title of Journal: NA

CHECKLIST FOR SIGNATORIES

Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval: Name (printed) / Signature / Date
Classification/Unclassified Controlled Nuclear Information	[]	[X]	
Patent - General Counsel	[X]	[]	Per OGC memo 2-4-93
Legal - General Counsel	[X]	[]	Per OGC memo 2-4-93
Applied Technology/Export Controlled Information or International Program	[]	[X]	
WHC Program/Project	[]	[X]	
Communications	[]	[X]	
RL Program/Project	[]	[X]	
Publication Services	[]	[X]	
Other Program/Project	[]	[X]	

Information conforms to all applicable requirements. The above information is certified to be correct.

	Yes	No
References Available to Intended Audience	[X]	[]
Transmit to DOE-HQ/Office of Scientific and Technical Information	[]	[X]

Author/Requestor (Printed/Signature): K. K. GIAMBERARDINI — Date: 6-30-93

Intended Audience: [] Internal [] Sponsor [X] External

Responsible Manager (Printed/Signature): K. K. GIAMBERARDINI — Date: 6-30-93

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.

APPROVED FOR RELEASE — OFFICIAL DOCUMENT — VB — Date 6/30/93

Date Cancelled | Date Disapproved

BD-7600-062 (08/91) WEF074

Part 1

RECORD OF REVISION	(1) Document Number WHC-SD-WM-DP-027	Page 1

(2) Title

SINGLE SHELL TANK WASTE CHARACTERIZATION, TANK 241-C-110 CORES 37, 38 AND 39

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release (5) Cog. Eng.	(6) Cog. Mgr. Date
	(7)		
0-A RS	**Addendum 3**, "PNL 325 LABORATORIES SINGLE SHELL TANK WASTE CHARACTERIZATION, TANK 241-C-110 CORES 37, 38 AND 39 - DATA PACKAGE" ECN-161057	R.L.SHAVER RL Shaver	K.N.POOL 6/29/93 Karl N. Pool
0-A RS	**Addendum 4**, "PNL 325 LABORATORIES SINGLE SHELL TANK WASTE CHARACTERIZATION, TANK 241-C-110 CORES 37, 38 AND 39 - VALIDATION SUMMARY" ECN-161057	R.L.SHAVER RL Shaver	K.N.POOL 6/29/93 Karl N. Pool
0-A RS	**Addendum 5**, "222-S LABORATORIES SINGLE SHELL TANK WASTE CHARACTERIZATION, TANK 241-C-110 CORES 37, 38 AND 39 - RAW DATA" ECN-161057	R.L.SHAVER RL Shaver	K.N.POOL 6/29/93 Karl N. Pool
0	EDT-140652 02/26/93		

A-7320-005 (08/91) WEF168

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

SINGLE SHELL TANK WASTE CHARACTERIZATION PROJECT

MASTER COPY

CORES 37, 38 & 39 DATA REPORT

Tank C-110

Revision 0

FEB 1993
RECEIVED
OSM DMO

February 5, 1993

Prepared by: SG McKinley
LR Greenwood
EW Hoppe
JM Tingey

Pacific Northwest Laboratory

1.1

SUPPORTING DOCUMENT

1. Total Pages ~~2499~~ ~~2502~~ 7285

2. Title

SINGLE SHELL TANK WASTE CHARACTERIZATION, TANK 241-C-110 CORES 37, 38 AND 39

3. Number

WHC-SD-WM-DP-027

4. Rev No.

0-A

5. Key Words

SINGLE SHELL TANK, WASTE CHARACTERIZATION, TANK 241-C-110, VALIDATION SUMMARY, DATA PACKAGE

6. Author

Name: R. L. Shaver

R L Shaver 6-30-93

Signature

Organization/Charge Code 12610/J120H

APPROVED FOR PUBLIC RELEASE

7. Abstract

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10. RELEASE STAMP

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DATE JUL 08 1993 Sta. 4

9. Impact Level 3Q

A-6400-073 (11/91) (EF) WEF124

PNL 325 LABORATORIES SINGLE SHELL TANK WASTE CHARACTERIZATION, TANK 241-C-110 CORES 37, 38 AND 39 DATA PACKAGE

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INTRODUCTION

This Data Package contains the results obtained by the Pacific Northwest Laboratory (PNL) 325 Analytical Laboratory staff for the characterization and analyses of Cores 37, 38 and 39 from Single-Shell Tank C-110. The characterization and analysis of Tank C-110 is outlined in the Waste Characterization Plan for Hanford Site Single-Shell Tanks (WHC-EP-0210, Rev. 3: Hill et. al., 1991). Specific characterization activities are detailed in the WCP, Appendix I and in the WHC statement of work dated November 1991. Specific analyses for each sub-sample taken from a segment are described in Test Instructions prepared by the PNL SST Project Manager in accordance with procedures contained in the Analytical Chemistry Laboratory Procedure Compendium (PNL-MA-599).

The Cores were extruded, sub-sampled and composites prepared at the WHC 222-S Laboratory. Sub-samples were shipped to the PNL Shielded Analytical Lab (SAL), 325-B Hot Cell) for preparation and analysis. The samples included in this data package include the following: two core composite samples and two segments for rheology from Core 37; one core composite and two segments for Volatile Organic Analysis from Core 38; two core composites and three segments for VOA from Core 39; a tank liquid composite and a 222-S Laboratory hot-cell blank. The PNL ALO sample numbers assigned to the samples are listed in the table below. This table shows the sample number and sample type by analysis.

The data within this package are divided into three groups: Physical Testing, Radiochemical Analysis, and Organic Analysis. A brief technical narrative is given at the beginning of each data set followed by a summary of the data. The raw data and supporting documentation is included for each type of analysis. All chemical analysis data are reported on a per wet-weight basis. That is, no corrections were made for the weight percent water in the samples. The weight percent solids was measured and this data included. Sample preparations were completed in duplicate. The quality control requirements for each sample is defined in specific test instructions. All QC data are included in this data package.

It should be noted that there was poor agreement between the sample and the duplicate Halide data for the Core 37 Composite 2 (92-08305) sample. This may be due to the heterogeneous nature of the sample material. If this is of concern, and if there is material available, the client may want to have additional samples analyzed for EOX.

TANK C-110, CORES 37/38/39

Pu/U ISOTOPIC BY MASS SPEC.	C37 COMP 1 92-08302-H1 92-08302-H2 92-08302-H3	C37 COMP 2 92-08304-H1 92-08304-H2	C38 COMP 1 92-08306-H1 92-08306-H2 92-08306-H3		C39 COMP 1 92-08308-H1 92-08308-H2	C39 COMP 2 92-08310-H1 92-08310-H2		DRAINABLE LIQ 92-09437-A1 92-09437-A2 92-09437-A3		Sample for Pu/U Iso Duplicate Methods Blank
WT% SOLIDS	C37 COMP 1 92-08302-K1 92-08302-K2	C37 COMP 2 92-08304-K1 92-08304-K2	C38 COMP 1 92-08306-K1 92-08306-K2		C39 COMP 1 92-08308-K1 92-08308-K2	C39 COMP 2 92-08310-K1 92-08310-K2				Wt. % Solids Sample Wt. % Solids Samp Dup
SEMI - VOA	C37 COMP 1 92-08303-E1 92-08303-E2 92-08303-E3 92-08303-E4	C37 COMP 2 92-08305-E1 92-08305-E2	C38 COMP 1 92-08307-E1 92-08307-E2 92-08307-E3 92-08307-E4		C39 COMP 1 92-08309-E1 92-08309-E2	C39 COMP 2 92-08311-E1 92-08311-E2		DRAINABLE LIQ 92-09437-E1 92-09437-E2 92-09437-E3 92-09437-E4	C110 BLANK 92-08312-E1 92-08312-E2 92-08312-E3 92-08312-E4	Sample S-VOA and pH Duplicate S-VOA & pH Matrix Spike Matrix Spike Dup.
TOX/EOX	C37 COMP 1 92-08303-F1 92-08303-F2 92-08303-F3 92-08303-F4	C37 COMP 2 92-08305-F1 92-08305-F2 92-08305-F3	C38 COMP 1 92-08307-F1 92-08307-F2 92-08307-F3 92-08307-F4		C39 COMP 1 92-08309-F1 92-08309-F2 92-08309-F3 92-08309-F4	C39 COMP 2 92-08311-F1 92-08311-F2 92-08311-F4		DRAINABLE LIQ 92-09437-F1 92-09437-F2 92-09437-F3 92-09437-F4		Sample TOX/EOX Duplicate Methods Blank Sample Spike TOX/EOX
VOA			C38 SEG 1 92-08297-M1 92-08297-M2 92-08297-M3 92-08297-M4	C38 SEG 4 92-08298-M1 92-08298-M2	C39 SEG 2 92-08299-M1 92-08299-M2 92-08299-M3 92-08299-M4	C39 SEG 3 92-08300-M1 92-08300-M2	C39 SEG 4 92-08301-M1 92-08301-M2		C110 BLANK 92-08312-M1 92-08312-M2 92-08312-M3 92-08312-M4	Sample VOA Duplicate VOA Matrix Spike Matrix Spike Dup.
RHEOLOGY	C37 SEG 2 92-11291	C37 SEG 4 92-00292								Rheology Sample

SINGLE SHELL TANK WASTE CHARACTERIZATION PROJECT

APPENDICES

PRIMARY ANALYTICAL DATA

Cores 37/38/39 DATA REPORT

Tank C-110

Revision 0

Pacific Northwest Laboratory

SINGLE SHELL TANK
WASTE CHARACTERIZATION PROJECT

APPENDIX A

TEST INSTRUCTIONS

Cores 37/38/39 DATA REPORT

Tank C-110

Revision 0

Pacific Northwest Laboratory

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CONTROLLED DOCUMENT
COPY NO. 01

SST SAMPLE TEST INSTRUCTION FOR C-110, CORE 37 ANALYSES

DATE PREPARED : October 5, 1992 PREPARED BY : SG McKinley

SAMPLE NUMBERS : 92-08302, 92-08303, 92-08304, 92-08305, 92-11291, 92-11292

APPROVED BY : SG McKinley Date 10/6/92
Project Manager

CONTROLLING DOCUMENTS :

TEST PLAN: WHC-EP-0210 Rev 3 Project No: 16021

PROJECT SOW: SST Sample Analysis SOW, Dated 4/92

Controlling Procedure: PNL-ALO-010

INTRODUCTION

This Test Instruction (TI) defines the scope of work to be completed on Tank C-110, Core 37. The samples include two solid core composites for Semi-VOA, EOX, Alpha Pu and Pu/U isotopic analyses, and two segment samples for rheology and physical testing. If the presence of NPH is indicated by screening then, the NPH clean-up procedures should be used prior to Semi-VOA analyses. All activities identified in this Test Instruction shall be charged against Project 16021 - SST Waste Characterization.

All analyses will be done at a Impact Level 2, and are to be completed following the identified procedures. Any deviations from the procedure must be documented and this documentation must accompany the analytical data. All analytical data are returned to the Project Management Office.

REQUESTED ANALYSES

Requested Analysis	Procedure #	Task Leader	WP#
Pu/U Mass Spec (Fusion)	PNL 2.30.6	Greenwood	M-90482
Alpha Pu (Fusion)	PNL-ALO-423/421	Greenwood	M-90482
Wt% Solids	PNL-ALO-504	Steele	M-90481
Semi-Volatile Organics	PNL-ALO-122/120 PNL-ALO-344/345	Hoppe	M-90483
TOX/EOX	PNL-ALO-320/321	Hoppe	M-90483
Rheology/Physical Testing	PNL-ALO-501/502	Tingey	M-90484

SST SAMPLE TEST INSTRUCTION FOR C-110 CORES 37 ANALYSES

B-HOT CELL SAMPLE PREPARATION INSTRUCTIONS

- Transfer the samples for rheology and physical testing to the A Hot-Cell Group.
  Core 37 Segment 2 92-11291
  Core 37 Segment 4 92-11292

- Prepare Caustic Fusion WP# M90481 PNL-ALO-102
  QC requirements: Duplicate and Blank

- Prepare samples for transfer to the Organic Group as follows:
  - Semi-VOA - four 1g samples in 40 ml vials WP# M90481
  - EOX - four 1g samples in 20 ml vials WP# M90481

  If radiation levels are prohibitive, the samples for organic analysis will be prepared in the SAL.

SAMPLE IDENTIFICATION SYSTEM

The following sample identification system will be used. All samples will be identified as 92-0XXXX-Y-Number. The "Y" letter will identify a sample preparation method. The "Number" identifies replicate analyses using the sample preparation method (i.e., duplicates, spikes, blanks, etc.). The Sample Preparation Method code is:

E	Semi Volatile Organics
F	TOX/EOX
H	Caustic Fusion for Pu/U isotopics and Alpha Pu
K	Wt % Solids

- One set of Matrix Spike and Matrix Spike Duplicate QC samples are required per core or one per day which ever is most frequent, for Semi-VOA.

- One Sample Spike sample per core or one per day which ever is most frequent is required for TOX/EOX analyses.

- All samples of core material will be prepared in duplicate.

TANK C-110, CORE 37			
SAMPLE PREPARATION AND ANALYSIS			
	C37 COMP 1	C37 COMP 2	QC REQUIREMENTS
CAUSTIC FUSION	92-08302-H-1	92-08304-H-1	Fusion Sample for Pu/U iso & Pu
	92-08302-H-2	92-08304-H-2	Fusion Duplicate
	92-08302-H-3	92-08304-H-3	Methods Blank (min. 1 per batch)
	C37 COMP 1	C37 COMP 2	
WT% SOLIDS	92-08302-K-1	92-08304-K-1	Wt. % Solids Sample
	92-08302-K-2	92-08304-K-2	Wt. % Solids Sample Dup
	C37 COMP 1	C37 COMP 2	
SEMI - VOA	92-08303-E1	92-08305-E1	Sample S-VOA and pH
	92-08303-E2	92-08305-E2	Duplicate S-VOA & pH
	92-08303-E3	92-08305-E3	Matrix Spike *
	92-08303-E4	92-08305-E4	Matrix Spike Dup. *
	C37 COMP 1	C37 COMP 2	
TOX/EOX	92-08303-F1	92-08305-F1	Sample TOX/EOX
	92-08303-F2	92-08305-F2	Duplicate
	92-08303-F3	92-08305-F3	Methods Blank
	92-08303-F4	92-08305-F4	Sample Spike TOX/EOX *
	C37 SEG 2	C37 SEG 4	
RHEOLOGY & PHYS TESTING	92-11291	92-11292	Sample

* NOTE: SPIKE AND SPIKE CONTROL SAMPLES ARE REQUIRED: ONE PER CORE OR ONE PER WHICH EVER IS MOST FREQUENT

CONTROLLED DOCUMENT
COPY NO. 01

SST SAMPLE TEST INSTRUCTION FOR C-110, CORE 38 - C-110 DRAINABLE LIQUID COMPOSITE - 222S HOT-CELL BLANK ANALYSES

DATE PREPARED : October 5, 1992 PREPARED BY : SG McKinley

SAMPLE NUMBERS : 92-08297, 92-08298, 92-08306, 92-08307, 92-08312, 92-09437

APPROVED BY : Project Manager Date 10/6/92

CONTROLLING DOCUMENTS :

TEST PLAN: WHC-EP-0210 Rev 3 Project No: 16021

PROJECT SOW: SST Sample Analysis SOW, Dated 4/92

Controlling Procedure: PNL-ALO-010

INTRODUCTION

This Test Instruction (TI) defines the scope of work to be completed on Tank C-110, Core 38, the Drainable Liquid Composite for C-110 and a WHC-222S Hot Cell Blank sample. The Core 38 samples include a solid core composite and one drainable liquid composite for Semi-VOA, EOX, Alpha Pu and Pu/U isotopic analyses and two segment samples for VOA. The WHC-222-S Hot-Cell blank will be analyzed for Semi-VOA and VOA. If the presence of NPH is indicated by screening then, the NPH clean-up procedures should be used prior to Semi-VOA analyses. All activities identified in this Test Instruction shall be charged against Project 16021 - SST Waste Characterization.

- All analyses will be done at a Impact Level 2, and are to be completed following the identified procedures. Any deviations from the procedure must be documented and this documentation must accompany the analytical data. All analytical data are returned to the Project Management Office.

REQUESTED ANALYSES

Requested Analysis	Procedure #	Task Leader	WP#
Pu/U Mass Spec (Fusion or Acid)	PNL 2.30.6	Greenwood	M-90482
Alpha Pu (Fusion or Acid)	PNL-ALO-423/421	Greenwood	M-90482
Wt% Solids	PNL-ALO-504	Steele	M-90481
Semi-Volatile Organics	PNL-ALO-122/120 PNL-ALO-344/345	Hoppe	M-90483
TOX/EOX	PNL-ALO-320/321	Hoppe	M-90483
VOA	PNL-ALO-121/335	Hoppe	M-90483

SST SAMPLE TEST INSTRUCTION FOR C-110, CORE 38 - C-110 DRAINABLE LIQUID COMPOSITE - 222S HOT-CELL BLANK ANALYSES

B-HOT CELL AND SAMPLE PREPARATION INSTRUCTIONS

- Prepare samples for transfer to the Organic Group as follows:
  - VOA and Semi-VOA - four 1g samples in 40 ml vials
  - EOX - four 1g samples in 20 ml vials

  If radiation levels are prohibitive, the samples for organic analysis will be prepared in the SAL.

- If radiation levels permit, transfer the Drainable Liquid Composite and the 222S Hot-Cell blank samples to the appropriate analytical groups for preparation and analyses.

- Prepare Caustic Fusion PNL-ALO-102
  QC requirements: Duplicate and Blank

- Prepare Acid Digestion PNL-ALO-101
  QC requirements: Duplicate and Blank

- All B Hot-Cell activities should be charged to M90481. Sample preparation activities performed by the analytical groups should be charged to the WP # appropriate for the analyses.

SAMPLE IDENTIFICATION SYSTEM

The following sample identification system will be used. All samples will be identified as 92-0XXXX-Y-Number. The "Y" letter will identify a sample preparation method. The "Number" identifies replicate analyses using the sample preparation method (i.e., duplicates, spikes, blanks, etc.). The Sample Preparation Method code is:

A	Acid Digestion
E	Semi Volatile Organics
F	TOX/EOX
H	Caustic Fusion
K	Wt % Solids
M	Volatile Organic Analyses

- One set of Matrix Spike and Matrix Spike Duplicate QC samples are required per core or one per day which ever is most frequent, for SemiVOA.

- One Sample Spike sample per core or one per day which ever is most frequent is required for TOX/EOX analyses.

- All samples of core material will be prepared in duplicate.

SAMPLE PREPARATION AND ALYSIS OF C-110, CORE 38, C-110 DRAINABLE LIQUID AND 222S HOT CELL BLANK

					QC REQUIREMENTS
CAUSTIC FUSION	C38 COMP 1				
	92-08306-H 1				Fusion Sample for Pu/U Iso & Pu
	92-08306-H-2				Fusion Duplicate
	92-08306-H-3				Methods Blank (min. 1 per batch)
WT% SOLIDS	C38 COMP 1				
	92-08306-K-1				Wt. % Solids Sample
	92-08306-K-2				Wt. % Solids Sample Dup
ACID DIGESTION			DRAINABLE LIQ		
			92-09437-A-1		Sample for Pu/U Iso & Pu
			92-09437-A-2		Acid Digest. Duplicate
			92-09437-A-3		Methods Blank (min. 1 per batch)
SEMI - VOA	C38 COMP 1		DRAINABLE LIQ	C110 BLANK	
	92-08307-E-1		92-09437-E-1	92-08312-E-1	Sample S-VOA and pH
	92-08307-E-2		92-09437-E-2	92-08312-E-2	Duplicate S-VOA & pH
	92-08307-E-3		92-09437-E-3	92-08312-E-3	Matrix Spike *
	92-08307-E-4		92-09437-E-4	92-08312-E-4	Matrix Spike Dup. *
TOX/EOX	C38 COMP 1		DRAINABLE LIQ		
	92-08307-F-1		92-09437-F-1		Sample TOX/EOX
	92-08307-F-2		92-09437-F-2		Duplicate
	92-08307-F-3		92-09437-F-3		Methods Blank
	92-08307-F-4		92-09437-F-4		Sample Spike TOX/EOX *
VOA	C38 SEG 1	C38 SEG 4		C110 BLANK	
	92-08297-M-1	92-08298-M-1		92-08312-M-1	Sample VOA
	92-08297-M-2	92-08298-M-2		92-08312-M-2	Duplicate VOA
	92-08297-M-3	92-08298-M-3		92-08312-M-3	Matrix Spike *
	92-08297-M-4	92-08298-M-4		92-08312-M-4	Matrix Spike Dup. *

* NOTE: SPIKE AND SPIKE DUPLICATE SAMPLES ARE REQUIRED: ONE PER CORE OR ONE PER BATCH WHICH EVER IS MOST FREQUENT

CONTROLLED DOCUMENT
COPY NO. 01

SST SAMPLE TEST INSTRUCTION FOR C-110, CORES 39 ANALYSES

DATE PREPARED : October 5, 1992 PREPARED BY : SG McKinley

SAMPLE NUMBERS : 92-08308, 92-08309, 92-08310, 92-08311, 92-08299, 92-08300, 92-08301

APPROVED BY : SGMcKinley Date 10/6/92
Project Manager

CONTROLLING DOCUMENTS :

TEST PLAN: WHC-EP-0210 Rev 3 Project No: 16021

PROJECT SOW: SST Sample Analysis SOW, Dated 4/92

Controlling Procedure: PNL-ALO-010

INTRODUCTION

This Test Instruction (TI) defines the scope of work to be completed on Tank C-110, Core 39. The samples include solid core composites for Semi-VOA, EOX, Alpha Pu and Pu/U isotopic analyses and three segment samples for VOA. If the presence of NPH is indicated by screening then, the NPH clean-up procedures should be used prior to Semi-VOA analyses. All activities identified in this Test Instruction shall be charged against Project 16021 - SST Waste Characterization.

All analyses will be done at a Impact Level 2, and are to be completed following the identified procedures. Any deviations from the procedure must be documented and this documentation must accompany the analytical data. All analytical data are returned to the Project Management Office.

REQUESTED ANALYSES

Requested Analysis	Procedure #	Task Leader	WP#
Pu/U Mass Spec (Fusion)	PNL 2.30.6	Greenwood	M-90482
Alpha Pu (Fusion)	PNL-ALO-423/421	Greenwood	M-90482
Wt% Solids	PNL-ALO-504	Steele	M-90481
Semi-Volatile Organics	PNL-ALO-122/120 PNL-ALO-344/345	Hoppe	M-90483
TOX/EOX	PNL-ALO-320/321	Hoppe	M-90483
VOA	PNL-ALO-121/335	Hoppe	M-90483

SST SAMPLE TEST INSTRUCTION FOR C-110, CORES 39 ANALYSES

B-HOT CELL SAMPLE PREPARATION INSTRUCTIONS

- Prepare Caustic Fusion WP# M90481 PNL-ALO-102
  QC requirements: Duplicate and Blank
- Prepare samples for transfer to the Organic Group as follows:
  - VOA and Semi-VOA - four 1g samples in 40 ml vials WP# M90481
  - EOX - four 1g samples in 20 ml vials WP# M90481

  If radiation levels are prohibitive, the samples for organic analysis will be prepared in the SAL.

SAMPLE IDENTIFICATION SYSTEM

The following sample identification system will be used. All samples will be identified as 92-0XXXX-Y-Number. The "Y" letter will identify a sample preparation method. The "Number" identifies replicate analyses using the sample preparation method (i.e., duplicates, spikes, blanks, etc.). The Sample Preparation Method code is:

E	Semi Volatile Organics
F	TOX/EOX
H	Caustic Fusion for Pu/U Isotopics and Alpha Pu
K	Wt % Solids
M	Volatile Organic Analyses

- One set of Matrix Spike and Matrix Spike Duplicate QC samples are required per core or one per day which ever is most frequent, for SemiVOA.
- One Sample Spike sample per core or one per day which ever is most frequent is required for TOX/EOX analyses.
- All samples of core material will be prepared in duplicate.

C-110, CORE 39 SAMPLE PREPARATION AND ANALYSIS

	C39 COMP 1	C39 COMP 2		QC REQUIREMENTS
CAUSTIC	92-08308-H-1	92-08310-H-1		Fusion Sample for Pu/U & Alpha Pu
FUSION	92-08308-H-2	92-08310-H-2		Fusion Duplicate
	92-08308-H-3	92-08310-H-3		Methods Blank (min. 1 per batch)
	C39 COMP 1	C39 COMP 2		
WT%	92-08308-K-1	92-08310-K-1		Wt. % Solids Sample
SOLIDS	92-08308-K-2	92-08310-K-2		Wt. % Solids Sample Dup
	C39 COMP 1	C39 COMP 2		
SEMI - VOA	92-08309-E1	92-08311-E1		Sample S-VOA and pH
	92-08309-E2	92-08311-E2		Duplicate S-VOA & pH
	92-08309-E3	92-08311-E3		Matrix Spike *
	92-08309-E4	92-08311-E4		Matrix Spike Dup. *
	C39 COMP 1	C39 COMP 2		
TOX/EOX	92-08309-F1	92-08311-F1		Sample TOX/EOX
	92-08309-F2	92-08311-F2		Duplicate
	92-08309-F3	92-08311-F3		Methods Blank
	92-08309-F4	92-08311-F4		Sample Spike TOX/EOX *
	C39 SEG 2	C39 SEG 3	C39 SEG 4	
VOA	92-08299-M1	92-08300-M1	92-08301-M1	Sample VOA
	92-08299-M2	92-08300-M2	92-08301-M2	Duplicate VOA
	92-08299-M3	92-08300-M3	92-08301-M3	Matrix Spike *
	92-08299-M4	92-08300-M4	92-08301-M4	Matrix Spike Dup. *

* NOTE: SPIKE AND SPIKE DUPLICATE SAMPLES ARE REQUIRED: ONE PER CORE OR ONE PER BATCH, WHICH EVER IS MOST FREQUENT

CONTROLLED DOCUMENT
COPY NO. 01

SST SAMPLE TEST INSTRUCTION FOR HLRF TANK C-110 - CORE 37 RHEOLOGY AND PHYSICAL TESTING

DATE PREPARED : November 19, 1992

PREPARED BY : SG McKinley

SAMPLE NUMBERS : 92-11291 & 92-11292

APPROVED BY : SGMcKinley
Project Manager

Date 11/19/92

CONTROLLING DOCUMENTS :

TEST PLAN: WHC-EP-0210 REV. 3

Project No.: 16021

PROJECT SOW: SST Sample Analysis SOW, Dated 4/92

Controlling Procedure: PNL-ALO-010

INTRODUCTION

This Test Instruction (TI) describes the rheological and physical testing of segments 2 and 4 from Core 37 from Tank C-110. All activities identified in this Test Instruction shall be charged against Project 16021 - SST Characterization Project. All analyses are completed at Impact Level 2.

This TI is based on the SST Characterization Project Technical Project Plan (April, 1992). All analyses are to be completed following the identified procedures. Any deviations from the procedure must be documented and this documentation must accompany the analytical data. All analytical data are returned to the Project Management Office.

REQUESTED ANALYSES

Requested Analysis		Procedure Number	WP #
Shear Strength	undiluted/ambient T°	PNL-ALO-501	M90484
Shear Stress/Shear Rate	undiluted, 1:1, 3:1/ ambient & 95°C	PNL-ALO-501/502	M90484
Wt. % Solids	undil. Segment 2 Rheology sample	PNL-ALO-504	M90484
Settling Velocity	undiluted, 1:1, 3:1	PNL-ALO-501	M90484
Settling Behavior	undiluted centrifuged sample	PNL-ALO-501	M90484
Wt. % Dissolved Solids	centrifuged supernate	PNL-ALO-501	M90484

SST SAMPLE TEST INSTRUCTION FOR HLRF
TANK C-110 - CORE 37
RHEOLOGY AND PHYSICAL TESTING

A-HOT CELL SAMPLE INSTRUCTIONS

- All analyses should be performed in duplicate if adequate sample is available.
- Rheological measurements should include plots of the shear stress vs shear rate, viscosity vs shear rate and yield stress
- Settling Behavior should include determinations of the following:
  - bulk density
  - centrifuged solids and supernate densities
  - weight and volume percent centrifuged solids
- The ALO sample numbers should be assigned as follows:

CORE IDENTIFICATION	ALO NUMBER
Core 37 - Segment 2	92-11291
Core 37 - Segment 4	92-11292

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WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

SINGLE SHELL TANK WASTE CHARACTERIZATION PROJECT

APPENDIX B

CHAIN OF CUSTODY

Cores 37/38/39 DATA REPORT

Tank C-110

Revision 0

Pacific Northwest Laboratory

B1 - CHAIN OF CUSTODY

AND SAMPLE RECEIPT FORMS

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

Collector BEHey Date 9/24/92

Organization WHC-PCL Telephone 3-2529

Sample Number	Point of Origin	Type of Sample	Analysis Requested
J738	C-110 C37 S2	sludge	Rheology & Phys. Test
J739	C-110 C37 S4	sludge	Rheology & Phys. Test
J914	BX-107 C40 S2	sludge	Rheology & Phys. Test
J913	BX-107 C40 S4	sludge	Rheology & Phys. Test
J912	BX-107 C40 S6	sludge	Rheology & Phys. Test
J951	BX-107 C40 C1	sludge	SVOA, EOX, Fusion {U, Pu} *
J952	BX-107 C40 C2	sludge	SVOA, EOX, Fusion {U, Pu} *
J953	BX-107 C41 C1	sludge	SVOA, EOX, Fusion {U, Pu} *
J954	BX-107 C41 C2	sludge	SVOA, EOX, Fusion {U, Pu} *
			* isotopic for both U and Pu BH

910 #
92-112
92-11

Special Handling and/or Storage

Possible Sample Hazards Caustic and Radioactive material.

Hey

Westinghouse Hanford Company	CHAIN OF CUSTODY

Contact BE Hey Telephone 3-2529
Sample Collected by BE Hey Date 9/24/92
Sample Location BX-107 / C-110
Laboratory Notebook WHC-N-611 1
Remarks none
Method of Shipment pig and door stop in corniers in N-55 overpack
Shipped from door 13, 222-S, 200-W
Shipped to door 207, 325-B-300
Possible Sample Hazards Radioactive material in caustic matrix

Sample Identification				ALO #
J738	C-110	core 37	segment 2	92-11291
J739	C-110	core 37	segment 4	
J914	BX-107	core 40	Segment 2	
J913	BX-107	core 40	segment 4	
J912	BX-107	core 40	segment 6	
J952	BX-107	core 40	composite 2	
J951	BX-107	core 40	composite 1	
J953	BX-107	core 41	composite 1	
J954	BX-107	core 41	composite 2	92-11299

Chain of Possession

Relinquished by: BE Hey	Received by: J.M. Schmidt	Date/Time: 9-24-92 / 1845
Relinquished by: J.M. Schmidt	Received by: John K. Rees	Date/Time: 9-24-92 2055
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Hey

Westinghouse Hanford Company	CHAIN OF CUSTODY

Contact Bruce Hey Telephone 3-2529
Sample Collected by WHC - PCL Date 6/24/92
Sample Location Tanks 202-B, 111-T, and 110-C
Laboratory Notebook WHC-N-607 1, WHC-N-532, WHC-N-562
Remarks

Method of Shipment B-plant truck configured with door stop carriers
Shipped from 222-S laboratory complex door 13
Shipped to PNL - 325 building - door 325B
Possible Sample Hazards caustic material / radioactive

Sample Identification

902'	1416'	J742'	J728'	J762'
904'	1417	J745'	J734'	J506'
1004'	1418'	J747'	J730'	J507'
1010'	1419'	J748'	J736'	J508'
973'	1420'	J749'	J731'	J509'
978'	1421'	J726'	J737'	
1013'	1422'	J732'		
1014'	1423'	J727'		
-		J733'		

[See Attached signed CC:mail messages for more info.]
BH

Chain of Possession

Relinquished by: Bruce Hey	Received by: Mike Hartley	Date/Time: 6-24-92 2105
Relinquished by: Debbie L. Gill	Received by: John K. Rose	Date/Time: 6-24-92 2105
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

[2] From: Bruce E Hey at ~WHC169 9/24/92 1:12PM (3216 bytes: 45 ln)
To: James E Atterberry, Roderick D (Rod) Burton at ~WHC21, Bruce E Hey, Jim R Jewett at ~WHC167, Vida V Johansen at ~WHC32, Steve G McKinney, Mark D Nuzum at ~WHC110, Michael A Sams at ~WHC157, Denise R Sauer at ~PNL27, Eli R Smith at ~WHC157, Rick T Steele at ~PNL26, Janice M Wagner at ~WHC21, Ronald L Clawson at ~WHC157
Subject: BX-107 Samples to be shipped to PNL.
---------- Message Contents ----------

The following lists give the samples which will be sent to PNL this evening. As yet I am awaiting to hear what the appropriate charge code numbers will be for transportation, B-plant, and Patrol. If all goes as planned, the B-plant truck should pick up samples at door 13, 222-S Laboratory at 6:00p and depart the WYE barracade by 8:00p.

All samples are caustic and contain the specified radionuclide content listed in the second list below.

TANK	VIAL	SAMPLE POINT	ANALYSIS
C-110	J738	Core 37 Segment 2	Rheology
C-110	J739	Core 37 Segment 4	Rheology
BX-107 pic	J914	Core 40 Segment 2	Rheology
BX-107	J913	Core 40 Segment 4	Rheology
BX-107	J912	Core 40 Segment 6	Rheology
BX-107	J951	Core 40 Composite 1	SVOA, EOX, Fusion{U(iso),Pu(iso)}
BX-107	J952	Core 40 Composite 2	SVOA, EOX, Fusion{U(iso),Pu(iso)}
BX-107	J953	Core 41 Composite 1	SVOA, EOX, Fusion{U(iso),Pu(iso)}
BX-107	J954	Core 41 Composite 2	SVOA, EOX, Fusion{U(iso),Pu(iso)}

The following is the radionuclide breakdown of the above samples. This information was obtained from PDSU results off of LCCS. The results are of samples submitted to PDSU for fusion digest analyses from core composites which include sample material from the same sample point as the sample in question. Numerical values were obtained by multiplying the amount of sample (in grams) by the concentration of radionuclide reported by LCCS (uCi/g). Therefore units are in microcuries (uCi) or for total uranium, in micrograms.

Vial	GEA-(Cs)	Pu-239/240	Sr-90	Total Alpha	Total Beta	Total U
J738 (113.54g)	2.71e+3	1.53e+1	4.22e+2	1.37e+1	5.50e+3	1.07e-1
J739 (128.43g)	3.07e+3	1.73e+1	4.78e+2	1.55e+1	6.18e+3	1.21e-1
J914 (157.02g)	3.94e+3	8.49e+0	1.56e+3	1.81e+1	8.04e+3	3.96e+6
J913 (117.54g)	2.95e+3	6.36e+0	1.17e+3	1.35e+1	6.02e+3	2.96e+6
J912 (142.39g)	3.97e+3	7.70e+0	1.42e+3	1.64e+1	7.29e+3	3.59e+6
J951 (15g)	3.77e+2	8.12e-1	1.49e+2	1.73e+0	7.68e+2	3.78e+5
J952 (15g)	3.77e+2	8.12e-1	1.49e+2	1.73e+0	7.68e+2	3.78e+5
J953 (15g)	3.77e+2	8.12e-1	1.49e+2	1.73e+0	7.68e+2	3.78e+5
J954 (15g)	3.77e+2	8.12e-1	1.49e+2	1.73e+0	7.68e+2	3.78e+5

Bruce Hey, 3-2529

[7] From: Bruce E Hey at ~WHC169 6/18/92 7:00AM (5197 bytes: 55 ln)
To: James E Atterberry, Roderick D (Rod) Burtor at ~WHC21, Bruce E Hey, Vida V Johansen at ~WHC32, Steve G McKinney, Mark D Nuzum at ~WHC110, Michael A Sams at ~WHC157, Denise R Sauer at ~PNL26, Eli R Smith at ~WHC157, Rick T Steele at ~PNL26, Kenneth E Strickler at ~WHC20
Subject: PCL-PNL Shipment of SST Waste Samples

---------- Message Contents ----------

The evening of Wednesday, June 24, 1992 I plan on having samples from single shell tanks B-202, T-111, and C-110 shipped from 222-S, Door 13 to PNL, 325 Bldg, Door 325B. The B-plant truck usually loads up these shipments by 1830 and departs the Wye barracade by 2000.

The N-55 overpacks on the B-plant truck must be configured for door stop carriers. Also, badging requirements at PNL (308 Exclusion Area) have been changed so drivers need to be current.

Work order numbers to use are:
a. Transportation E08191
b. Patrol Support E08237

Samples to be shipped are:

ID	Sample	Amount	Analysis	T. Alpha (uCi)	T. Beta (uCi)	T. U (g)	Gamma (uCi)
902	B202C24C1	3.0 g	S-VOA	1.4E+0	4.6E+1	1.1E-3	1.2E-1
904	B202C24C1	3.4 g	EOX	1.6E+0	5.2E+1	1.2E-3	1.3E-1
1004	B202C24C2	3.4 g	S-VOA	1.6E+0	5.2E+1	1.2E-3	1.3E-1
1010	B202C24C2	3.6 g	EOX	1.6E+0	5.5E+1	1.3E-3	1.3E-1
973	B202C25C1	3.3 g	S-VOA	1.5E+0	5.0E+1	1.2E-3	1.3E-1
978	B202C25C1	3.3 g	EOX	1.5E+0	5.0E+1	1.2E-3	1.3E-1
1013	B202C25C2	3.1 g	S-VOA	1.4E+0	4.7E+1	1.1E-3	1.2E-1
1014	B202C25C2	3.2 g	EOX	1.5E+0	4.9E+1	1.2E-3	1.2E-1
1416	T111C31C1	20.5 g	EOX/S-VOA	7.66E+0	3.10E+2	5.73E-2	3.41E+0
1417	T111C31C1	5.1 g	Fusion	1.9E+0	7.7E+1	1.4E-2	8.5E-1
1418	T111C31C2	23.3 g	EOX/S-VOA	8.71E+0	3.53E+2	6.51E-2	3.88E+0
1419	T111C31C2	5.0 g	Fusion	1.9E+0	7.6E+1	1.4E-2	8.3E-1
1420	T111C33C1	21.4 g	EOX/S-VOA	8.00E+0	3.24E+2	5.98E-2	3.56E+0
1421	T111C33C1	5.0 g	Fusion	1.9E+0	7.6E+1	1.4E-2	8.3E-1
1422	T111C33C2	22.1 g	EOX/S-VOA	8.26E+0	3.35E+2	6.17E-2	3.68E+0
1423	T111C33C2	6.2 g	Fusion	2.32E+0	9.4E+1	1.7E-2	1.03E+0
J742	C110C38S1	11.7 g	VOA	1.37E+0	5.16E+2	1.37E-2	2.32E+2
J745	C110C38S4	13.9 g	VOA	1.63E+0	6.13E+2	1.62E-2	2.75E+2
J747	C110C39S2	15.1 g	VOA	1.77E+0	6.66E+2	1.77E-2	2.99E+2
J748	C110C39S3	15.6 g	VOA	1.83E+0	6.88E+2	1.82E-2	3.09E+2
J749	C110C39S4	12.3 g	VOA	1.44E+0	5.43E+2	1.44E-2	2.44E+2
J726	C110C37C1	6.0 g	Fusion	7.0E-1	2.6E+2	7.0E-3	1.2E+2
J732	C110C37C1	13.1 g	EOX/S-VOA	1.53E+0	5.78E+2	1.53E-2	2.59E+2
J727	C110C37C2	5.5 g	Fusion	6.4E-1	2.4E+2	6.4E-3	1.1E+2
J733	C110C37C2	9.8 g	EOX/S-VOA	1.1E+0	4.3E+2	1.1E-2	1.9E+2
J728	C110C38C1	6.7 g	Fusion	7.8E-1	3.0E+2	7.8E-3	1.3E+2
J734	C110C38C1	29.7 g	EOX/S-VOA	3.47E+0	1.31E+3	3.47E-2	5.88E+2
J730	C110C39C1	9.8 g	Fusion	1.1E+0	4.3E+2	1.1E-2	1.9E+2
J736	C110C39C1	28.2 g	EOX/S-VOA	3.30E+0	1.24E+3	3.30E-2	5.58E+2
J731	C110C39C2	4.6 g	Fusion	5.4E-1	2.0E+2	5.4E-3	9.1E+1
J737	C110C39C2	25.5 g	EOX/S-VOA	2.98E+0	1.13E+3	2.98E-2	5.05E+3

Any questions please contact me.
Thank you.

B Hey 6/24/92

[17] From: Bruce E Hey at ~WHC169 6/24/92 3:51PM (1629 bytes: 22 ln)
To: James E Atterberry, Roderick D (Rod) Burton at ~WHC21, Bruce E Hey,
Vida V Johansen at ~WHC32, Steve G McKinney, Mark D Nuzum at ~WHC110,
Michael A Sams at ~WHC157, Denise R Sauer at ~PNL26, Eli R Smith at ~WHC157,
Rick T Steele at ~PNL26, Kenneth E Strickler at ~WHC20
Subject: Addition Samples to be Shipped on 06/24/92
---------- Message Contents ----------

In addition to the 31 (or so) samples which I have already discussed for the shipment on 06/24/92, I am including five (5) more. There is enough room in the existing packages to accomodate these samples so there is no change to the truck configuration.

The samples are:

ID	Sample	Amount	Analysis
J762	C110 Hot-cell Blank	10 grams	VOA, Semi-VOA
J506	T111 Hot-cell Blank	10 grams	Semi-VOA
J507	T111 Field Blank	10 grams	Semi-VOA
J508	T111 Hot-cell Blank	10 grams	VOA
J509	T111 Field Blank	10 grams	VOA

These samples are D-water blanks used for sample control standards. There is no radiological data on these samples because they are not waste tank material, only water blanks.

Bruce Hey

B Hey 6/24/92

SAMPLE RECEIPT FORM

Delivered by: B-PLANT OVERPACK Date/Time: 6-24-92 2120

Received by: JK Rau C-110

Cust ID No	ALO Sample No	Cust ID No	ALO Sample No	Cust ID No	ALO Sample No
J-742	92-08297	J 734	92-08307		
J745	92-08298	J730	92-08308		
J 747	92-08299	J736	92-08309		
J 748	~~92-08300~~ 92-08300	J731	92-08310		
J 749	92-08301	J737	92-08311		
J 726	92-08302	J762	92-08312		
J 732	92-08303				
J 727	92-08304				
J 733	92-08305				
J 728	92-08306				

1. Customer Chain-of-Custody form: Present X Absent ___

2. Additional shipping forms (list):
   ORSR

3. Custody seals on shipping and/or sample containers and their conditions.
   Present X Absent ___

   If Present, condition: GOOD

4. Sample tag(s) ID numbers if not recorded on the Chain-of-Custody record or on sample vial.

   Notes: NA

5. Condition of shipping container (i.e., broken container, dented, breached plastic bag, temperature of sample container as defined in Section 3.0 PNL-ALO-051, etc).
   OK 30°C AMBIENT TEMP

6. Condition of sample vials. — OUTER CAN PKG. OK. VIALS STILL IN CANS.

7. Verification of agreement or nonagreement of information on receiving documents.
   AGREE

8. Resolution of problems or discrepancies. N/A

RETURN COMPLETED FORM TO PROJECT MANAGER

PNL-ALO-051, Rev. 0
Exhibit 1
Page 1 of 1

SAMPLE RECEIPT FORM

Delivered by: B-PLANT OVERPACK Date/Time: 9-24-92 2110

Received by: John K. Baum

Customer Sample Number(s): J-738, J739, J914, J913, J912, J952, J951, J953, J954

ALO Sample Number(s): 92-11291 → 92-11299

1. Customer Chain-of-Custody Form: Present X Absent ____

2. Additional Shipping Forms (list):
   ORSR

3. Custody Seals on Shipping and/or Sample Containers and their Conditions.
   Present X Absent ____
   If Present, Condition: GOOD

4. Sample Tag(s) ID Numbers if not Recorded on the Chain-of-Custody Record or on Sample Vial. N/A
   Notes:

5. Condition of Shipping Container (i,e., broken container, dented, breached plastic bag, temperature of sample container as defined in Section 3.0 in PNL-ALO-051, etc.) GOOD

6. Condition of Sample Vials. UNKNOWN - WILL UNLOAD 9-25-92 AM
   VIAL CONDITIONS GOOD KO 9/25/92

7. Verification of Agreement or Nonagreement of Information on Receiving Documents. AGREE

8. Resolution of Problems or Discrepancies.
   N/A

RETURN COMPLETED FORM TO PROJECT MANAGER

Chain of Custody Number SST-556

SST

B-HOT CELL CHAIN-OF-CUSTODY TO A-HOT CELL

DATE OF TRANSFER 9/25/92

SENDER Rick L Steele

RECEIVER Joel M Tingey

WHC CORE IDENTIFICATION NUMBER Core 37, 40, 41

HOMOGENIZATION AND COMPOSITE PREPARATION

Analytical Lab Sample #				Sample Identification	
92-11291				C-110	J738
92-11~~922~~	292	Rmh	10/13/92	C-110	J739
92-11~~923~~	293	Rmh	10/13/92	BX-107	J914
92-11~~924~~	294	Rmh	10/13/92	BX-107	J913
92-11~~925~~	295	Rmh	10/13/92	BX-107	J912

Original - Project Management Office
Copy - 325A Hot Cell
Copy - 325B Hot Cell

Page 1 of 1

Chain of Custody Number SST-557

ALO CHAIN OF CUSTODY

SAMPLE DESCRIPTION CORE 38, 222S HOT CELL BLANK APPLICABLE TEST INSTRUCTION TI-SST-165

ANALYSIS REQUESTED OR DEPARTMENT SVOA AND ~~TOX~~/FOX DUB 10-9-92 DDR

SAMPLE PREP METHOD NONE

ALO SAMPLE NUMBER	SAMPLE DESCRIPTION	SENDER	DATE	RECEIVER	DATE
92-08312		[illegible]	10/2/92	[illegible]	10-2-92

Original - Project Management
Copy - Sender
Copy - Receiver

Page 1 of 1

Chain of Custody Number SST-558

ALO CHAIN OF CUSTODY

SAMPLE DESCRIPTION CORE 38, DRAINABLE LIQUID APPLICABLE TEST INSTRUCTION TI-SST-165

ANALYSIS REQUESTED OR DEPARTMENT ALPHA PU AND PU/U MS

SAMPLE PREP METHOD NONE

ALO SAMPLE NUMBER	SAMPLE DESCRIPTION	SENDER	DATE	RECEIVER	DATE
92-09437		[illegible]	10/2/92	[illegible]	10-7-92

Original - Project Management
Copy - Sender
Copy - Receiver

Page 1 of 1

Chain of Custody Number SST-559

ALO CHAIN OF CUSTODY

SAMPLE DESCRIPTION CORE 38, DRAINABLE LIQUID APPLICABLE TEST INSTRUCTION TI-SST-165

ANALYSIS REQUESTED OR DEPARTMENT SVOA AND TOX/EOX

SAMPLE PREP METHOD NONE

ALO SAMPLE NUMBER	SAMPLE DESCRIPTION	SENDER	DATE	RECEIVER	DATE
92-09437		[illegible]	10/7/92	[illegible]	10-7-92

Original - Project Management
Copy - Sender
Copy - Receiver

Page 1 of 1

Chain of Custody Number SST-560

ALO CHAIN OF CUSTODY

SAMPLE DESCRIPTION CORE 38 & CORE 39, SEGMENT APPLICABLE TEST INSTRUCTION MULTIPLE

ANALYSIS REQUESTED OR DEPARTMENT VOA

SAMPLE PREP METHOD NONE

ALO SAMPLE NUMBER	SAMPLE DESCRIPTION	SENDER	DATE	RECEIVER	DATE
92-08297-M-1	(CORE 38)	[illegible]	10/16/92	[illegible]	[illegible]
92-08297-M-2	DUP (CORE 38)	[illegible]		[illegible]	
92-08297-M-3	MS (CORE 38)	[illegible]		[illegible]	
92-08297-M-4	MSD (CORE 38)	[illegible]		[illegible]	
92-08298-M-1	(CORE 38)	[illegible]		[illegible]	
92-08298-M-2	DUP (CORE 38)	[illegible]		[illegible]	
92-08299-M-1	(CORE 39)	[illegible]		[illegible]	
92-08299-M-2	DUP (CORE 39)	[illegible]		[illegible]	
92-08299-M-3	MS (CORE 39)	[illegible]		[illegible]	
92-08299-M-4	MSD (CORE 39)	[illegible]		[illegible]	
92-08300-M-1	(CORE 39)	[illegible]		[illegible]	
92-08300-M-2	DUP (CORE 39)	[illegible]		[illegible]	
92-08301-M-1	(CORE 39)	[illegible]		[illegible]	
92-08301-M-2	DUP (CORE 39)	[illegible]	X	[illegible]	X

Original - Project Management
Copy - Sender
Copy - Receiver

Page 1 of 1 Chain of Custody Number SST-561

ALO CHAIN OF CUSTODY

SAMPLE DESCRIPTION CORE 37, 38 & 39, CORE COMP. APPLICABLE TEST INSTRUCTION MULTIPLE

ANALYSIS REQUESTED OR DEPARTMENT EOX/TOX

SAMPLE PREP METHOD NONE

ALO SAMPLE NUMBER	SAMPLE DESCRIPTION	SENDER	DATE	RECEIVER	DATE
CORE 37			10/12/92		
92-08303-F-1			10/12/92	D L Bellofatto	10/12/92
92-08303-F-2	DUP			D L Bellofatto	
92-08303-F-3	BLK			D L Bellofatto	
92-08303-F-4	SPK			D L Bellofatto	
92-08305-F-1				D L Bellofatto	
92-08305-F-2	DUP			D L Bellofatto	
92-08305-F-4	SPK			D L Bellofatto	
CORE 38			10/12/92		
92-08307-F-1				D L Bellofatto	
92-08307-F-2	DUP			D L Bellofatto	
92-08307-F-3	BLK			D L Bellofatto	
92-08307-F-4	SPK			D L Bellofatto	
CORE 39			10/12/92		
92-08309-F-1				D L Bellofatto	
92-08309-F-2	DUP			D L Bellofatto	
92-08309-F-3	BLK			D L Bellofatto	
92-08309-F-4	SPK			D L Bellofatto	
92-08311-F-1				D L Bellofatto	
92-08311-F-2	DUP			D L Bellofatto	
92-08311-F-4	SPK			D L Bellofatto	

Original - Project Management
Copy - Sender
Copy - Receiver

Page 1 of 1 Chain of Custody Number SST-562

ALO CHAIN OF CUSTODY

SAMPLE DESCRIPTION CORE 37, 38 & 39, CORE COMP. APPLICABLE TEST INSTRUCTION MULTIPLE

ANALYSIS REQUESTED OR DEPARTMENT SVOA

SAMPLE PREP METHOD NONE

ALO SAMPLE NUMBER	SAMPLE DESCRIPTION	SENDER	DATE	RECEIVER	DATE
CORE 37			10/12/92		
92-08303-E-1					10/12/92
92-08303-E-2	DUP				
92-08303-E-3	MS				
92-08303-E-4	MSD				
92-08305-E-1					
92-08305-E-2	DUP				
CORE 38					
92-08307-E-1					
92-08307-E-2	DUP				
92-08307-E-3	MS				
92-08307-E-4	MSD				
CORE 39					
92-08309-E-1					
92-08309-E-2	DUP				
92-08309-E-3	MS				
92-08309-E-4	MSD				
92-08311-E-1					
92-08311-E-2	DUP				

Original - Project Management
Copy - Sender
Copy - Receiver

Page 1 of 1

Chain of Custody Number SST-563

ALO CHAIN OF CUSTODY

SAMPLE DESCRIPTION CORE 37, 38 & 39, CORE COMP. APPLICABLE TEST INSTRUCTION MULTIPLE

ANALYSIS REQUESTED OR DEPARTMENT Pu/U MS AND ALPHA Pu

SAMPLE PREP METHOD FUSION

ALO SAMPLE NUMBER	SAMPLE DESCRIPTION	SENDER	DATE	RECEIVER	DATE
CORE 37		Clyde Chamberlin	10-16-92	Kathy A Pospal	10/16/92
92-08302-H-1		Clyde Chamberlin		Kathy A Pospal	
92-08302-H-2	DUP	Clyde Chamberlin		Kathy A Pospal	
92-08302-H-3	BLK	Clyde Chamberlin		Kathy A Pospal	
92-08304-H-1		Clyde Chamberlin		Kathy A Pospal	
92-08304-H-2	DUP	Clyde Chamberlin		Kathy A Pospal	
CORE 38		Clyde Chamberlin		Kathy A Pospal	
92-08306-H-1		Clyde Chamberlin		Kathy A Pospal	
92-08306-H-2	DUP	Clyde Chamberlin		Kathy A Pospal	
92-08306-H-3	BLK	Clyde Chamberlin		Kathy A Pospal	
CORE 39		Clyde Chamberlin		Kathy A Pospal	
92-08308-H-1		Clyde Chamberlin		Kathy A Pospal	
92-08308-H-2	DUP	Clyde Chamberlin		Kathy A Pospal	
92-08310-H-1		Clyde Chamberlin		Kathy A Pospal	
92-08310-H-2	DUP	Clyde Chamberlin		Kathy A Pospal	

Original - Project Management
Copy - Sender
Copy - Receiver

B2 - SAMPLE PREP DATA SHEETS

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Shielded Analytical Laboratory
Bench Sheet

Project Id.: SST

Project No.: [redacted]

TANK C-110
Cores 37, 38, 39

[redacted]

1/11/93

92-08303
26.2412
25.2495
[redacted]

92-08305
use E3
28.4054
[redacted]

92-08307
26.6361
25.6642
[redacted]

92-08309
26.7308
25.6214
[redacted]

92-08311
26.1411
25.1403
[redacted]

Analyst: [signature] Date: 10-8-92

Reviewer: [signature] Date: 11/5/92

Procedures Used:

____	PNL-ALO-101,	Acid Digestion for Metals Analysis
____	PNL-ALO-102,	Fusion of Hanford Tank Waste Solids
____	PNL-ALO-103,	Water Leach of Sludges, Soils, and Other Solid Samples
____	PNL-ALO-104,	Extraction Procedure Toxicity
____	PNL-ALO-106,	Acid Digestion for Preparation of Samples for Radiochemical Analysis
____	PNL-ALO-107,	Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____	PNL-ALO-108,	Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____	PNL-ALO-330	Hexadecane Extracts for Volatile Organic Compounds
____	PNL-ALO-504,	Percent Solids Determination of Soils/Sludges/Solids
____	PNL-ALO-120,	Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-130,	Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____	WHC-053-1,	Laboratory Procedure for Measurement of Physical and Rheological Properties of Solutions, Slurries and Sludges
____	7.40.9	Laboratory Procedure for the Physical Characterization of Fluids
____	7.40.16	Separation of Carbon from Soil/Sediment/Sludge Samples
____	7.40.24	Measurement of Carbon-14 in Zircaloy Cladding Crud Layer
____	7.40.25	Distillation of Caustic Trap Solutions for C-14 Separation
____	7.40.29	Specific Gravity of Highly Radioactive Solutions
____	7.40.30	Bulk Density of Highly Radioactive Free-Flowing Granular Solids
____	7.40.34	Tritium in Irradiated Cladding Materials
____	7.40.36	Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____	7.40.37	Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____	7.40.42	Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges
____	7.40.47	Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method
X	Other	Ti-165, 164, 166

M&TE Used:

X	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D
____	Corning pH meter Model 240 S/N 6629		

HANFORD TANK WASTE CHARACTERIZATION
SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 164-165 PROJECT NO.: 16021 WBS NO.: 09 REPORT RESULTS IN: _____

ISSUED BY: R.T. Steele DATE: 10/8/92 CONTROLLING PROCEDURE: PNL-ALO-010

ANALYST: [illegible] DATE: 10-8-92 QA PLAN: ALO-003 IMPACT LEVEL: II

REVIEW: [illegible] DATE: 10/8/92 CORE ID: TKC-110

Cov. 32, 38, 39

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISCELLANEOUS
M90481	92-08303		PH	.9917								
	92-08305	E3		1.0030								
	92-08307			.9719								
	92-08309			1.1094								
	92-08311			1.0008								

Shielded Analytical Laboratory
Bench Sheet

Tank C-110
Fusion

Project Id.: SST

Project No.: M90481

Pu/U MS / Alpha Pu

92-08302, 92-08304 Core 37

	Sample Identification	Gross Wt. (g)	Tare Wt. (g)	Net Sample Wt. (g)
J726	92-08302-H-1	50.1503 ~~50.5778 gm~~	49.6265 ~~50.0329 g.~~	.5238 ~~0.5449 gm~~
"	92-08302-H-2	50.1142	49.5861	.5281
"	92-08302-H-3	—	—	—
J727	92-08304-H-1	51.5237	51.0151	.5086
"	92-08304-H-2	49.8079	49.3020	.5059

92-08302-H-3 is methods blank

Dry Wgts

92-08302-H1	92-08302-H2	92-08304-H1
50.3260	49.8247	51.2376
50.0329	49.5861	51.0151
~~0.7431 g.~~	.2386	.2225

92-08302-H1

49.8920
49.6265
.2655

92-08304-H2

49.5440
49.3020
.2420

Analyst: Lynda Chamberlain Date: 10-14-92

Reviewer: [illegible] Date: 10/14/92

20 ml 6M HCL / 100 ml tot. vol.

Procedures Used:

____	PNL-ALO-101, Acid Digestion for Metals Analysis
X	PNL-ALO-102, Fusion of Hanford Tank Waste Solids
____	PNL-ALO-103, Water Leach of Sludges, Soils, and Other Solid Samples
____	PNL-ALO-106, Acid Digestion for Preparation of Samples for Radiochemical Analysis
____	PNL-ALO-107, Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____	PNL-ALO-108, Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____	PNL-ALO-110, Toxicity Characteristic Leaching Procedure (TCLP) Extraction for Inorganic Contaminants
____	PNL-ALO-120, Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-121, Preparation and Cleanup of Hydrocarbon Containing Samples for the Analysis of Volatile Organic Compounds
____	PNL-ALO-122, Cleanup of Hydrocarbon Containing Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-130, Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____	PNL-ALO-213, Mercury in Water, Solids and Sludges by Manual Cold Vapor Technique
____	PNL-ALO-225, Measurement of pH in Aqueous Solution
____	PNL-ALO-330, Hexadecane Extracts for Volatile Organic Compounds
____	PNL-ALO-381, Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method
____	PNL-ALO-504, Percent Solids Determination of Soils/Sludges/Solids
____	7.40.9 Laboratory Procedure for the Physical Characterization of Fluids
____	7.40.16 Separation of Carbon from Soil/Sediment/Sludge Samples
____	7.40.25 Distillation of Caustic Trap Solutions for C-14 Separation
____	7.40.29 Specific Gravity of Highly Radioactive Solutions
____	7.40.34 Tritium in Irradiated Cladding Materials
____	7.40.36 Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____	7.40.37 Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____	7.40.42 Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges
X	TI-SST- 1164
____	Other _____

M&TE Used:

X	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D
____	Corning pH meter Model 240 S/N 6629		

SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 164 PROJECT NO.: 16021 WBS NO.: 09

L=LIQUID SAMPLE S=SOLID SAMPLE

ISSUED BY: Rick T. Steele DATE: 10/07/92 22

PREP TYPE: FUSION

ANALYST: Clyde Chambers DATE: 10-16-92

QA PLAN: ALO-003 IL: II

REVIEW: [illegible] DATE: 10/16/92

CORE ID: 37 TANK C-110

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	STAMPE	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISC.
M90482	92-08302-H-1	SEE BELOW	SEE BELOW	.5238	S		100						SAMPLE
	92-08302-H-2			.5281			↓						DUP
	92-08302-H-3			—									BLANK
	92-08304-H-1			.5086									SAMPLE
	92-08304-H-2			.5059									DUP
		PNL 2 30.6	Pu/U HS										
		PNL-ALO-423/421	ALPHA Pu										

Shielded Analytical Laboratory
Bench Sheet

Tank C-110
Fusion
Pu/U MS/Alpha Pu

Project Id.: SST

Project No.: M90481

92-08306 Core 38

92-08308, 92-08310 Core 39

	Sample Identification	Gross Wt. (g)	Tare Wt. (g)	Net Sample Wt. (g)
J728	92-08306-H-1	50.2204	49.7142	.5062
"	92-08306-H-2	48.4590	47.9174	.5416
"	92-08306-H-3	—	50.9308	—
J730	92-08308-H-1	50.0830	49.5737	.5093
"	92-08308-H-2	52.8780	52.3588	.5192
J731	92-08310-H-1	48.0775	47.5638	.5137
"	92-08310-H-2	52.3969	51.8936	.5033

92-08306-H-3 is methods blank

Dry Weight

92-08306-H-1	49.9337	49.7142	.2195	2.2
92-08306-H-2	48.1610	47.9174	.2436	2.3
92-08306-H-3	—	50.9308	—	2.2
92-08308-H-1	49.7914	49.5737	.2177	2.1
92-08308-H-2	52.5980	52.3588	.2392	2.4
92-08310-H-1	47.8103	47.5638	.2465	2.4
92-08310-H-2	52.1492	51.8936	.2556	2.5

Analyst: [signature] Date: 10/15/92

Reviewer: [signature] Date: 10-15-92

20 ml. 6 M HCL / 100 ml. vol.

Procedures Used:

____	PNL-ALO-101, Acid Digestion for Metals Analysis
X	PNL-ALO-102, Fusion of Hanford Tank Waste Solids
____	PNL-ALO-103, Water Leach of Sludges, Soils, and Other Solid Samples
____	PNL-ALO-106, Acid Digestion for Preparation of Samples for Radiochemical Analysis
____	PNL-ALO-107, Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____	PNL-ALO-108, Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____	PNL-ALO-110, Toxicity Characteristic Leaching Procedure (TCLP) Extraction for Inorganic Contaminants
____	PNL-ALO-120, Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-121, Preparation and Cleanup of Hydrocarbon Containing Samples for the Analysis of Volatile Organic Compounds
____	PNL-ALO-122, Cleanup of Hydrocarbon Containing Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-130, Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____	PNL-ALO-213, Mercury in Water, Solids and Sludges by Manual Cold Vapor Technique
____	PNL-ALO-225, Measurement of pH in Aqueous Solution
____	PNL-ALO-330, Hexadecane Extracts for Volatile Organic Compounds
____	PNL-ALO-381, Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method
____	PNL-ALO-504, Percent Solids Determination of Soils/Sludges/Solids
____	7.40.9 Laboratory Procedure for the Physical Characterization of Fluids
____	7.40.16 Separation of Carbon from Soil/Sediment/Sludge Samples
____	7.40.25 Distillation of Caustic Trap Solutions for C-14 Separation
____	7.40.29 Specific Gravity of Highly Radioactive Solutions
____	7.40.34 Tritium in Irradiated Cladding Materials
____	7.40.36 Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____	7.40.37 Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____	7.40.42 Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges
X	TI-SST-165, 166
____	Other _____

M&TE Used:

____	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D
____	Corning pH meter Model 240 S/N 6629		

SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 165, 166 PROJECT NO.: 16021 WBS NO.: 09

L=LIQUID SAMPLE S=SOLID SAMPLE

ISSUED BY: Rick T. Steele DATE: 10/07/92

PREP TYPE: FUSION

ANALYST: [illegible] DATE: 10-16-92

QA PLAN: ALO-003 IL: II

REVIEW: [illegible] DATE: 10/16/92

CORE ID: 38,39 TANK C-110

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	STAYMPPE	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISC.
M90482	92-08306-H-1	SEE BELOW	SEE BELOW	.5062	S		100 µl						SAMPLE
	92-08306-H-2			.5416									DUP
	92-08306-H-3			—									BLANK
	92-08308-H-1			.5093									SAMPLE
	92-08308-H-2			.5192									DUP
	92-08310-H-1			.5137									SAMPLE
	92 08310-H-2			.5033									DUP
		PNL 2.30.6	Pu/U MS										
		PNL-ALO-423/421	ALPHA Pu										

B02-010

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WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

Shielded Analytical Laboratory
Bench Sheet

Project Id.: SST

Project No.: M90481

Tank C-110 Core 38

SVOA (Re-Run)

92-8307-E1	92-8307-E2	92-8307-E3	92-8307-E4
33.2097	33.2968	33.6980	32.9777
32.1909	32.3431	32.7502	31.9414
1.0188	.9537	.9478	1.0363

Analyst: [signature] Date: 12/10/92

Reviewer: [signature] Date: 12/10/92

Procedures Used:

____	PNL-ALO-101, Acid Digestion for Metals Analysis
____	PNL-ALO-102, Fusion of Hanford Tank Waste Solids
____	PNL-ALO-103, Water Leach of Sludges, Soils, and Other Solid Samples
____	PNL-ALO-104, Extraction Procedure Toxicity
____	PNL-ALO-106, Acid Digestion for Preparation of Samples for Radiochemical Analysis
____	PNL-ALO-107, Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____	PNL-ALO-108, Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____	PNL-ALO-330 Hexadecane Extracts for Volatile Organic Compounds
____	PNL-ALO-504, Percent Solids Determination of Soils/Sludges/Solids
____	PNL-ALO-120, Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-130, Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____	WHC-053-1, Laboratory Procedure for Measurement of Physical and Rheological Properties of Solutions, Slurries and Sludges
____	7.40.9 Laboratory Procedure for the Physical Characterization of Fluids
____	7.40.16 Separation of Carbon from Soil/Sediment/Sludge Samples
____	7.40.24 Measurement of Carbon-14 in Zircaloy Cladding Crud Layer
____	7.40.25 Distillation of Caustic Trap Solutions for C-14 Separation
____	7.40.29 Specific Gravity of Highly Radioactive Solutions
____	7.40.30 Bulk Density of Highly Radioactive Free-Flowing Granular Solids
____	7.40.34 Tritium in Irradiated Cladding Materials
____	7.40.36 Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____	7.40.37 Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____	7.40.42 Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges
____	7.40.47 Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method
X	Other TI-SST-165

M&TE Used:

X	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D
____	Corning pH meter Model 240 S/N 6629		

Page 1 of 1

Shielded Analytical Laboratory
Bench Sheet

Additional Sample Request

Project Id.: Project No.: M-9048

Cores 37, 38, 39 Hi Fusion
Pu & U Isos
92-08302 H1, H2
04 " "
06 " "
08 " "
10 " "

Dispensed approx. 35 mls of remaining sample and delivered to K Pappel Rm 309.

Analyst: Charlie Chamberlin Date: 10-29-92

Reviewer: Robert Hicks Date: 11/2/92

Procedures Used:

____ PNL-ALO-101, Acid Digestion for Metals Analysis
____ PNL-ALO-102, Fusion of Hanford Tank Waste Solids
____ PNL-ALO-103, Water Leach of Sludges, Soils, and Other Solid Samples
____ PNL-ALO-104, Extraction Procedure Toxicity
____ PNL-ALO-106, Acid Digestion for Preparation of Samples for Radiochemical Analysis
____ PNL-ALO-107, Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____ PNL-ALO-108, Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____ PNL-ALO-330 Hexadecane Extracts for Volatile Organic Compounds
____ PNL-ALO-504, Percent Solids Determination of Soils/Sludges/Solids
____ PNL-ALO-120, Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____ PNL-ALO-130, Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____ WHC-053-1, Laboratory Procedure for Measurement of Physical and Rheological Properties of Solutions, Slurries and Sludges
____ 7.40.9 Laboratory Procedure for the Physical Characterization of Fluids
____ 7.40.16 Separation of Carbon from Soil/Sediment/Sludge Samples
____ 7.40.24 Measurement of Carbon-14 in Zircaloy Cladding Crud Layer
____ 7.40.25 Distillation of Caustic Trap Solutions for C-14 Separation
____ 7.40.29 Specific Gravity of Highly Radioactive Solutions
____ 7.40.30 Bulk Density of Highly Radioactive Free-Flowing Granular Solids
____ 7.40.34 Tritium in Irradiated Cladding Materials
____ 7.40.36 Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____ 7.40.37 Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____ 7.40.42 Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges
____ 7.40.47 Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method

X Other TI-SST-164, 165, 166

M&TE Used:

____	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D
____	Corning pH meter Model 240 S/N 6629		

Shielded Analytical Laboratory
Bench Sheet

Project Id.: SST

Project No.: M90481

Tank C-110
Cores 37, 38, ~~39~~ 10/6/92
Semi Vols

*92-08303-E1	-E2*	-E3	-E4
33.9834	33.6489	33.7668	34.2316
33.0388	32.6409	32.7392	33.1461
0.9446 g.	1.0080 g.	1.0276 g.	1.0855 g

92-08305-E1	-E2	-E3 (for PH)	E4
33.3078	33.2402	33.1472	
32.3342	32.1672	32.1442	32.2783
0.9736 g.	1.0730 g	1.0030 g.	

92-08307 E1	E2	E3	E4
33.9257	~~32.9785~~ ~~33.4713~~ cec	33.3670	33.5886
32.9159	32.0268	32.2976	32.6006
1.0098 g.	0.9517 g.	1.0694 g	0.9880 g

Analyst: Clyde Chamberlain Date: 10-8-92 Reviewer: [illegible] Date: 10/8/92

Procedures Used:

____	PNL-ALO-101,	Acid Digestion for Metals Analysis
____	PNL-ALO-102,	Fusion of Hanford Tank Waste Solids
____	PNL-ALO-103,	Water Leach of Sludges, Soils, and Other Solid Samples
____	PNL-ALO-104,	Extraction Procedure Toxicity
____	PNL-ALO-106,	Acid Digestion for Preparation of Samples for Radiochemical Analysis
____	PNL-ALO-107,	Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____	PNL-ALO-108,	Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____	PNL-ALO-330	Hexadecane Extracts for Volatile Organic Compounds
____	PNL-ALO-504,	Percent Solids Determination of Soils/Sludges/Solids
____	PNL-ALO-120,	Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-130,	Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____	WHC-053-1,	Laboratory Procedure for Measurement of Physical and Rheological Properties of Solutions, Slurries and Sludges
____	7.40.9	Laboratory Procedure for the Physical Characterization of Fluids
____	7.40.16	Separation of Carbon from Soil/Sediment/Sludge Samples
____	7.40.24	Measurement of Carbon-14 in Zircaloy Cladding Crud Layer
____	7.40.25	Distillation of Caustic Trap Solutions for C-14 Separation
____	7.40.29	Specific Gravity of Highly Radioactive Solutions
____	7.40.30	Bulk Density of Highly Radioactive Free-Flowing Granular Solids
____	7.40.34	Tritium in Irradiated Cladding Materials
____	7.40.36	Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____	7.40.37	Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____	7.40.42	Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges
____	7.40.47	Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method
X	Other	~~165~~ 166

M&TE Used:

X	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D
____	Corning pH meter Model 240 S/N 6629		

Shielded Analytical Laboratory
Bench Sheet

Project Id.: 55T

Project No.: M90481

TANK C-110 10/6/92
Cores ~~37-38~~, 39
Semi Vol

92-08309-E1	E2	E3	E4
32.9359	33.1333	33.3923	33.1129
31.9965	31.8831	32.3613	32.1549
0.9394 g.	1.2502 g.	1.0310 g.	0.9580 g.

92-08311-E1	E2
33.4025	33.1970
32.3994	32.1382
1.0031 g.	1.0588 g.

Analyst: [signature] Date: 10-8-92

Reviewer: [signature] Date: 10/9/92

Procedures Used:

____	PNL-ALO-101,	Acid Digestion for Metals Analysis
____	PNL-ALO-102,	Fusion of Hanford Tank Waste Solids
____	PNL-ALO-103,	Water Leach of Sludges, Soils, and Other Solid Samples
____	PNL-ALO-104,	Extraction Procedure Toxicity
____	PNL-ALO-106,	Acid Digestion for Preparation of Samples for Radiochemical Analysis
____	PNL-ALO-107,	Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____	PNL-ALO-108,	Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____	PNL-ALO-330	Hexadecane Extracts for Volatile Organic Compounds
____	PNL-ALO-504,	Percent Solids Determination of Soils/Sludges/Solids
____	PNL-ALO-120,	Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-130,	Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____	WHC-053-1,	Laboratory Procedure for Measurement of Physical and Rheological Properties of Solutions, Slurries and Sludges
____	7.40.9	Laboratory Procedure for the Physical Characterization of Fluids
____	7.40.16	Separation of Carbon from Soil/Sediment/Sludge Samples
____	7.40.24	Measurement of Carbon-14 in Zircaloy Cladding Crud Layer
____	7.40.25	Distillation of Caustic Trap Solutions for C-14 Separation
____	7.40.29	Specific Gravity of Highly Radioactive Solutions
____	7.40.30	Bulk Density of Highly Radioactive Free-Flowing Granular Solids
____	7.40.34	Tritium in Irradiated Cladding Materials
____	7.40.36	Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____	7.40.37	Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____	7.40.42	Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges
____	7.40.47	Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method
X	Other T:	163, 164

M&TE Used:

X	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D
____	Corning pH meter Model 240 S/N 6629		

SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 164, 165 PROJECT NO.: 16021 WBS NO.: 09

L=LIQUID SAMPLE S=SOLID SAMPLE

ISSUED BY: Rick T. Steele DATE: 10/07/92

PREP TYPE: None

ANALYST: [illegible] DATE: 10-8-92

QA PLAN: ALO-003 IL: II

REVIEW: [illegible] DATE: 10/8/92

CORE ID: 37,38,TANK C-110

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	SAMPLE TYPE	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISC.
M90483	92-08303-E-1	PNL-ALO-122/120/344/345	SVOA	.9446	S								SAMP
	92-08303-E-2			1.0080									DUP
	92-08303-E-3			1.0276									MS
	92-08303-E-4			1.0855									MSD
	92-08305-E-1			.9736									SAMP
	92-08305-E-2			1.0730									DUP
	92-08305-E-3	For PH		1.0030									MS
	92-08305-E-4	[illegible] 10/6/92											MSD
	92-08307-E-1			1.0098									SAMP
	92-08307-E-2			0.9517									DUP
	92-08307-E-3			1.0694									MS
	92-08307-E-4			0.9880									MSD

SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 166 PROJECT NO.: 16021 WBS NO.: 09

L=LIQUID SAMPLE S=SOLID SAMPLE

ISSUED BY: Rick T. Steele DATE: 10/07/92

PREP TYPE: None

ANALYST: [illegible] DATE: 10-8-92

QA PLAN: ALO-003 IL: II

REVIEW: [illegible] DATE: 10/8/92

CORE ID: 39 TANK C-110

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	STAYMPPE	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISC.
M9D483	92-08309-E-1	PNL-ALO-122/120/344/345	SVOA	.9394	S								SAMP
	92-08309-E-2			1.2502									DUP
	92-08309-E-3			1.0310									MS
	92-08309-E-4			.9580									MSD
	92-08311-E-1			1.0031									SAMP
	92 08311-E-2			1.0588									DUP
	~~92-08311-E-3~~	[illegible] 10/8/92											MS
	~~92-08311-E-4~~	[illegible] 10/8/92											MSD

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

B02-020

Shielded Analytical Laboratory
Bench Sheet
Tank C-110 Core 38

Project Id.: SST

VOA

Project No.: M90481

92-08297, 92-08298

	Sample Identification	Gross Wt. (g)	Tare Wt. (g)	Net Sample Wt. (g)
J-742	92-08297-M-1	25.1052	24.1789	0.9263
	92-08297-M-2	24.9863	24.0472	0.9391
	92-08297-M-3	25.2177	24.1689	1.0488
	92-08297-M-4	25.0140	23.9987	1.0153
J-745	92-08298-M-1	25.1013	24.1284	0.9729
	92-08298-M-2	25.4776	24.2943	1.1833
	~~92-08298-M-3~~	~~[illegible]~~ 10/9/92		
	~~92-08298-M-4~~	~~[illegible]~~ 10/9/92		

Analyst: [signature] Date: 10/15/92

Reviewer: [signature] Date: 10/16/92

Procedures Used:

____	PNL-ALO-101, Acid Digestion for Metals Analysis
____	PNL-ALO-102, Fusion of Hanford Tank Waste Solids
____	PNL-ALO-103, Water Leach of Sludges, Soils, and Other Solid Samples
____	PNL-ALO-106, Acid Digestion for Preparation of Samples for Radiochemical Analysis
____	PNL-ALO-107, Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____	PNL-ALO-108, Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____	PNL-ALO-110, Toxicity Characteristic Leaching Procedure (TCLP) Extraction for Inorganic Contaminants
____	PNL-ALO-120, Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-121, Preparation and Cleanup of Hydrocarbon Containing Samples for the Analysis of Volatile Organic Compounds
____	PNL-ALO-122, Cleanup of Hydrocarbon Containing Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-130, Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____	PNL-ALO-213, Mercury in Water, Solids and Sludges by Manual Cold Vapor Technique
____	PNL-ALO-225, Measurement of pH in Aqueous Solution
____	PNL-ALO-330, Hexadecane Extracts for Volatile Organic Compounds
____	PNL-ALO-381, Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method
____	PNL-ALO-504, Percent Solids Determination of Soils/Sludges/Solids
____	7.40.9 Laboratory Procedure for the Physical Characterization of Fluids
____	7.40.16 Separation of Carbon from Soil/Sediment/Sludge Samples
____	7.40.25 Distillation of Caustic Trap Solutions for C-14 Separation
____	7.40.29 Specific Gravity of Highly Radioactive Solutions
____	7.40.34 Tritium in Irradiated Cladding Materials
____	7.40.36 Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____	7.40.37 Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____	7.40.42 Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges
X	TI-SST-165
____	Other _____

M&TE Used:

X	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D
____	Corning pH meter Model 240 S/N 6629		

Shielded Analytical Laboratory
Bench Sheet

Project Id.: SST Tank C-110 Core 39 VOA Project No.: M90481

92-08299, 92-08300, 92-08301

Sample Ident	Gross wt(g)	Tare wt(g)	Net Sample wt. (g)
92-08299-M1	33.0105	32.0050	1.0055
M2	33.3699	32.2699	1.1000
M3	33.1237	32.1072	1.0165
M4	33.2794	32.0603	1.2191
92-08300-M1	33.0750	31.9994	1.0756
M2	33.3311	32.1817	1.1494
92-08301-M1	33.0284	32.0923	0.9361
M2	33.1157	31.8695	1.2462

Analyst: [signature] Date: 10/15/92

Reviewer: [signature] Date: 10/16/92

Procedures Used:

____	PNL-ALO-101,	Acid Digestion for Metals Analysis
____	PNL-ALO-102,	Fusion of Hanford Tank Waste Solids
____	PNL-ALO-103,	Water Leach of Sludges, Soils, and Other Solid Samples
____	PNL-ALO-106,	Acid Digestion for Preparation of Samples for Radiochemical Analysis
____	PNL-ALO-107,	Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____	PNL-ALO-108,	Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____	PNL-ALO-110,	Toxicity Characteristic Leaching Procedure (TCLP) Extraction for Inorganic Contaminants
____	PNL-ALO-120,	Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-121,	Preparation and Cleanup of Hydrocarbon Containing Samples for the Analysis of Volatile Organic Compounds
____	PNL-ALO-122,	Cleanup of Hydrocarbon Containing Samples for the Analysis of Semivolatile Organic Compounds
____	PNL-ALO-130,	Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____	PNL-ALO-213,	Mercury in Water, Solids and Sludges by Manual Cold Vapor Technique
____	PNL-ALO-225,	Measurement of pH in Aqueous Solution
____	PNL-ALO-330,	Hexadecane Extracts for Volatile Organic Compounds
____	PNL-ALO-381,	Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method
____	PNL-ALO-504,	Percent Solids Determination of Soils/Sludges/Solids
____	7.40.9	Laboratory Procedure for the Physical Characterization of Fluids
____	7.40.16	Separation of Carbon from Soil/Sediment/Sludge Samples
____	7.40.25	Distillation of Caustic Trap Solutions for C-14 Separation
____	7.40.29	Specific Gravity of Highly Radioactive Solutions
____	7.40.34	Tritium in Irradiated Cladding Materials
____	7.40.36	Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____	7.40.37	Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____	7.40.42	Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges
X	TI-SST- 166	
____	Other ____	

M&TE Used:

X	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D
____	Corning pH meter Model 240 S/N 6629		

SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 165 PROJECT NO.: 16021 WBS NO.: 09

L=LIQUID SAMPLE S=SOLID SAMPLE

ISSUED BY: Rick T. Steele DATE: 10/07/92

PREP TYPE: None

ANALYST: [illegible] DATE: 10/15/92

QA PLAN: ALO-003 IL: II

REVIEW: Rick T. Steele DATE: 10/16/92

CORE ID: 38 TANK C-110

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	STAYMPPE	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISC.
M90483	92-08297-M-1	PNL-ALO-121/335	VOA	0.9263	S								SAMP
	92-08297-M-2			0.9371									DUP
	92-08297-M-3			1.0498									MS
	92-08297-M-4			1.0153									MSD
	92-08298-M-1			0.9729									SAMP
	92-08298-M-2			1.1833									DUP
	~~92-08298-M-3~~	[illegible] 10/7/92											MS
	~~92-08298-M-4~~	[illegible] 10/7/92											MSD

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

B02-025

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SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 166 PROJECT NO.: 16021 WBS NO.: 09

L=LIQUID SAMPLE S=SOLID SAMPLE

ISSUED BY: Rick T. Steele DATE: 10/07/92

PREP TYPE: None

ANALYST: [illegible] DATE: 10/15/92

QA PLAN: ALO-003 IL: II

REVIEW: Rick T. Steele DATE: 10/16/92

CORE ID: 39 TANK C-110

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	STAMPE	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISC.
M90483	92-08299-M-1	PNL-ALO-121/335	VOA	1.0055	S								SAMP
	92-08299-M-2			1.1000									DUP
	92-08299-M-3			1.0165									MS
	92-08299-M-4			1.2191									MSD
	92-08300-M-1			1.0256									SAMP
	92-08300-M-2			1.1494									DUP
	92-08301-M-1			0.9361									SAMP
	92-08301-M-2			1.2462									DUP

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

B02-026

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Shielded Analytical Laboratory
Bench Sheet
Tank C-110, Core 37,38,39
92-08303, 92-08305, 92-08307
92-08309, 92-08311
EOX / TOX

Project Id.: SST

Project No.: M90481

	Sample I.D.	Gross Wt. (g)	Tare Wt. (g)	Net Sample Wt. (g)
Core 37	92-08303-F-1	25.0287	24.1220	0.9067
	92-08303-F-2	25.~~48~~ 3597 10/9/92	24.3349	1.0248
	92-08303-F-3	Blank	—	—
	92-08303-F-4	25.1342	24.1953	0.9389
	92-08305-F-1	25.3770	24.2947	1.0823
	92-08305-F-2	25.3572	24.3717	0.9855
	~~92-08305-F-3~~	10/9/92	—	—
	92-08305-F-4	25.4607	24.3421	1.1186
Core 38	92-08307-F-1	25.3773	24.4192	0.9581
	92-08307-F-2	25.3071	24.2674	1.0397
	92-08307-F-3	Blank	—	—
	92-08307-F-4	25.0058	24.0483	0.9575
Core 39	92-08309-F-1	25.7124	24.4996	1.2128
	92-08309-F-2	25.6845	24.4335	1.2510
	92-08309-F-3	Blank	—	—
	92-08309-F-4	25.5235	24.3987	1.1248
	92-08311-F-1	25.6006	24.4434	1.1572
	92-08311-F-2	25.3582	24.3183	1.0399
	~~92-08311-F-3~~	10/9/92	—	—
	92-08311-F-4	25.7507	24.3579	1.3928

Analyst: [signature] Date: 10-12-92

Reviewer: [signature] Date: 10/12/92

Procedures Used:

____ PNL-ALO-101, Acid Digestion for Metals Analysis
____ PNL-ALO-102, Fusion of Hanford Tank Waste Solids
____ PNL-ALO-103, Water Leach of Sludges, Soils, and Other Solid Samples
____ PNL-ALO-106, Acid Digestion for Preparation of Samples for Radiochemical Analysis
____ PNL-ALO-107, Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____ PNL-ALO-108, Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____ PNL-ALO-110, Toxicity Characteristic Leaching Procedure (TCLP) Extraction for Inorganic Contaminants
____ PNL-ALO-120, Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____ PNL-ALO-121, Preparation and Cleanup of Hydrocarbon Containing Samples for the Analysis of Volatile Organic Compounds
____ PNL-ALO-122, Cleanup of Hydrocarbon Containing Samples for the Analysis of Semivolatile Organic Compounds
____ PNL-ALO-130, Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____ PNL-ALO-213, Mercury in Water, Solids and Sludges by Manual Cold Vapor Technique
____ PNL-ALO-225, Measurement of pH in Aqueous Solution
____ PNL-ALO-330, Hexadecane Extracts for Volatile Organic Compounds
____ PNL-ALO-381, Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method
____ PNL-ALO-504, Percent Solids Determination of Soils/Sludges/Solids
____ 7.40.9 Laboratory Procedure for the Physical Characterization of Fluids
____ 7.40.16 Separation of Carbon from Soil/Sediment/Sludge Samples
____ 7.40.25 Distillation of Caustic Trap Solutions for C-14 Separation
____ 7.40.29 Specific Gravity of Highly Radioactive Solutions
____ 7.40.34 Tritium in Irradiated Cladding Materials
____ 7.40.36 Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____ 7.40.37 Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____ 7.40.42 Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges

X TI-SST- 164, 165

____ Other _____

M&TE Used:

X	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D

____ Corning pH meter Model 240 S/N 6629

SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 164, 165 PROJECT NO.: 16021 WBS NO.: 09

L=LIQUID SAMPLE S=SOLID SAMPLE

ISSUED BY: Rick T. Steele DATE: 10/07/92

PREP TYPE: None

ANALYST: [illegible] DATE: 10-12-92

QA PLAN: ALO-003 IL: II

REVIEW: [illegible] DATE: 10/8/92

CORE ID: 37,38,TANK C-110

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	STAYMPPE	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISC.
M90483	92-08303-F-1	PNL-ALO-320/321	EOX/TOX	.9067	S								SAMP
	92-08303-F-2			1.0348									DUP
	92-08303-F-3			—	BLK								BLK
	92-08303-F-4			.9389									SA SPK
	92-08305-F-1			1.0823									SAMP
	92-08305-F-2			.9855									DUP
	~~92-08305-F-3~~	JAA 10/8/92											BLK
	92-08305-F-4			1.1186									SA SPK
	92-08307-F-1			.9581									SAMP
	92-08307-F-2			1.0397									DUP
	92-08307-F-3												BLK
	92-08307-F-4			0.9575									SA SPK

SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 166 PROJECT NO.: 16021 WBS NO.: 09

L=LIQUID SAMPLE S=SOLID SAMPLE

ISSUED BY: Rick T. Steele DATE: 10/07/92

PREP TYPE: None

ANALYST: Cyndi Chamberlain DATE: 10-12-92

QA PLAN: ALO-003 IL: II

REVIEW: [illegible] DATE: 10/12/92

CORE ID: 39 TANK C-110

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	STAMPE	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISC.
M90483	92-08309-F-1	PNL-ALO-320/321	EOX/TOX	1.2128	S								SAMP
	92-08309-F-2			1.2510									DUP
	92-08309-F-3			—	BLK								BLK
	92-08309-F-4			1.1248									SA SPK
	92-08311-F-1			1.1572									SAMP
	92-08311-F-2			1.0399									DUP
	~~92-08311-F-3~~	[illegible] 10/9/92		—									BLK
	92-08311-F-4			1.3928									SA SPK

Shielded Analytical Laboratory
Bench Sheet

Project Id.: Tank C-110 Core 38 Drainable Liquid

Project No.: M 90481

Acid Digestion ~~for Radchem~~
92-09437-J795
Dispensed 5ml for Radchem group

TOX / EOX
SVOA
92-09437-J795
Dispensed all remaining liquid into one vial.

Analyst:	Date:	Reviewer:	Date:
Cindy Chamberlin	10-7-92	[illegible]	10/7/92

Procedures Used:

____ PNL-ALO-101, Acid Digestion for Metals Analysis
____ PNL-ALO-102, Fusion of Hanford Tank Waste Solids
____ PNL-ALO-103, Water Leach of Sludges, Soils, and Other Solid Samples
____ PNL-ALO-104, Extraction Procedure Toxicity
____ PNL-ALO-106, Acid Digestion for Preparation of Samples for Radiochemical Analysis
____ PNL-ALO-107, Leach Procedure for Preparing Sludges, Soils and Other Solid Samples for Free Cyanide Analysis
____ PNL-ALO-108, Aqueous Leach of Sludges, Soils and Other Solid Samples for Anion Analysis
____ PNL-ALO-330 Hexadecane Extracts for Volatile Organic Compounds
____ PNL-ALO-504, Percent Solids Determination of Soils/Sludges/Solids
____ PNL-ALO-120, Procedure for Extraction of Single Shell Tank Samples for the Analysis of Semivolatile Organic Compounds
____ PNL-ALO-130, Procedure for the Receipt and Inspection of Single Shell Tank (SST) Samples
____ WHC-053-1, Laboratory Procedure for Measurement of Physical and Rheological Properties of Solutions, Slurries and Sludges
____ 7.40.9 Laboratory Procedure for the Physical Characterization of Fluids
____ 7.40.16 Separation of Carbon from Soil/Sediment/Sludge Samples
____ 7.40.24 Measurement of Carbon-14 in Zircaloy Cladding Crud Layer
____ 7.40.25 Distillation of Caustic Trap Solutions for C-14 Separation
____ 7.40.29 Specific Gravity of Highly Radioactive Solutions
____ 7.40.30 Bulk Density of Highly Radioactive Free-Flowing Granular Solids
____ 7.40.34 Tritium in Irradiated Cladding Materials
____ 7.40.36 Analysis of Solid Samples for Carbonate by Use of Coulometrics Model 5011 Coulometer.
____ 7.40.37 Determination of Carbon in Solids Using the Coulometrics Carbon Dioxide Coulometer
____ 7.40.42 Determination of Carbon-14 in Radioactive Liquids, Soils, and Sludges
____ 7.40.47 Determination of TC,TOC and TIC in Radioactive Liquids, Soils, and Sludges by Hot Persulfate Method

X Other TI-SST-165

M&TE Used:

____	Cell 2 Balance	360-06-01-016	Mettler AE 160
____	Cell 6 Balance	362-06-01-038	Mettler AE 200
____	Counter Balance	360-06-01-024	Sartorius R 200D
____	Corning pH meter Model 240 S/N 6629		

SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 165 PROJECT NO.: 16021 WBS NO.: 09

L=LIQUID SAMPLE S=SOLID SAMPLE

ISSUED BY: Rick T. Steele DATE: 10/07/92

PREP TYPE: None

ANALYST: [signature] DATE: 10/7/92

QA PLAN: ALO-003 IL: II

REVIEW: Rick T. Steele DATE: 10/7/92

CORE ID: 38 Drainable Liquid

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	STAMPE	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISC.
M90482	92-09437	PNL 2.30.5	Pu/U HS		L								See below
		PNL-ALO-423/421	Alpha Pu										
Radchem	must prep this	sample using PNL-ALO-101	Samples	will be:	92-	09437-	A1	SAMP					
							A2	DUP					
							A3	BLANK					

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

B02-033

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SAMPLE PREP DATA SHEET
(325-B Hot Cells)

TI NO.: 165 PROJECT NO.: 16021 WBS NO.: 09

L=LIQUID SAMPLE S=SOLID SAMPLE

ISSUED BY: Rick T. Steele DATE: 10/07/92

PREP TYPE: None

ANALYST: Cindy Chambers DATE: 10-7-92

QA PLAN: ALO-003 IL: II

REVIEW: [illegible] DATE: 10/7/92

CORE ID: 38 DRAINABLE LIQ

WORK PACKAGE NO.	ALO NUMBER	Analytical Procedure	Analyte or Analysis	SAMPLE WT	STAMPE	WATER WT (g)	TOTAL VOL (mL)	SPIKE ID	SPIKE VOL (mL)	DILUTION FACTOR	DILUENT MATRIX	PIPET CALIB (mL)	MISC.
M90483	92-09437	PNL-ALO-122/120/344/345	SVOA		L								Entire Sample
		PNL-ALO-320/321	TOX/EOX										↓

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SINGLE SHELL TANK WASTE CHARACTERIZATION PROJECT

APPENDIX C

PHYSICAL PROPERTIES

Cores 37/38/39 DATA REPORT

Tank C-110

Revision 0

Pacific Northwest Laboratory

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C1 - INTRODUCTION

Introduction to Physical Properties Primary Data Package

This section of Cores 37/38/39 Primary Data Package contains primary or "raw" data collected during preparation and analysis of physical properties on Cores 37/38/39 samples. Samples are assigned a laboratory sample number which is used for tracking. Weight percent solids data was obtained for samples prepared by KOH fusion.

The rheologic properties were measured for the segments 2 and 4 from Core 37.

C2 - LABORATORY ANALYST

SIGNATURE LIST

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A HOT CELL ANALYST SIGNATURE LIST

ANALYST NAME	INITIALS	WRITTEN NAME	INITIALS
Thomas K. Andrews	TKA	TK Andrews	TKA
H. Craig Buchanan	HCB	H. Craig Buchanan	HCB
Garry M. Richardson	GMR	GM Richardson	GMR
Elmer H. Shade	EHS	Elmer H. Shade	EHS
Joel M. Tingey	JMT	Joel M Tingey	JMT

B HOT CELL ANALYST SIGNATURE LIST

ANALYST NAME	INITIALS	WRITTEN NAME	INITIALS
Clyde E. Chamberlin	CEC	Clyde E. Chamberlin	CEC.
F. Vaughn Hoopes	FVH	F. Vaughn Hoopes	FVH
Shawn A. Homi	SAH	Shawn A. Homi	S.H.
John K. Rau	JKR	John K. Rau	JKR
Rick T. Steele	RTS	Rick T. Steele	RTS

C3 - PERCENT SOLIDS ANALYSIS

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CURRENT DATE: October 28, 1992

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - Wt % Solids

Data Package/Report - Cores 37, 38, & 39

ALO Numbers - Core 37: 92-08302-K1 92-08302-K2 92-08304-K1 92-08304-K2

Core 38: 92-08306-K1 92-08306-K2

Core 39: 92-08308-K1 92-08308-K2 92-08310-K1 92-08310-K2

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

10/30/92
Date

Exhibit 1
Page 1 of 1

PERCENT SOLIDS DATA FORM

DATE 10-13-92 SAMPLE ID # 92-08302-K-1

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.0670 10-20-92

Tare Wt.: 8.5651

Wet Sample Wt: = .5019

Time/Date into Oven: 15:45pm 10-12-92 Oven Temp: 107 °C

Time/Date out Oven: 10:00 Am 10-13-92 Oven Temp: 105 °C

Tare Wt. + Dry Sample: 8.7948

Tare Wt.: 8.5651

Dry Sample Wt.: .2297

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 45.77 %

PERCENT SOLIDS DATA FORM

DATE 10-13-92 SAMPLE ID # 92-08302-2-2

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.5686

Tare Wt.: 9.0597

Wet Sample Wt: = .5089

Time/Date into Oven: 15:45 Pm 10-12-92 Oven Temp: 107 °C

Time/Date out Oven: 10.00 Am 10-13-92 Oven Temp: 105 °C

Tare Wt. + Dry Sample: 9.2904

Tare Wt.: 9.0597

Dry Sample Wt.: .2307

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 45.33 %

Exhibit 1
Page 1 of 1

PERCENT SOLIDS DATA FORM

DATE 10-13-92 SAMPLE ID # 92-08304-K-1

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.1126

Tare Wt.: 8.5483

Wet Sample Wt: = .5643

Time/Date into Oven: 1:45 PM 10-12-92 Oven Temp: 107°C

Time/Date out Oven: 10:00 AM 10-13-92 Oven Temp: 105°C

Tare Wt. + Dry Sample: 8.8010

Tare Wt.: 8.5483

Dry Sample Wt.: .2527

% Solids = (Dry Sample Wt.) / (Wet Sample Wt.) X 100%

% Solids = 44.78 %

PERCENT SOLIDS DATA FORM

DATE 10-13-92 SAMPLE ID # 92-08304-K-2

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.6634

Tare Wt.: 9.1448

Wet Sample Wt: = .5186

Time/Date into Oven: 1545 pm 10-13-92 Oven Temp: 107 °C

Time/Date out Oven: 1010 AM 10-13-92 Oven Temp: 105 °C

Tare Wt. + Dry Sample: 9.3735

Tare Wt.: 9.1448

Dry Sample Wt.: .2287

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 44.10 %

Exhibit 1
Page 1 of 1

PERCENT SOLIDS DATA FORM

DATE 10-14-92 SAMPLE ID # 92-08306-K-1

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.6206

Tare Wt.: 9.0743

Wet Sample Wt: = .5463

Time/Date into Oven: 15:45 10-12-92 Oven Temp: 107 °C

Time/Date out Oven: 10:00 10-13-92 Oven Temp: 105 °C

Tare Wt. + Dry Sample: 9.2947

Tare Wt.: 9.0743

Dry Sample Wt.: .2204

$$\% \text{ Solids} = \frac{(\text{Dry Sample Wt.})}{(\text{Wet Sample Wt.})} \times 100\%$$

% Solids = 40.34 %

PERCENT SOLIDS DATA FORM

DATE 10-14-92 SAMPLE ID # 92-08306-K-2

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.5192

Tare Wt.: 9.0011

Wet Sample Wt: = .5181

Time/Date into Oven: 1545 10-12-92 Oven Temp: 107 °C

Time/Date out Oven: 1000 10-13-92 Oven Temp: 105 °C

Tare Wt. + Dry Sample: 9.2183

Tare Wt.: 9.0011

Dry Sample Wt.: .2172

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 41.92 %

PERCENT SOLIDS DATA FORM

DATE 10-14-92 SAMPLE ID # 92-083UX-K-1

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.1853

Tare Wt.: 8.6419

Wet Sample Wt: = .5434

Time/Date into Oven: 1545 10-12-92 Oven Temp: 107°C

Time/Date out Oven: 1000 10-13-92 Oven Temp: 105°C

Tare Wt. + Dry Sample: 8.8604

Tare Wt.: 8.6419

Dry Sample Wt.: .2185

% Solids = (Dry Sample Wt.) / (Wet Sample Wt.) X 100%

% Solids = 40.21 %

PERCENT SOLIDS DATA FORM

DATE 10-14-92 SAMPLE ID # 92-08308-K-2

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.1960

Tare Wt.: 8.6868

Wet Sample Wt: = .5092

Time/Date into Oven: 15:45 10-12-92 Oven Temp: 107°C

Time/Date out Oven: 1000 10-13-92 Oven Temp: 105°C

Tare Wt. + Dry Sample: 8.9032

Tare Wt.: 8.6868

Dry Sample Wt.: .2164

$$\% \text{ Solids} = \frac{(\text{Dry Sample Wt.})}{(\text{Wet Sample Wt.})} \times 100\%$$

% Solids = 42.50 %

PERCENT SOLIDS DATA FORM

DATE 10-14-92 SAMPLE ID # 92-08310-R-1

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: 9.1857

Tare Wt.: 8.6710

Wet Sample Wt: = .5147

Time/Date into Oven: 15:45 10-12-92 Oven Temp: 107 °C

Time/Date out Oven: 1600 10-13-92 Oven Temp: 105°C

Tare Wt. + Dry Sample: 8.9138

Tare Wt.: 8.6710

Dry Sample Wt.: .2428

$$\% \text{ Solids} = \frac{(\text{Dry Sample Wt.})}{(\text{Wet Sample Wt.})} \times 100\%$$

% Solids = 47.17 %

PERCENT SOLIDS DATA FORM

DATE 10-11-92 SAMPLE ID # 92-08310-X-2

ANALYST [illegible] REVIEWER [illegible]

Tare Wt. + Wet Sample: ~~9.0208~~ 9.5547 10-20-92

Tare Wt.: ~~.5339~~ 9.0208 10-20-92

Wet Sample Wt: = .5339

Time/Date into Oven: 15:45 10-12-92 Oven Temp: 107 °C

Time/Date out Oven: 10:00 10-13-92 Oven Temp: 105 °C

Tare Wt. + Dry Sample: 9.2726

Tare Wt.: 9.0208

Dry Sample Wt.: .2518

$$\% \text{ Solids} = \frac{\text{(Dry Sample Wt.)}}{\text{(Wet Sample Wt.)}} \times 100\%$$

% Solids = 47.16 %

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C4 - RHEOLOGIC ANALYSIS

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

RHEOLOGY AND PHYSICAL TESTING TEST INSTRUCTIONS

C04-002

90

PHYSICAL AND RHEOLOGICAL PROPERTIES TESTING

Samples from two segments of Core 37 from Tank 241-C-110 were received at PNL's High-Level Radiochemistry Facility (325-A Hot-Cell facility). These samples were prepared at Westinghouse Hanford Company's (WHC) 222-S laboratory. These samples were from segments 2 and 4. The samples were labeled as J738 (segment 2) and J739 (segment 4). The condition of the samples upon receipt is recorded on the sample receipt description forms found in Appendix C.

The rheological testing on these samples included shear strength and shear stress as a function of shear rate. The physical properties which were measured included wt% solids, settling behavior, and wt% dissolved solids. Settling behavior included both settling rates, vol% settled solids, and wt% and vol% centrifuged solids. The settling velocity and vol% settled solids were performed on 1:1 and 3:1 water/sample dilutions. Shear stress as a function of shear rate were also performed on the diluted samples at both ambient temperature and 95°C.

Experimental Procedures

Density

Solid samples were placed in preweighed, volume-graduated, centrifuge tubes where they were weighed and then centrifuged for 1 hr at >1000 gravities to remove voids. This ensured accurate volume measurements and allowed division of the sample mass by the sample volume to obtain density.

Liquid samples were placed in preweighed volumetric flasks up to the volume line, weighed, and the densities were calculated.

Solids Settling Rate and Volume Percent Settled Solids

Settling rates and volume percent settled solids measurements were conducted in preweighed, volume-graduated, centrifuge tubes. The cross-sectional area in the upper portion of the centrifuge tube is constant thus allowing the conversion of settling rate data from mL/hr to cm/hr.

After the settling rates were determined, the volume percent settled solids were calculated by dividing the final settled solids volume by the total sample volume.

Volume Percent and Weight Percent Centrifuged Solids and Supernate

Following the settling-rate measurements above, the samples were centrifuged for 1 hr at >1000 gravities. Total sample volume and solids volume were determined using the graduations on the centrifuge tubes thus allowing the volume percentages of both solids and supernate to be calculated.

Weight percentages of the centrifuged solids and supernate were determined by decanting or pipeting the centrifuged supernate into a preweighed vial. This allowed weighing supernate and the solids remaining in the centrifuge tubes independently. The weight percentages of each were then calculated.

Weight Percent Solids and Undissolved Solids

Samples were placed into preweighed vials, weighed, and allowed to air-dry overnight to remove free liquid to prevent splattering in the oven. Then the samples were transferred to a drying oven at 105 ± 5°C where they were dried for 24 hr. The dried samples were removed from the oven, placed in a desiccator to cool to room temperature, reweighed, and the weight percent total solids was calculated.

Determinations of the weight percentage of undissolved solids were performed with supernate samples in the same manner as described above for the measurement of weight percent total solids in solid or slurry samples. The percentage of dissolved solids in the supernate was multiplied by the percentage of supernate in the sample to arrive at the percentage of dissolved solids in the total sample. The percentage of undissolved solids was calculated by subtracting the percentage of dissolved solids from the wt% total solids.

Shear Strength

Shear strength (τ_s) is a semiquantitative measure of the force required to move the sample. Since this property is dependent upon sample history, the shear strength was measured before the sample was disturbed. The shear strength was measured with a Haake RV100 viscometer with a M5 head and a shear vane manufactured at PNL. Technical procedure PNL-ALO-501 was used to perform these measurements. The sample was placed in the water bath at the specified temperature and left for a minimum of 1 hour. A shear vane with the dimensions H_v = 0.635 cm (height) and D_v = 0.635 cm (diameter) was placed in

the sample and rotated at a shear rate of 0.3 rpm. The shear stress (S_τ) of the sample was recorded as a function of time. The shear strength was then calculated according to equation 1 where 4.9×10^5 is the maximum torque of the M5 head and $\%\tau/100$ is the ratio of the total torque which is recorded as full scale on the plot of the shear stress.

$$\tau_s = \frac{\frac{\%\tau}{100} \times S_\tau \times 4.90 \times 10^5}{\frac{\pi \times H_v \times D_v^2}{2} + \frac{\pi \times D_v^3}{6}} \qquad (1)$$

Shear Stress versus Shear Rate

For the samples which could be poured (the convective liquid samples from window C), the shear stress of the sample as a function of shear rate was determined using a Haake RV100 viscometer with a M5 head and a MVI sensing system. Calibration checks were made with certified 50 and 10 cP viscosity standards to ensure that the viscometer was operating properly. Technical procedure PNL-ALO-501 was used to perform these measurements. The sample was thoroughly agitated, and 40 ml of the sample was transferred to the viscometer cup. The cup was moved up into the shroud which was controlled at the desired temperature with a constant temperature bath. The sample was held at this temperature for 1 hour and then agitated before the measurement was made. The shear rate was gradually ramped from 0 to 468 s^{-1} and the shear stress recorded as function of shear rate. The viscosity was then calculated by dividing the shear stress by the shear rate. The yield stress was also obtained from this measurement.

A rheogram for a material with a yield stress will have two portions to it. The first portion appears as a nearly vertical line beginning at the origin and running up the ordinate. This portion of the rheogram is recording the behavior of the material as it acts like a solid or gel. When sufficient force is transmitted to the material to break the gel or make it yield, the rheogram will angle sharply to the right, and from then on the behavior of the material as a fluid is recorded. The point in the curve at which the sample transfers from a solid or gel to a fluid is the yield point. The stress at this point measured in Pascals on the ordinate is the value of the yield stress.

For the remaining samples, the shear stress of the sample as a function of shear rate was determined using a Haake RV100 viscometer with a M5 head and a cone and plate sensing system. The cone used for these measurements has a pitch of approximately 0.5°. Calibration checks were made with certified 500 and 1000 cP viscosity standards to ensure that the equipment was operating properly. Technical Procedure PNL-ALO-502 was used to perform these measurements. The sample was thoroughly agitated and placed in a water bath at the desired temperature. The sample was allowed to sit at this temperature for a minimum of 1 hour. Approximately 1 gram of sample was transferred to the viscometer plate which was also heated to the desired temperature. The cone was brought down to the sample plate until the cone touched the plate. The cone was then moved up slightly so it did not contact the plate. The shear rate was gradually ramped from 0 to 500 s^{-1} and the shear stress recorded as function of shear rate. The viscosity and yield stress using this technique are calculated in the same manner as is used with the MVI sensing system.

Physical Properties

The physical properties of segments 2 and 4 are summarized in Table 1. This summary includes volume percent settled solids, volume and weight percent centrifuged solids, density of the segment material and the centrifuged supernate and solids, and weight percent total solids and undissolved solids.

Table 1. Physical Properties Summary

Property	Segment 2	Segment 4
Settled Solids (vol%)	100	100
Centrifuged Solids		
(vol%)	75.7	76.2
(wt%)	80.0	81.6
Density (g/ml)		
Sample	1.41	1.48
Centrifuged Supernate	1.15	1.13
Centrifuged Solid	1.49	1.59
Wt% Solids	40.3	28.4
Wt% Undissolved Solids	35.3	20.3

The data in Table 1 indicates that segment 2 contains a higher percentage of solids than segment 4. The density of the centrifuged solids in segment 4 (1.59 g/ml) is larger than observed in segment 2 (1.49 g/ml). The average centrifuged supernate density for both segments is 1.14 ± 0.03 g/ml.

As can be seen form Table 1, no settling was observed in the as received segment samples over a period of 3 days. Two dilutions (1:1 and 3:1 water to sample) were prepared for each of the segments. The volume percent settled solids for each of the dilutions prepared from samples of segments 2 and 4 are plotted as a function of settling time in Figures 1 and 2, respectively. Duplicate measurements for each of the dilutions are plotted in these figures. The lines just connect the points and are not an indication of any curve fit.

For segments 2 and 4, the 1:1 dilution reaches a final vol% settled solids of 60 and 63%, respectively. In both segments the majority of the settling is observed in the first 24 hours. The 1:3 dilutions of both segment 2 and 4 reach a final volume percent settled solids of 32%. For both of these

segments the majority of the solids settling is complete within 24 hours. The volume percent settled solids for the 1:3 dilution shows approximately a factor of 2 decrease as would be expected if no significant change in the particle morphology, size, or density was observed.

Rheological Properties

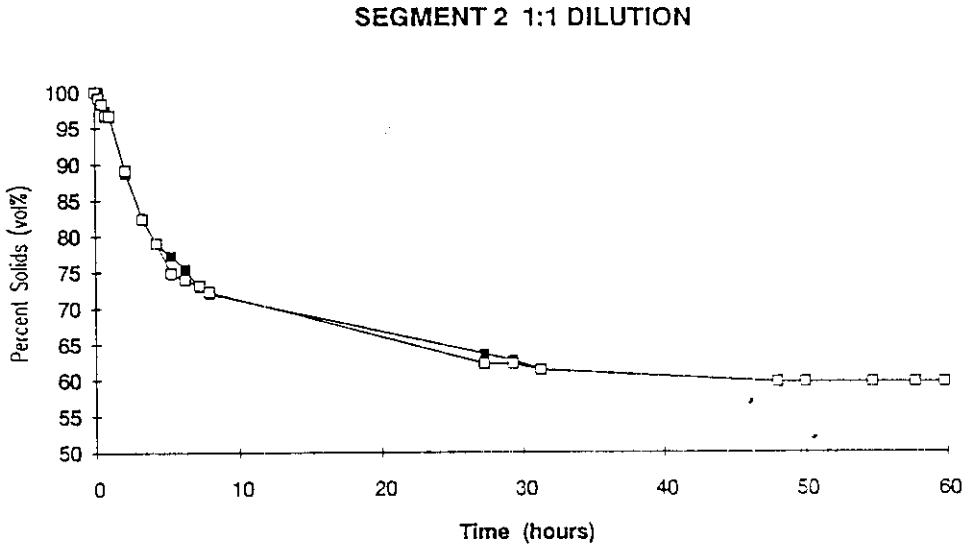
The shear strength of all the segment samples was 5000 ± 2200 dynes/cm^2. Even though the measured shear strength is low, it is well above the baseline (200 dynes/cm^2).

Shear stress as a function of shear rate on the undiluted segment samples were run in at ambient temperature and 95°C, but due to drying of the sample, and the slipperiness of the samples valid data could not be obtained. At ambient temperature the cone tended to slip over the sample, and a peak in the shear stress of both samples was observed at low shear rates. Slippage tends to increase with increased shear rate; therefore, a peak is observed at low shear rates followed by a decrease in shear stress as shear rate is increased. This type of behavior is generally observed with materials similar to greases and lubricants. At 95°C the samples dried out before the measurement could be completed, and the shear stress of the sample increased steeply as the sample dried. Valid measurements at ambient temperature could possibly be performed at low shear rate (< 1 s^{-1}) or with an oscillation method. At 95°C a sealed system which held the moisture in the system would be required. This may be accomplished by surrounding the sample with oil.

Rheological properties were measured in duplicate on the dilutions of segment samples 2 and 4 at both ambient and 95°C. These measurements do provide valid viscosity data. At high shear rates (200 - 500 1/s), all of the diluted samples have viscosities of 5 cP or less which is near the detection limit of the system (2 cP). Both segments exhibit yield psuedoplastic behavior, but at viscosities near the detection limit it is difficult to perform accurate modeling of this data. Significant decreases in the viscosity of the samples are observed as the temperature of the sample is increased.

Plots of shear stress and viscosity as a function of shear rate for the dilutions are attached at in Appendix C of this report.

Figure 1: Segment 2 Dilutions



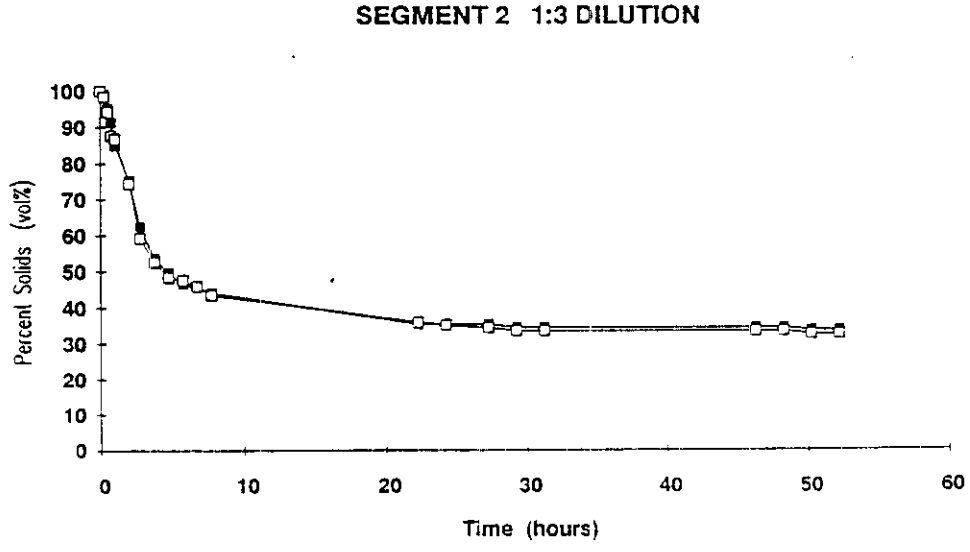
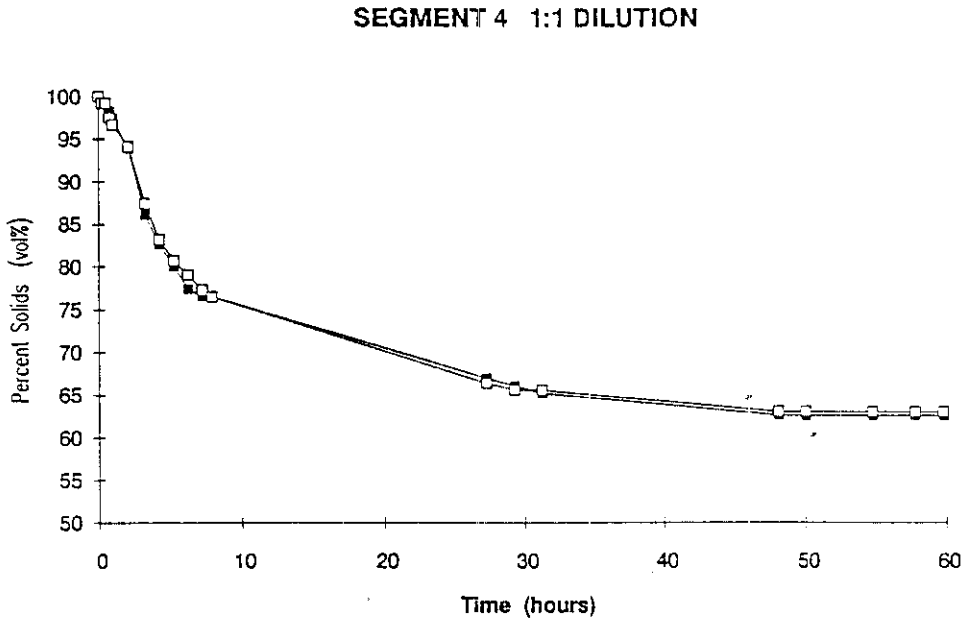
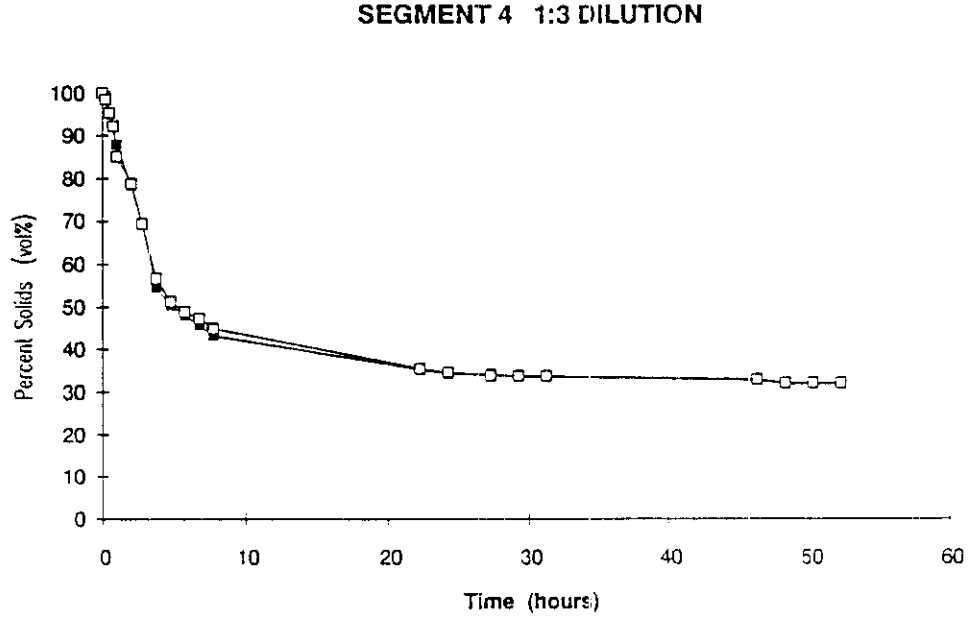


Figure 2: Segment 4 Dilutions





SAMPLE RECEIPT DESCRIPTION

BOTTLE IDENTIFICATION: J-738 B020504 3

ALO #: 92-11291

TANK: 241-C-110 CORE: 37 SEGMENT: 2

MASS: GROSS 257.20 g

TARE UNKNOWN g

SAMPLE N/A g

BOTTLE SIZE: 125 ml BOTTLE LOCATION: "A" Cell

SAMPLE DESCRIPTION: Brown in color, Self Standing massive liquid

BOTTLE CONDITION: Lid loose

COMMENTS: Large void areas in Sample, Sample bottle received in a plastic bag with a moisture absorbent material

SHIPPED BY: WHC TO SAL RECEIVED BY: Joel W Tracy

SAMPLE RECEIPT DESCRIPTION

BOTTLE IDENTIFICATION: J-739 B0205043

ALO #: 92-11292

TANK: 241-C-110 CORE: 37 SEGMENT: 4

MASS: GROSS 269 g

TARE UNKNOWN g

SAMPLE N/A g

BOTTLE SIZE: 125 ml BOTTLE LOCATION: "A" Cell

SAMPLE DESCRIPTION: Brown in color, small amount of free liquid, uniform height

BOTTLE CONDITION: good lid is tight

COMMENTS: Some small voids visable in Sample Sample Received in a plastic bag, packed in a moisture absorbent material

SHIPPED BY: WHC TO SAL RECEIVED BY: Joel M Turner

J738

CONTROLLED DOCUMENT
COPY NO. 01

JM Tingey
January 5, 1992

Reference Test Instruction: TI-SST-178
Test Instruction: C37S2 Rheology

CORE 37 SEGMENT 2 (TANK 241-C-110) RHEOLOGY AND PHYSICAL TESTING

Approved by: Joel M Tingey Date: 1/5/93

General Instructions:

1. When you have finished an instruction, put a check in front of the item.
2. Keep the sample in a sealed container as much as possible to prevent it from drying.
3. Sign and date the bottom of each page when the requested analyses are complete.

M&TE List:

✓ Balance 1:
Calib ID 388-06-01-016 Calib Exp Date 2-07-93
Location "A" Cell

✓ Balance 2:
Calib ID 362-06-01-035 Calib Exp Date 2-07-93
Location "B" Cell

✓ Viscosity Standards:
Lot No: 112586 Reported Viscosity: 485 cP
Exp. Date: None Measured Viscosity: 411 @ 30°C cP

✓ Viscosity Standards:
Lot No: 021888 Reported Viscosity: 923 cP
Exp. Date: None Measured Viscosity: 778 @ 30°C cP

✓ Viscosity Standards:
Lot No: 022688 Reported Viscosity: 49.8 cP
Exp. Date: None Measured Viscosity: 43.5 @ 28°C cP

✓ Viscosity Standards:
Lot No: 072689 Reported Viscosity: 9.8 cP
Exp. Date: None Measured Viscosity: 10.0 @ 28°C cP

Signature [signature] Date 1-5-93 LRB _____ Page _____

JM Tingey
January 5, 1992

Reference Test Instruction: TI-SST-178
Test Instruction: C37S2 Rheology

✓ Thermocouple:
Calib. ID: 77 Type: K
Exp. Date: 3/15/93 Location: "B" Cell Furnace

✓ Thermometer:
Calib. ID: 1225 Type: K
Exp. Date: 6/93 Location: 601

✓ Thermocouple:
Calib. ID: 1728 Type: K contact
Exp. Date: 3/94 Location: "B" Cell Viscometer

✓ Thermocouple:
Calib. ID: 78 Type: K
Exp. Date: 3/15/93 Location: "B" Cell Water Bath

✓ Thermometer:
Calib. ID: 1224 Type: K
Exp. Date: 8/93 Location: 601

Signature _____ Date _____ LRB _____ Page _____

JM Tingey
January 5, 1992

VISCOMETER CALIBRATION

__1. Install the cone on the Haake M5 head. Set the head on the cone and plate adapter. Clean the plate and set the gap. Run a baseline (no sample on the plate). Record the sample name and file name for this run.

Sample Name: _____
File Name: _____

BASELINE NOT STORED

__2. Set the chart recorder and computer parameters to *tau vs D*, *%D = 10*, *%tau = 5%*, $t_1 = 0$, $t_2 = 5$ *min*, and $t_3 = 0.1$ *min*. Place a drop of the 500 cP standard on the plate and run the standard. Record the sample name and file name on this page. Record the lot number and reported viscosity on page 1.

Sample Name: 500cP STD
File Name: 500cP193

✓3. Change the *%tau* setting on the chart recorder and computer to *10%*. Place a drop of the 1000 cP standard on the plate and run the standard. Record the sample name and file name on this page. Record the lot number and reported viscosity on page 1.

Sample Name: 1000cP STD
File Name: 1000cP19

SHEAR STRESS/SHEAR RATE ON AS-RECEIVED SAMPLE

__4. Change the parameters on the chart recorder and computer to *%D = 8*, *%tau = 100%*, $t_1 = 0$, $t_2 = 5$ *min*, and $t_3 = 0.1$ *min*. Place a small sample of sample 92-11291 (bottle is labeled J738) on the plate which is at ambient temperature (record the temperature of the plate). Run the sample and record the sample and file name.

Sample Name: _____
File Name: _____
Temperature _____°C

Sample slip - making data invalid 2/5/93

Signature [signature] Date 2-5-93 LRB _____ Page ____

__5. Repeat the same measurement as above with a duplicate sample. Record the sample name and file name.

Sample Name: _____
File Name: _____

__6. Place sample 92-11291 in the water bath at 95°C for a minimum of 1 hour. Measure the temperature of the sample with a thermocouple. Stir the sample if needed to obtain a homogeneous sample.

Sample slips in cup and plate. Dates Dried. 2/5/93

__7. Place a small sample of sample 92-11291 on the plate which is at 95°C (record the temperature of the plate). Run the sample and record the sample and file name.

Sample Name: _____
File Name: _____
Temperature _____°C

__8. Repeat the same measurement as above with a duplicate sample. Record the sample name and file name.

Sample Name: _____
File Name: _____

SHEAR STRENGTH

✓9. Install the shear vane on the Haake M5 head. Set the head on the viscometer stand. Run a baseline (in air). Change the parameters in the computer and on the recorder to *tau vs time*, *%D = 6 and 0.01*, *%tau = 10 ~~100%~~*, *up curve only*, $t_1 = 0$, $t_2 = 2$ *min*, and $t_3 = 0.0$ *min*. Using the lab jack carefully raise the sample (92-11291) until the shear vane blades are fully immersed in sludge. Perform the measurement and record the sample name, file name, and temperature for this run.

1-7-93

Sample Name: C37S2881 1-7-93
File Name: C37S2591
Temperature: 32 °C

Signature [signature] Date 1-7-92 LRB _____ Page ____

✓10. Repeat the above measurement in a second spot in the bottle. Record the sample name and file name.

Sample Name: C37S2
File Name: C37S2SS2

PHYSICAL TESTING

✓11. Transfer 15 grams from sample 92-11291 to each of two weighed 15 mL centrifuge cones labeled C37-S2-1 and C37-S2-2. Record the weights and the distance between 4 and 14 mL on the graduated centrifuge cones with the samples.

C37-S2-1			C37-S2-2		
Total	20.210	g	Total	20.553	g
Cone + Lid	5.720	g	Cone + Lid	5.762	g
Sample	14.99	g	Sample	14.791	g
Cone	5.133	g	Cone	5.173	g
4 to 14 mL	58	mm	4 to 14 mL	58	mm

Balance "ACell"

✓12 Begin the settling rate measurement by shaking the centrifuge cones and setting the two samples in an isolated location. For the duration of the settling behavior the sample should be allowed to settle with little or no disturbance.

Record the start time: 0800 and date: 1-13-93

✓13 One hour later measure the solids, supernate, and total volumes.

Time: 0900 Date: 01-13-93

C37-S2-1			C37-S2-2		
Total	No	mL Sample ID or Tube	Total	No	mL Sample ID or Tube
Solids	Change	mL	Solids	Change	mL
Liquid	Change	mL	Liquid		mL

there was no free liquid on top of samples after settling overnight and before shake up

Signature [illegible] Date 1-13-93 LRB _____ Page ____

✓ 14 Two hours later measure the solids, supernate, and total volumes.

Time: 1000 Date: 1-13-93

C37-S2-1		C37-S2-2	
Total	no	Total	no
Solids	Change	Solids	Change
Liquid	Change	Liquid	Change

✓ 15 Four hours later measure the solids, supernate, and total volumes.

Time: 1200 Date: 1-13-93

C37-S2-1		C37-S2-2	
Total	no	Total	no
Solids	Change	Solids	Change
Liquid	Change	Liquid	Change

✓ 16 Six hours later measure the solids, supernate, and total volumes.

Time: 1400 Date: 1-13-93

C37-S2-1		C37-S2-2	
Total	no	Total	no
Solids	Change	Solids	Change
Liquid	Change	Liquid	Change

✓ 17 At hour 7 or just before leaving at the end of the work day measure the solids, supernate, and total volumes.

Time: 1530 Date: 1-13-93

C37-S2-1		C37-S2-2	
Total	no	Total	no
Solids	Change	Solids	Change
Liquid	Change	Liquid	Change

Signature [illegible] Date 1-13-93 LRB _____ Page ____

✓ 18 At the beginning of the next day, measure the solids, supernate, and total volumes. Repeat the measurement every two hours or until no settling is observed over a period of 6 hours.

Time: 0730 Date: 1-14-93

C37-S2-1		C37-S2-2	
Total	No mL	Total	no mL
Solids	change mL	Solids	change mL
Liquid	change mL	Liquid	change mL

Time: _____ Date: _____

C37-S2-1		C37-S2-2	
Total	mL	Total	mL
Solids	Na mL	Solids	Na mL
Liquid	mL	Liquid	mL

Time: _____ Date: _____

C37-S2-1		C37-S2-2	
Total	mL	Total	mL
Solids	Na mL	Solids	Na mL
Liquid	mL	Liquid	mL

Time: _____ Date: _____

C37-S2-1		C37-S2-2	
Total	mL	Total	mL
Solids	Na mL	Solids	Na mL
Liquid	mL	Liquid	mL

Signature [illegible] Date 1-14-93 LRB _____ Page ____

JM Tingey
January 5, 1992

Reference Test Instruction: TI-SST-178
Test Instruction: C37S2 Rheology

19 At the beginning of the next day, measure the solids, supernate, and total volumes. Repeat the measurement every two hours or until no settling is observed over a period of 6 hours.

Time: Na Date: Na

C37-S2-1			C37-S2-2		
Total		mL	Total		mL
Solids	Na	mL	Solids	Na	mL
Liquid		mL	Liquid		mL

Time: Date:

C37-S2-1			C37-S2-2		
Total		mL	Total		mL
Solids	Na	mL	Solids	Na	mL
Liquid		mL	Liquid		mL

Time: Date:

C37-S2-1			C37-S2-2		
Total		mL	Total		mL
Solids	Na	mL	Solids	Na	mL
Liquid		mL	Liquid		mL

Time: Date:

C37-S2-1			C37-S2-2		
Total		mL	Total		mL
Solids	Na	mL	Solids	Na	mL
Liquid		mL	Liquid		mL

Signature [signature] Date 1-14-93 LRB _____ Page ____

✓ 20. Shake up the samples in the two centrifuge cones and place the centrifuge cones in the centrifuge. Centrifuge these samples at high speed for 1 hour. Record the total volume, and solids volume.

20.665

C37-S2-1			C37-S2-2		
Total	10.6	mL	Total	10.4	mL
Solids	7.95	mL	Solids	7.95	mL
Liquid	2.65	mL	Liquid	2.45	mL

20.415

✓ 21. Transfer the supernate from the centrifuge cones to two weighed 10 ml graduated cylinders. Record the volume and weight of the centrifuged supernate.

C37-S2-1			C37-S2-2		
Total	40.098	g	Total	43.054	g
Tare	37.096	g	Tare	40.177	g
Liquid	3.002	g	Liquid	2.877	g
Liquid	2.65	mL	Liquid	2.45	mL

Balance "A" Cell

✓ 22. Weigh the solids remaining in the centrifuge cones. Record the volume and weight of the centrifuged solids.

C37-S2-1			C37-S2-2		
Total	17.647	g	Total	17.499	g
Tare	5.725	g	Tare	5.762	g
Solids	11.927	g	Solids	11.737	g
Solids	7.95	mL	Solids	7.95	mL

C = 1.50 gm/cc

C = 1.476

Balance A Cell

Signature [signature] Date 1-18-92 LRB _____ Page ____

✓23. Calculate the vol% settled solids, vol% centrifuged solids, wt% centrifuged solids, and densities of the slurry, centrifuged solids, and centrifuged supernate.

Volume Percent Settled Solids

Vol% Settled Solids = [Settled Solids Volume/Total Sample Volume] * 100

Vol% (C37-S2-1) = [10.6 ml/ 10.6 ml] * 100 = 100 vol%

Vol% (C37-S2-2) = [10.4 ml/ 10.4 ml] * 100 = 100 vol%

Vol% Settled Solids (C37-2) = 100 vol%

Volume Percent Centrifuged Solids

Vol% Centrifuged Solids = [Cent. Solids Vol./Total Sample Vol.] * 100

Vol% (C37-S2-1) = [7.95 ml/ 10.6 ml] * 100 = 75.0 vol%

Vol% (C37-S2-2) = [7.95 ml/ 10.4 ml] * 100 = 76.4 vol%

Vol% Centrifuged Solids (C37-2) = 75.7 vol%

Weight Percent Centrifuged Solids

Wt% Centrifuged Solids = [Cent. Solids Mass/Total Sample Mass] * 100

Wt% (C37-S2-1) = [11.927 g/ 14.939 g] * 100 = 79.8 wt%

Wt% (C37-S2-2) = [11.737 g/ 14.653 g] * 100 = 80.1 wt%

Wt% Centrifuged Solids (C37-2) = 80.0 wt%

Sample Density

Density = Total mass/Total volume

Density (C37-S2-1) = 14.939 g/ 10.6 ml = 1.41 g/ml

Density (C37-S2-2) = 14.653 g/ 10.4 ml = 1.41 g/ml

Sample Density (C37-S2) = 1.41 g/ml

Signature [signature] Date 2-5-93 LRB _____ Page ____

Centrifuged Supernate Density

Density = Centrifuged Supernate mass/Centrifuged Supernate volume

Density (C37-S2-1) = 3.002 g/ 2.65 ml = 1.13 g/ml

Density (C37-S2-2) = 2.877 g/ 2.45 ml = 1.17 g/ml

Centrifuged Supernate Density (C37-S2) = 1.15 g/ml

Centrifuged Solids Density

Density = Centrifuged Solids mass/Centrifuged Solsids volume

Density (C37-S2-1) = 11.927 g/ 7.95 ml = 1.50 g/ml

Density (C37-S2-2) = 11.737 g/ 7.95 ml = 1.48 g/ml

Centrifuged Solids Density (C37-S2) = 1.49 g/ml

✓ 24. Transfer approximately 2 grams of the centrifuged supernate to each of two weighed scintillation vials labeled C37-S2-SUP1 and C37-S2-SUP2. Weigh the sample in the vials. Let the samples air dry until no visible liquid is observed in the vial. Place the vials in the muffle furnace and allow them to remain in the furnace at 105°C ± 3°C uncapped for 24 hours.

	Sup 1 C37-S2-1		Sup 2 C37-S2-2	
Total	23.119	g	22.980	g
Vial	20.780	g	20.437	g
Sample	2.339	g	2.543	g

Balance SAC 11

Signature [signature] Date 2-5-93 LRB _____ Page ____

25. Remove the samples from the muffle furnace and cap the samples. Place the samples in a dessicator while the vial cools (a minimum of 1 hour). Remove the sample from the dessicator and weigh the dried sample.

C37-S2-SUP1			C37-S2-SUP2		
Total	21.358	g	Total	21.076	g
Vial	20.780	g	Vial	20.437	g
Sample	.578	g	Sample	0.639	g

Balance AC ell

26. Transfer approximately 1 gram of the uncentrifuged sample (92-11291) to each of two weighed scintillation vials labeled C37-S2-1 and C37-S2-2. Weigh the sample in the vials. Let the samples air dry until no visible liquid is observed in the vial. Place the vials in the muffle furnace and allow them to remain in the furnace at 105°C ± 3°C uncapped for 24 hours.

C37-S2-1			C37-S2-2		
Total	21.578	g	Total	22.058	g
Vial	20.701	g	Vial	20.739	g
Sample	~~0.807~~ 0.817	g 2/5/93	Sample	1.319	g

Balance AC ell

27. Remove the samples from the muffle furnace and cap the samples. Place the samples in a dessicator while the vial cools (a minimum of 1 hour). Remove the sample from the dessicator and weigh the dried sample.

C37-S2-1			C37-S2-2		
Total	21.027	g	Total	21.277	g
Vial	20.701	g	Vial	20.739	g
Sample	0.326	g	Sample	0.538	g

Balance AC ell

Signature [signature] Date ~~2-2-93~~ 2-2-93 LRB _____ Page _____

✓28. Calculate wt% solids and wt% dissolved solids.

Weight % Solids

Wt% Solids = [Dry Sample mass/Wet Sample mass] * 100%

Wt% (C37-S2-1) = (0.326 g/ 0.817 g) * 100% = 39.9 %

Wt% (C37-S2-2) = (0.538 g/ 1.319 g) * 100% = 40.8 %

Ave. Wt% Solids (C37-S2) = 40.3 %

Weight % Dissolved Solids

Wt% Diss. = (Dry Supernate mass/Wet Supernate mass)*(100 - wt% Cent. Solids)

Wt% (C37-S2-1) = (2.578 g / 2.339 g)*(100 - 39.8)% = 5.0

Wt% (C37-S2-2) = (2.639 g / 2.543 g)*(100 - 40.1)% = 5.0

Ave. Wt% Dissolved Solids = 5.0 %

Weight % Undissolved Solids

Ave. Wt% Undissolved Solids= Ave. Wt% Total Solids - Ave. Wt% Dissolved Solids

Wt% Undissolved Solids = 40.3 - 5.0 = 35.3 %

DILUTION PREPARATION AND PHYSICAL TESTING (1:1)

✓29. Transfer the supernate in the graduate cylinders and the solids in the centrifuge cones to a weighed jar labeled **C37-S2-DIL1**. Transfer enough of the **92-11291** sample to obtain 30 grams of sample in **C37-S2-DIL1**. Weigh the sample in the jar. Add an equal mass of distilled water. Record the mass of water added and the total mass of the resulting slurry. Mix the sample to obtain a homogeneous sample.

	C37-S2-DIL1	
Jar + Solids	184.60	g
Jar (Tare)	134.79	g
Solids Sample	50.01	g

Signature [signature] Date 2-5-93 LRB _____ Page _____

JM Tingey
January 5, 1992

Reference Test Instruction: TI-SST-178
Test Instruction: C37S2 Rheology

1-19-93

Jar + Solids +Water	~~134.80~~ 1-19-93	g 234.74
Jar + Solids	~~134.80~~	g 184.80
Water	49.94	g

30. Install the MV-I sensor on the In-Cell Viscometer. Tap the M5 measuring head. Set the chart recorder and computer parameters to *tau vs D*, *%D = 40*, *%tau = 5%*, $t_1 = 0$, $t_2 = 5$ *min*, and $t_3 = 0.1$ *min*. Zero the instrument, run a baseline, and run the 10 standard in the cup and spindle viscometer system. Record the sample name and file name on this page. Record the lot number and reported viscosity in the M&TE section on page 1.

Sample Name: 10cP STD
File Name: 10cP12593

31. Change the *%tau* setting on the chart recorder and computer to *10%*. Transfer 40 ml of the 50 cP standard to the cup and run the standard. Record the sample name and file name on this page. Record the lot number and reported viscosity in the M&TE section on page 1.

Sample Name: 50cP STD.
File Name: 50cP12593

32. Change the parameters on the chart recorder and computer to *%tau = 100%*. Transfer 40 ml of C37-S2-DIL1 to the viscometer cup (record the temperature of the viscometer). Run the sample and record the sample and file name.

Sample Name: C37-S2-DIL-1
File Name: C37S21
Temperature 28 °C

33. Repeat the same measurement as above. Record the sample name and file name. Transfer this sample back to the jar labeled C37-S2-DIL1.

Sample Name: C37S2DIL2
File Name: C37S22

Signature [illegible] Date [illegible] LRB _____ Page ____

✓ 34. Place capped sample C37-S2-DIL1 in the water bath at 95°C for a minimum of 1 hour. Measure the temperature of the sample with a thermocouple. Stir the sample if needed to obtain a homogeneous sample.

✓ 35. Transfer 40 ml of C37-S2-DIL1 to the viscometer cup. The viscometer tempering vessel should be at at 95°C (record the actual temperature). Run the sample and record the sample and file name.

Sample Name: C37-S2DIL1-3
File Name: C37S2D13
Temperature 95 °C

✓ 36. Repeat the same measurement as above. Record the sample name and file name. Transfer the sample to the jar labeled C37-S2-DIL1.

Sample Name: C37S2DIL1-4
File Name: C37S2D14

✓ 37. Transfer 15 grams from sample C37-S2-DIL1 (at ambient temperature) to each of two weighed 15 mL centrifuge cones labeled C37-S2-D1 and C37-S2-D2. Record the weights and the distance between 4 and 14 mL on the graduated centrifuge cones with the samples.

C37-S2-D1			C37-S2-D2		
Total	18.993	g	Total	19.518	g
Cone + Lid	5.711	g	Cone + Lid	5.728	g
Sample	13.282	g	Sample	13.790	g
Cone	5.121	g	Cone	5.138	g
4 to 14 mL	58	mm	4 to 14 mL	58	mm

Balance Acell

✓ 38. Begin the settling rate measurement by shaking the centrifuge cones and setting the two samples in an isolated location. For the duration of the settling behavior the sample should be allowed to settle with little or no disturbance.

Signature [signature] Date 1-5-93 LRB _____ Page ____

Record the start time: 0745 and date: 1/23/93

✓39. Record the settling rate behavior on the attached settling rate data sheet.

DILUTION PREPARATION AND PHYSICAL TESTING (3:1)

✓40. Transfer the slurry in the centrifuge cones to a weighed jar labeled **C37-S2-DIL2**. Transfer enough of the **C37-S2-DIL1** sample to obtain 30 grams of **C37-S2-DIL1** sample in the jar labeled **C37-S2-DIL2**. Weigh the sample in the jar. Add an equal mass of distilled water. Record the mass of water added and the total mass of the resulting slurry. Mix the sample to obtain a homogeneous sample.

	C37-S2-DIL2	
Jar + C37-S2-DIL1	185.81	g
Jar (Tare)	135.36	g
C37-S2-DIL1 Sample	50.45	g
Jar + C37-S2-DIL1 + Water	236.06	g
Jar + C37-S2-DIL1	185.81	g
Water	50.15	g

✓41. Install the MV-I sensor on the In-Cell Viscometer. Tap the M5 measuring head. Set the chart recorder and computer parameters to *tau vs D*, *%D = 40*, *%tau = 5%*, $t_1 = 0$, $t_2 = 5$ *min*, and $t_3 = 0.1$ *min*. Zero the instrument, run a baseline, and run the 10 standard in the cup and spindle viscometer system. Record the sample name and file name on this page. Record the lot number and reported viscosity in the M&TE section on page 1.

Sample Name: ~~50cP~~ 10cPSTD 1/25/93
File Name: 10CP2593

✓42. Change the *%tau* setting on the chart recorder and computer to *10%*. Transfer 40 ml of the 50 cP standard to the cup and run the standard. Record the sample name and file name on this page. Record the lot number and reported viscosity in the M&TE section on page 1.

Signature [illegible] Date 2-5-93 LRB _____ Page ____

Sample Name: 50CPSTD
File Name: 50CP12593

✓43. Change the parameters on the chart recorder and computer to *%tau = 100%*. Transfer 40 ml of **C37-S2-DIL2** to the viscometer cup (record the temperature of the viscometer). Run the sample and record the sample and file name.

Sample Name: C3752DIL2-1
File Name: C3752D21
Temperature 28 °C

✓44. Repeat the same measurement as above. Record the sample name and file name. Transfer this sample back to the jar labeled C37-S2-DIL2.

Sample Name: C3752DIL2-2
File Name: C3752D22

✓45. Place capped sample **C37-S2-DIL2** in the water bath at 95°C for a minimum of 1 hour. Measure the temperature of the sample with a thermocouple. Stir the sample if needed to obtain a homogeneous sample.

✓46. Transfer 40 ml of **C37-S2-DIL2** to the viscometer cup. The viscometer tempering vessel should be at at 95°C (record the actual temperature). Run the sample and record the sample and file name.

Sample Name: C3752DIL2-3
File Name: C3752D23
Temperature 95 °C

✓47. Repeat the same measurement as above. Record the sample name and file name. Transfer the sample to the jar labeled **C37-S2-DIL2**.

Sample Name: C3752DIL24
File Name: C3752D24

Signature Elmer A Schade Date 1-28-93 LRB _____ Page ____

48. Transfer 15 grams from sample **C37-S2-DIL2** (at ambient temperature) to each of two weighed 15 mL centrifuge cones labeled C37-S2-D3 and C37-S2-D4. Record the weights and the distance between 4 and 14 mL on the graduated centrifuge cones with the samples.

C37-S2-D3			C37-S2-D4		
Total	19.291	g	Total	18.596	g
Cone + Lid	5.695	g	Cone + Lid	5.707	g
Sample	13.596	g	Sample	12.889	g
Cone	5.105	g	Cone	5.119	g
4 to 14 mL	58	mm	4 to 14 mL	58	mm

Balance ~X^Cell

49. Begin the settling rate measurement by shaking the centrifuge cones and setting the two samples in an isolated location. For the duration of the settling behavior the sample should be allowed to settle with little or no disturbance.

Record the start time: 0945 and date: 1-7-93

50. Record the settling rate behavior on the attached settling rate data sheet.

Signature _____ Date _____ LRB _____ Page ____

SETTLING RATE DATA SHEET

1. Transfer 15 ml of C37-S2-DIL1 to each of two weighed centrifuge cones labeled C37-S2-D1 and C37-S2-D2 or use the existing sample.

C37-S2-D1		C37-S2-D2	
Total	18.993 g	Total	9.518 g
Cone + Lid	5.711 g	Cone + Lid	5.728 g
Sample	13.282 g	Sample	13.790 g
Cone	5.121 g	Cone	5.138 g

Balance Ar Cell

2. Begin the settling rate measurement by setting the two centrifuge cones in an isolated place at ambient temperature. For the duration of the settling behavior measurements the sample should be allowed to settle with little or no disturbances.

Start Time 0745 Temperature 29 °C Date 1-23-93

3. Measure and record the total, liquid and solid volumes every 15 minutes for the first hour of settling.

Time 0800 Temperature 29 °C Date 1-23-93

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	11.4 ml	Solids	11.8 ml
Liquid	0 ml	Liquid	0.1 ml

Time 0815 Temperature 29 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	11.2 ml	Solids	11.7 ml
Liquid	0.2 ml	Liquid	0.2 ml

Time 0830 Temperature 29 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	11.1 ml	Solids	11.5 ml
Liquid	0.3 ml	Liquid	0.4 ml

Signature [signature] Date 1-22-93 LRB _____ Page _____

Time 0845 Temperature 29 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	11.0 ml	Solids	11.5 ml
Liquid	0.4 ml	Liquid	0.4 ml

✓ 4. Repeat these measurments every hour for the remainder of the day.

Time 0950 Temperature 29 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	10.1 ml	Solids	10.6 ml
Liquid	1.30 ml	Liquid	1.3 ml

Time 1100 Temperature 29 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	9.4 ml	Solids	9.8 ml
Liquid	2.0 ml	Liquid	2.1 ml

Time 1200 Temperature 29 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	9.0 ml	Solids	9.4 ml
Liquid	2.4 ml	Liquid	2.5 ml

Time 1300 Temperature 29 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	8.9 ml	Solids	8.9 ml
Liquid	2.6 ml	Liquid	3.0 ml

Time 1400 Temperature 29 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	8.6 ml	Solids	8.8 ml
Liquid	2.8 ml	Liquid	3.1 ml

Signature [signature] Date 1-22-93 LRB _____ Page ____

Time 1500 Temperature 29 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	8.3 ml	Solids	8.7 ml
Liquid	3.1 ml	Liquid	3.2 ml

Time 1540 Temperature 29 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	8.2 ml	Solids	8.6 ml
Liquid	3.2 ml	Liquid	3.3 ml

✓ 5. At the beginning of the next day, measure and record the total, liquid and solid volumes every two hours throughout the day or until there is no change in the solids volume for three successive measurements.

Time 11 00 Temperature 28 °C Date 1-24-93

C37-S2-D1		C37-S2-D2	
Total	11.40 ml	Total	11.9 ml
Solids	7.25 ml	Solids	7.4 ml
Liquid	4.15 ml	Liquid	4.5 ml

Time 1300 Temperature 28 °C

C37-S2-D1		C37-S2-D2	
Total	11.40 ml	Total	11.9 ml
Solids	7.15 ml	Solids	7.4 ml
Liquid	4.25 ml	Liquid	4.5 ml

Time 1500 Temperature 28 °C

C37-S2-D1		C37-S2-D2	
Total	11.40 ml	Total	11.9 ml
Solids	7.0 ml	Solids	7.3 ml
Liquid	4.40 ml	Liquid	4.6 ml

Time _____ Temperature _____ °C

C37-S2-D1		C37-S2-D2	
Total	N/A ml	Total	N/A ml
Solids	N/A ml	Solids	N/A ml
Liquid	_____ ml	Liquid	_____ ml

Signature [signature] Date 1-25-93 LRB _____ Page _____

Time _____ Temperature _____ °C

C37-S2-D1		C37-S2-D2	
Total	_____ ml	Total	_____ ml
Solids	NA ml	Solids	NA ml
Liquid	_____ ml	Liquid	_____ ml

6. If the solids volume of the sample is still changing, repeat the settling measurements for one more day.

Time 0745 Temperature 28 °C Date 1-25-93

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	6.8 ml	Solids	7.1 ml
Liquid	4.6 ml	Liquid	4.8 ml

Time 0945 Temperature 28 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	6.8 ml	Solics	7.1 ml
Liquid	4.6 ml	Liquid	4.8 ml

Time 1130 Temperature 28 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	6.8 ml	Solics	7.1 ml
Liquid	4.6 ml	Liquid	4.8 ml

Time 1730 Temperature 28 °C

C37-S2-D1		C37-S2-D2	
Total	11.4 ml	Total	11.9 ml
Solids	6.8 ml	Solids	7.1 ml
Liquid	4.6 ml	Liquid	4.8 ml

Time 1930 Temperature 28 °C

C37-S2-D1			C37-S2-D2	
Total	1930 ml	11.4	Total	11.9 ml
Solids	11.4 ml	6.8	Solids	7.1 ml
Liquid	6.8 ml	4.6	Liquid	4.8 ml

1-25

Signature [signature] Date 1-25-93 LRB _____ Page _____

__7. Calculate the the vol% settled solids.

Vol% Settled Solids = volume settled solids/total volume * 100 vol%

C37-S2-D1
Vol% Settled Solids = 6.8 mL/ 11.4 mL * 100 vol%
= 59.6 vol%

C37-S2-D2
Vol% Settled Solids = 7.1 mL/ 11.9 mL * 100 vol%
= 59.7 vol%

Signature Joel M Tingey Date 2/5/93 LRB _____ Page ____

SETTLING RATE DATA SHEET

✓1. Transfer 15 ml of C37-S2-DIL2 to each of two weighed centrifuge cones labeled C37-S2-D3 and C37-S2-D4 or use the existing sample.

C37-S2-D3		C37-S2-D4	
Total	19.291 g	Total	18.596 g
Cone + Lid	5.695 g	Cone + Lid	5.707 g
Sample	13.596 g	Sample	12.889 g
Cone	5.105 g	Cone	5.119 g

Balance "A" cell

✓2. Begin the settling rate measurement by setting the two centrifuge cones in an isolated place at ambient temperature. For the duration of the settling behavior measurements the sample should be allowed to settle with little or no disturbances.

Start Time 0945 Temperature 28 °C Date 1-22-93

✓3. Measure and record the total, liquid and solid volumes every 15 minutes for the first hour of settling.

Time 1000 Temperature 28 °C Date 1-22-93

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	12.4 ml	Solids	11.8 ml
Liquid	0.1 ml	Liquid	0.2 ml

Time 1015 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	11.9 ml	Solids	11.3 ml
Liquid	0.6 ml	Liquid	0.7 ml

Time 1030 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	11.4 ml	Solids	10.5 ml
Liquid	1.1 ml	Liquid	1.5 ml

Signature [signature] Date 1-22-93 LRB _____ Page ____

Time 1045 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	10.6 ml	Solids	10.4 ml
Liquid	1.1 ml	Liquid	1.6 ml

4. Repeat these measurments every hour for the remainder of the day.

Time 1145 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	9.4 ml	Solids	8.9 ml
Liquid	3.1 ml	Liquid	3.1 ml

Time 1230 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	7.8 ml	Solids	7.1 ml
Liquid	4.7 ml	Liquid	4.9 ml

Time 1330 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	6.7 ml	Solids	6.3 ml
Liquid	5.8 ml	Liquid	5.7 ml

Time 1430 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	6.2 ml	Solics	5.8 ml
Liquid	6.3 ml	Liquid	6.2 ml

Time 1530 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	5.8 ml	Solids	5.7 ml
Liquid	6.7 ml	Liquid	6.3 ml

Signature [signature] Date 1-27-93 LRB _____ Page _____

Time 16:30 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	5.7 ml	Solids	5.5 ml
Liquid	6.8 ml	Liquid	6.5 ml

Time 1730 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	5.5 ml	Solids	5.2 ml
Liquid	7.0 ml	Liquid	6.8 ml

✓5. At the beginning of the next day, measure and record the total, liquid and solid volumes every two hours throughout the day or until there is no change in the solids volume for three successive measurements.

Time 0800 Temperature ~~1-28~~ 28 °C Date 1-28-93

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	4.4 ml	Solids	4.3 ml
Liquid	8.1 ml	Liquid	7.7 ml

Time 1000 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	4.4 ml	Solids	4.2 ml
Liquid	8.1 ml	Liquid	7.8 ml

Time 1300 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	4.4 ml	Solids	4.1 ml
Liquid	8.1 ml	Liquid	7.9 ml

Time 1500 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	~~4.3~~ ml 12.5	Total	12.0 ml
Solids	4.3 ml	Solids	4.0 ml
Liquid	8.2 ml	Liquid	8.0 ml

Signature [signature] Date 1-28-93 LRB _____ Page ____

Time 1700 Temperature 28 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	4.3 ml	Solids	4.0 ml
Liquid	8.2 ml	Liquid	8.0 ml

✓6. If the solids volume of the sample is still changing, repeat the settling measurements for one more day.

Time 0800 Temperature 29 °C Date 1-29-93

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	4.3 ml	Solids	4.0 ml
Liquid	8.2 ml	Liquid	8.0 ml

Time 1000 Temperature 29 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	4.3 ml	Solids	4.0 ml
Liquid	8.2 ml	Liquid	8.0 ml

Time 1200 Temperature 29 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	4.2 ml	Solids	3.9 ml
Liquid	8.3 ml	Liquid	8.1 ml

Time 1400 Temperature 29 °C

C37-S2-D3		C37-S2-D4	
Total	12.5 ml	Total	12.0 ml
Solids	4.2 ml	Solids	3.9 ml
Liquid	8.3 ml	Liquid	8.1 ml

Time _____ Temperature _____ °C

C37-S2-D3		C37-S2-D4	
Total	NA ml	Total	____ ml
Solids	NA ml	Solids	NA ml
Liquid	____ ml	Liquid	____ ml

Signature [signature] Date 1-29-93 LRB _____ Page _____

__7. Calculate the the vol% settled solids.

Vol% Settled Solids = volume settled solids/total volume * 100 vol%

C37-S2-D3
Vol% Settled Solids = 4.2 mL/ 12.5 mL * 100 vol%
= 33.6 vol%

C37-S2-D4
Vol% Settled Solids = 3.9 mL/ 12.0 mL * 100 vol%
= 32.5 vol%

Signature Joel M Tangey Date 2/5/93 LRB _____ Page ____

J739

CONTROLLED DOCUMENT

JM Tingey
January 5, 1992

COPY NO. 01

Reference Test Instruction: TI-SST-178
Test Instruction: C37S4 Rheology

CORE 37 SEGMENT 4 (TANK 241-C-110) RHEOLOGY AND PHYSICAL TESTING

Approved by: J M Tingey Date: 1/5/93

General Instructions:

1. When you have finished an instruction, put a check in front of the item.
2. Keep the sample in a sealed container as much as possible to prevent it from drying.
3. Sign and date the bottom of each page when the requested analyses are complete.

M&TE List:

✓ Balance 1:
Calib ID 388-06-01-016 Calib Exp Date 2-07-93
Location "A" Cell

✓ Balance 2:
Calib ID 362-06-01-035 Calib Exp Date 2-07-93
Location "B" Cell

✓ Viscosity Standards:
Lot No: 112586 Reported Viscosity: 485 cP
Exp. Date: None Measured Viscosity: 411 @ 30°C cP

✓ Viscosity Standards:
Lot No: 021888 Reported Viscosity: 923 cP
Exp. Date: None Measured Viscosity: 778 @ 30°C cP

✓ Viscosity Standards:
Lot No: 022688 Reported Viscosity: 49 cP
Exp. Date: None Measured Viscosity: 43.3 @ 30°C cP

✓ Viscosity Standards:
Lot No: 072689 Reported Viscosity: 9.8 cP
Exp. Date: None Measured Viscosity: 10.0 @ 30°C cP

Signature [illegible] Date 1-13-93 LRB _____ Page _____

JM Tingey
January 5, 1992

Reference Test Instruction: TI-SST-178
Test Instruction: C37S4 Rheology

✓ Thermocouple:
Calib. ID: 77 Type: K
Exp. Date: 3/15/93 Location: "B" Cell Furnace

✓ Thermometer:
Calib. ID: 1225 Type: K
Exp. Date: 6/93 Location: 601

✓ Thermocouple:
Calib. ID: 1728 Type: K contact
Exp. Date: 3/94 Location: "B" Cell Viscometer

✓ Thermocouple:
Calib. ID: 78 Type: K
Exp. Date: 3/15/93 Location: "B" Cell Water Bath

✓ Thermometer:
Calib. ID: 1224 Type: K
Exp. Date: 8/93 Location: 601

Signature [signature] Date 1-13-93 LRB _____ Page ____

VISCOMETER CALIBRATION

✓1. Install the cone on the Haake M5 head. Set the head on the cone and plate adapter. Clean the plate and set the gap. Run a baseline (no sample on the plate). Record the sample name and file name for this run.

Sample Name: _____
File Name: _____

Baseline not stored gmT 2/4/93

✓2. Set the chart recorder and computer parameters to *tau vs D*, *%D = 10*, *%tau = 5%*, $t_1 = 0$, $t_2 = 5$ *min*, and $t_3 = 0.1$ *min*. Place a drop of the 500 cP standard on the plate and run the standard. Record the sample name and file name on this page. Record the lot number and reported viscosity on page 1.

Sample Name: 500cP STD
File Name: 500cP193

✓3. Change the *%tau* setting on the chart recorder and computer to *10%*. Place a drop of the 1000 cP standard on the plate and run the standard. Record the sample name and file name on this page. Record the lot number and reported viscosity on page 1.

Sample Name: 1000cP STD
File Name: 1000 cP19

SHEAR STRESS/SHEAR RATE ON AS-RECEIVED SAMPLE

__4. Change the parameters on the chart recorder and computer to *%D = 8*, *%tau = 100%*, $t_1 = 0$, $t_2 = 5$ *min*, and $t_3 = 0.1$ *min*. Place a small sample of sample 92-11292 (bottle is labeled J739) on the plate which is at ambient temperature (record the temperature of the plate). Run the sample and record the sample and file name.

Sample Name: _____
File Name: _____
Temperature _____ °C

gmT 2/4/93

Not able to get accurate data. Two parameters caused problems - slippage & particle size

Signature [signature] Date 1-13-93 LRB _____ Page _____

__5. Repeat the same measurement as above with a duplicate sample. Record the sample name and file name.

Sample Name: _____
File Name: _____

__6. Place sample 92-11292 in the water bath at 95°C for a minimum of 1 hour. Measure the temperature of the sample with a thermocouple. Stir the sample if needed to obtain a homogeneous sample.

__7. Place a small sample of sample 92-11292 on the plate which is at 95°C (record the temperature of the plate). Run the sample and record the sample and file name.

Sample Name: _____
File Name: _____
Temperature _____°C

not able to get accurate data due to slippage & possibly large particles
2/4/93

__8. Repeat the same measurement as above with a duplicate sample. Record the sample name and file name.

Sample Name: _____
File Name: _____

SHEAR STRENGTH

✓9. Install the shear vane on the Haake M5 head. Set the head on the viscometer stand. Run a baseline (in air). Change the parameters in the computer and on the recorder to *tau vs time*, *%D = 6 and 0.01*, *%tau =* 10 ~~100%~~, *up curve only*, $t_1 = 0$, $t_2 = 2$ *min*, and $t_3 = 0.0$ *min*. Using the lab jack carefully raise the sample (92-11292) until the shear vane blades are fully immersed in sludge. Perform the measurement and record the sample name, file name, and temperature for this run. 1-7-93 CB

Sample Name: C37S4
File Name: C37S4SS1
Temperature: 32 °C

Signature [signature] Date 1-13-93 LRB _____ Page ____

10. Repeat the above measurement in a second spot in the bottle. Record the sample name and file name.

Sample Name: C37S4

File Name: C37S4152

PHYSICAL TESTING

11. Transfer 15 grams from sample 92-11292 to each of two weighed 15 mL centrifuge cones labeled C37-S4-1 and C37-S4-2. Record the weights and the distance between 4 and 14 mL on the graduated centrifuge cones with the samples.

C37-S4-1			C37-S4-2		
Total	20.698	g	Total	21.122	g
Cone + Lid	5.630	g	Cone + Lid	5.760	g
Sample	15.068	g	Sample	15.362	g
Cone	5.041	g	Cone	5.121	g
4 to 14 mL	____	mm	4 to 14 mL	____	mm

Balance A'Cell

12 Begin the settling rate measurement by shaking the centrifuge cones and setting the two samples in an isolated location. For the duration of the settling behavior the sample should be allowed to settle with little or no disturbance.

Record the start time: 0800 and date: 01-13-93

13 One hour later measure the solids, supernate, and total volumes.

Time: 0900 Date: 1-13-93

C37-S4-1			C37-S4-2		
Total	~~Can~~	mL Sample out of tube	Total	~~Can~~	mL Sample out of tube
Solids	~~Rec~~	mL	Solids	Rec	mL
Liquid		mL	Liquid		mL

No free liquid on surface before shakeup

Signature [signature] Date 1-13-93 LRB _____ Page ____

✓14 Two hours later measure the solids, supernate, and total volumes.

Time: 1000 Date: 1-13-93

C37-S4-1			C37-S4-2		
Total	no	mL	Total	no	mL
Solids	Change	mL	Solids	Change	mL
Liquid		mL	Liquid		mL

✓15 Four hours later measure the solids, supernate, and total volumes.

Time: 1200 Date: 1-13-93

C37-S4-1			C37-S4-2		
Total	no	mL	Total		mL
Solids	change	mL	Solids	no	mL
Liquid		mL	Liquid	Change	mL

✓16 Six hours later measure the solids, supernate, and total volumes.

Time: 1400 Date: 1-13-93

C37-S4-1			C37-S4-2		
Total	no	mL	Total		mL
Solids	change	mL	Solids	no	mL
Liquid		mL	Liquid	Change	mL

✓17 At hour 7 or just before leaving at the end of the work day measure the solids, supernate, and total volumes.

Time: 1530 Date: 1-13-93

C37-S4-1			C37-S4-2		
Total		mL	Total		mL
Solids	no	mL	Solids	no	mL
Liquid	Change	mL	Liquid	Change	mL

Signature [illegible] Date 1-13-93 LRB _____ Page ____

JM Tingey
January 5, 1992

Reference Test Instruction: TI-SST-178
Test Instruction: C37S4 Rheology

18 At the beginning of the next day, measure the solids, supernate, and total volumes. Repeat the measurement every two hours or until no settling is observed over a period of 6 hours.

Time: 0730 Date: 1-14-93

C37-S4-1			C37-S4-2		
Total	Nc	mL	Total		mL
Solids		mL	Solids	Nc	mL
Liquid	Change	mL	Liquid	Change	mL

Time: Date:

C37-S4-1			C37-S4-2		
Total		mL	Total		mL
Solids	Na	mL	Solids	Na	mL
Liquid		mL	Liquid		mL

Time: Date:

C37-S4-1			C37-S4-2		
Total		mL	Total		mL
Solids	Na	mL	Solids	Na	mL
Liquid		mL	Liquid		mL

Time: Date:

C37-S4-1			C37-S4-2		
Total		mL	Total		mL
Solids	Na	mL	Solids	Na	mL
Liquid		mL	Liquid		mL

Signature [illegible] Date 1-14-93 LRB _____ Page _____

19 At the beginning of the next day, measure the solids, supernate, and total volumes. Repeat the measurement every two hours or until no settling is observed over a period of 6 hours.

Time: Na Date: Na

C37-S4-1		C37-S4-2	
Total	mL	Total	mL
Solids Na	mL	Solids Na	mL
Liquid	mL	Liquid	mL

Time: Date:

C37-S4-1		C37-S4-2	
Total	mL	Total	mL
Solids Na	mL	Solids Na	mL
Liquid	mL	Liquid	mL

Time: Date:

C37-S4-1		C37-S4-2	
Total	mL	Total	mL
Solids Na	mL	Solids Na	mL
Liquid	mL	Liquid	mL

Time: Date:

C37-S4-1		C37-S4-2	
Total	mL	Total	mL
Solids Na	mL	Solids Na	mL
Liquid	mL	Liquid	mL

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JM Tingey
January 5, 1992

Reference Test Instruction: TI-SST-178
Test Instruction: C37S4 Rheology
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✓ 20. Shake up the samples in the two centrifuge cones and place the centrifuge cones in the centrifuge. Centrifuge these samples at high speed for 1 hour. Record the total volume, and solids volume.

20.600 Total mass of sample + cone for C37-S4-1 [illegible] 2/4/93

C37-S4-1			C37-S4-2		
Total	10.50	mL	Total	10.7	mL
Solids	8.05	mL	Solids	8.1	mL
Liquid	2.45	mL	Liquid	2.6	mL

21.076 Total mass of sample and cone for C37-S4-1 [illegible] 2/4/93

✓ 21. Transfer the supernate from the centrifuge cones to two weighed 10 ml graduated cylinders. Record the volume and weight of the centrifuged supernate.

C37-S4-1			C37-S4-2		
Total	39.943	g	Total	43.183	g
Tare	37.172	g	Tare	40.228	g
Liquid	2.771	g	Liquid	2.955	g
Liquid	2.45	mL	Liquid	2.60	mL

Balance "A" Cell

✓ 22. Weigh the solids remaining in the centrifuge cones. Record the volume and weight of the centrifuged solids.

C37-S4-1			C37-S4-2		
Total	17.783	g	Total	18.096	g
Tare	5.041	g	Tare	5.171	g
Solids	12.742	g	Solids	12.925	g
Solids	8.05	mL	Solids	8.10	mL

Balance "A" Cell

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__23. Calculate the vol% settled solids, vol% centrifuged solids, wt% centrifuged solids, and densities of the slurry, centrifuged solids, and centrifuged supernate.

Volume Percent Settled Solids

Vol% Settled Solids = [Settled Solids Volume/Total Sample Volume] * 100

Vol% (C37-S4-1) = [~~2.45~~ 8.05 10.50 ml/ 10.50 ml] * 100 = 100 vol%

Vol% (C37-S4-2) = [10.70 ml/ 10.70 ml] * 100 = 100 vol%

Vol% Settled Solids (C37-4) = 100 vol%

Volume Percent Centrifuged Solids

Vol% Centrifuged Solids = [Cent. Solids Vol./Total Sample Vol.] * 100

Vol% (C37-S4-1) = [8.05 ml/ 10.5 ml] * 100 = 76.7 vol%

Vol% (C37-S4-2) = [8.10 ml/ 10.7 ml] * 100 = 75.7 vol%

Vol% Centrifuged Solids (C37-4) = 76.2 vol%

Weight Percent Centrifuged Solids

Wt% Centrifuged Solids = [Cent. Solids Mass/Total Sample Mass] * 100

Wt% (C37-S4-1) = [12.742 g/ ~~15.068~~ 15.559 g] * 100 = ~~81.9~~ 81.6 wt% 2/4/93

Wt% (C37-S4-2) = [12.925 g/ 15.905 g] * 100 = 81.3 wt%

Wt% Centrifuged Solids (C37-4) = 81.6 wt%

Sample Density

Density = Total mass/Total volume

Density (C37-S4-1) = 15.559 g/ 10.5 ml = 1.48 g/ml

Density (C37-S4-2) = 15.905 g/ 10.7 ml = 1.49 g/ml

Sample Density (C37-S4) = 1.48 g/ml

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Centrifuged Supernate Density

Density = Centrifuged Supernate mass/Centrifuged Supernate volume

Density (C37-S4-1) = 2.771 g/ 2.45 ml = 1.13 g/ml

Density (C37-S4-2) = 2.955 g/ 2.60 ml = 1.14 g/ml

Centrifuged Supernate Density (C37-S4) = 1.13 g/ml

Centrifuged Solids Density

Density = Centrifuged Solids mass/Centrifuged Solsids volume

Density (C37-S4-1) = 12.742 g/ 8.05 ml = 1.58 g/ml

Density (C37-S4-2) = 12.925 g/ 8.10 ml = 1.60 g/ml

Centrifuged Solids Density (C37-S4) = 1.59 g/ml

✓24. Transfer approximately 2 grams of the centrifuged supernate to each of two weighed scintillation vials labeled C37-S4-SUP1 and C37-S4-SUP2. Weigh the sample in the vials. Let the samples air dry until no visible liquid is observed in the vial. Place the vials in the muffle furnace and allow them to remain in the furnace at 105°C ± 3°C uncapped for 24 hours.

C37-S4-1			C37-S4-2		
Total	22.257	g	Total	22.789	g
Vial	20.354	g	Vial	20.286	g
Sample	1.903	g	Sample	2.503	g

Balance "A" C&V

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✓ 25. Remove the samples from the muffle furnace and cap the samples. Place the samples in a dessicator while the vial cools (a minimum of 1 hour). Remove the sample from the dessicator and weigh the dried sample.

C37-S4-SUP1		C37-S4-SUP2	
Total	20.883 g	Total	21.010 g
Vial	20.354 g	Vial	20.286 g
Sample	0.529 g	Sample	0.724 g

Balance "A" Cell

✓ 26. Transfer approximately 1 gram of the uncentrifuged sample (92-11292) to each of two weighed scintillation vials labeled C37-S4-1 and C37-S4-2. Weigh the sample in the vials. Let the samples air dry until no visible liquid is observed in the vial. Place the vials in the muffle furnace and allow them to remain in the furnace at 105°C ± 3°C uncapped for 24 hours.

C37-S4-1		C37-S4-2	
Total	22.225 g	Total	22.548 g
Vial	20.723 g	Vial	21.090 g
Sample	1.502 g	Sample	1.458 g

Balance "A" cell

__ 27. Remove the samples from the muffle furnace and cap the samples. Place the samples in a dessicator while the vial cools (a minimum of 1 hour). Remove the sample from the dessicator and weigh the dried sample.

C37-S4-1		C37-S4-2	
Total	21.384 g	Total	21.735 g
1-29-93 Vial	~~21.384~~ g 20.723	Vial 1-29-93	~~21.0645~~ g 21.090
Sample	0.661 g	Sample	0.6450 g

Balance _____

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✓28. Calculate wt% solids and wt% dissolved solids.

Weight % Solids

Wt% Solids = [Dry Sample mass/Wet Sample mass] * 100%

Wt% (C37-S4-1) = (0.529 g/ 1.903 g) * 100% = 27.8 %

Wt% (C37-S4-2) = (0.724 g/ 2.503 g) * 100% = 28.9 %

Ave. Wt% Solids (C37-S4) = 28.4 %

Weight % Dissolved Solids

Wt% Diss. = (Dry Supernate mass/Wet Supernate mass)*(100 - wt% Cent. Solids)

Wt% (C37-S4-1) 9-14-93 = (~~[illegible]~~ g / ~~[illegible]~~ g)*(100 - ~~[illegible]~~ 81.9 9-21-93)% = 8.0 %

Wt% (C37-S4-2) = (0.645 g / 1.458 g)*(100 - 81.3)% = 8.3 %

Ave. Wt% Dissolved Solids = 8.1 %

Weight % Undissolved Solids

Ave. Wt% Undissolved Solids= Ave. Wt% Total Solids - Ave. Wt% Dissolved Solids

Wt% Undissolved Solids = 28.4 - 8.1 = 20.3 %

DILUTION PREPARATION AND PHYSICAL TESTING (1:1)

✓29. Transfer the supernate in the graduate cylinders and the solids in the centrifuge cones to a weighed jar labeled **C37-S4-DIL1**. Transfer enough of the **92-11292** sample to obtain 30 grams of sample in **C37-S4-DIL1**. Weigh the sample in the jar. Add an equal mass of distilled water. Record the mass of water added and the total mass of the resulting slurry. Mix the sample to obtain a homogeneous sample.

	C37-S4-DIL1	
Jar + Solids	184.98	g
Jar (Tare)	134.42	g
Solids Sample	50.56	g

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Jar + Solids +Water 235.45 g
Jar + Solids 184.98 g
Water 50.47 g

✓ 30. Install the MV-I sensor on the In-Cell Viscometer. Tap the M5 measuring head. Set the chart recorder and computer parameters to *tau vs D*, *%D = 40*, *%tau = 5%*, $t_1 = 0$, $t_2 = 5$ *min*, and $t_3 = 0.1$ *min*. Zero the instrument, run a baseline, and run the 10 standard in the cup and spindle viscometer system. Record the sample name and file name on this page. Record the lot number and reported viscosity in the M&TE section on page 1.

Sample Name: 10CP STD
File Name: 10CP12593

✓ 31. Change the *%tau* setting on the chart recorder and computer to *10%*. Transfer 40 ml of the 50 cP standard to the cup and run the standard. Record the sample name and file name on this page. Record the lot number and reported viscosity in the M&TE section on page 1.

Sample Name: 50CP STD
File Name: 50CP12593

✓ 32. Change the parameters on the chart recorder and computer to *%tau = 100%*. Transfer 40 ml of **C37-S4-DIL1** to the viscometer cup (record the temperature of the viscometer). Run the sample and record the sample and file name.

Sample Name: C37S4D11
File Name: C37S41
Temperature 28 °C

✓ 33. Repeat the same measurement as above. Record the sample name and file name. Transfer this sample back to the jar labeled **C37-S4-DIL1**.

Sample Name: C37S4D12
File Name: C37S42

JM Richardson

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✓34. Place capped sample C37-S4-DIL1 in the water bath at 95°C for a minimum of 1 hour. Measure the temperature of the sample with a thermocouple. Stir the sample if needed to obtain a homogeneous sample.

✓35. Transfer 40 ml of C37-S4-DIL1 to the viscometer cup. The viscometer tempering vessel should be at at 95°C (record the actual temperature). Run the sample and record the sample and file name.

Sample Name: C3754DIL1-3
File Name: C3754D13
Temperature 95 °C

✓36. Repeat the same measurement as above. Record the sample name and file name. Transfer the sample to the jar labeled C37-S4-DIL1.

Sample Name: C3754DIL1-4 C3754DIL1-5
File Name: C3754D14 C3754D15

✓37. Transfer 15 grams from sample C37-S4-DIL1 (at ambient temperature) to each of two weighed 15 mL centrifuge cones labeled C37-S4-D1 and C37-S4-D2. Record the weights and the distance between 4 and 14 mL on the graduated centrifuge cones with the samples.

C37-S4-D1			C37-S4-D2		
Total	19.300	g	Total	19.725	g
Cone + Lid	5.712	g	Cone + Lid	5.753	g
Sample	13.588	g	Sample	13.972	g
Cone	5.125	g	Cone	5.168	g
4 to 14 mL	55	mm	4 to 14 mL	55	mm

Balance A&Cell

✓38. Begin the settling rate measurement by shaking the centrifuge cones and setting the two samples in an isolated location. For the duration of the settling behavior the sample should be allowed to settle with little or no disturbance.

Signature JM Richardson Date 1-25-93 LRB _____ Page _____

Record the start time: 0745 and date: 1/23/93

✓39. Record the settling rate behavior on the attached settling rate data sheet.

DILUTION PREPARATION AND PHYSICAL TESTING (3:1)

✓40. Transfer the slurry in the centrifuge cones to a weighed jar labeled **C37-S4-DIL2**. Transfer enough of the **C37-S4-DIL1** sample to obtain 30 grams of **C37-S4-DIL1** sample in the jar labeled **C37-S4-DIL2**. Weigh the sample in the jar. Add an equal mass of distilled water. Record the mass of water added and the total mass of the resulting slurry. Mix the sample to obtain a homogeneous sample.

	C37-S4-DIL2	
Jar + C37-S4-DIL1	185.22	g
Jar (Tare)	134.81	g
C37-S4-DIL1 Sample	50.31	g
Jar + C37-S4-DIL1 + Water	236.00	g
Jar + C37-S4-DIL1	185.22	g
Water	50.18	g

✓41. Install the MV-I sensor on the In-Cell Viscometer. Tap the M5 measuring head. Set the chart recorder and computer parameters to *tau vs D*, *%D = 40*, *%tau = 5%*, $t_1 = 0$, $t_2 = 5$ *min*, and $t_3 = 0.1$ *min*. Zero the instrument, run a baseline, and run the 10 standard in the cup and spindle viscometer system. Record the sample name and file name on this page. Record the lot number and reported viscosity in the M&TE section on page 1.

Sample Name: 10cPSTD
File Name: 10cP12593

✓42. Change the *%tau* setting on the chart recorder and computer to *10%*. Transfer 40 ml of the 50 cP standard to the cup and run the standard. Record the sample name and file name on this page. Record the lot number and reported viscosity in the M&TE section on page 1.

Signature [signature] Date 1-23-93 LRB _____ Page ____

Sample Name: 50CPSTD
File Name: 50CP12593

43. Change the parameters on the chart recorder and computer to *%tau = 100%*. Transfer 40 ml of C37-S4-DIL2 to the viscometer cup (record the temperature of the viscometer). Run the sample and record the sample and file name.

Sample Name: C3754DIL2-1
File Name: C3754D21
Temperature 28 °C

44. Repeat the same measurement as above. Record the sample name and file name. Transfer this sample back to the jar labeled C37-S4-DIL2.

Sample Name: C3754DIL2-2
File Name: C3754D22

45. Place capped sample C37-S4-DIL2 in the water bath at 95°C for a minimum of 1 hour. Measure the temperature of the sample with a thermocouple. Stir the sample if needed to obtain a homogeneous sample.

46. Transfer 40 ml of C37-S4-DIL2 to the viscometer cup. The viscometer tempering vessel should be at at 95°C (record the actual temperature). Run the sample and record the sample and file name.

Sample Name: C3754DIL2-3
File Name: C3754D23
Temperature 95 °C

47. Repeat the same measurement as above. Record the sample name and file name. Transfer the sample to the jar labeled C37-S4-DIL2.

Sample Name: C3754DIL2-4
File Name: C3754D24

JM Richardson

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✓48. Transfer 15 grams from sample C37-S4-DIL2 (at ambient temperature) to each of two weighed 15 mL centrifuge cones labeled C37-S4-D3 and C37-S4-D4. Record the weights and the distance between 4 and 14 mL on the graduated centrifuge cones with the samples.

C37-S4-D3			C37-S4-D4		
Total	18.920	g	Total	19.267	g
Cone + Lid	5.707	g	Cone + Lid	5.687	g
Sample	13.213	g	Sample	13.580	g
Cone	5.121	g	Cone	5.098	g
4 to 14 mL	58	mm	4 to 14 mL	58	mm

Balance Acell

✓49. Begin the settling rate measurement by shaking the centrifuge cones and setting the two samples in an isolated location. For the duration of the settling behavior the sample should be allowed to settle with little or no disturbance.

Record the start time: 0945 and date: 1/27/93

✓50. Record the settling rate behavior on the attached settling rate data sheet.

Signature [illegible] Date 1-27-93 LRB _____ Page ____

SETTLING RATE DATA SHEET

1. Transfer 15 ml of C37-S4-DIL1 to each of two weighed centrifuge cones labeled C37-S4-D1 and C37-S4-D2 or use the existing sample.

C37-S4-D1		C37-S4-D2	
Total	19.300 g	Total	19.725 g
Cone + Lid	5.712 g	Cone + Lid	5.753 g
Sample	13.588 g	Sample	13.972 g
Cone	5.125 g	Cone	5.168 g

Balance ACOM

2. Begin the settling rate measurement by setting the two centrifuge cones in an isolated place at ambient temperature. For the duration of the settling behavior measurements the sample should be allowed to settle with little or no disturbances.

Start Time 0745 Temperature 29 °C Date 1-23-93

3. Measure and record the total, liquid and solid volumes every 15 minutes for the first hour of settling.

Time 0800 Temperature 29 °C Date 1-23-93

C37-S4-D1		C37-S4-D2	
Total	11.50 ml	Total	11.9 ml
Solids	11.4 ml	Solids	11.8 ml
Liquid	0.1 ml	Liquid	0.1 ml

Time 0815 Temperature 29 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	11.4 ml	Solids	11.8 ml
Liquid	0.1 ml	Liquid	0.1 ml

Time 0830 Temperature 29 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	11.3 ml	Solids	11.6 ml
Liquid	0.2 ml	Liquid	0.3 ml

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Time 0845 Temperature 29 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	11.2 ml	Solids	11.5 ml
Liquid	0.3 ml	Liquid	0.4 ml

4. Repeat these measurments every hour for the remainder of the day.

Time 0950 Temperature 29 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	10.8 ml	Solids	11.2 ml
Liquid	0.7 ml	Liquid	0.7 ml

Time 1100 Temperature 29 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	9.9 ml	Solids	10.4 ml
Liquid	1.6 ml	Liquid	1.5 ml

Time 12:00 Temperature 29 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml 11.5	Total	11.9 ml
Solids	9.9 ml 9.5	Solids	9.9 ml
Liquid	1.6 ml 2.0	Liquid	2.0 ml

Time 1300 Temperature 29 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	9.2 ml	Solids	9.6 ml
Liquid	2.3 ml	Liquid	2.3 ml

Time 1400 Temperature 29 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	8.9 ml	Solids	9.4 ml
Liquid	2.6 ml	Liquid	2.5 ml

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Time 1500 Temperature 29 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	8.8 ml	Solids	9.2 ml
Liquid	2.7 ml	Liquid	2.7 ml

Time 1540 Temperature 29 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	8.8 ml	Solids	9.1 ml
Liquid	2.7 ml	Liquid	2.8 ml

5. At the beginning of the next day, measure and record the total, liquid and solid volumes every two hours throughout the day or until there is no change in the solids volume for three successive measurements.

Time 1100 Temperature 28 °C Date 1-24-93

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	7.7 ml	Solids	7.9 ml
Liquid	3.8 ml	Liquid	4.0 ml

Time 1300 Temperature 28 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	7.6 ml	Solids	7.8 ml
Liquid	3.9 ml	Liquid	4.1 ml

Time 1500 Temperature 28 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	7.5 ml	Solids	7.8 ml
Liquid	4.0 ml	Liquid	4.1 ml

Time _____ Temperature _____ °C

C37-S4-D1		C37-S4-D2	
Total	NA ml	Total	NA ml
Solids	NA ml	Solids	NA ml
Liquid	_____ ml	Liquid	_____ ml

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Time _____ Temperature _____ °C

C37-S4-D1		C37-S4-D2	
Total	NA ml	Total	NA ml
Solids	NA ml	Solids	NA ml
Liquid	_____ ml	Liquid	_____ ml

__6. If the solids volume of the sample is still changing, repeat the settling measurements for one more day.

Time 0745 Temperature ~~1-25~~ 28 °C Date 1-25-93

ab 1-25-93

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	7.2 ml	Solids	7.5 ml
Liquid	4.3 ml	Liquid	4.4 ml

Time 0945 Temperature 28 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	7.2 ml	Solids	7.5 ml
Liquid	4.3 ml	Liquid	4.4 ml

Time 1430 Temperature 28 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	7.2 ml	Solids	7.5 ml
Liquid	4.3 ml	Liquid	4.4 ml

Time 1730 Temperature 28 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	7.2 ml	Solids	7.5 ml
Liquid	4.3 ml	Liquid	4.4 ml

Time 1930 Temperature 28 °C

C37-S4-D1		C37-S4-D2	
Total	11.5 ml	Total	11.9 ml
Solids	7.2 ml	Solids	7.5 ml
Liquid	4.3 ml	Liquid	4.4 ml

Signature [signature] Date 1-25-93 LRB _____ Page _____

__7. Calculate the the vol% settled solids.

Vol% Settled Solids = volume settled solids/total volume * 100 vol%

C37-S4-D1
Vol% Settled Solids = 7.2 mL/ 11.5 mL * 100 vol%
= 62.6 vol%

C37-S4-D2
Vol% Settled Solids = 7.5 mL/ 11.9 mL * 100 vol%
= 63.0 vol%

Signature [signature] Date 2-5-93 LRB _____ Page ____

SETTLING RATE DATA SHEET

✓1. Transfer 15 ml of C37-S4-DIL2 to each of two weighed centrifuge cones labeled C37-S4-D3 and C37-S4-D4 or use the existing sample.

C37-S4-D3		C37-S4-D4	
Total	18.92 g	Total	19.267 g
Cone + Lid	5.707 g	Cone + Lid	5.687 g
Sample	13.213 g	Sample	13.580 g
Cone	5.121 g	Cone	5.098 g

Balance 1

✓2. Begin the settling rate measurement by setting the two centrifuge cones in an isolated place at ambient temperature. For the duration of the settling behavior measurements the sample should be allowed to settle with little or no disturbances.

Start Time 9:45 Temperature 28 °C Date 1-27-93

✓3. Measure and record the total, liquid and solid volumes every 15 minutes for the first hour of settling.

Time 10:00 Temperature 28 °C Date 1-27-93

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	12.4 ml	Solids	12.5 ml
Liquid	0.1 ml	Liquid	0.2 ml

Time 10:15 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	11.9 ml	Solids	12.1 ml
Liquid	0.6 ml	Liquid	0.6 ml

Time 10:30 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	11.5 ml	Solids	11.7 ml
Liquid	1.0 ml	Liquid	1.0 ml

Signature [signature] Date 1-27-93 LRB _____ Page _____

Time 1045 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	11.0 ml	Solids	10.8 ml
Liquid	1.5 ml	Liquid	1.9 ml

__4. Repeat these measurments every hour for the remainder of the day.

Time 1145 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	9.8 ml	Solids	10.0 ml
Liquid	2.7 ml	Liquid	2.7 ml

Time 1230 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	8.7 ml	Solids	8.8 ml
Liquid	3.8 ml	Liquid	3.9 ml

Time 1330 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	6.8 ml	Solids	7.2 ml
Liquid	5.7 ml	Liquid	5.5 ml

Time 1430 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	6.3 ml	Solids	6.5 ml
Liquid	6.2 ml	Liquid	6.2 ml

Time 1530 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	~~6.8~~ ml 6.0	Solids	~~5.0~~ ml 6.2
Liquid	~~6.7~~ ml 6.5	Liquid	~~7.0~~ ml 6.5

1-22-93 1-22-93

Signature [signature] Date 1-22-93 LRB _____ Page _____

Time 1630 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	5.7 ml	Solids	6.0 ml
Liquid	6.8 ml	Liquid	6.7 ml

Time 1730 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	5.4 ml	Solids	5.7 ml
Liquid	7.1 ml	Liquid	7.0 ml

__5. At the beginning of the next day, measure and record the total, liquid and solid volumes every two hours throughout the day or until there is no change in the solids volume for three successive measurements.

Time 0800 Temperature 28 °C Date 1-28-93

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	4.4 ml	Solids	4.5 ml
Liquid	8.1 ml	Liquid	8.2 ml

Time 10~~00~~ Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	4.3 ml	Solids	4.4 ml
Liquid	8.2 ml	Liquid	8.3 ml

Time 1300 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	4.3 ml	Solids	4.3 ml
Liquid	8.2 ml	Liquid	8.4 ml

Time 1500 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	4.2 ml	Solids	4.3 ml
Liquid	8.3 ml	Liquid	8.4 ml

Signature [illegible] Date 1-28-93 LRB _____ Page ____

Time 1700 Temperature 28 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	4.2 ml	Solids	4.3 ml
Liquid	8.3 ml	Liquid	8.4 ml

__6. If the solids volume of the sample is still changing, repeat the settling measurements for one more day.

Time 800 Temperature 29 °C Date 1-29-93

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	4.1 ml	Solids	4.2 ml
Liquid	8.4 ml	Liquid	8.5 ml

Time 1000 Temperature 29 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	4.0 ml	Solids	4.1 ml
Liquid	8.5 ml	Liquid	8.6 ml

Time 1300 Temperature 29 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	4.0 ml	Solids	4.1 ml
Liquid	8.5 ml	Liquid	8.6 ml

Time 1400 Temperature 29 °C

C37-S4-D3		C37-S4-D4	
Total	12.5 ml	Total	12.7 ml
Solids	4.0 ml	Solids	4.1 ml
Liquid	8.5 ml	Liquid	8.6 ml

Time _____ Temperature _____ °C

C37-S4-D3		C37-S4-D4	
Total	N/A ml	Total	N/A ml
Solids	N/A ml	Solids	N/A ml
Liquid	_____ ml	Liquid	_____ ml

Signature [signature] Date 1-29-93 LRB _____ Page _____

__7. Calculate the the vol% settled solids.

Vol% Settled Solids = volume settled solids/total volume * 100 vol%

C37-S4-D3

Vol% Settled Solids = 4.0 mL/ 12.5 mL * 100 vol%

= ~~35.4~~ 32.0 vol%

C37-S4-D4

Vol% Settled Solids = 4.1 mL/ 12.7 mL * 100 vol%

= 32.3 vol%

Signature [signature] Date 1-10-92 LRB _____ Page ____

RHEOGRAMS

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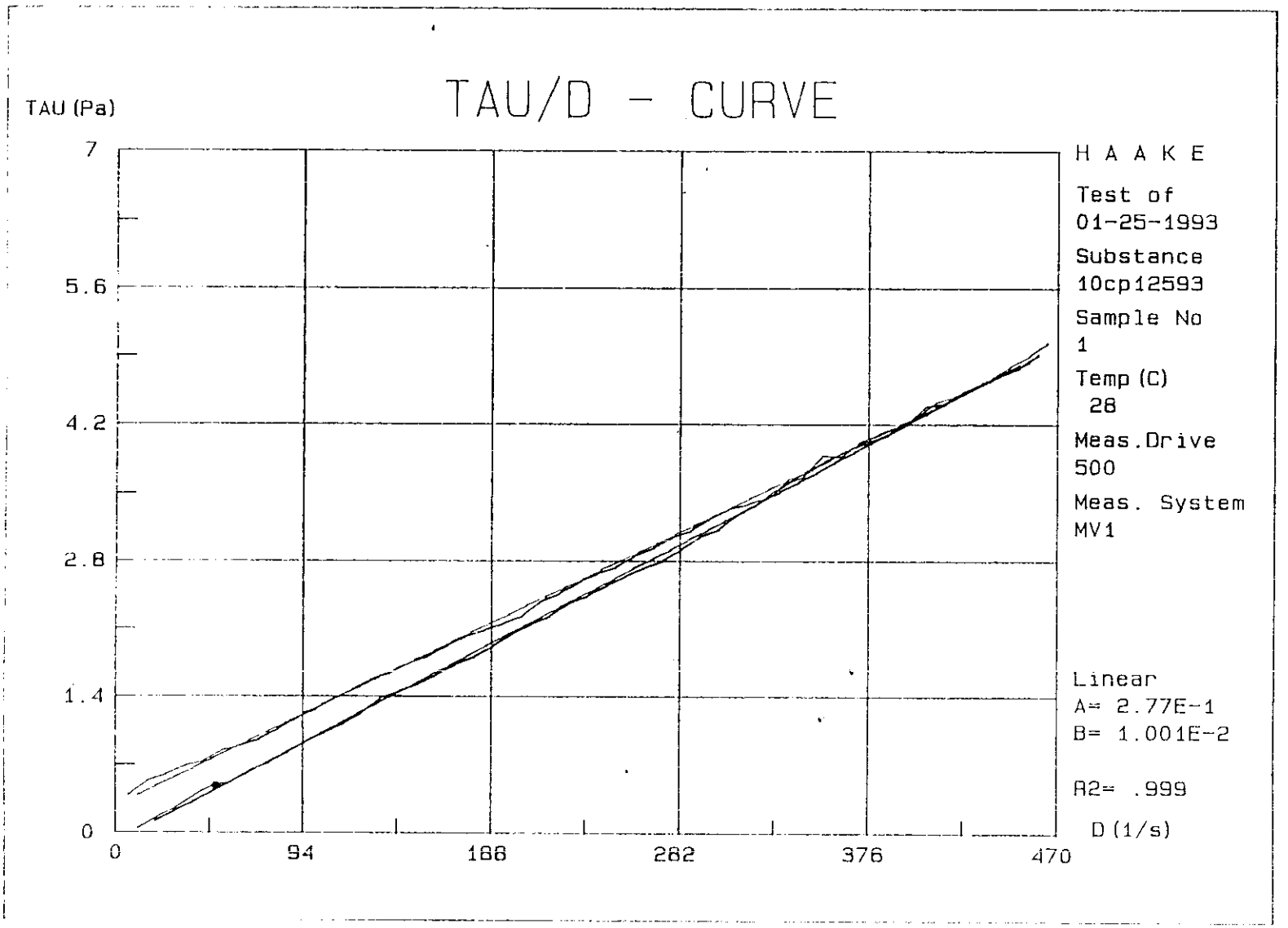
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4.2
2.8
1.4
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188
282
376
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D (1/s)
H A A K E
Test of
01-25-1993
Substance
10cp12593
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
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Linear
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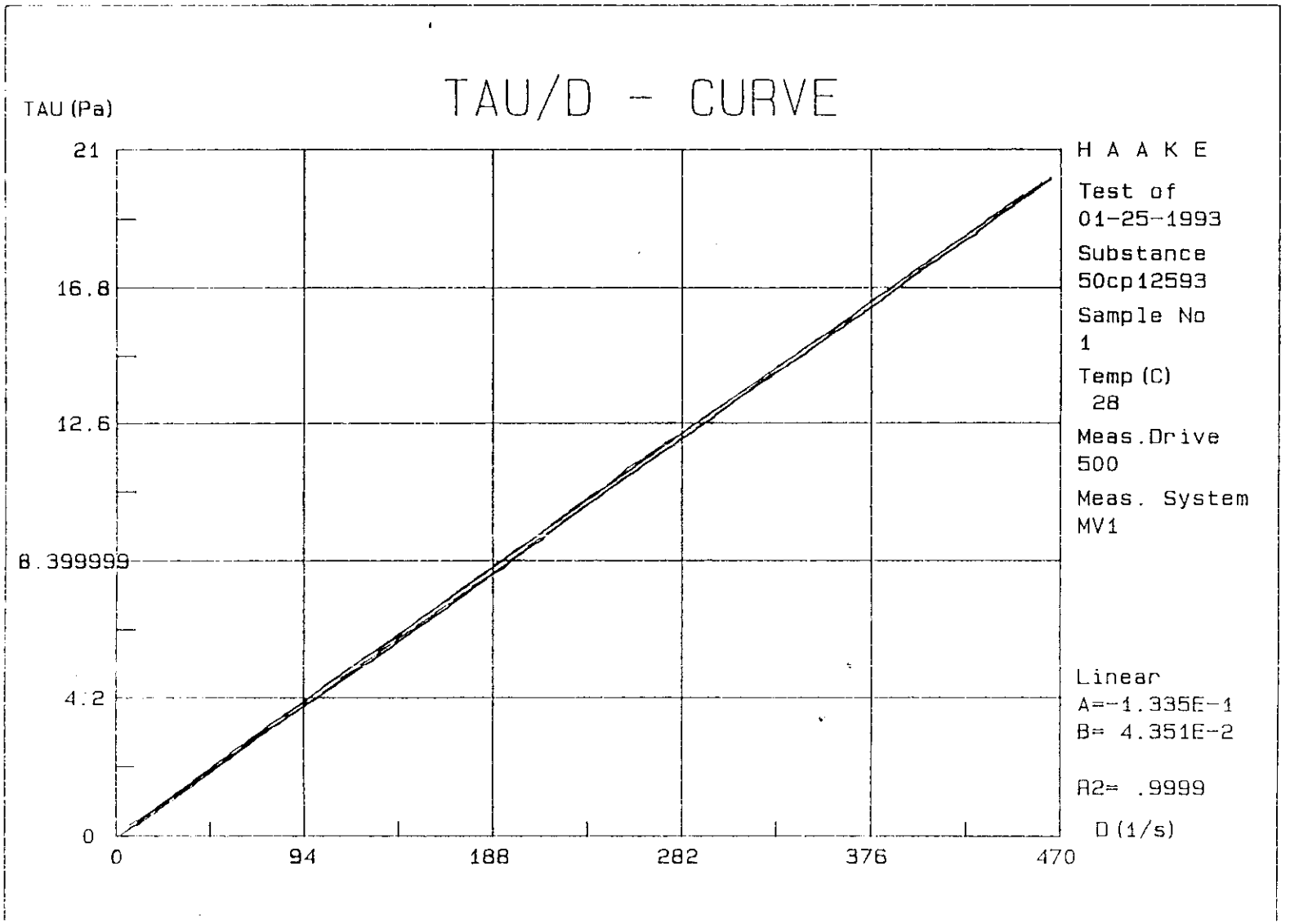
R2= .999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94
188
282
376
470
D (1/s)
H A A K E
Test of
01-25-1993
Substance
50cp12593
Sample No
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Temp (C)
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Meas.Drive
500
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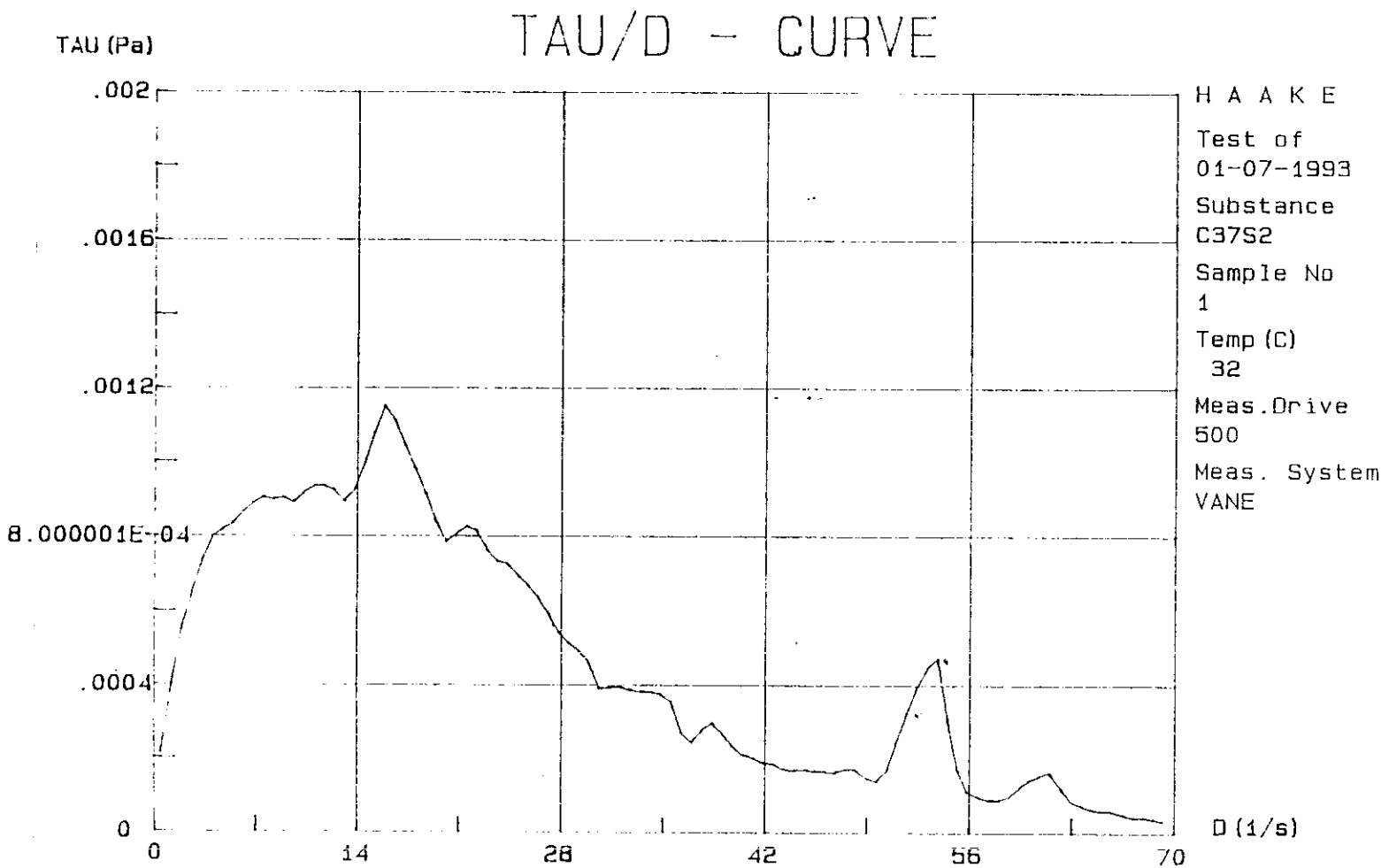
R2= .9999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.0016
.0012
8.000001E-04
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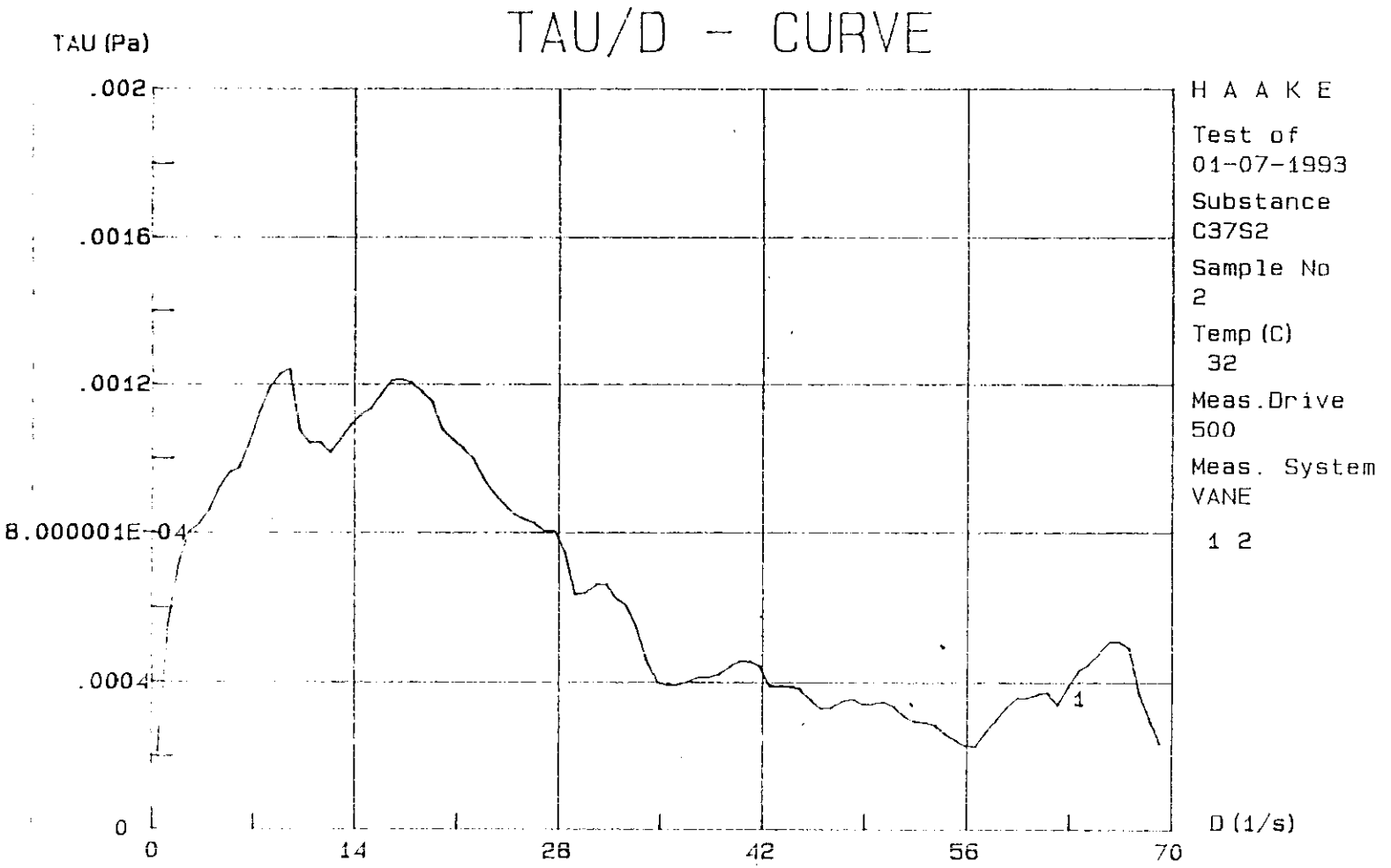
0
0
14
28
42
56
70
D (1/s)
H A A K E
Test of
01-07-1993
Substance
C37S2
Sample No
1
Temp (C)
32
Meas.Drive
500
Meas. System
VANE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TAU (Pa)
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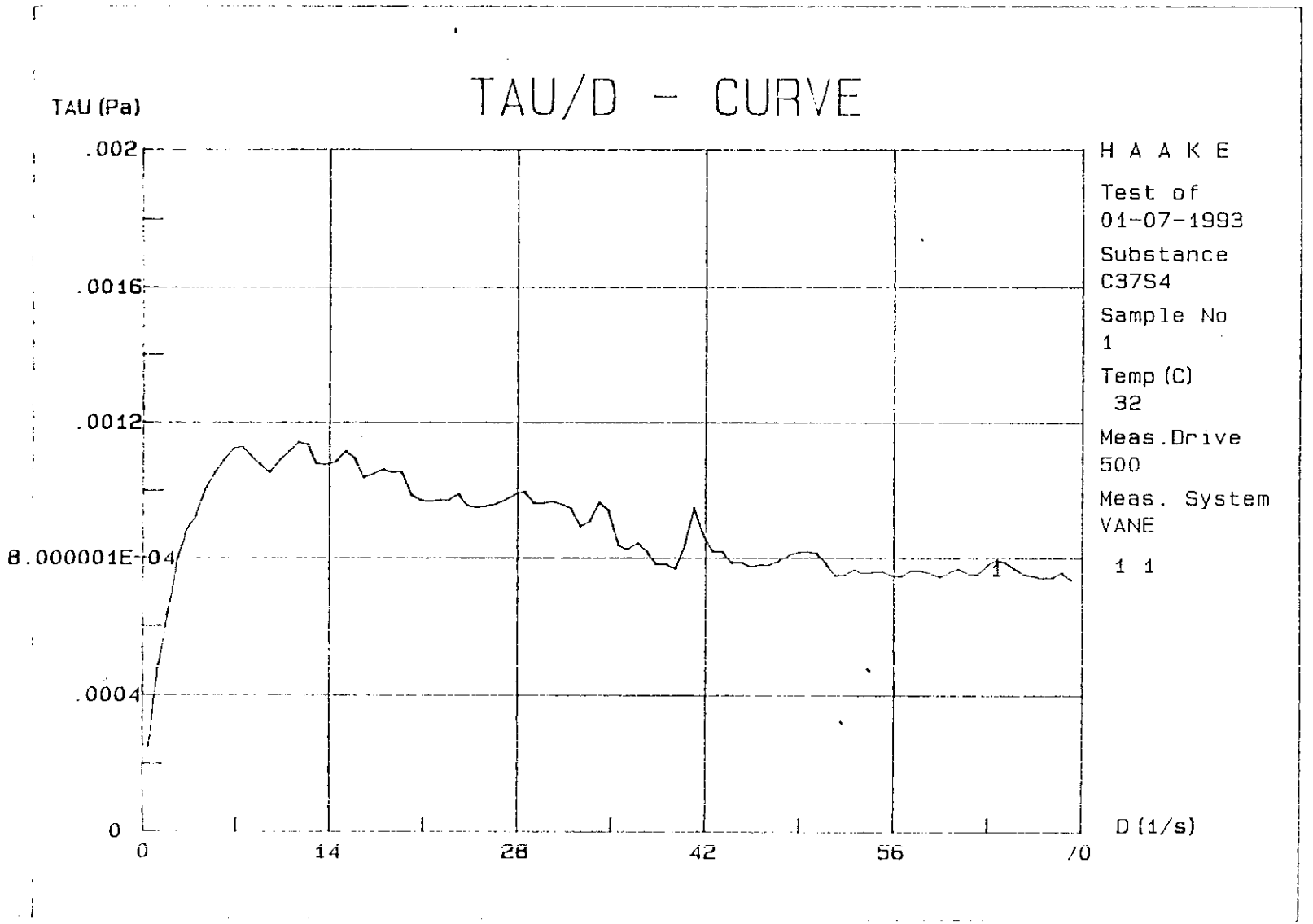
.0016
.0012
8.000001E-04
.0004
0
0
14
28
42
56
70
D (1/s)
1
H A A K E
Test of
01-07-1993
Substance
C37S2
Sample No
2
Temp (C)
32
Meas.Drive
500
Meas. System
VANE
1 2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.0016
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8.000001E-04
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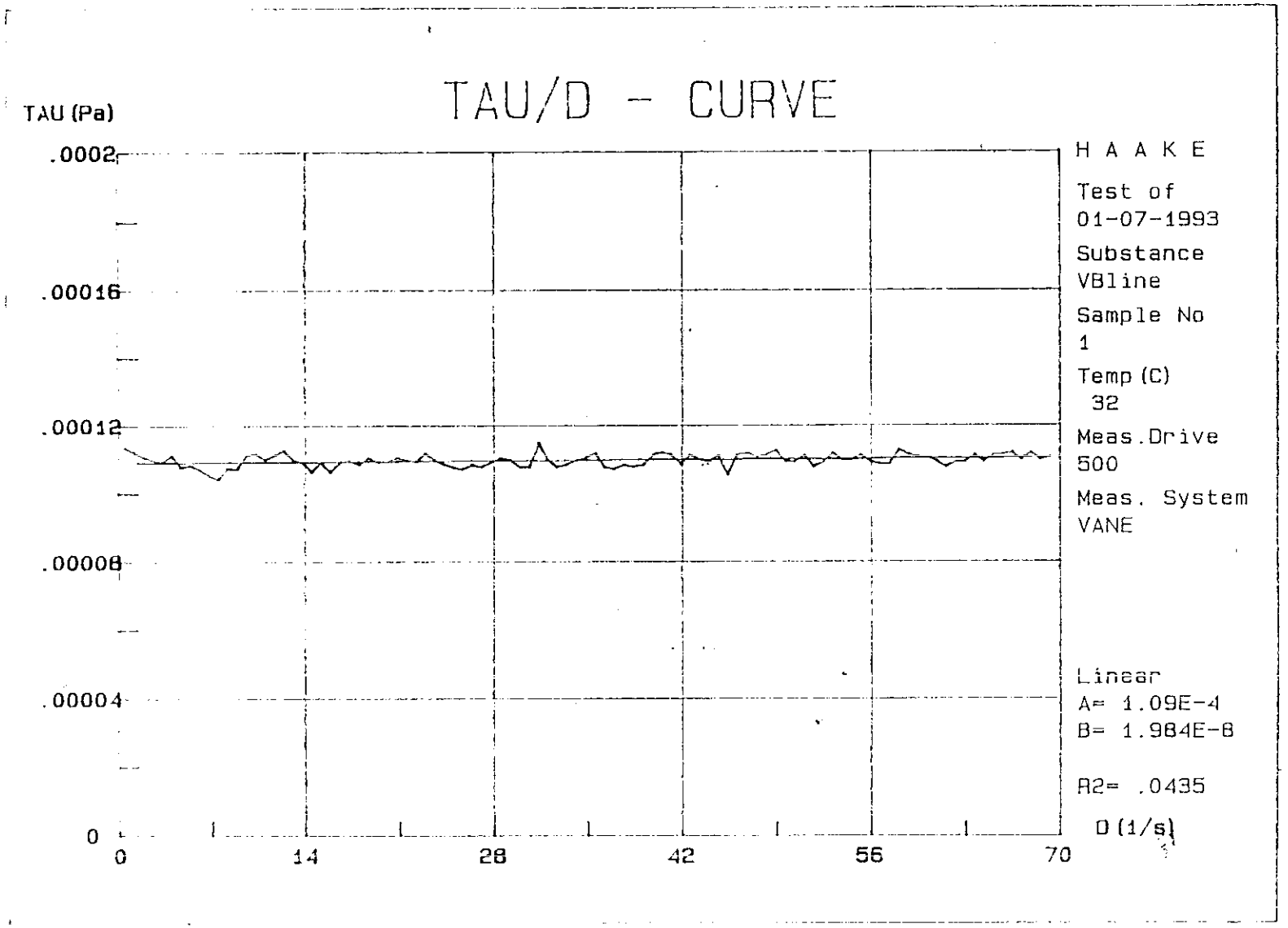
0
0
14
28
42
56
70
D (1/s)
H A A K E
Test of
01-07-1993
Substance
C37S4
Sample No
1
Temp (C)
32
Meas.Drive
500
Meas. System
VANE
1 1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.0002
.00016
.00012
.00008
.00004
0
0
14
28
42
56
70
D (1/s)
H A A K E
Test of
01-07-1993
Substance
VBline
Sample No
1
Temp (C)
32
Meas.Drive
500
Meas. System
VANE
Linear
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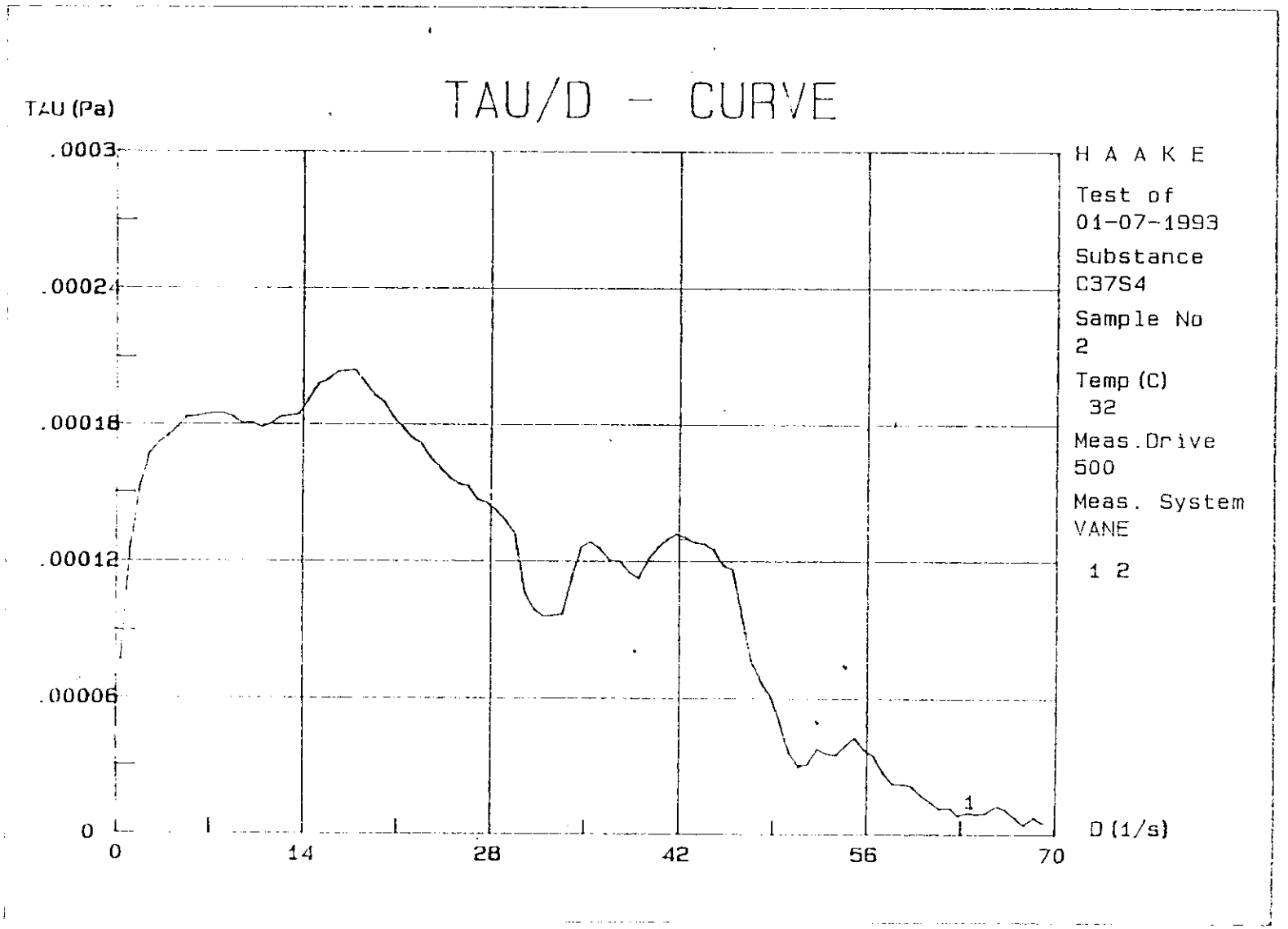
B= 1.984E-8
R2= .0435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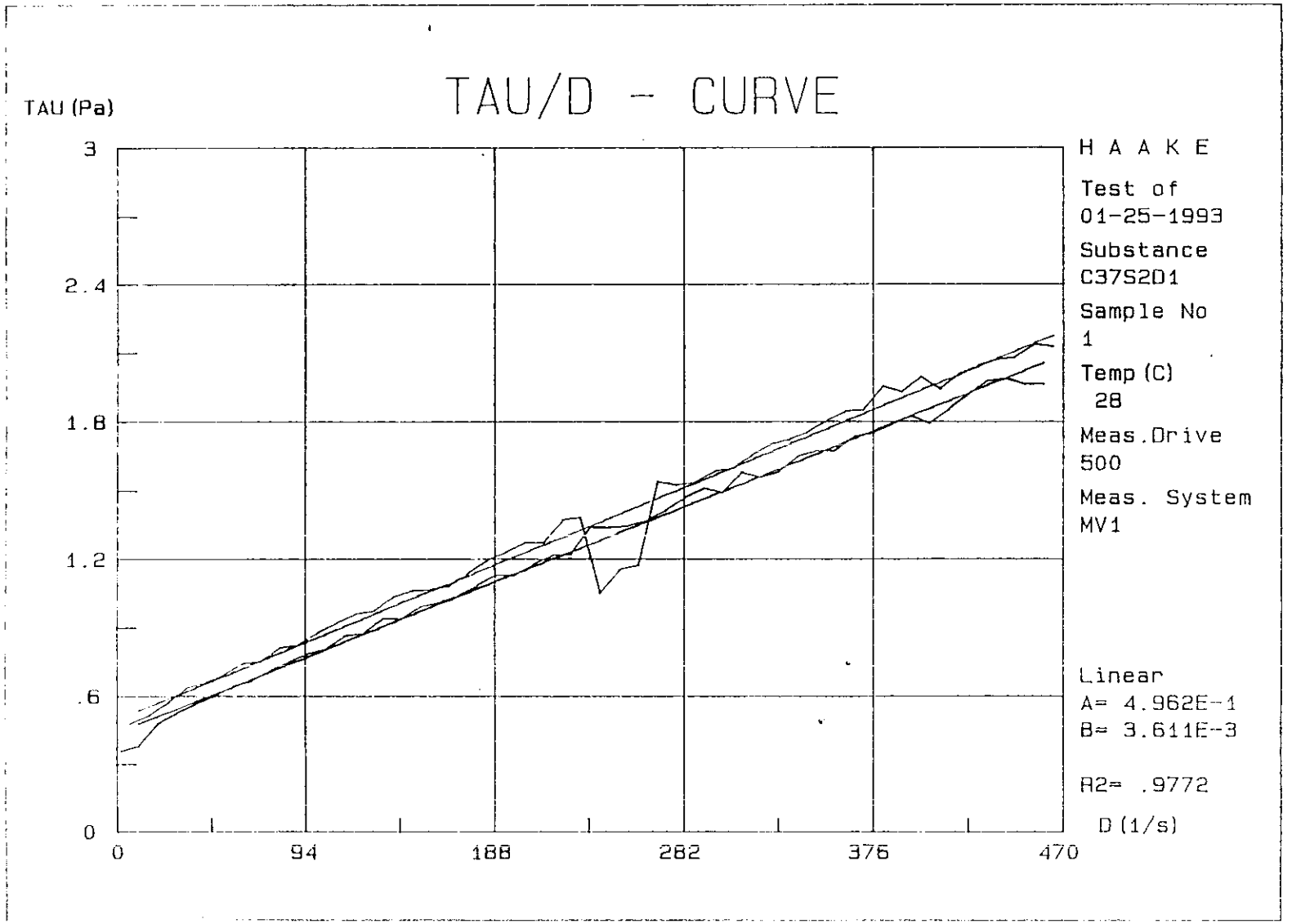
.00024
.00018
.00012
.00006
0
0
14
28
42
56
70
D (1/s)
1
H A A K E
Test of
01-07-1993
Substance
C37S4
Sample No
2
Temp (C)
32
Meas.Drive
500
Meas. System
VANE
1 2


TAU/D - CURVE
TAU (Pa)
3
2.4
1.8
1.2
.6
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S2D1
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1
Linear
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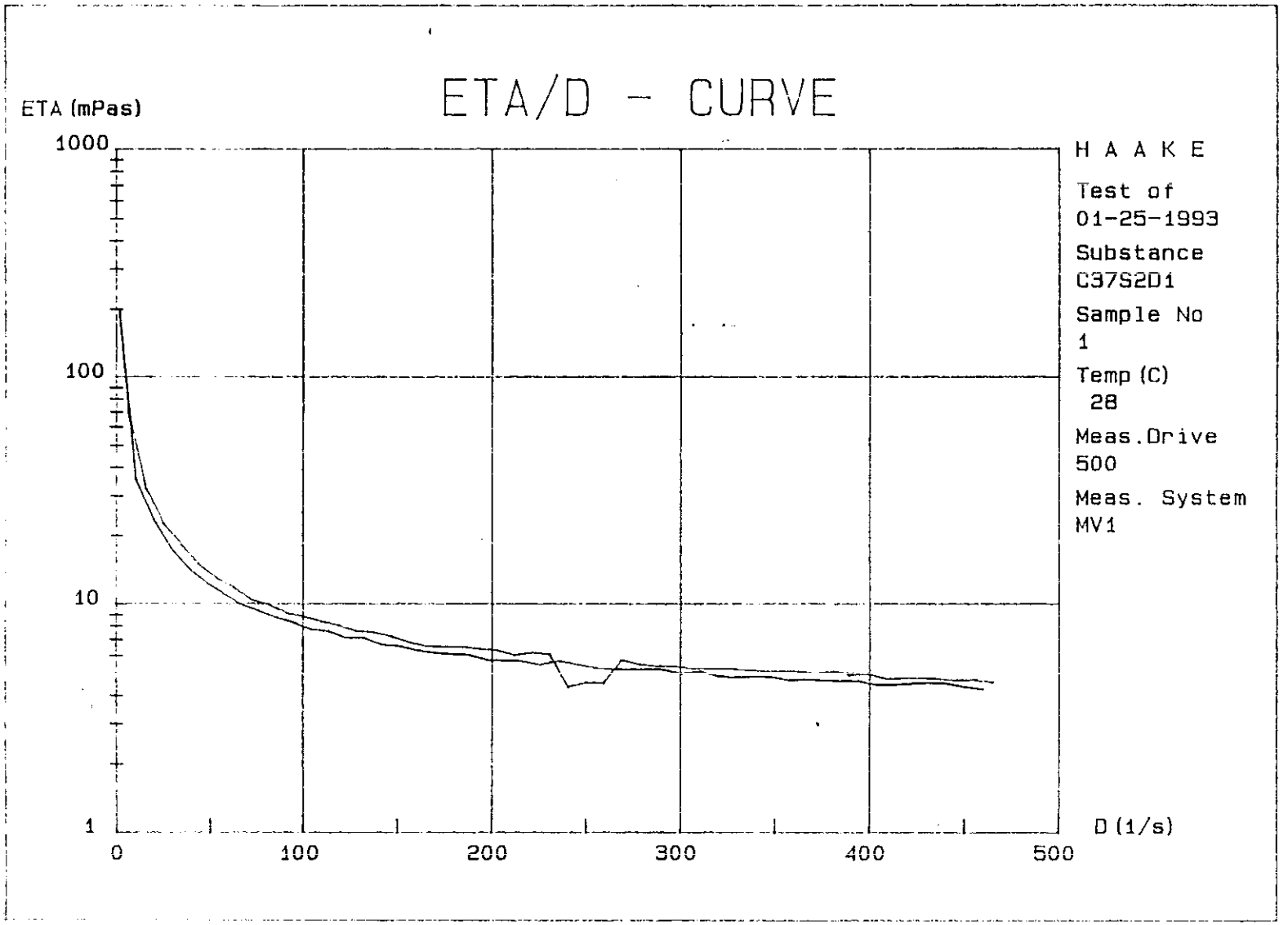
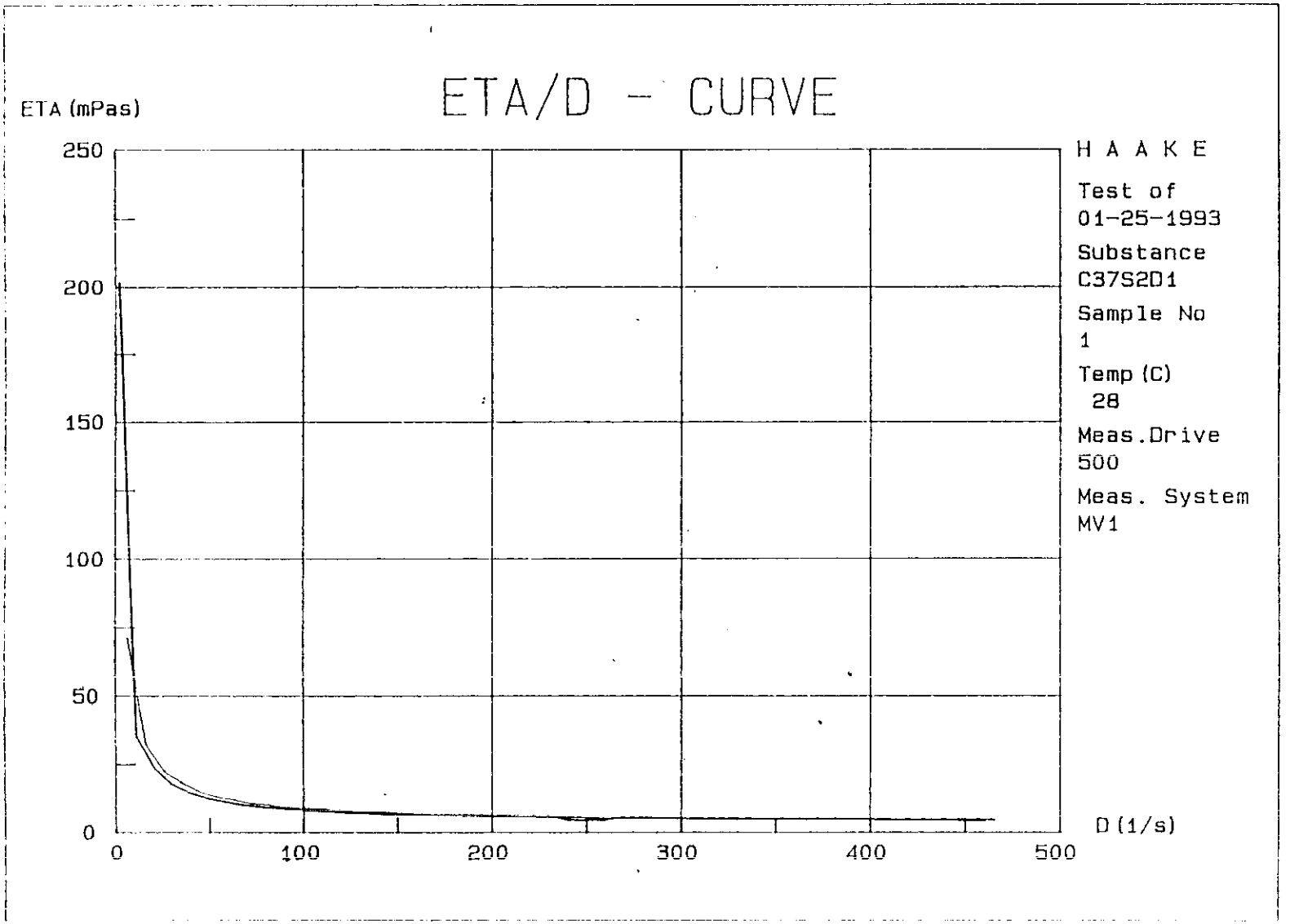
B= 3.611E-3
R2= .9772


ETA/D - CURVE
ETA (mPas)
1000
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S2D1
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1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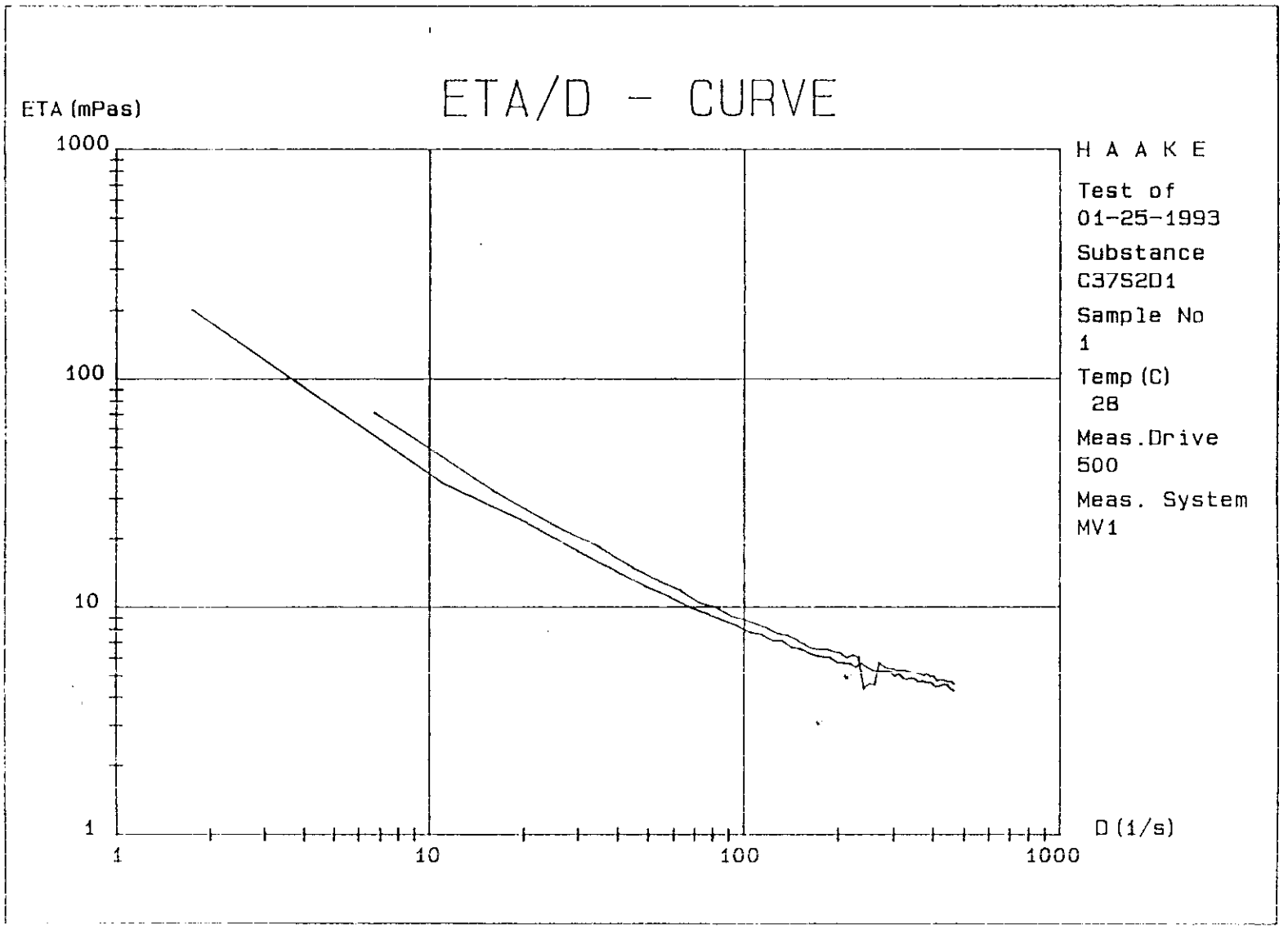
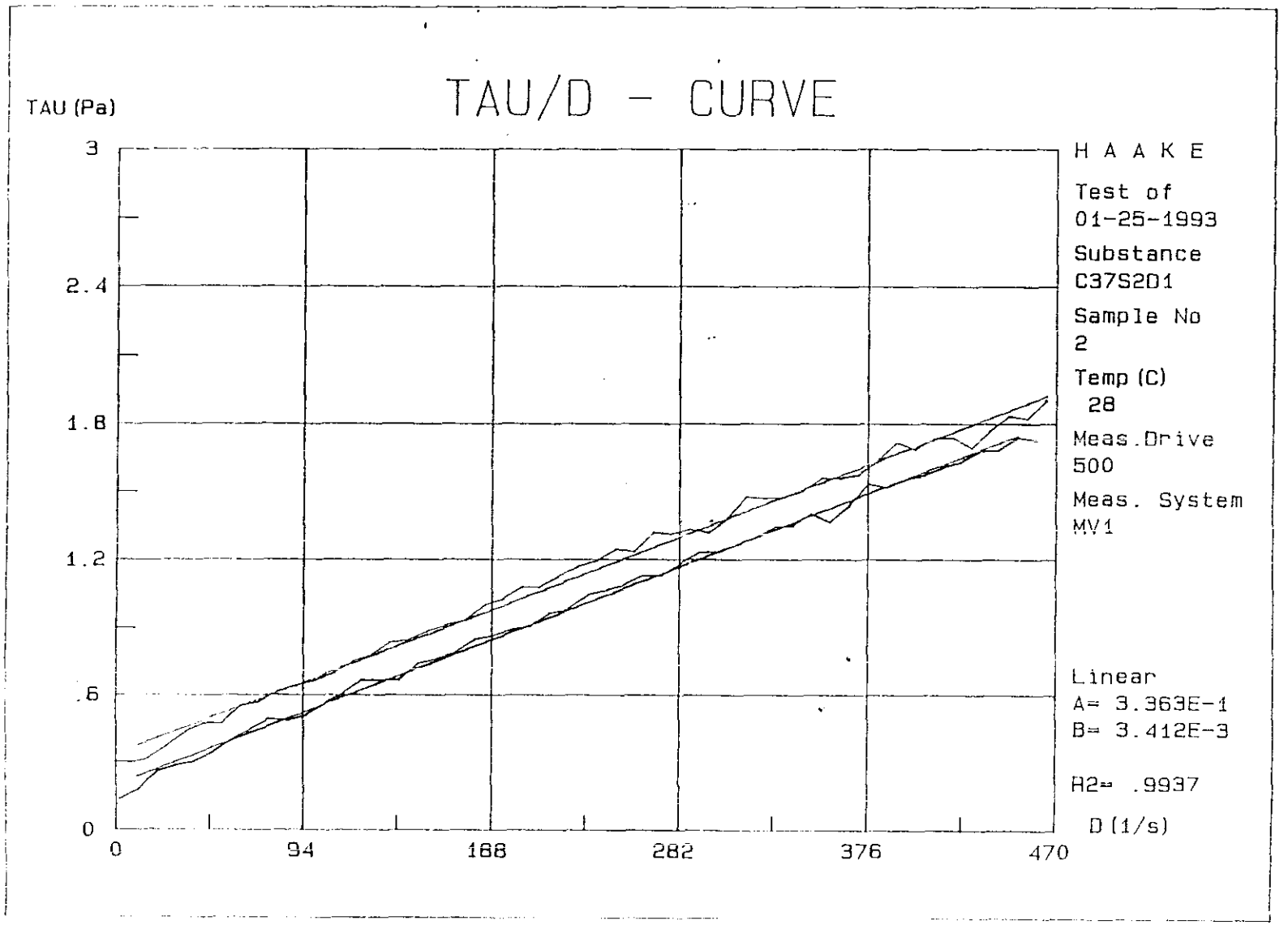
ETA (mPas)
250
200
150
100
50
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S2D1
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1


ETA/D - CURVE
ETA (mPas)
1000
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S2D1
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1


TAU/D - CURVE
TAU (Pa)
3
2.4
1.8
1.2
.6
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S2D1
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1
Linear
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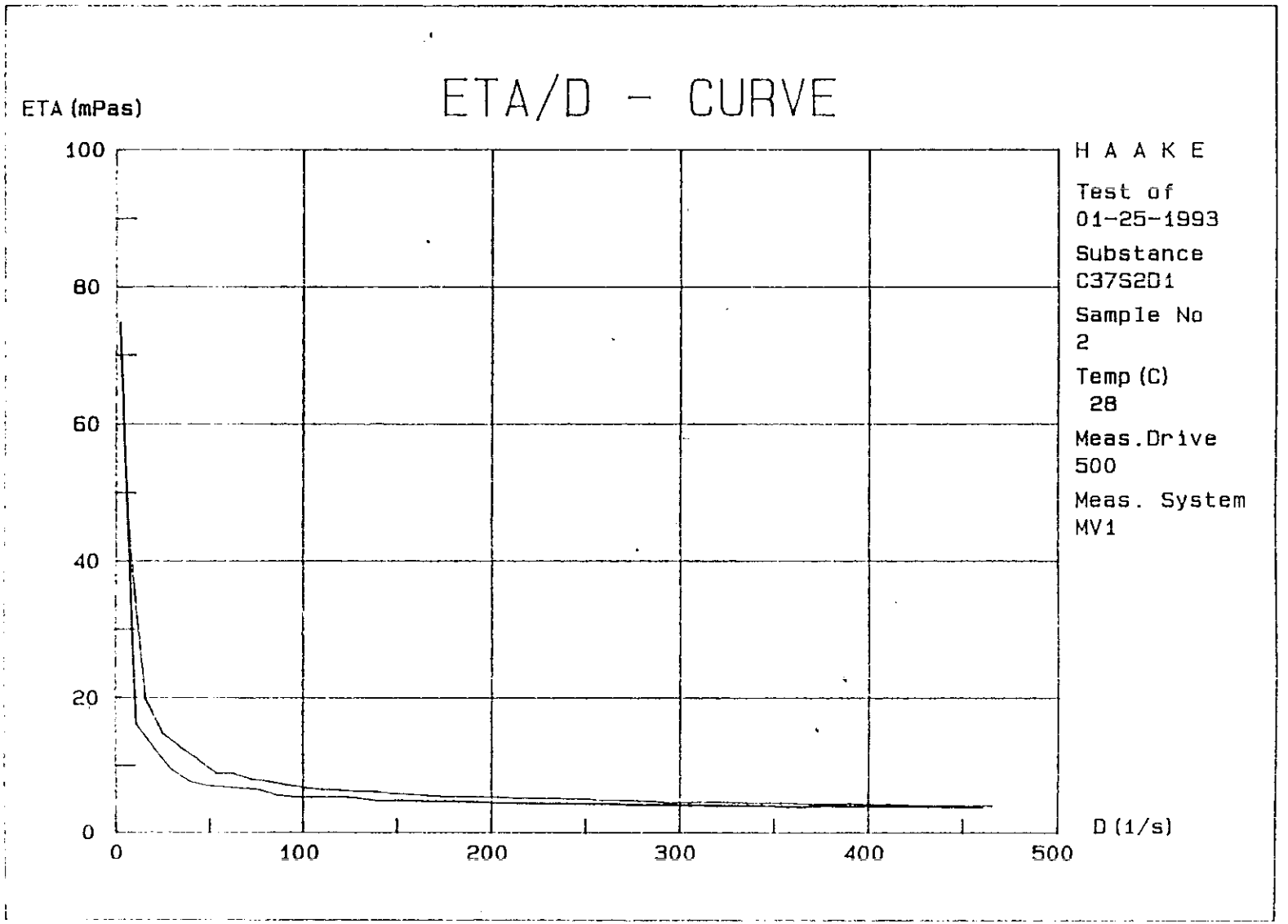
B= 3.412E-3
R2= .9937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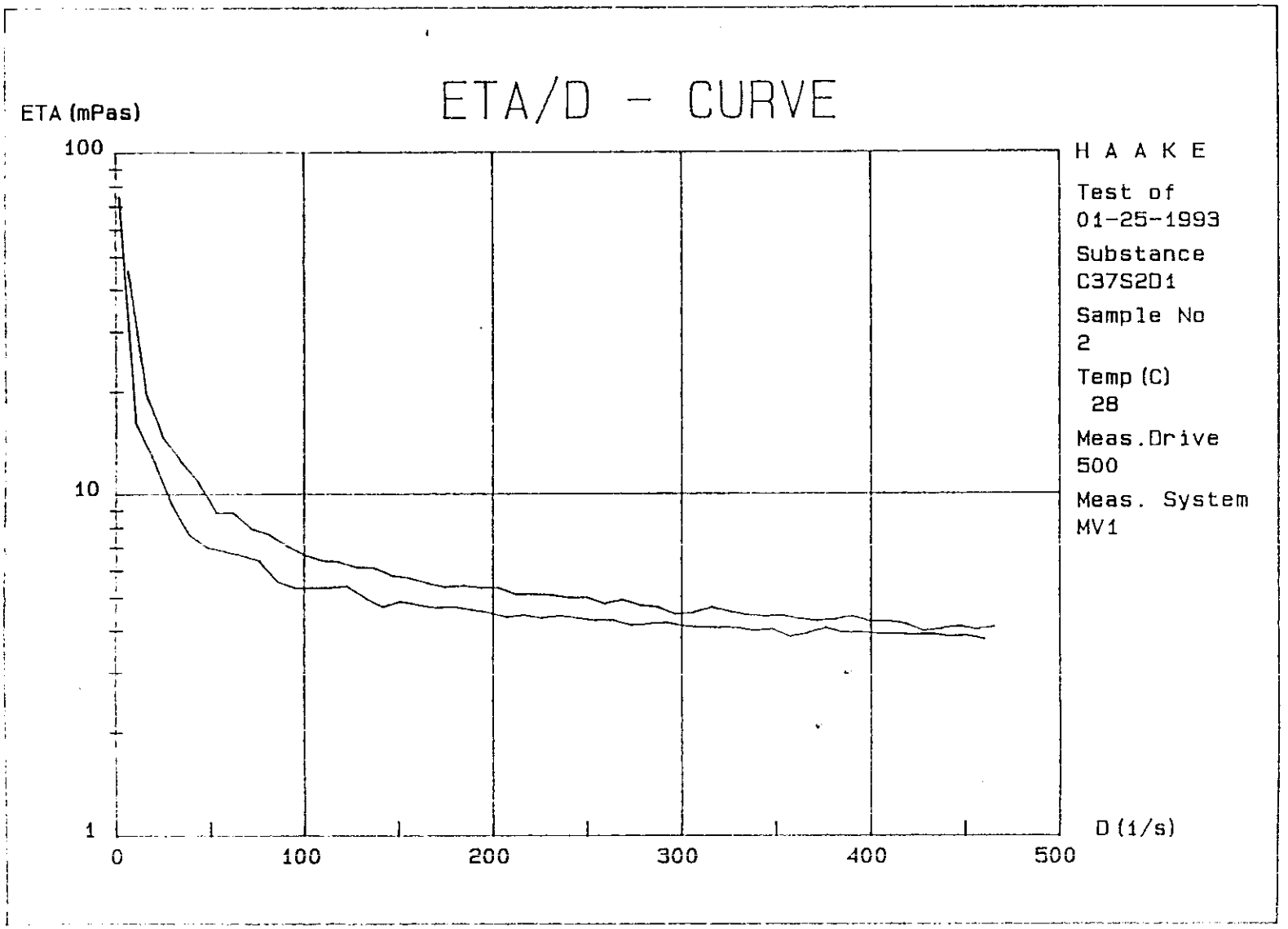
ETA (mPas)
100
80
60
40
20
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S2D1
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1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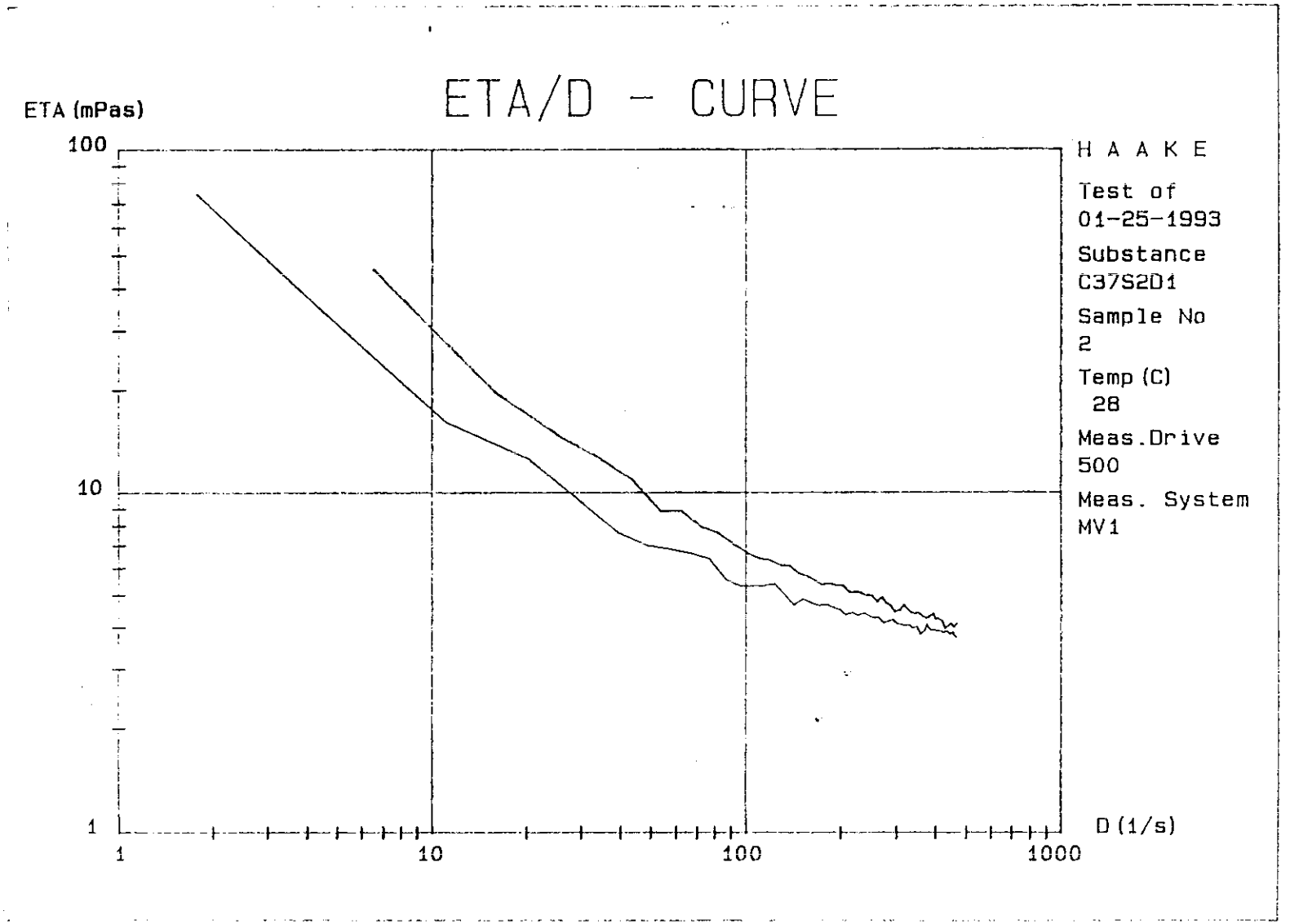
ETA (mPas)
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S2D1
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1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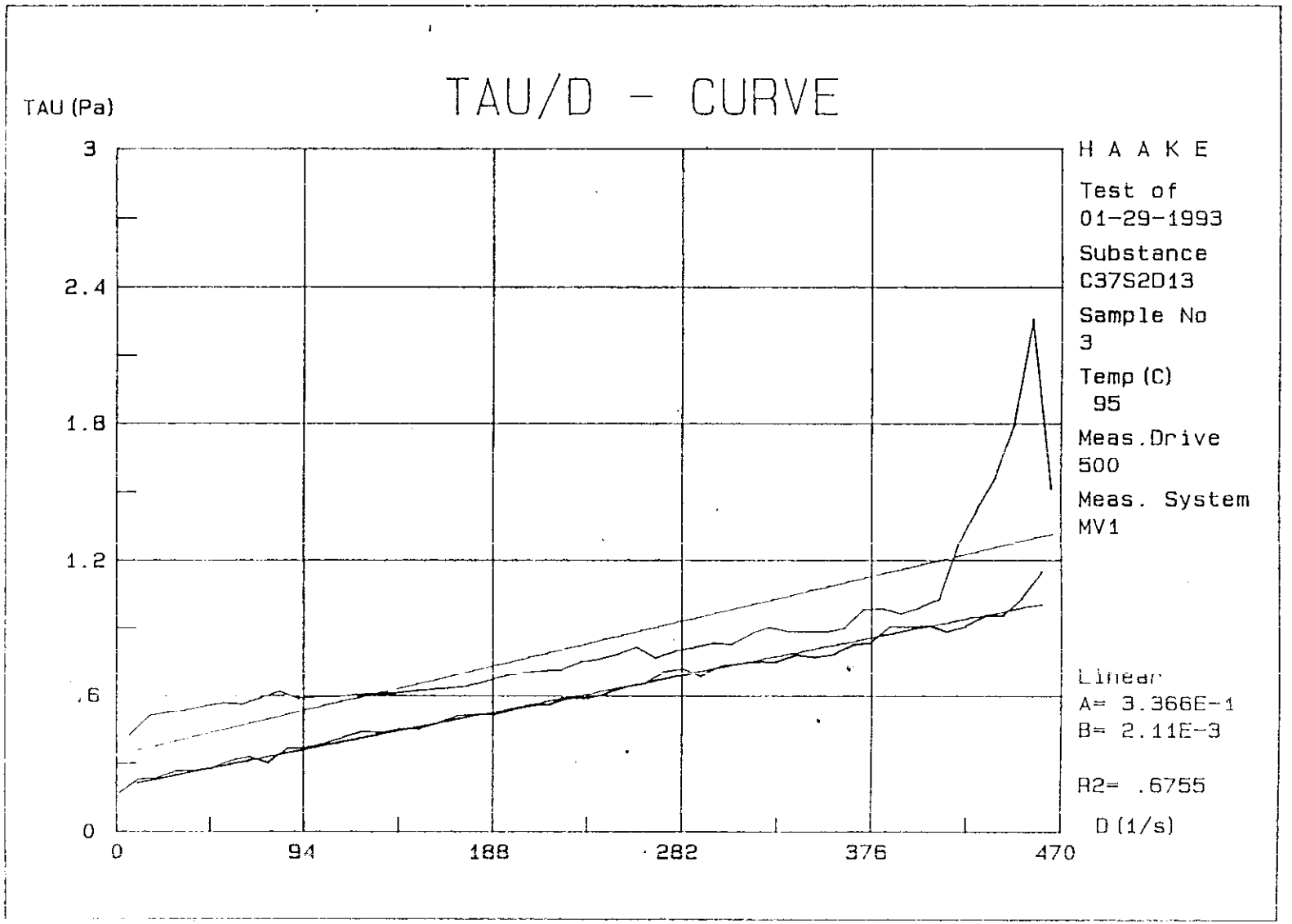
ETA (mPas)
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S2D1
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1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TAU (Pa)
3
2.4
1.8
1.2
.6
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S2D13
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1
Linear
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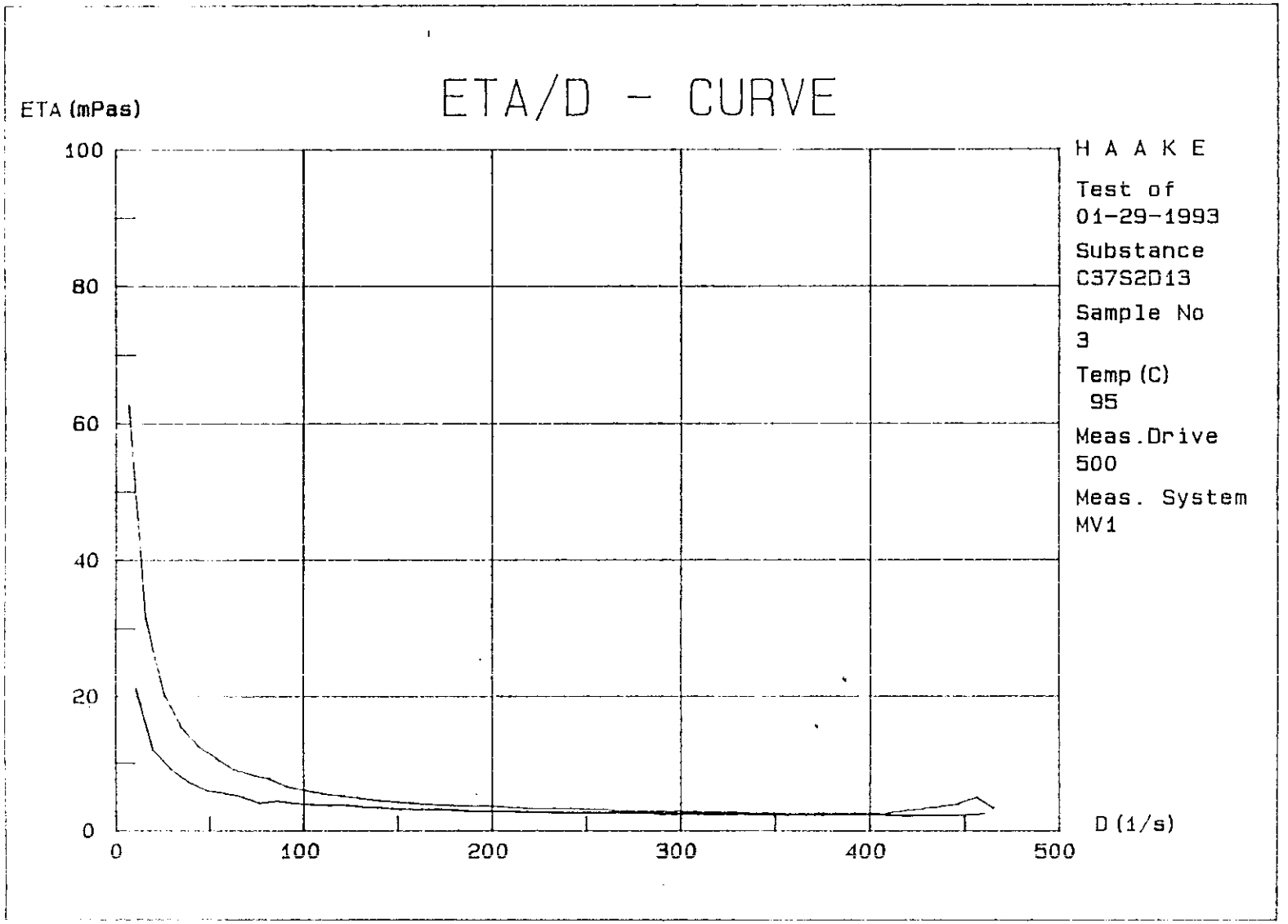
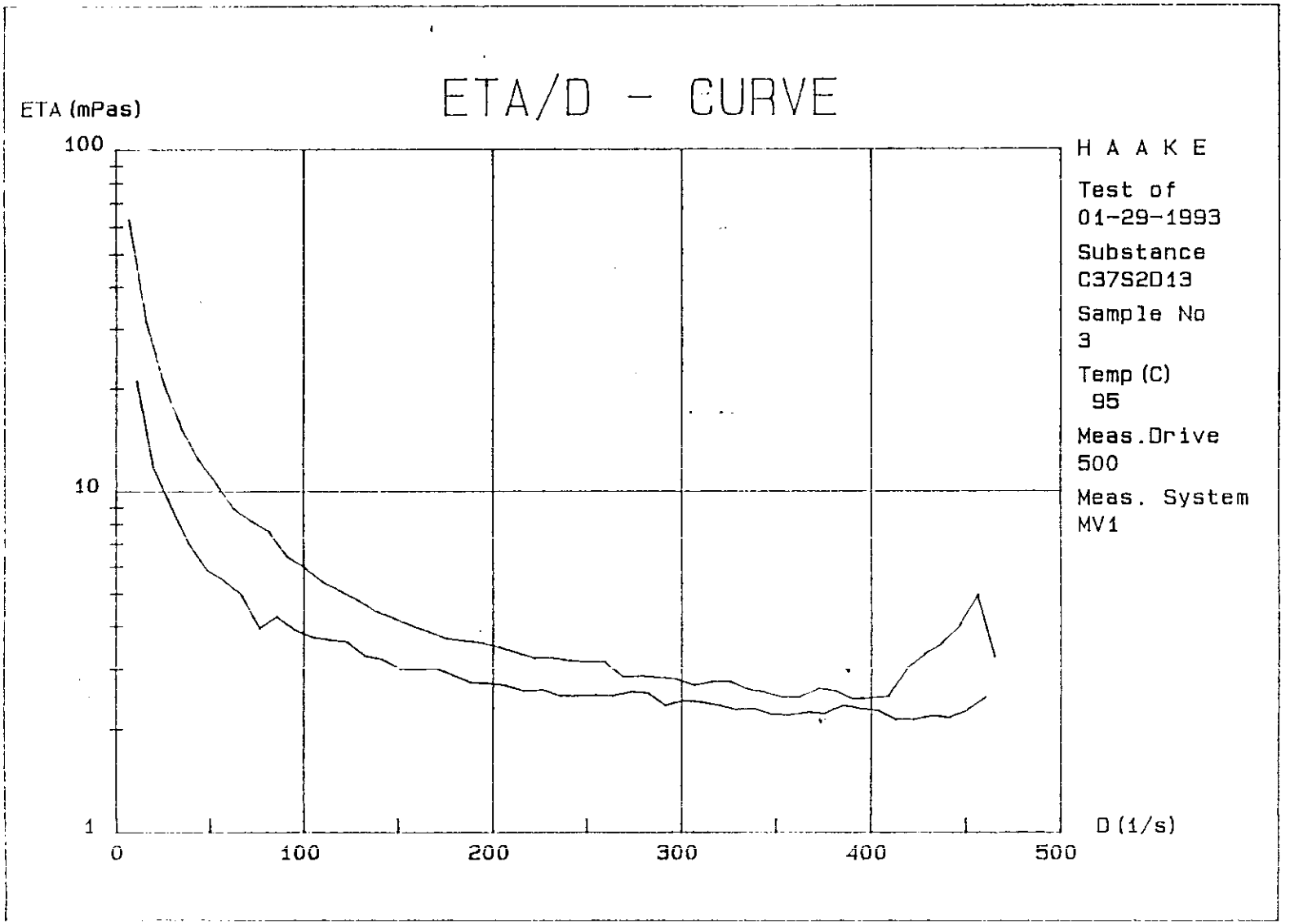
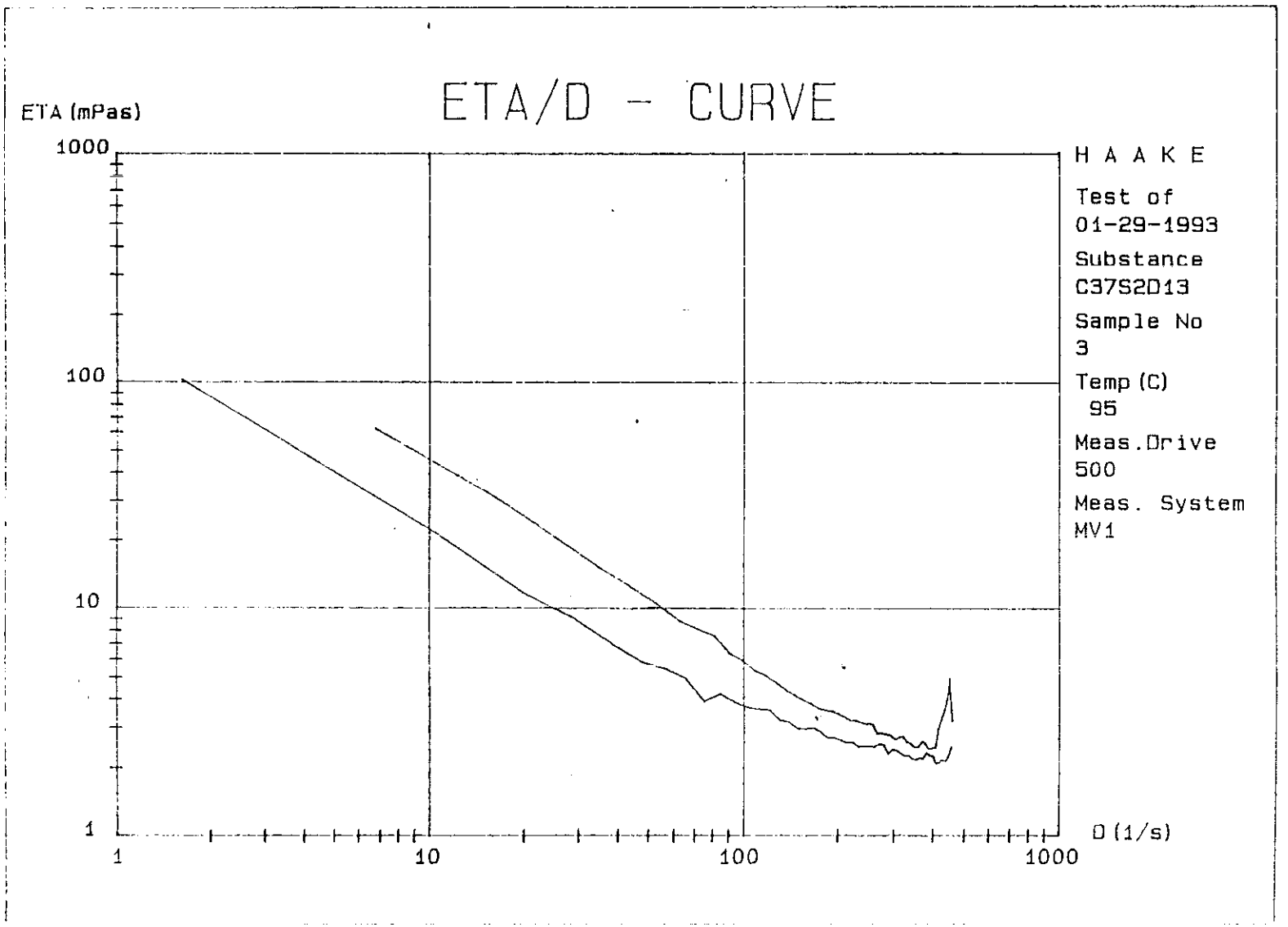
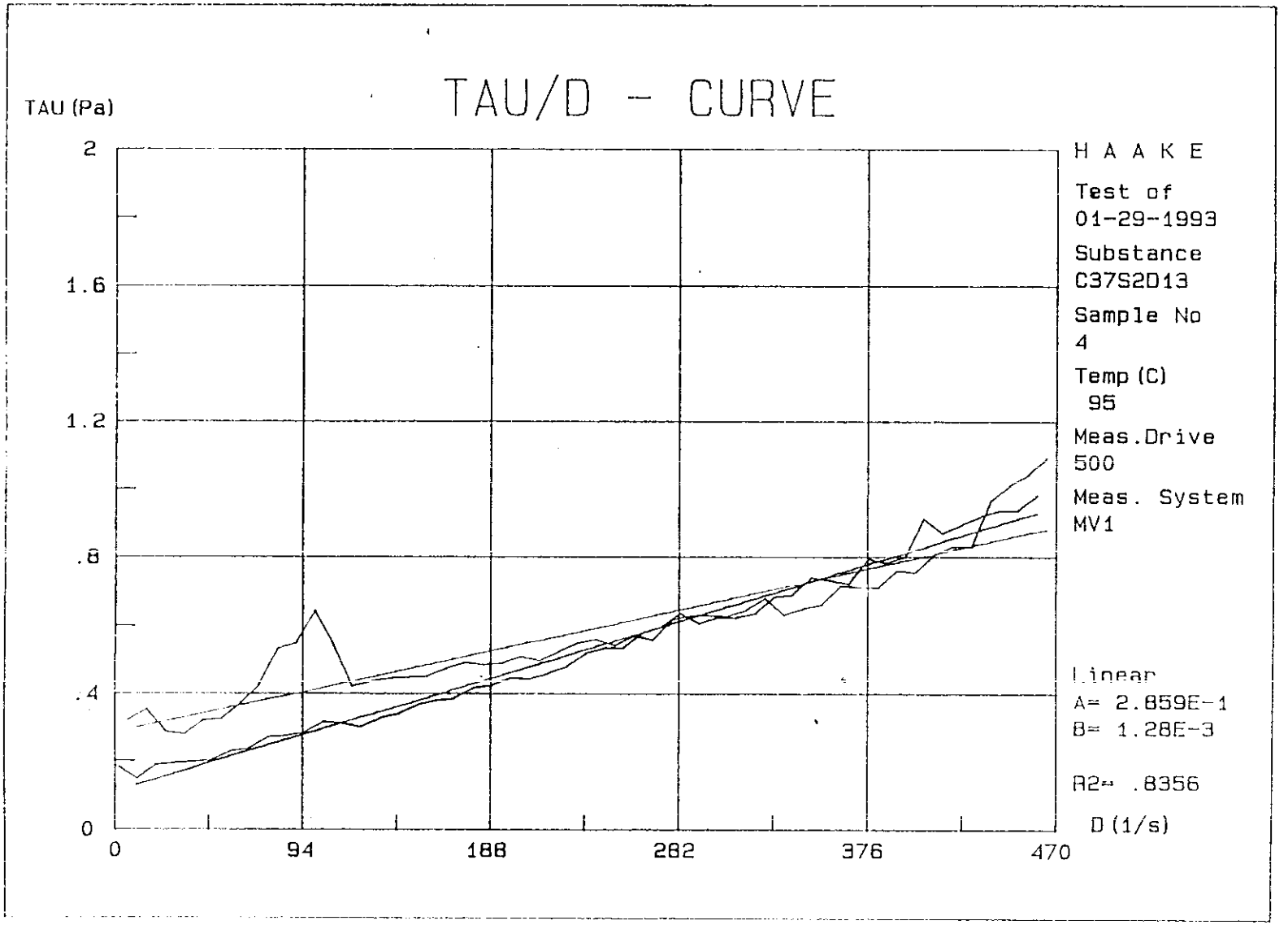
B= 2.11E-3
R2= .6755


ETA/D - CURVE
ETA (mPas)
100
80
60
40
20
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S2D13
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1


ETA/D - CURVE
ETA (mPas)
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S2D13
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1


ETA/D - CURVE
ETA (mPas)
1000
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S2D13
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1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94
188
282
376
470
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S2D13
Sample No
4
Temp (C)
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Meas. System
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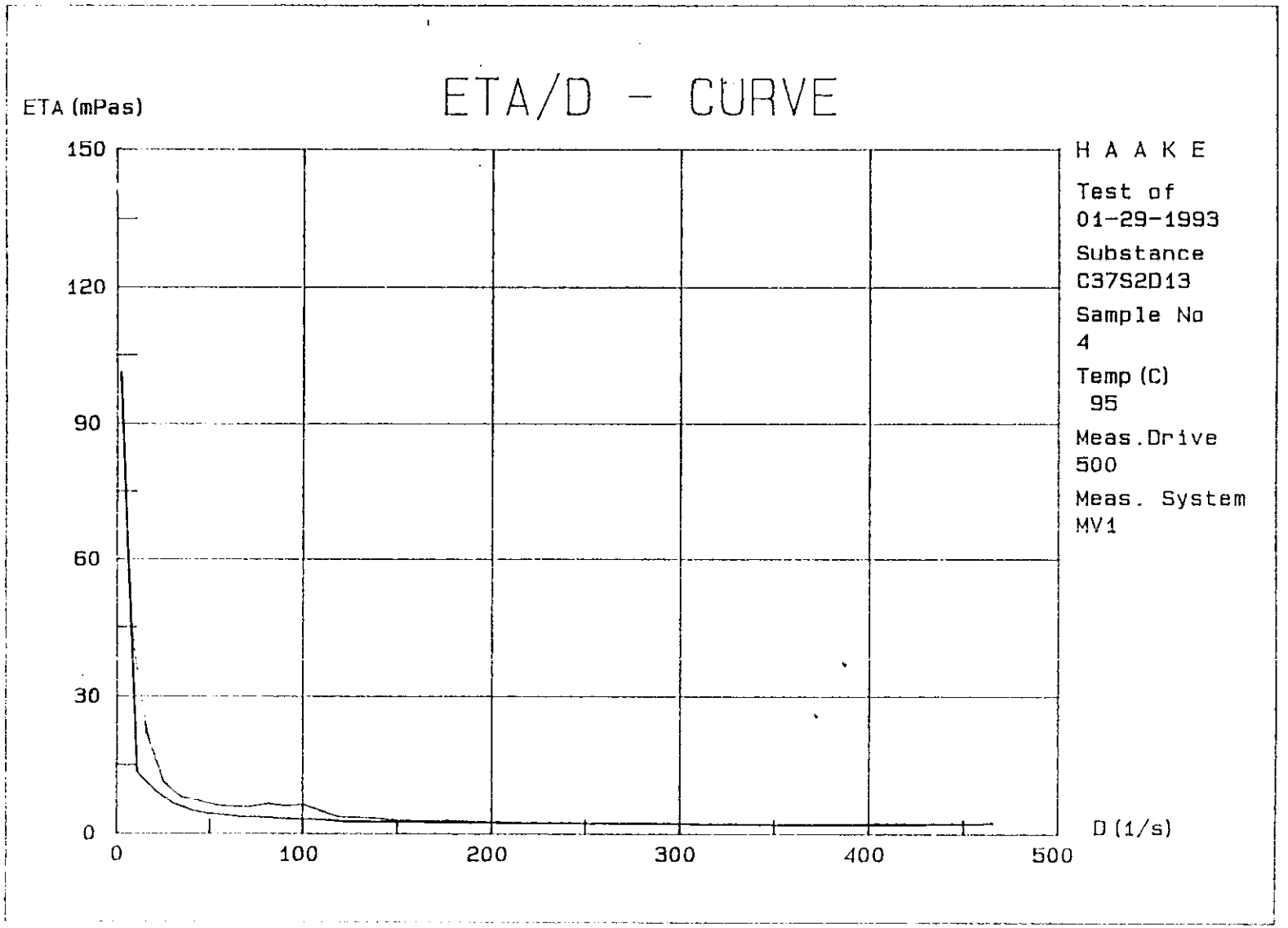
R2= .8356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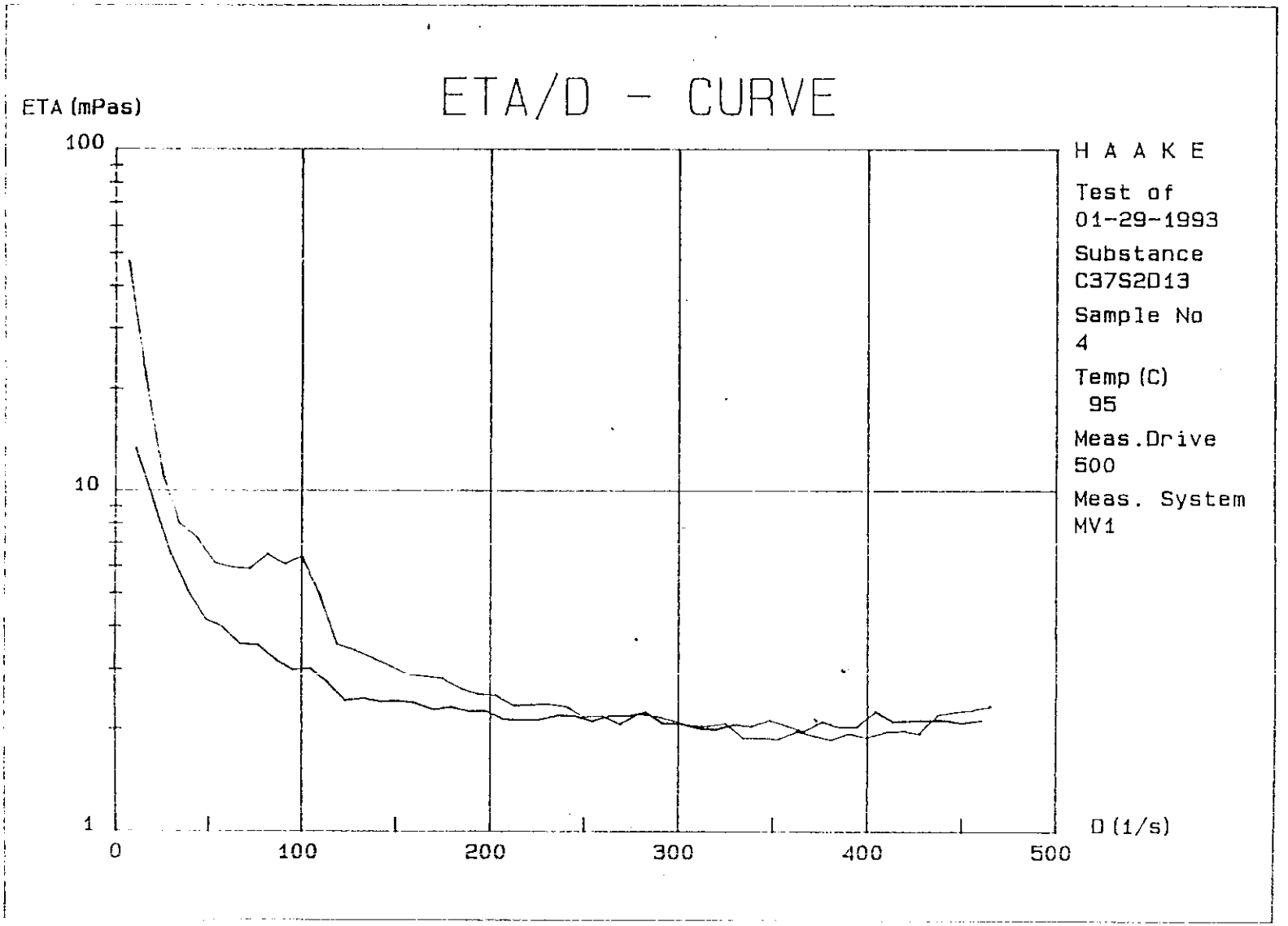
ETA (mPas)
150
120
90
60
30
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S2D13
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1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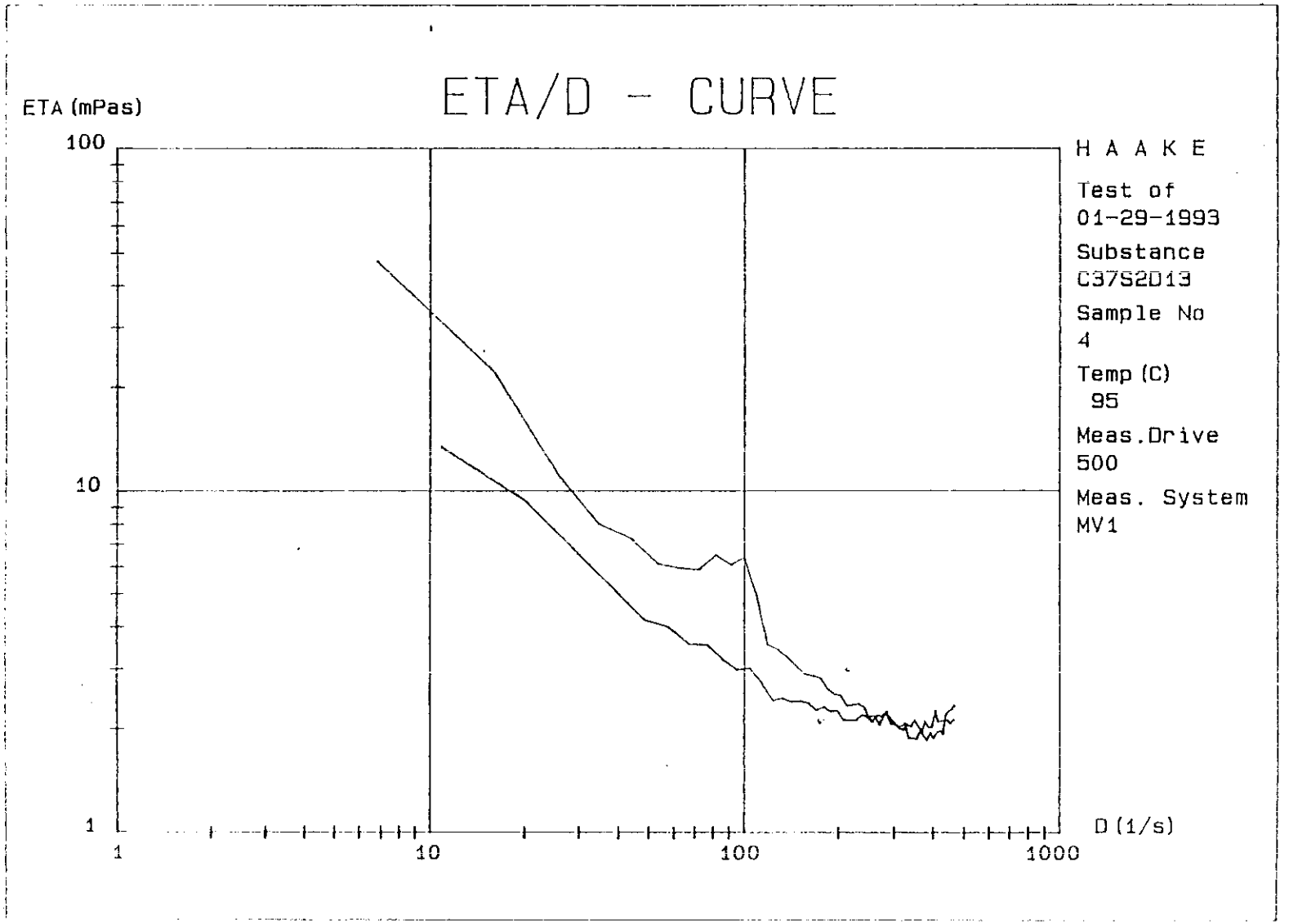
ETA (mPas)
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S2D13
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1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ETA (mPas)
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10
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1
10
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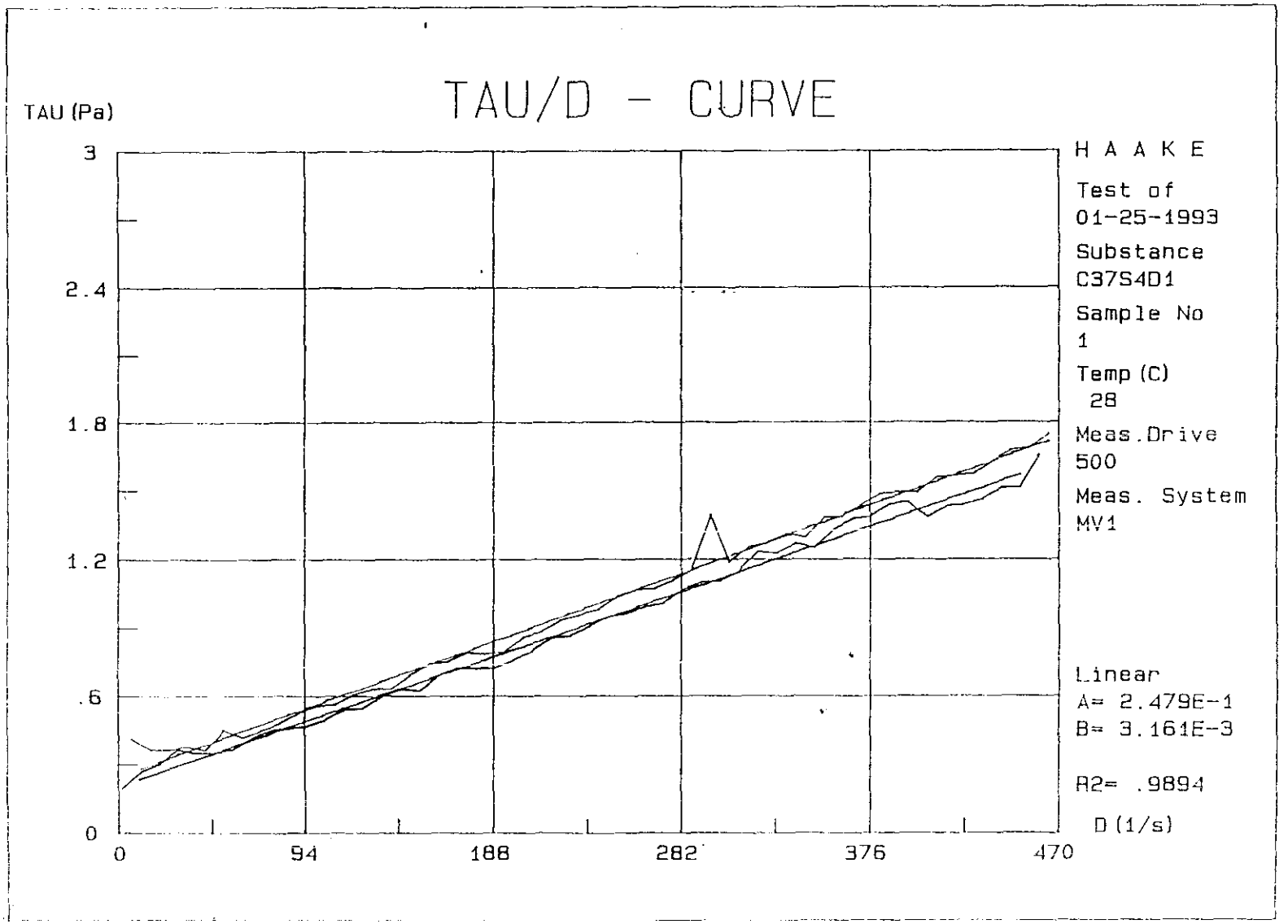
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S2D13
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1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TAU (Pa)
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2.4
1.8
1.2
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0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S4D1
Sample No
1
Temp (C)
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500
Meas. System
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Linear
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B= 3.161E-3
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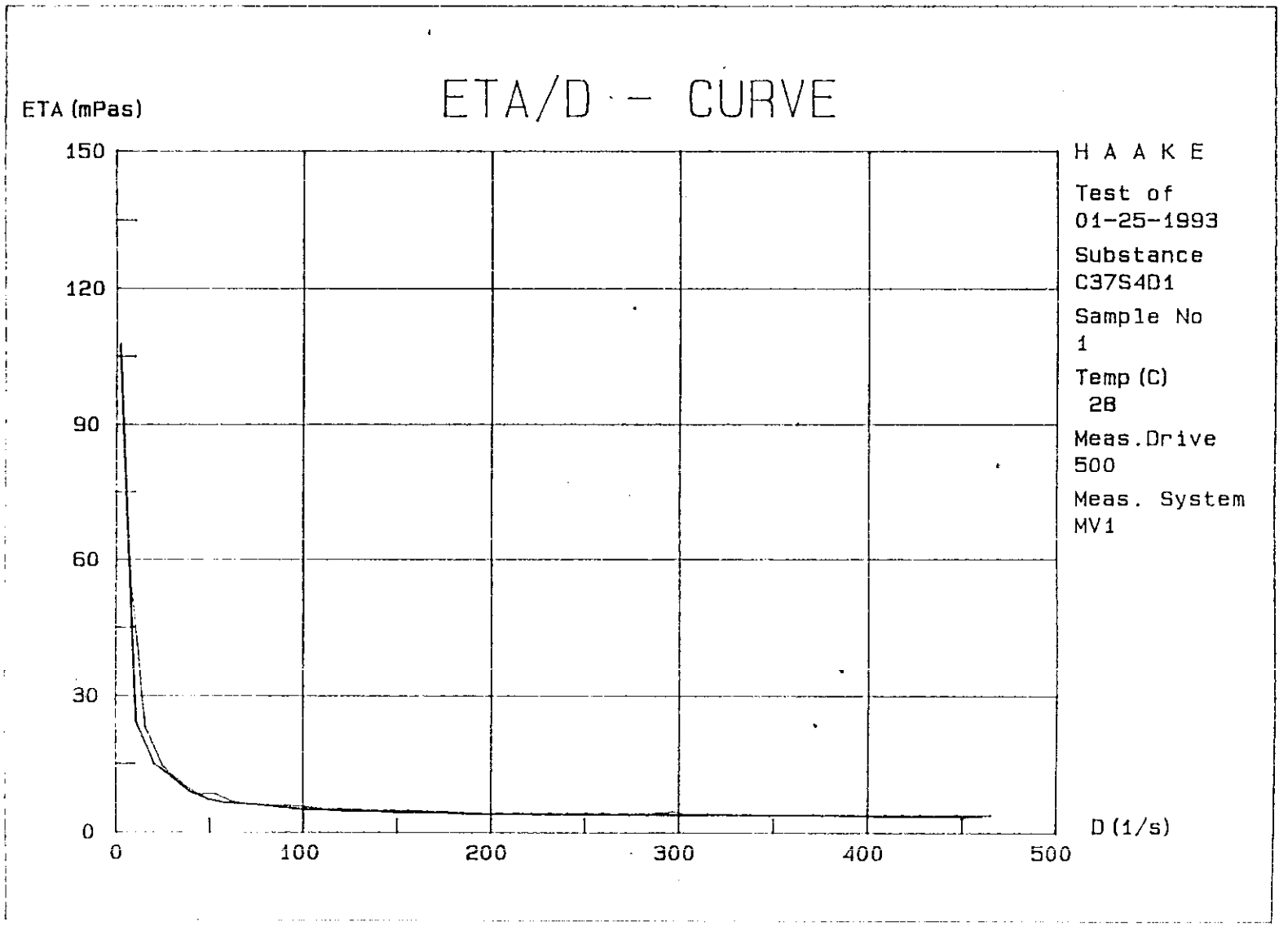
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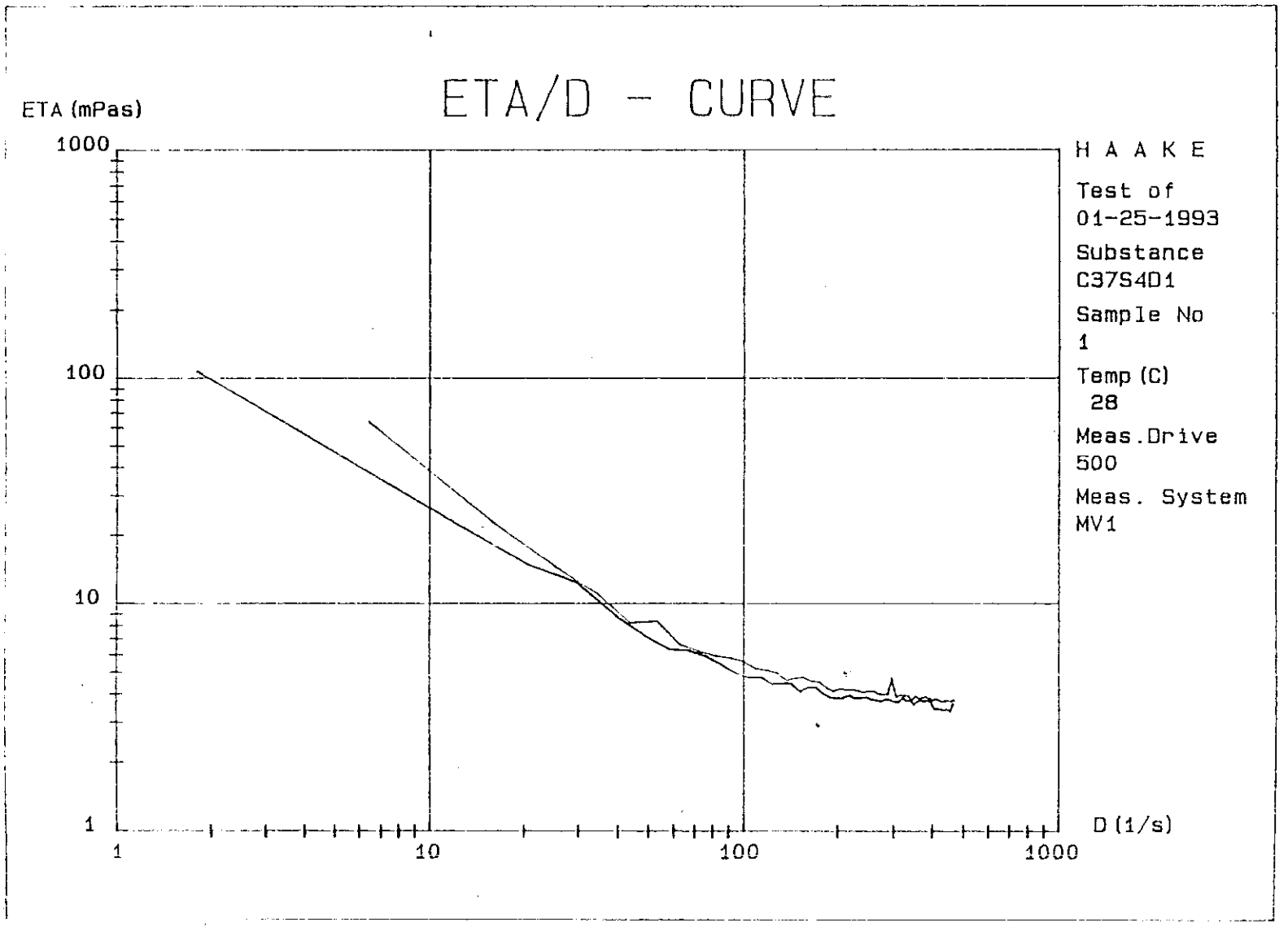
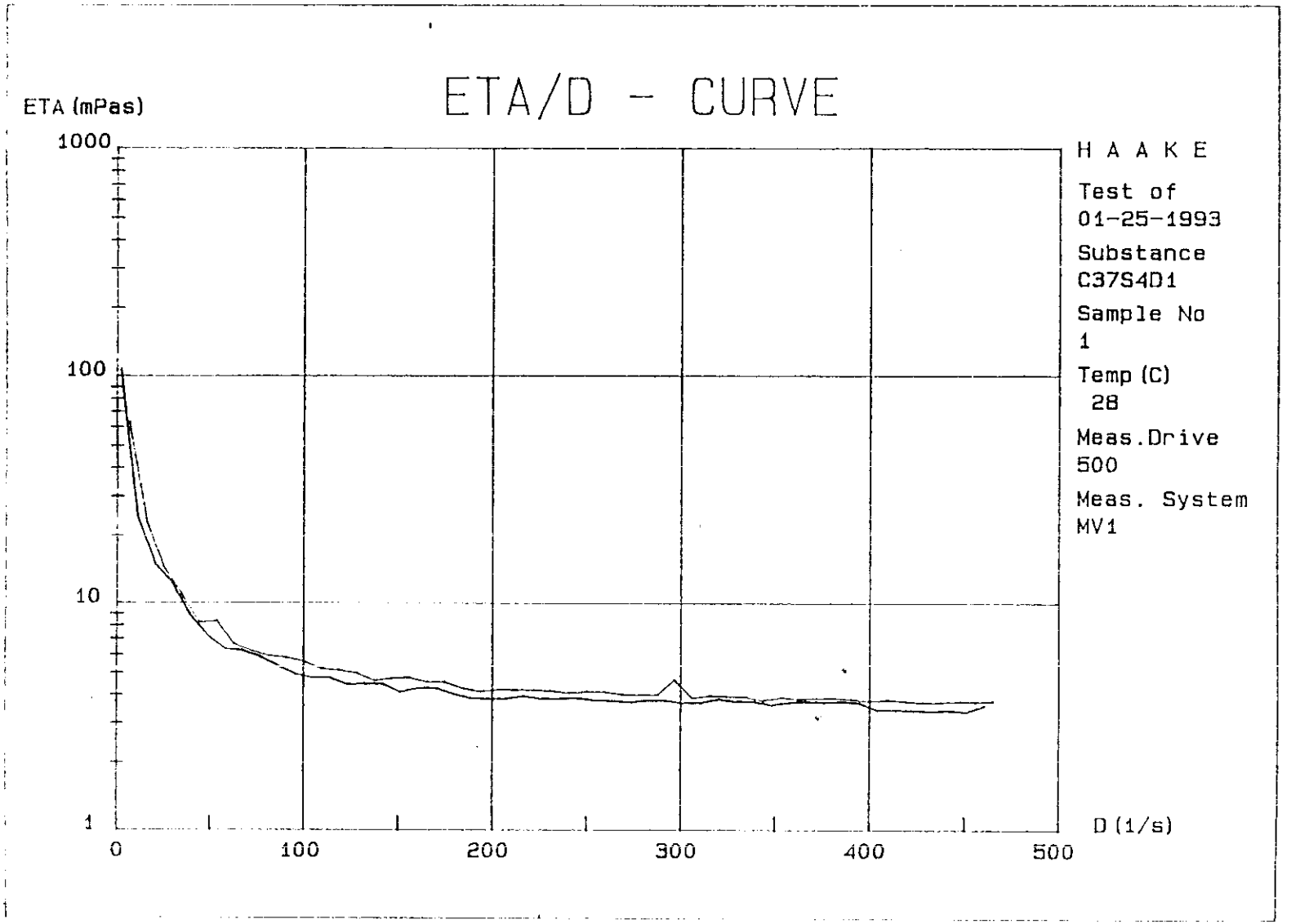
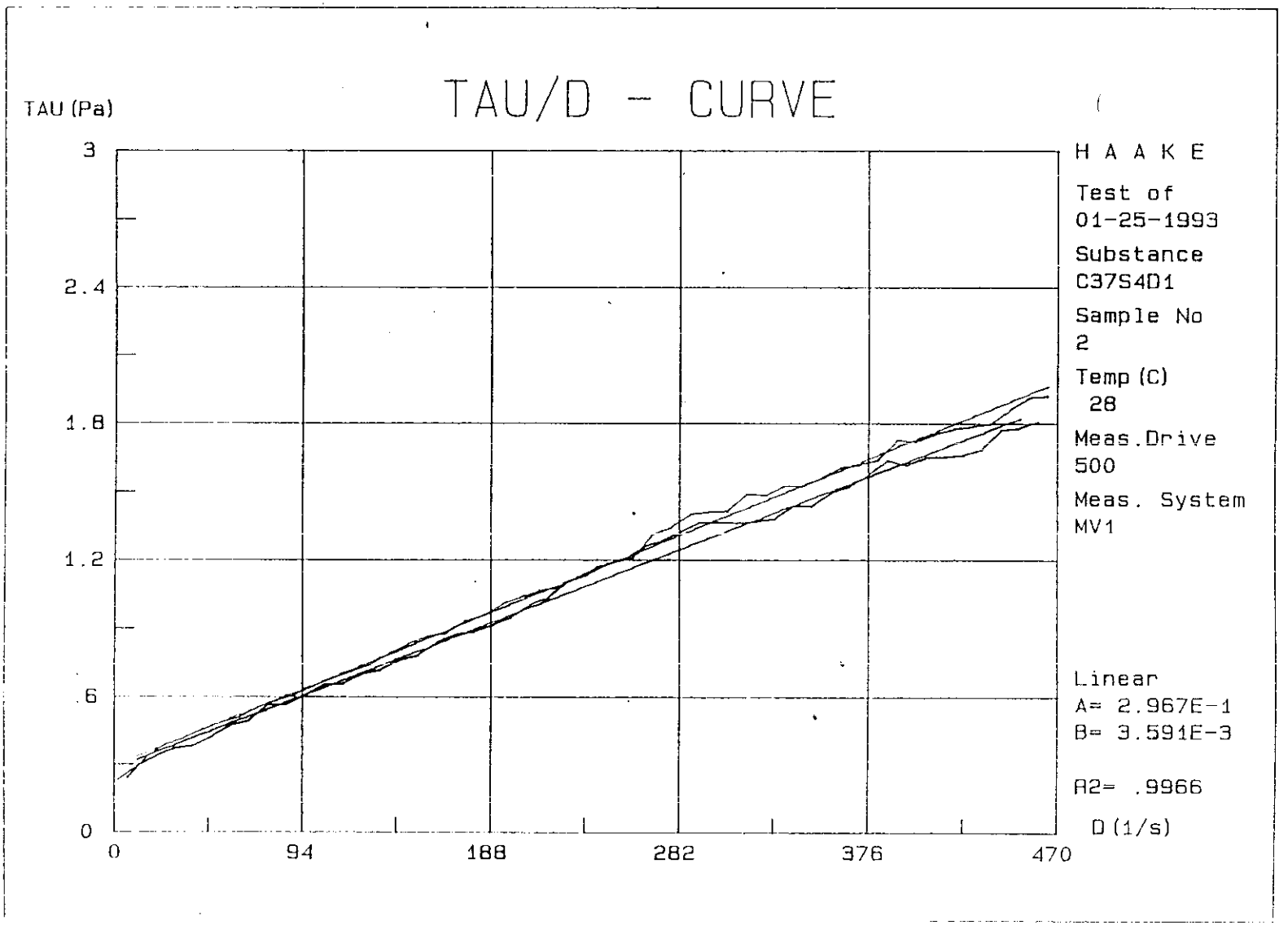
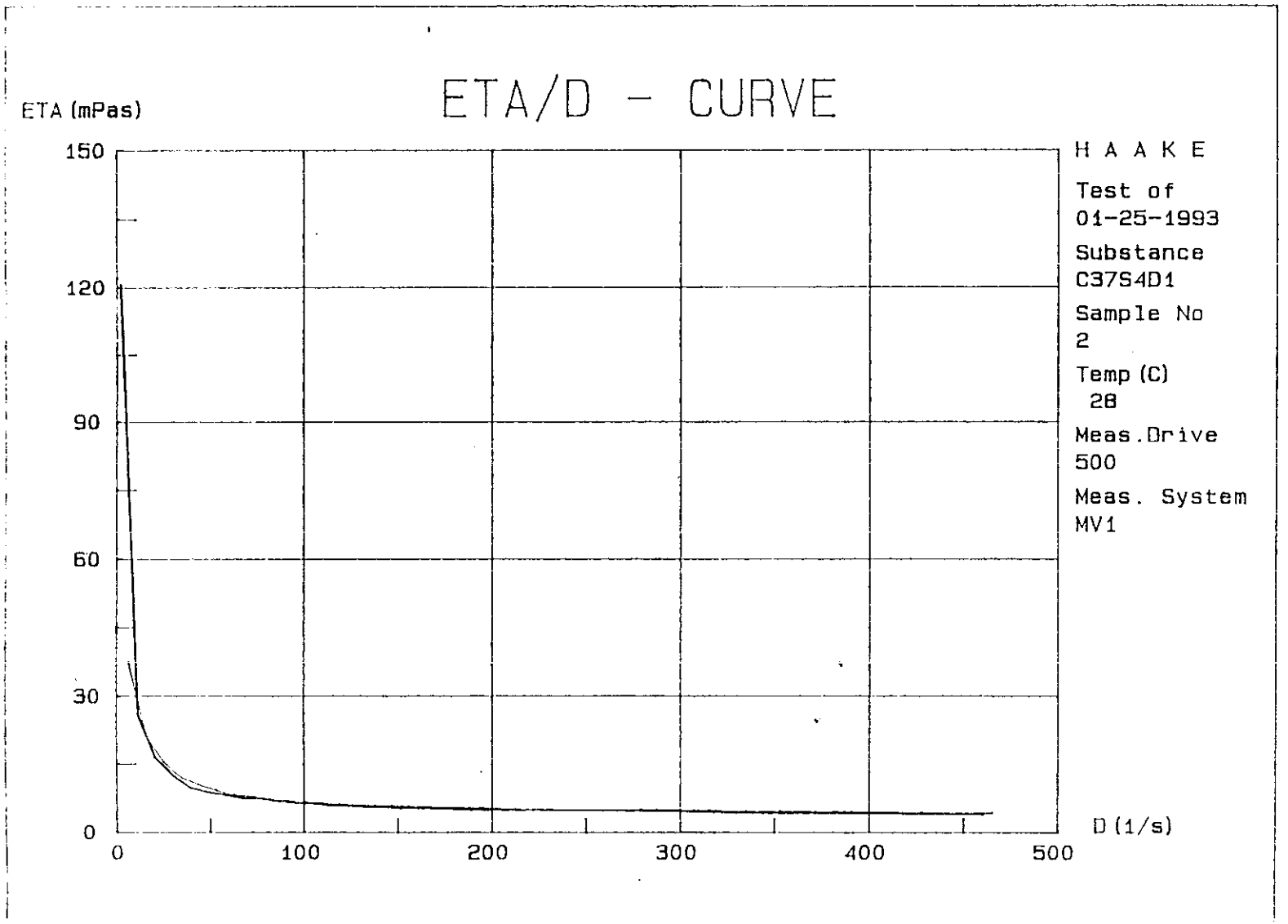
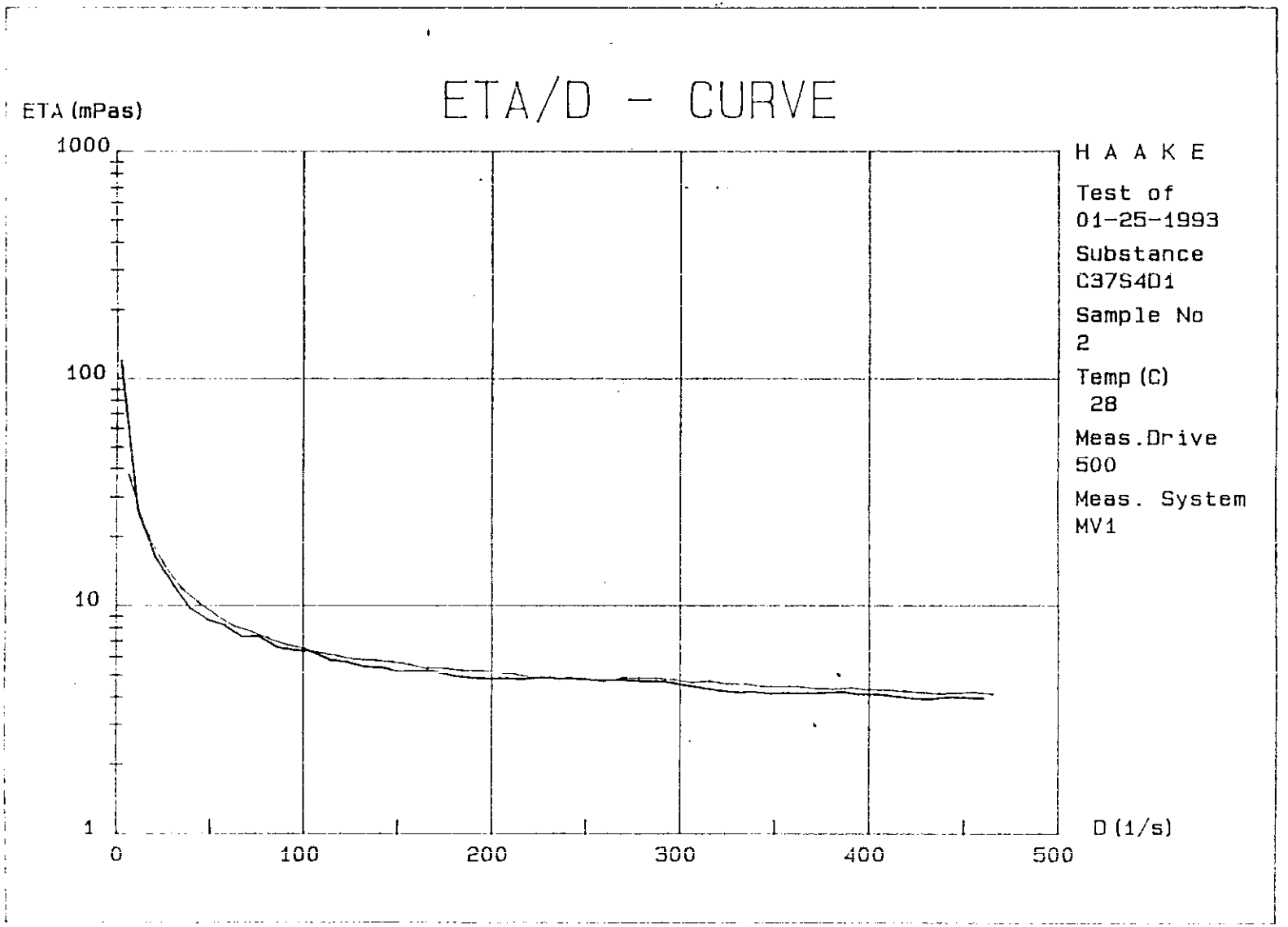
ETA (mPas)
150
120
90
60
30
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S4D1
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

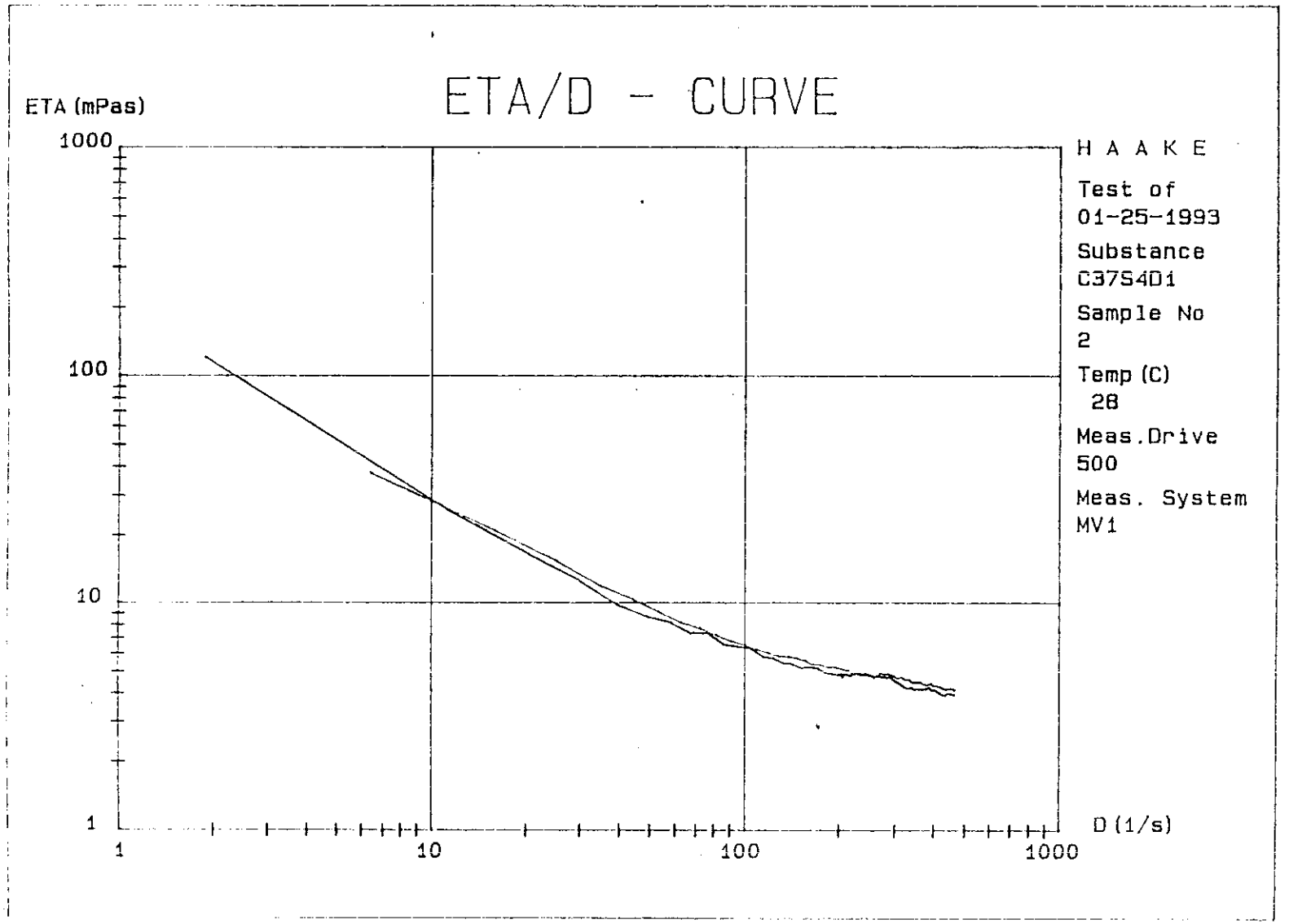

ETA/D - CURVE
ETA (mPas)
1000
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S4D1
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

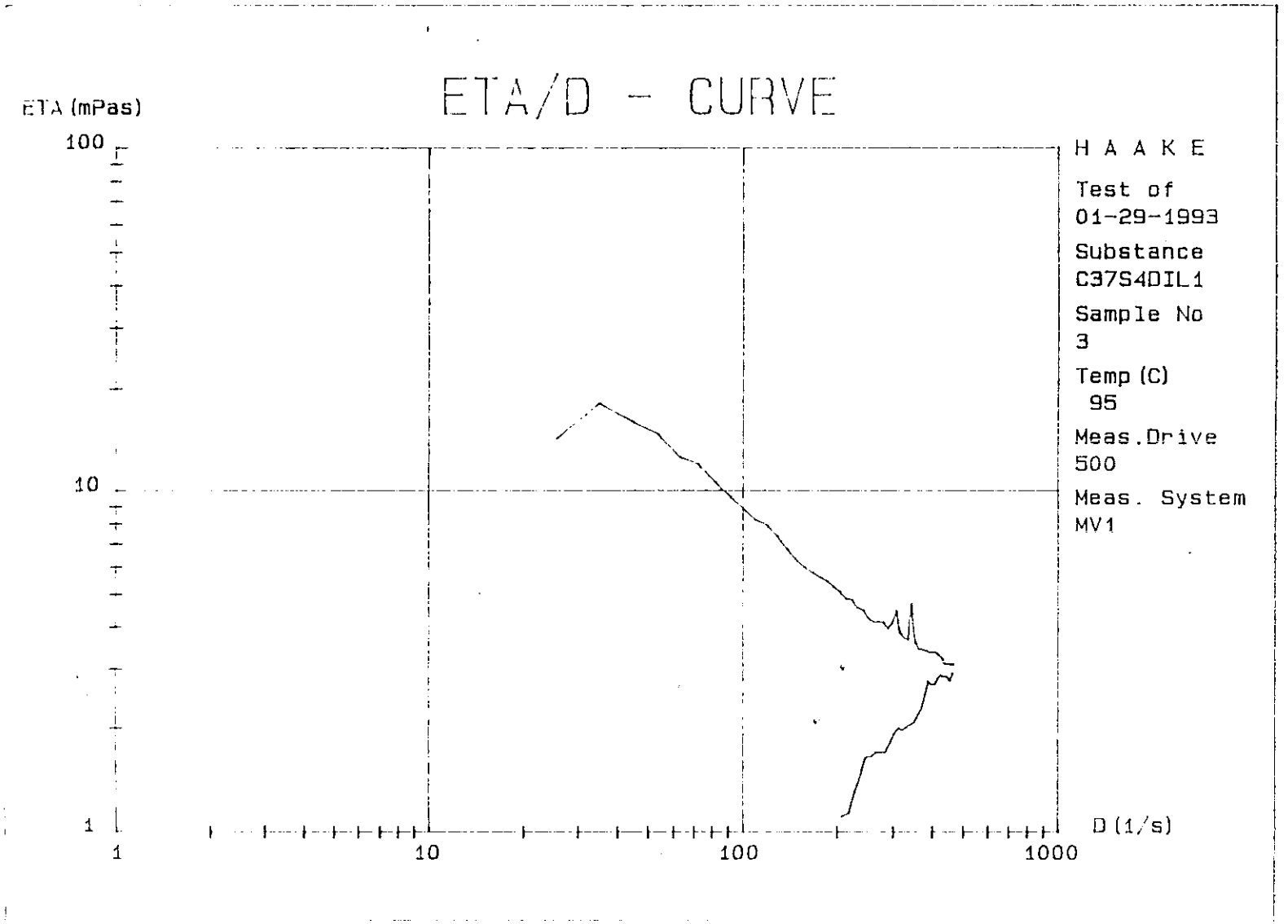

ETA/D - CURVE
ETA (mPas)
1000
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S4D1
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

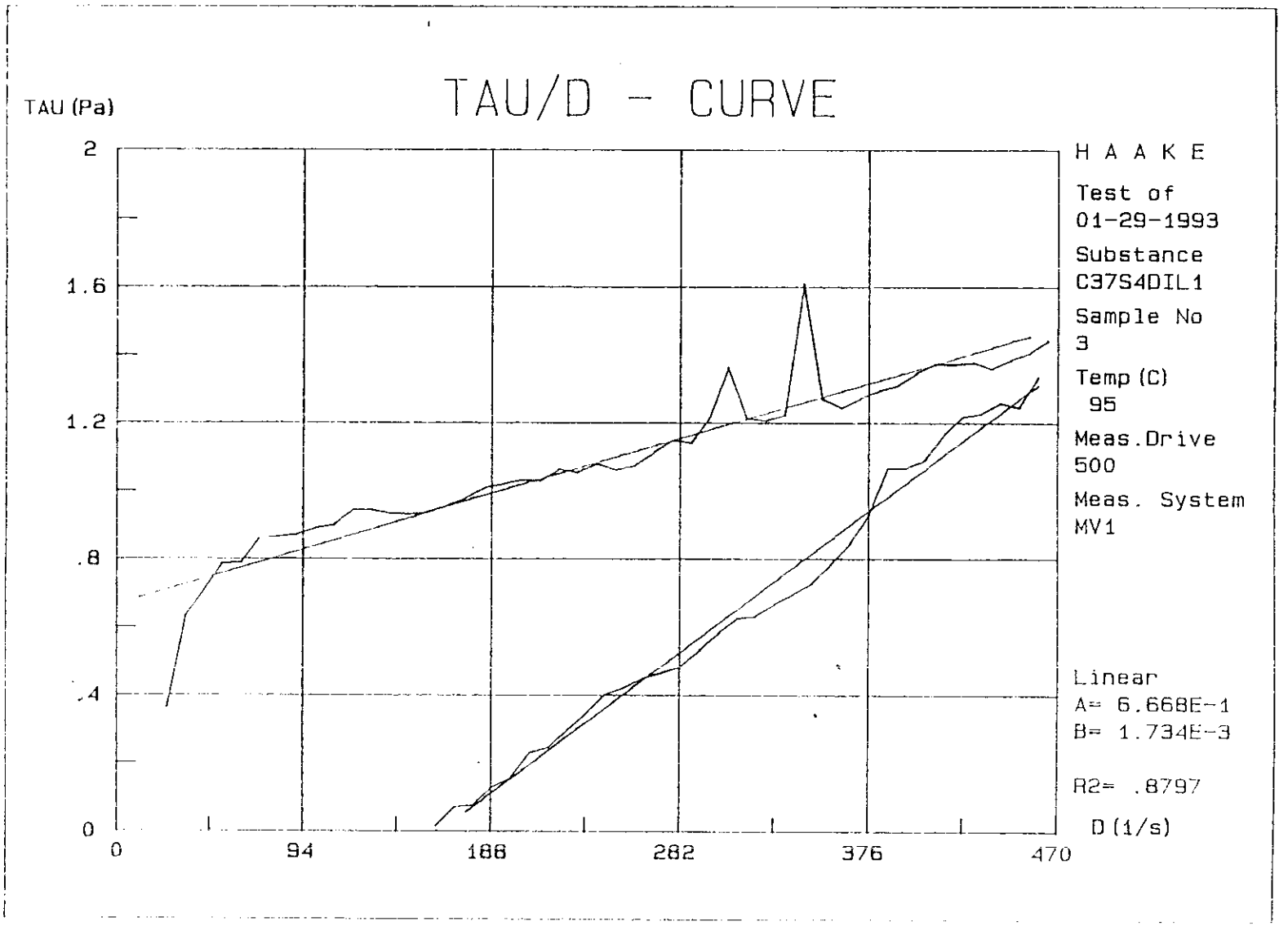

TAU/D - CURVE
TAU (Pa)
3
2.4
1.8
1.2
.6
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S4D1
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1
Linear
A= 2.967E-1
B= 3.591E-3
R2= .9966

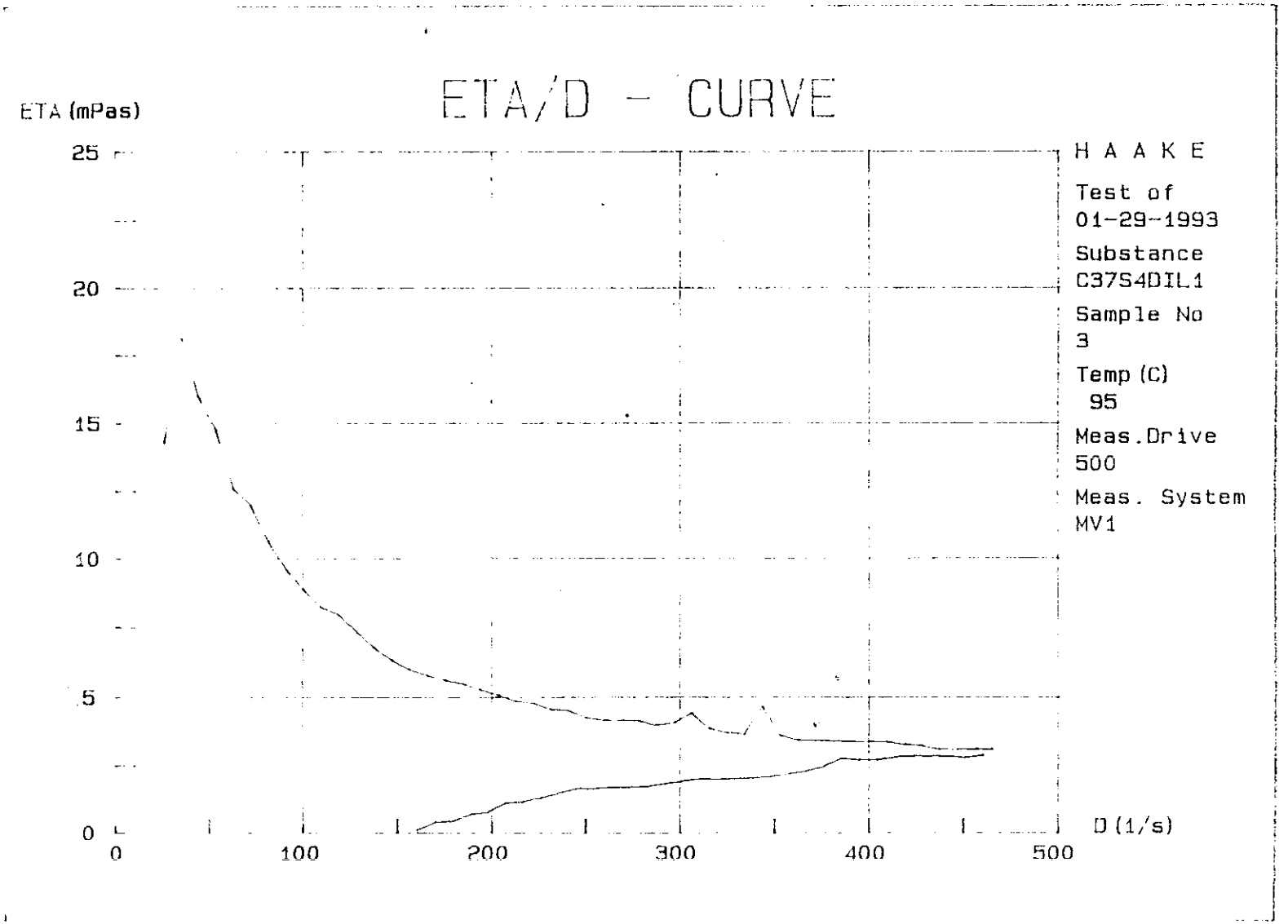

ETA/D - CURVE
ETA (mPas)
150
120
90
60
30
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S4D1
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

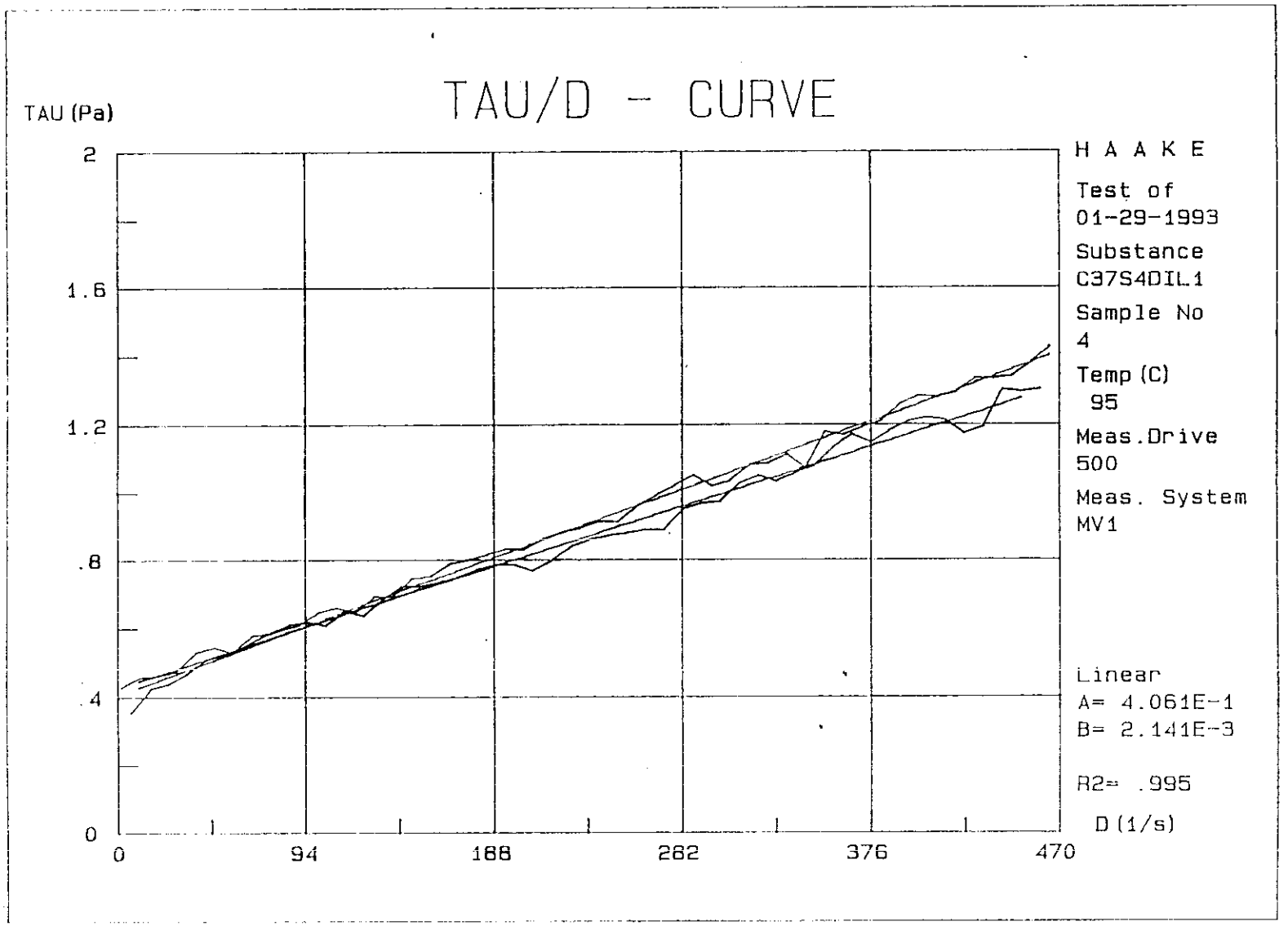

ETA/D - CURVE
ETA (mPas)
1000
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S4D1
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

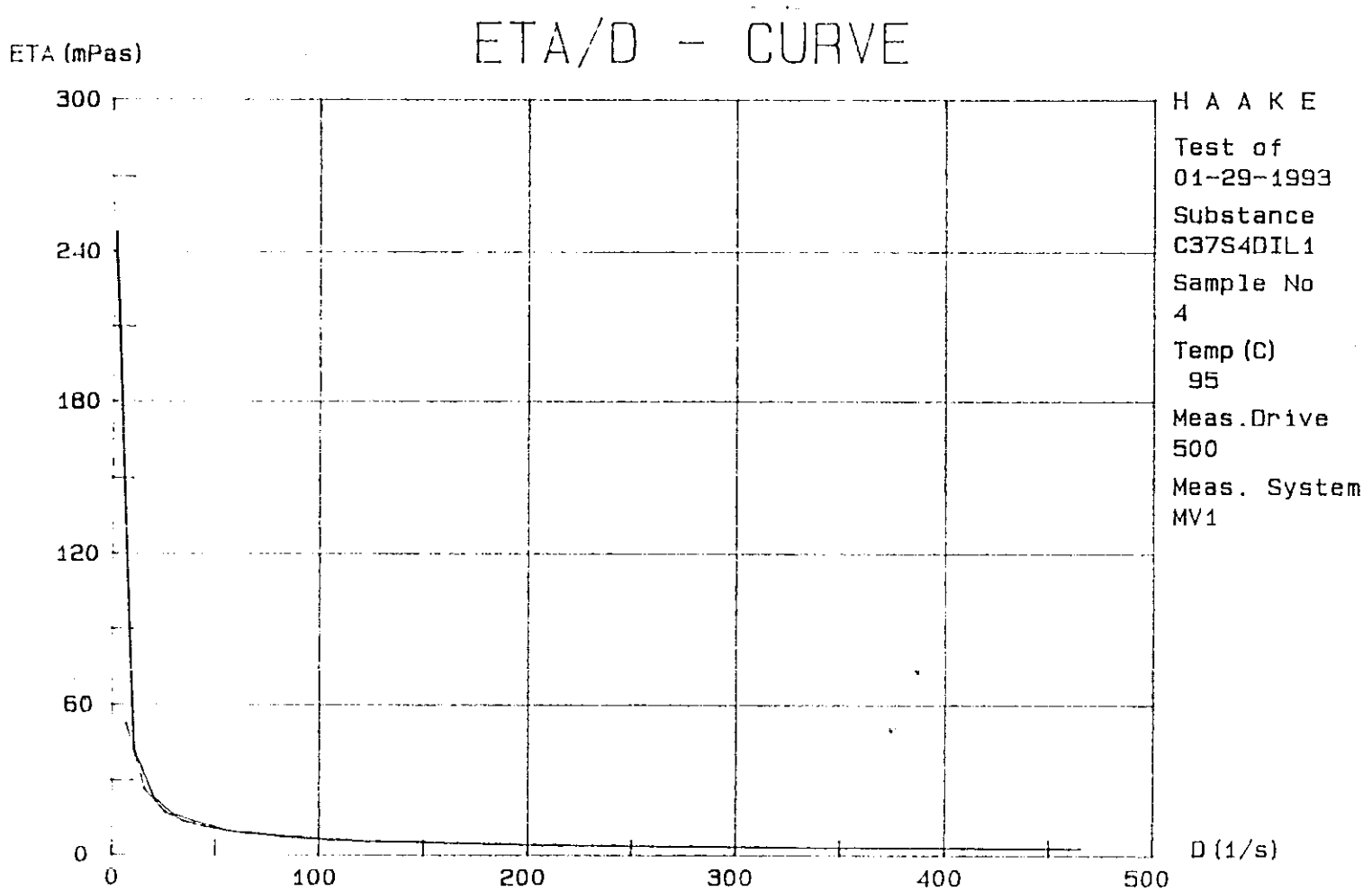

ETA/D - CURVE
ETA (mPas)
1000
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-25-1993
Substance
C37S4D1
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

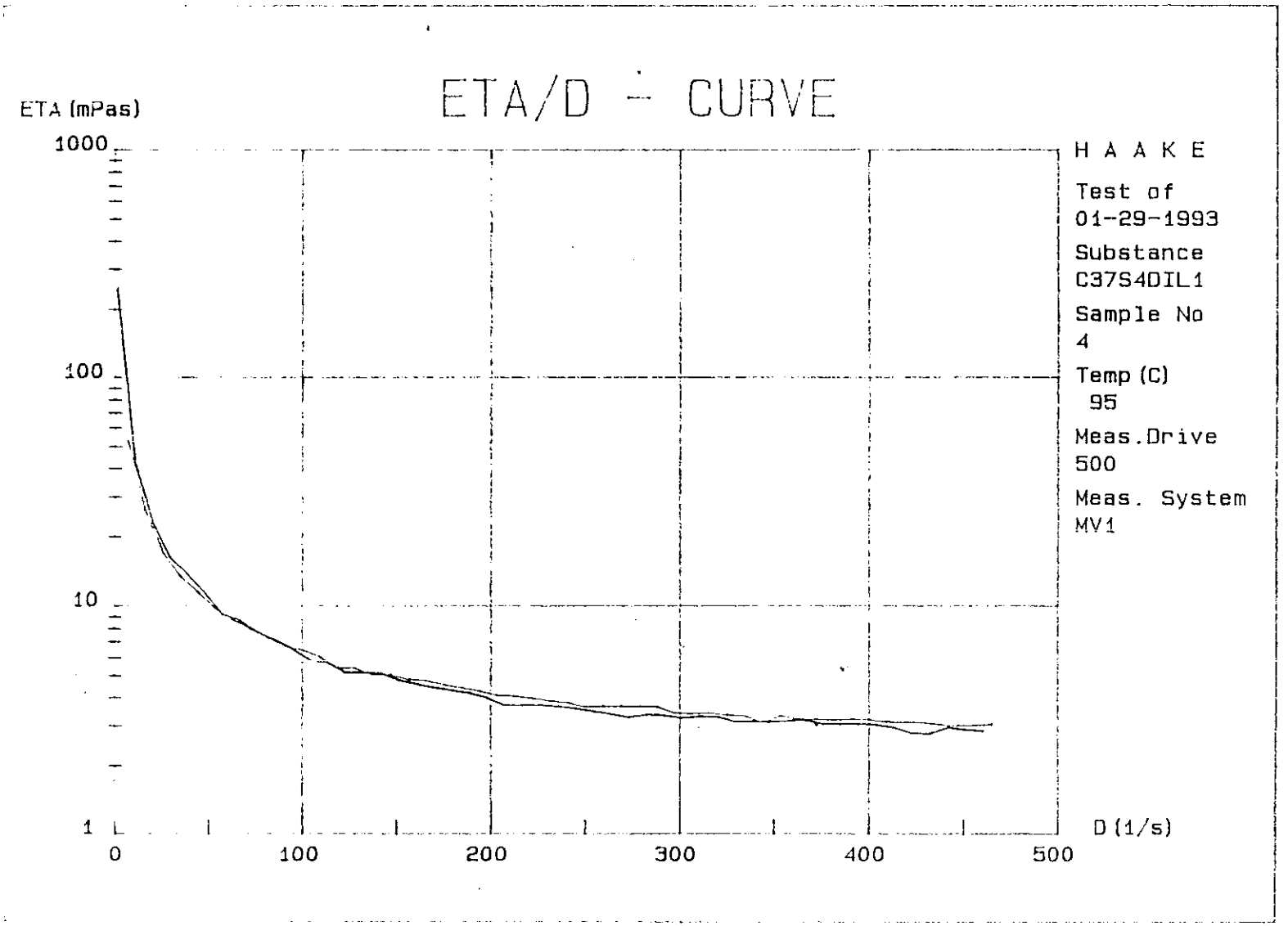

ETA/D - CURVE
ETA (mPas)
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

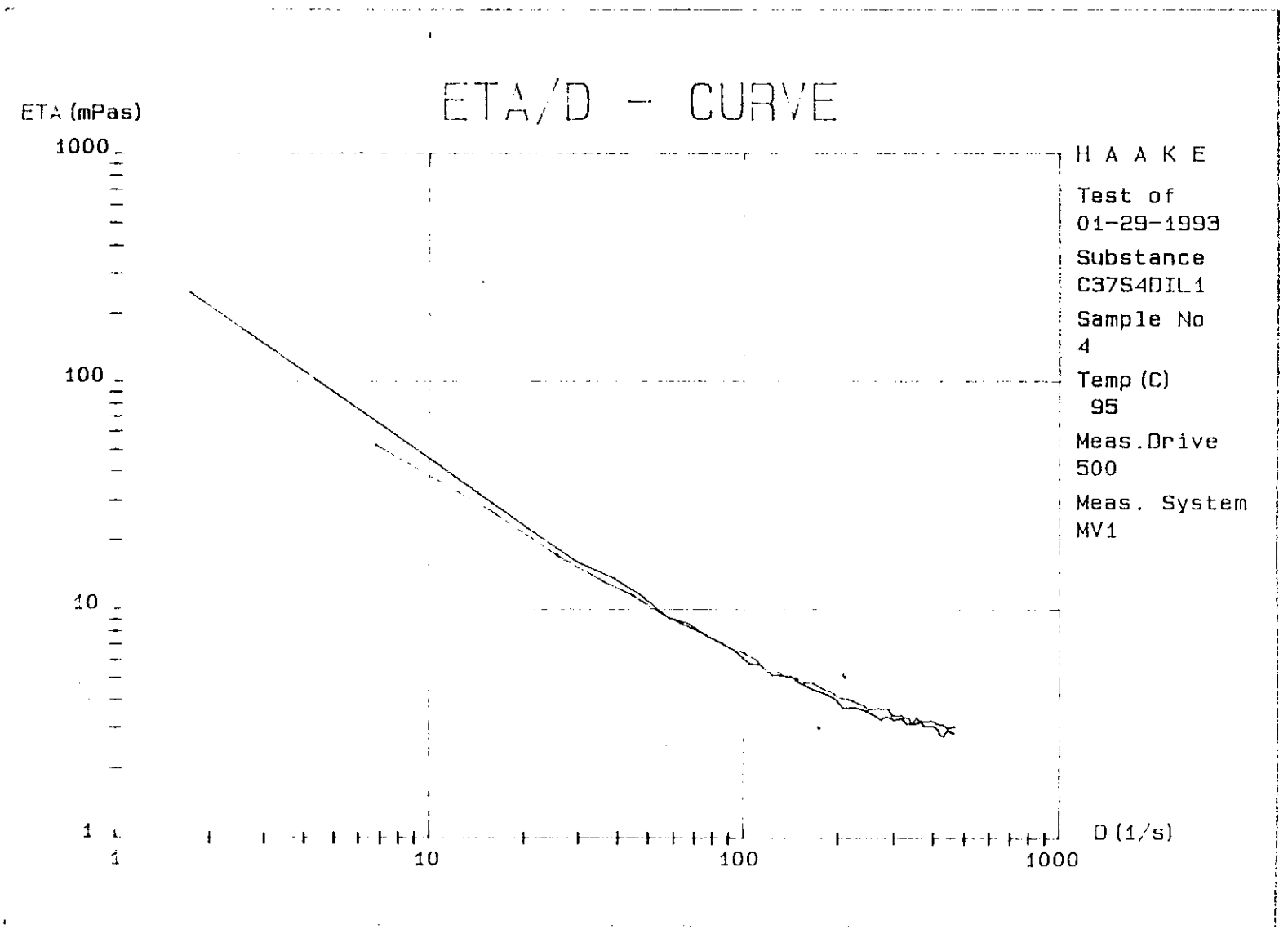

TAU/D - CURVE
TAU (Pa)
2
1.6
1.2
.8
.4
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1
Linear
A= 6.668E-1
B= 1.734E-3
R2= .8797

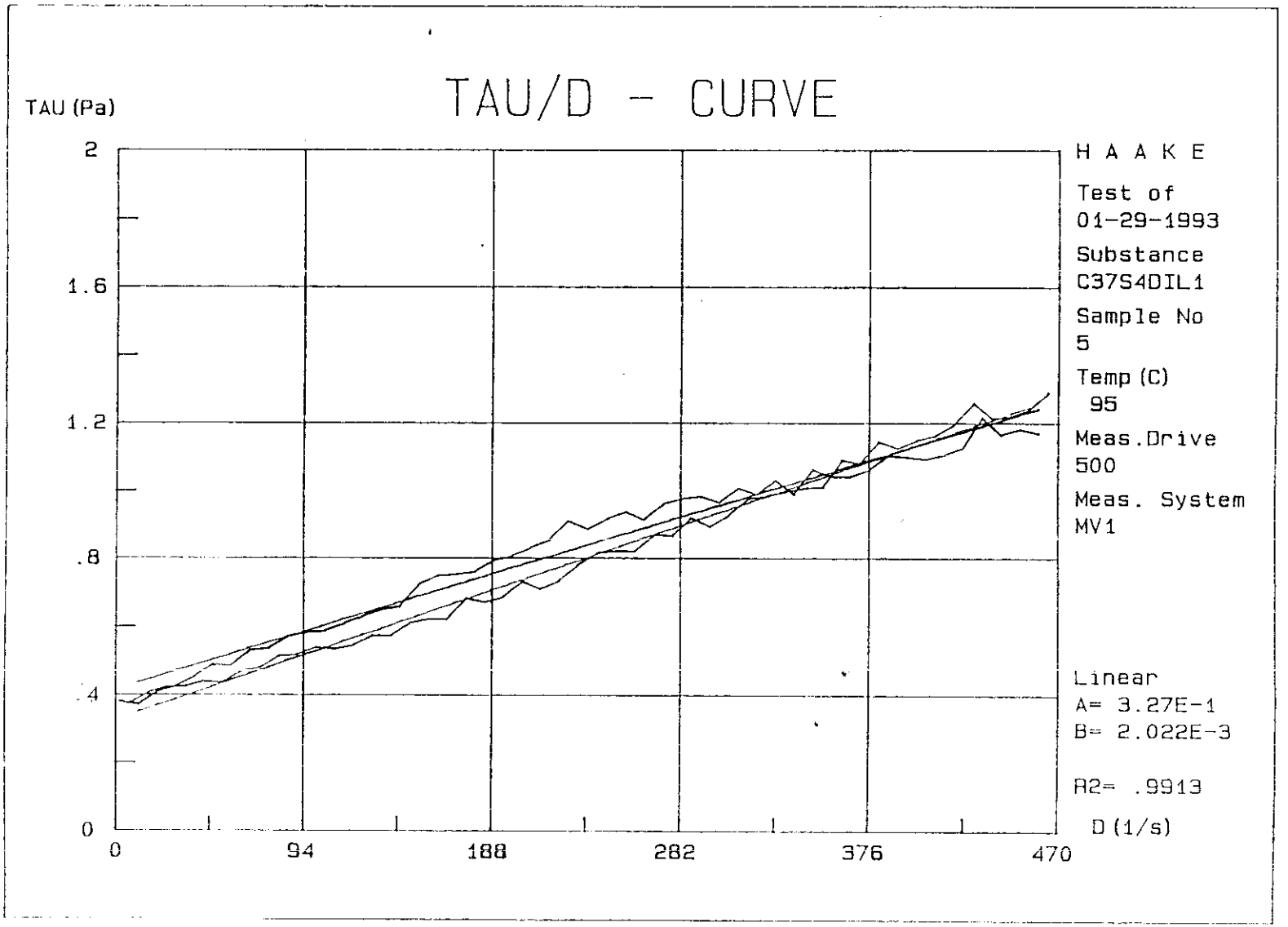

ETA/D - CURVE
ETA (mPas)
25
20
15
10
5
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

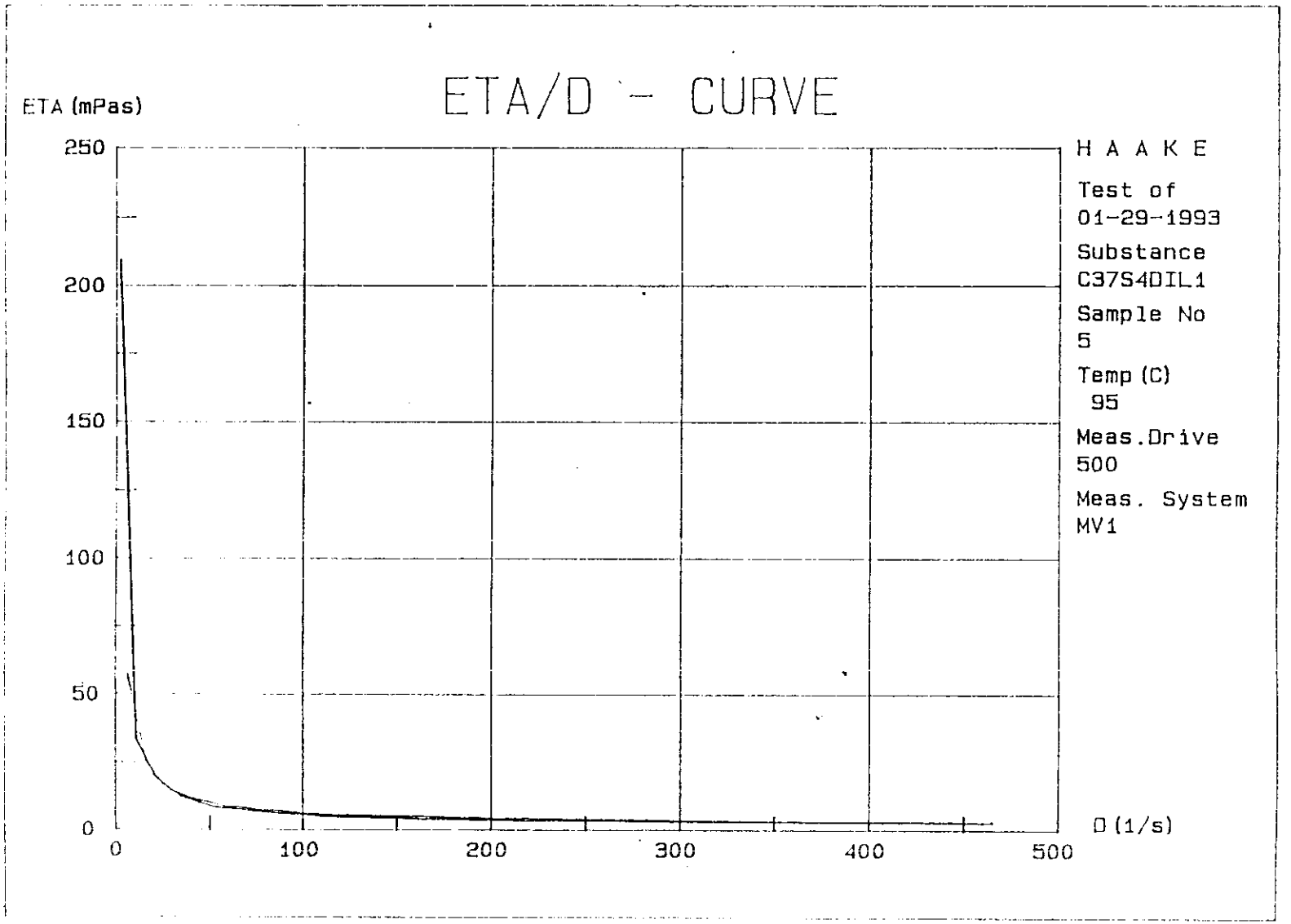

TAU/D - CURVE
TAU (Pa)
2
1.6
1.2
.8
.4
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1
Linear
A= 4.061E-1
B= 2.141E-3
R2= .995

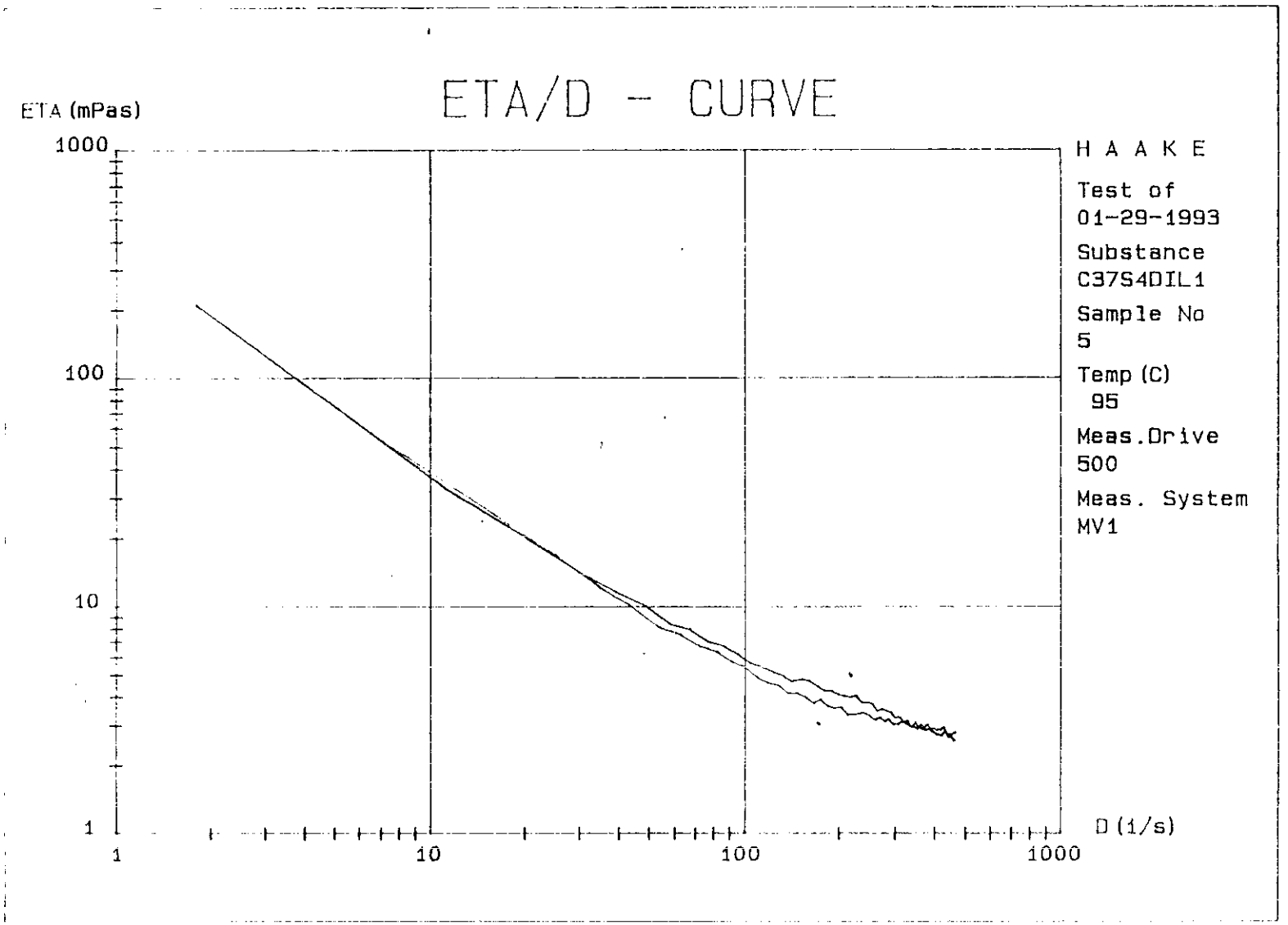

ETA/D - CURVE
ETA (mPas)
300
240
180
120
60
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

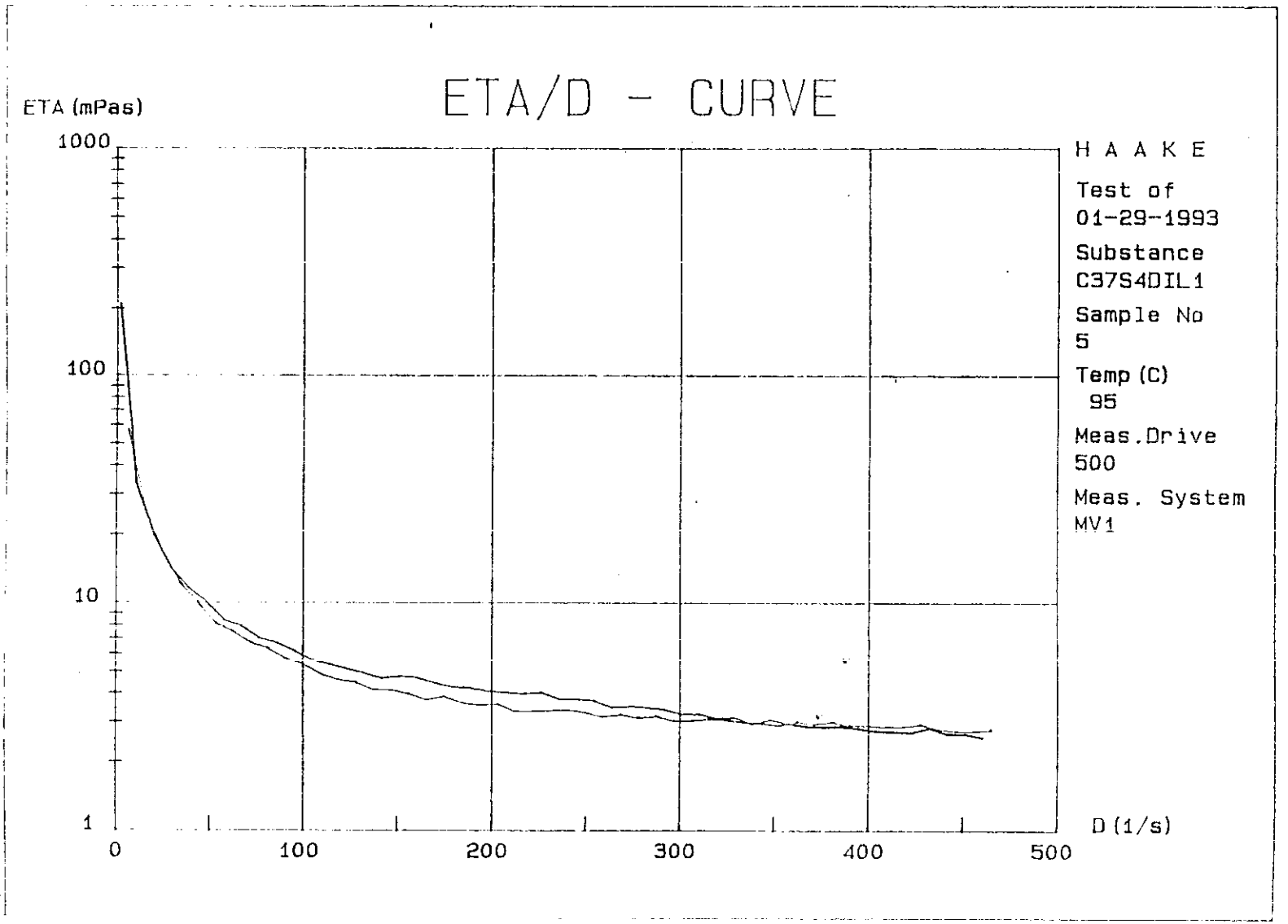

ETA/D - CURVE
ETA (mPas)
1000
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

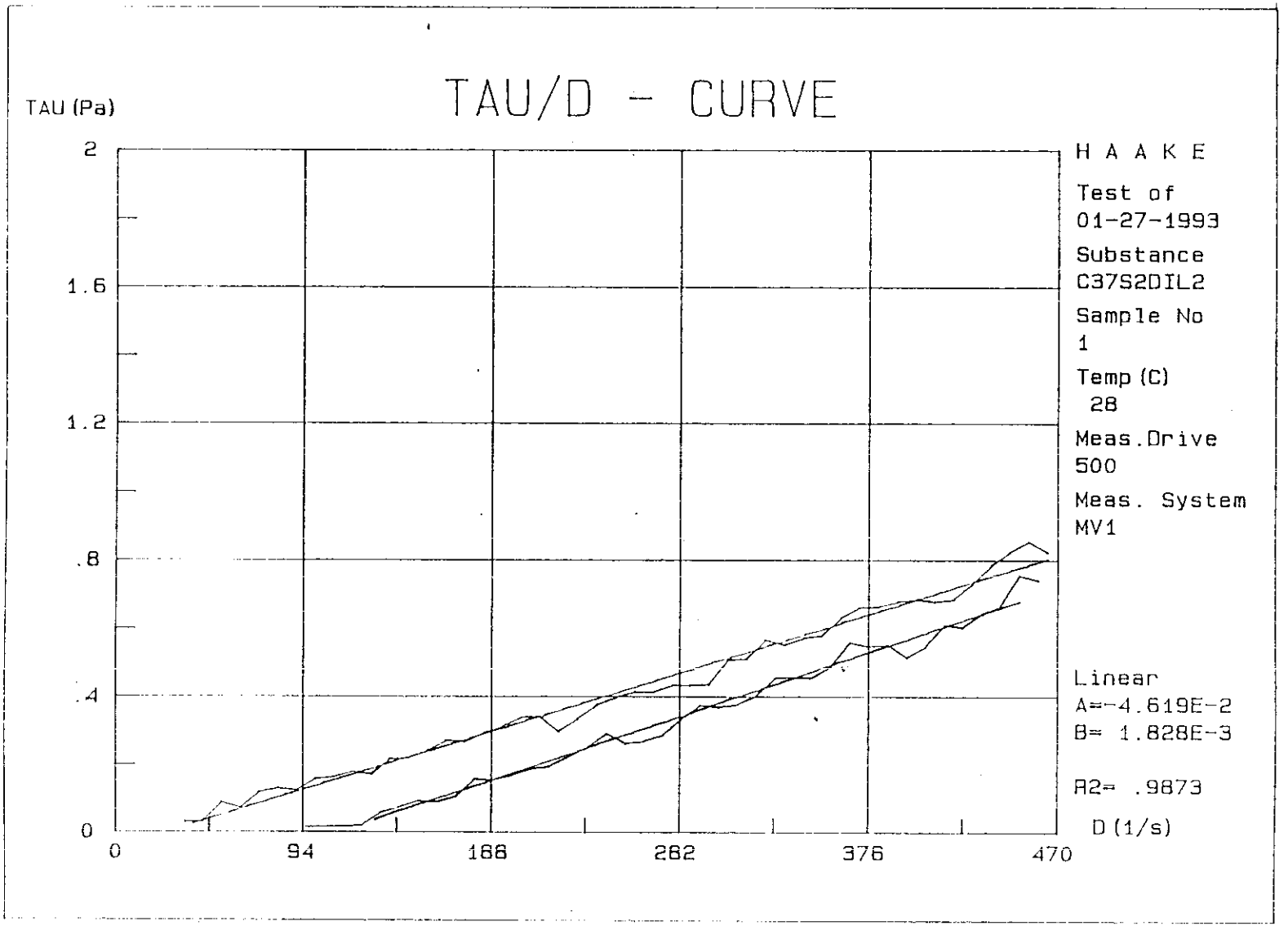

ETA/D - CURVE
ETA (mPas)
1000
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

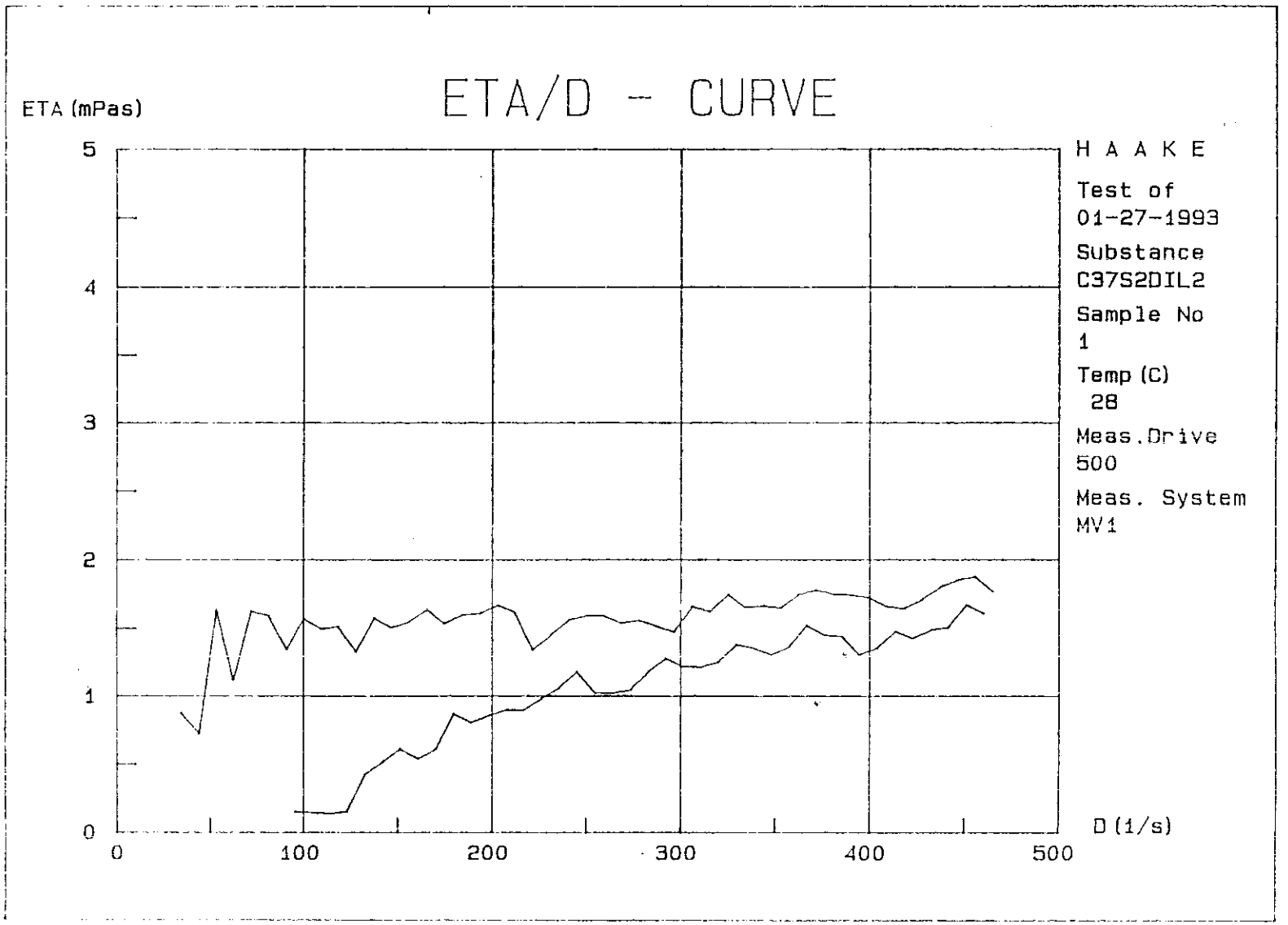

TAU/D - CURVE
TAU (Pa)
2
1.6
1.2
.8
.4
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
5
Temp (C)
95
Meas.Drive
500
Meas. System
MV1
Linear
A= 3.27E-1
B= 2.022E-3
R2= .9913

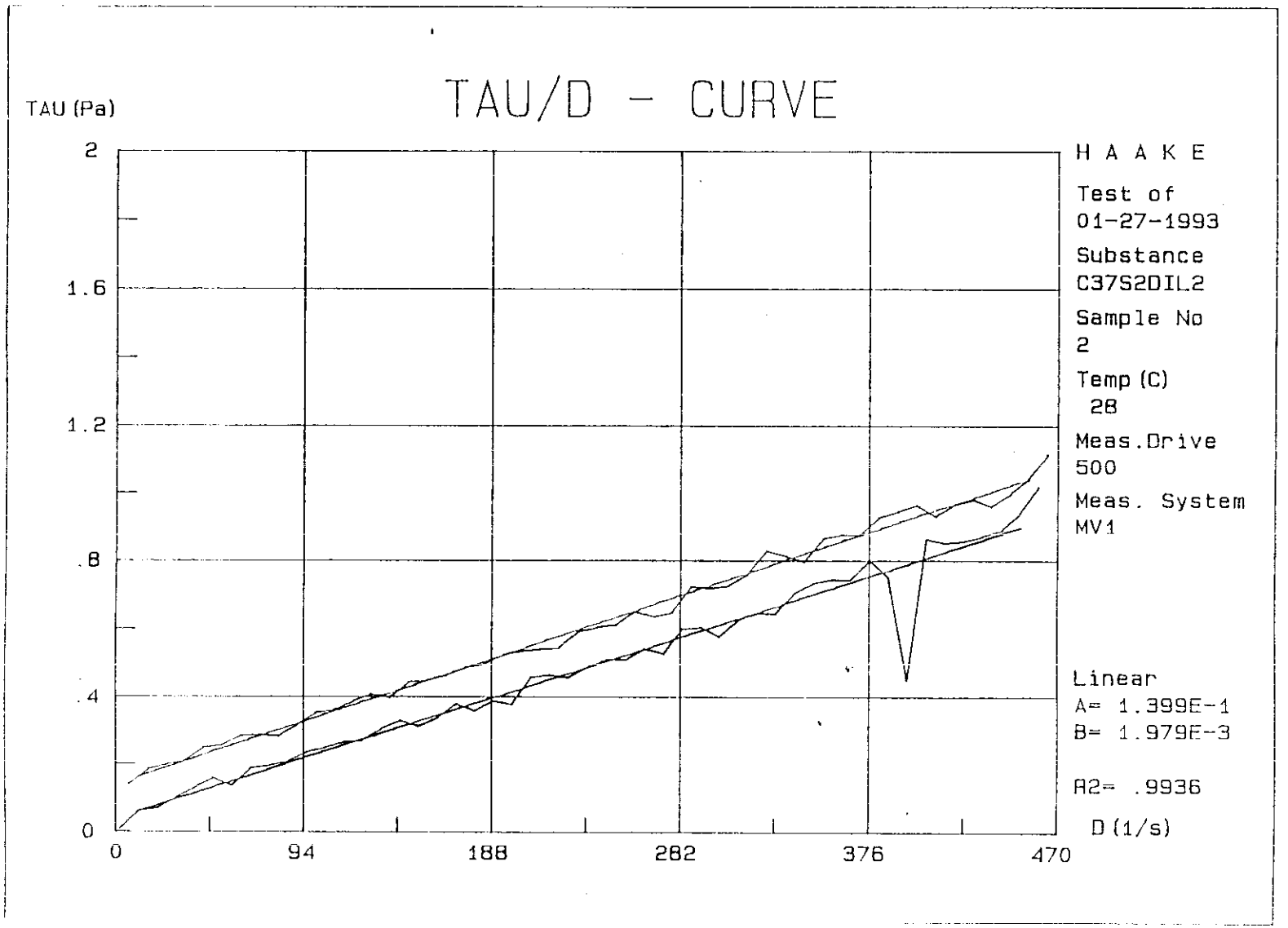

ETA/D - CURVE
ETA (mPas)
250
200
150
100
50
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
5
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

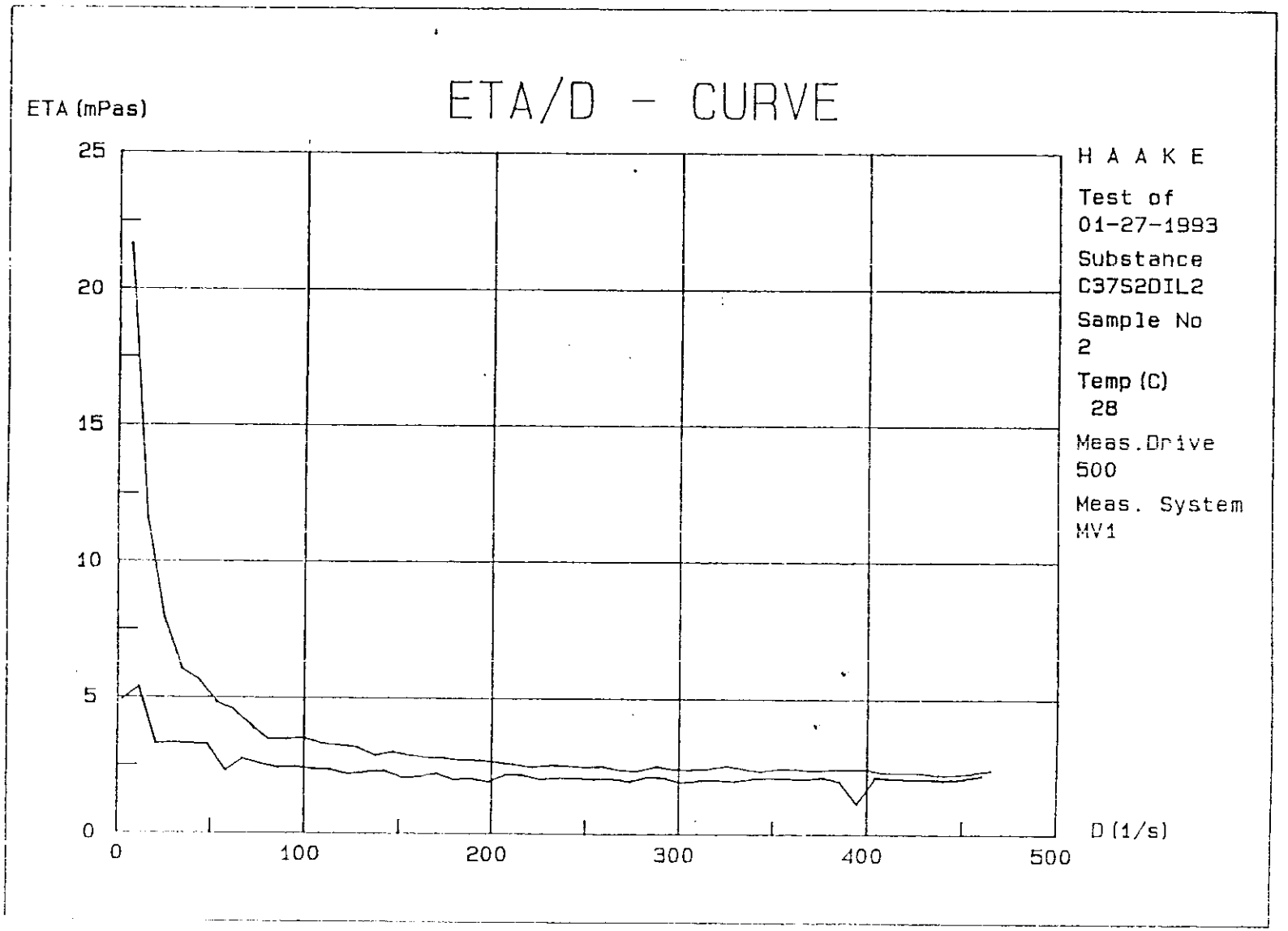

ETA/D - CURVE
ETA (mPas)
1000
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
5
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

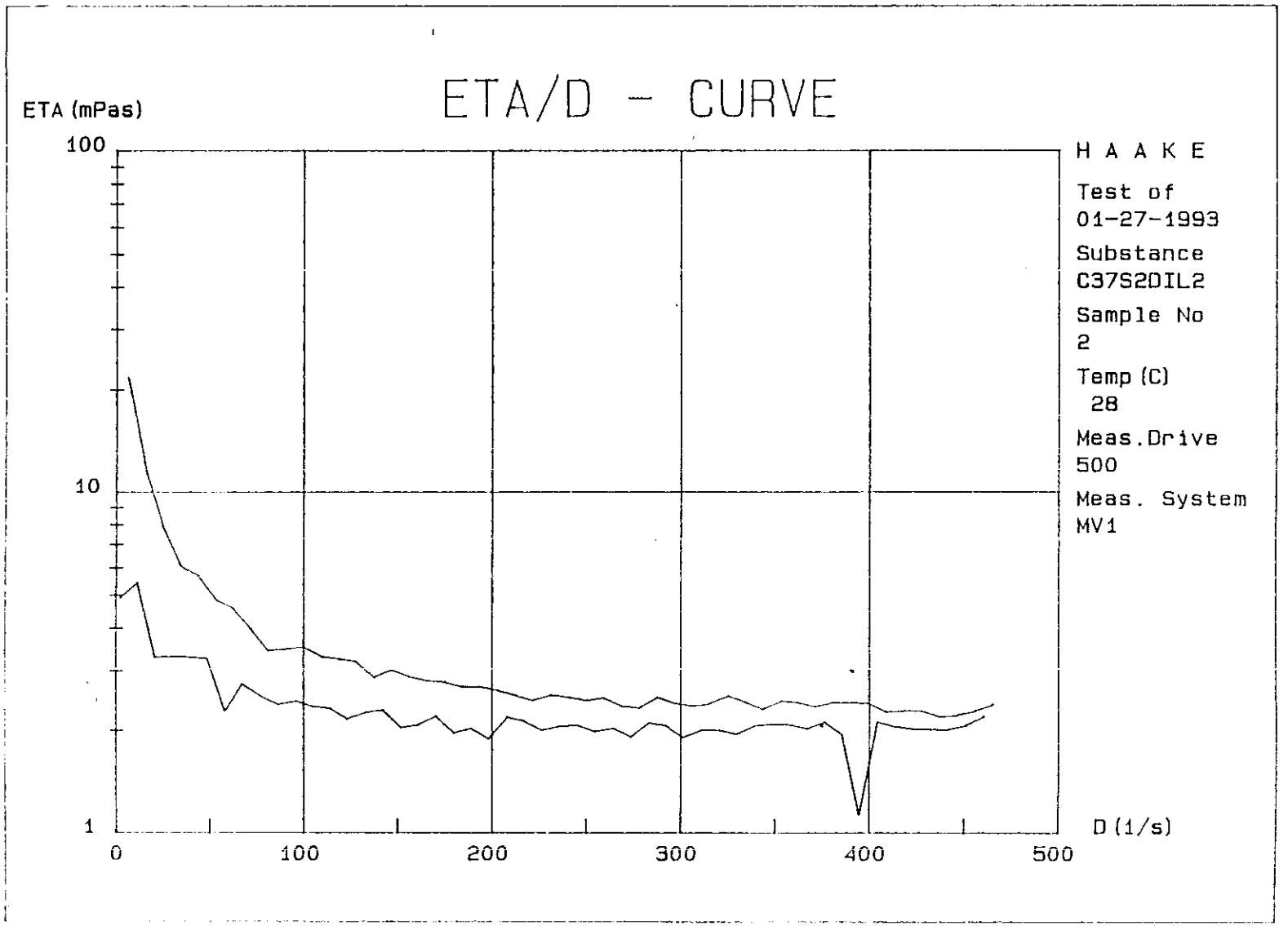

ETA/D - CURVE
ETA (mPas)
1000
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-29-1993
Substance
C37S4DIL1
Sample No
5
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

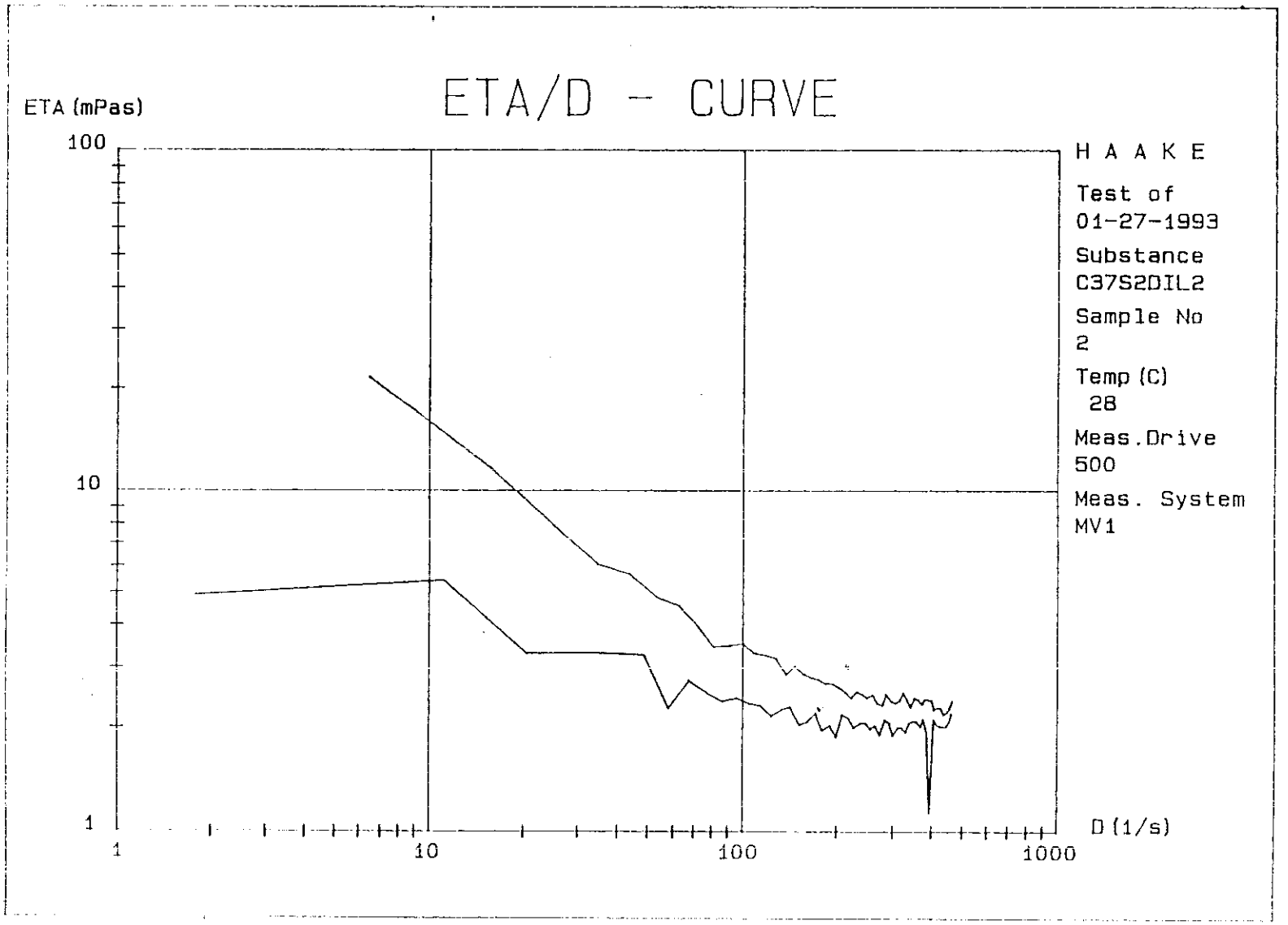

TAU/D - CURVE
TAU (Pa)
2
1.6
1.2
.8
.4
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S2DIL2
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1
Linear
A=-4.619E-2
B= 1.828E-3
R2= .9873

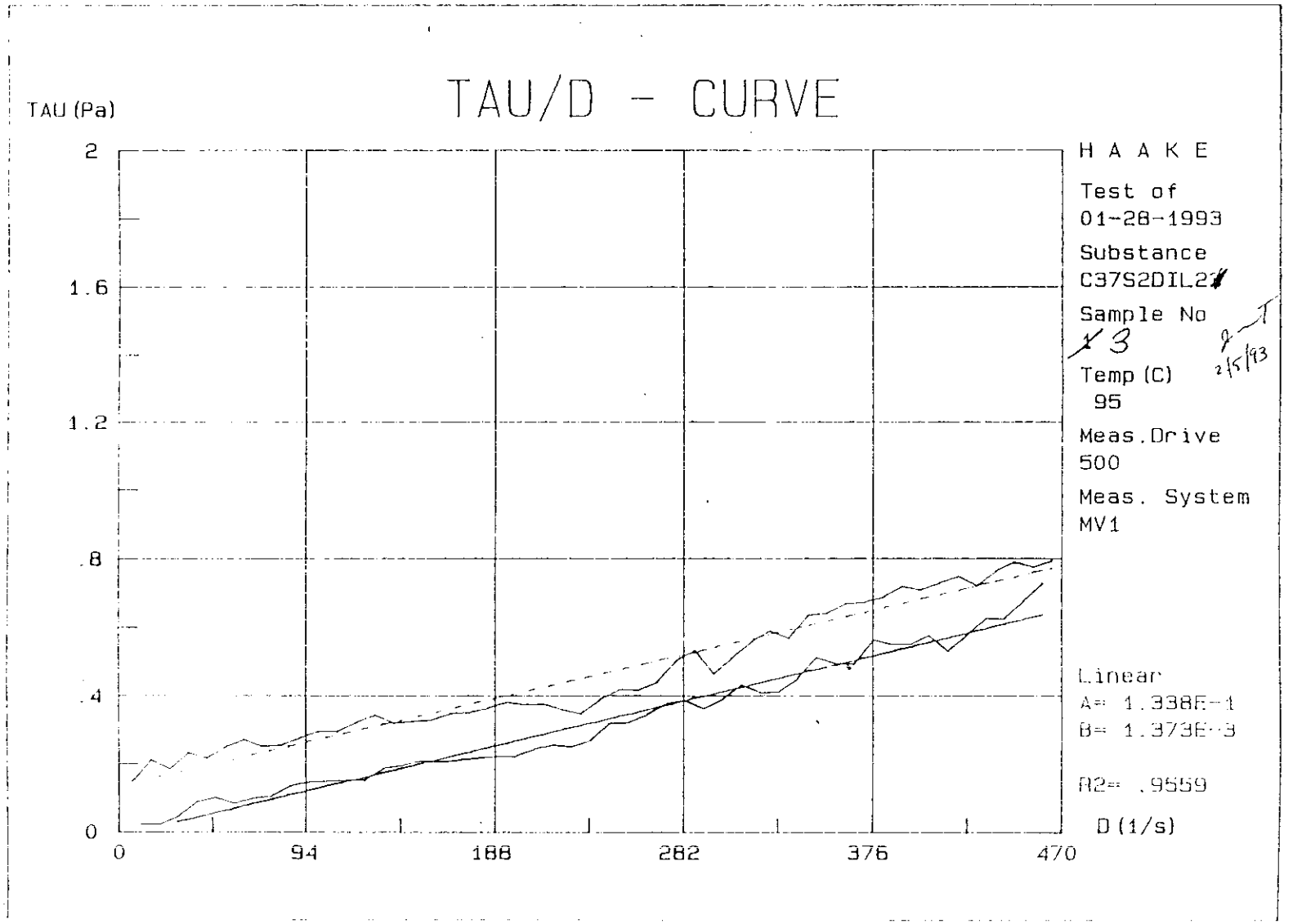

ETA/D - CURVE
ETA (mPas)
5
4
3
2
1
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S2DIL2
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

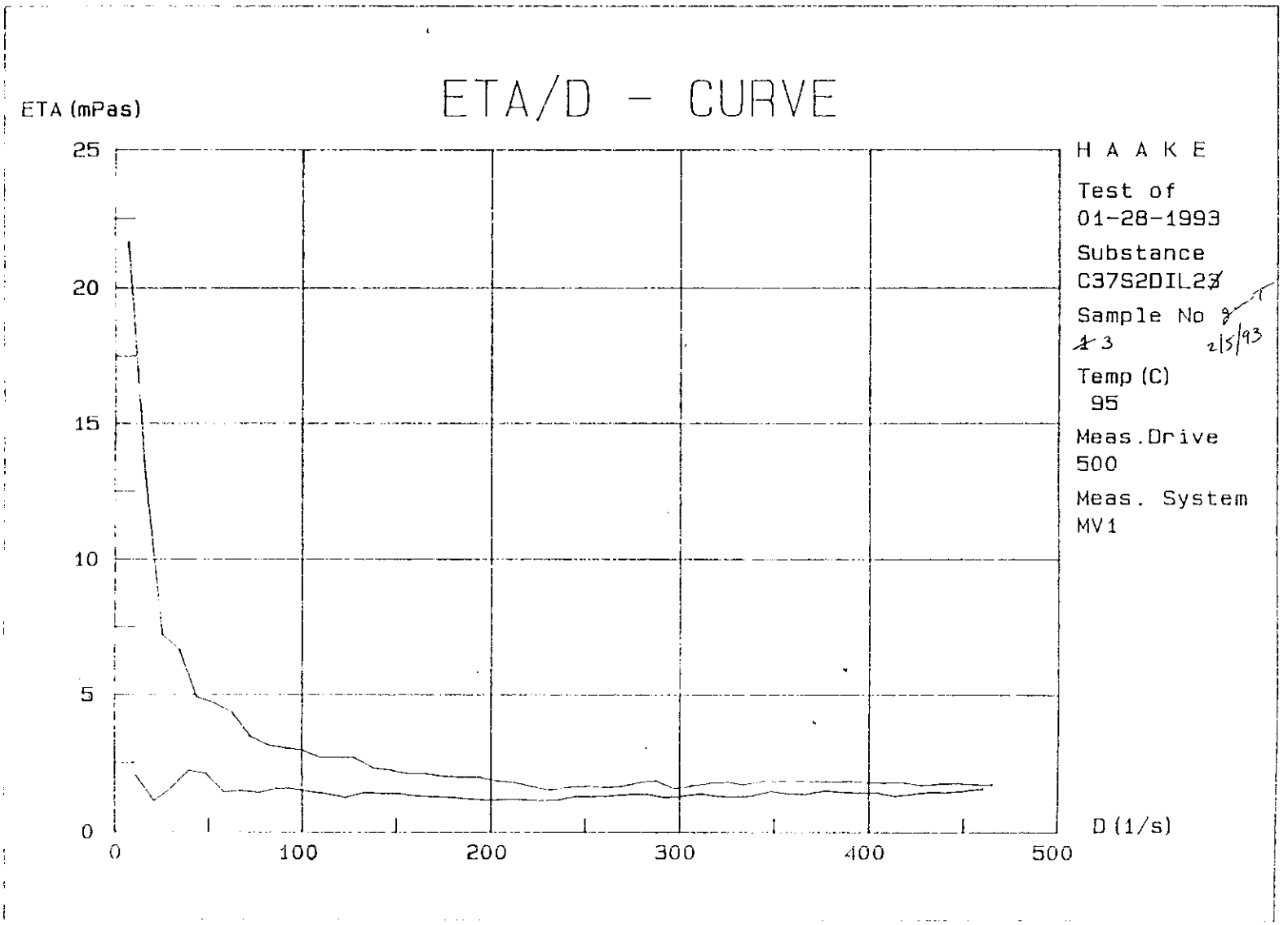

TAU/D - CURVE
TAU (Pa)
2
1.6
1.2
.8
.4
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S2DIL2
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1
Linear
A= 1.399E-1
B= 1.979E-3
R2= .9936

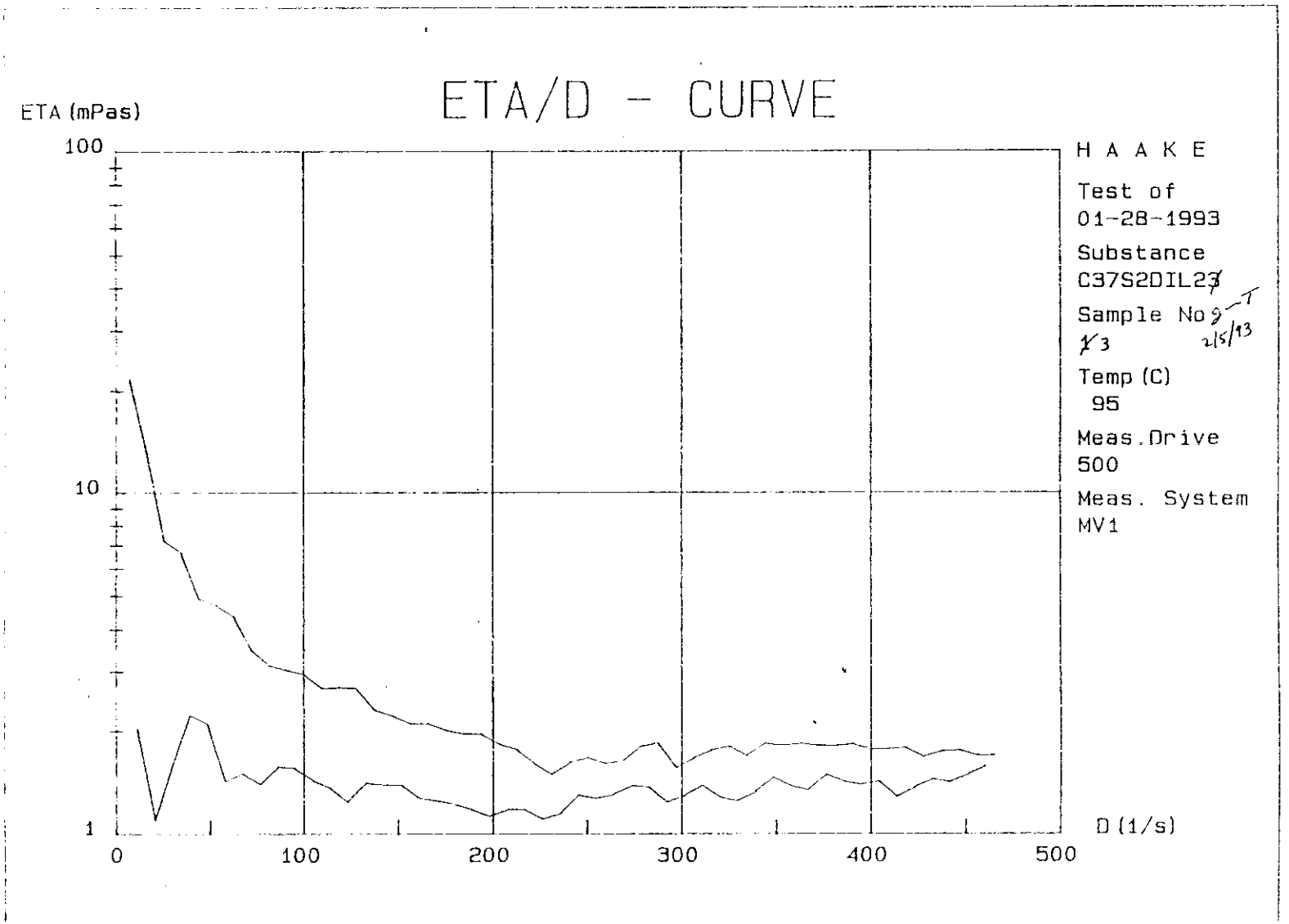

ETA/D - CURVE
ETA (mPas)
25
20
15
10
5
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S2DIL2
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

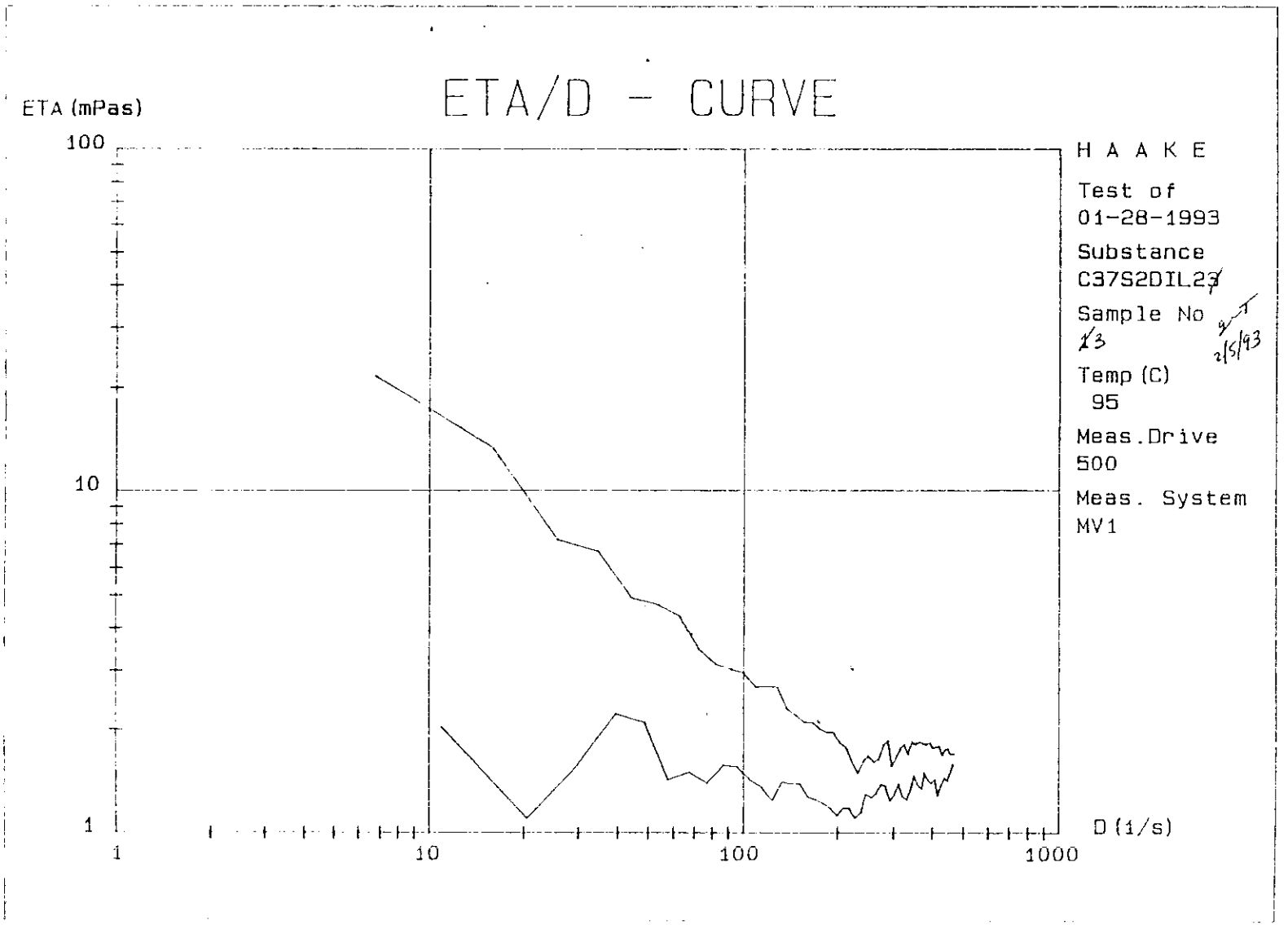

ETA/D - CURVE
ETA (mPas)
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S2DIL2
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

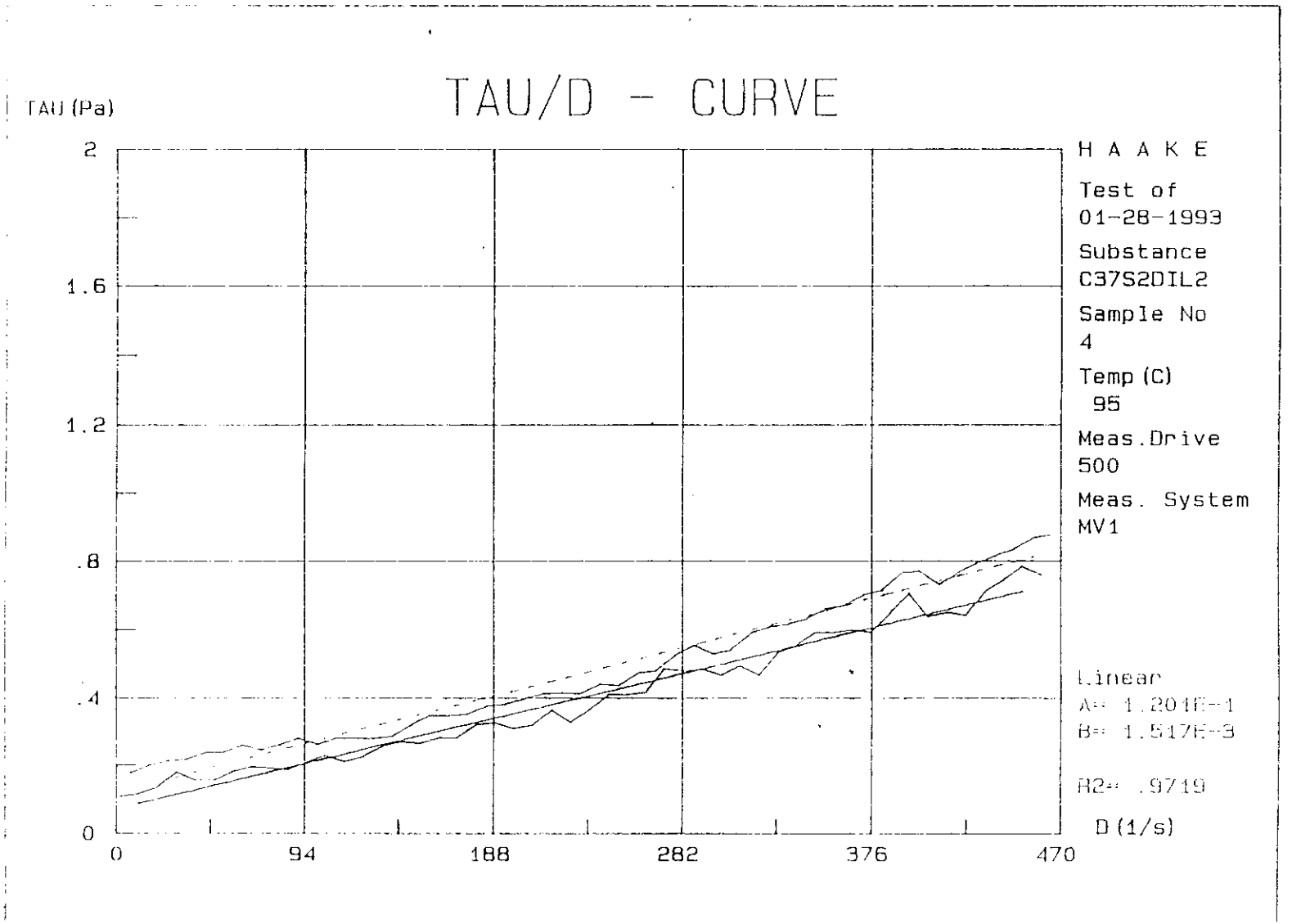

ETA/D - CURVE
ETA (mPas)
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S2DIL2
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

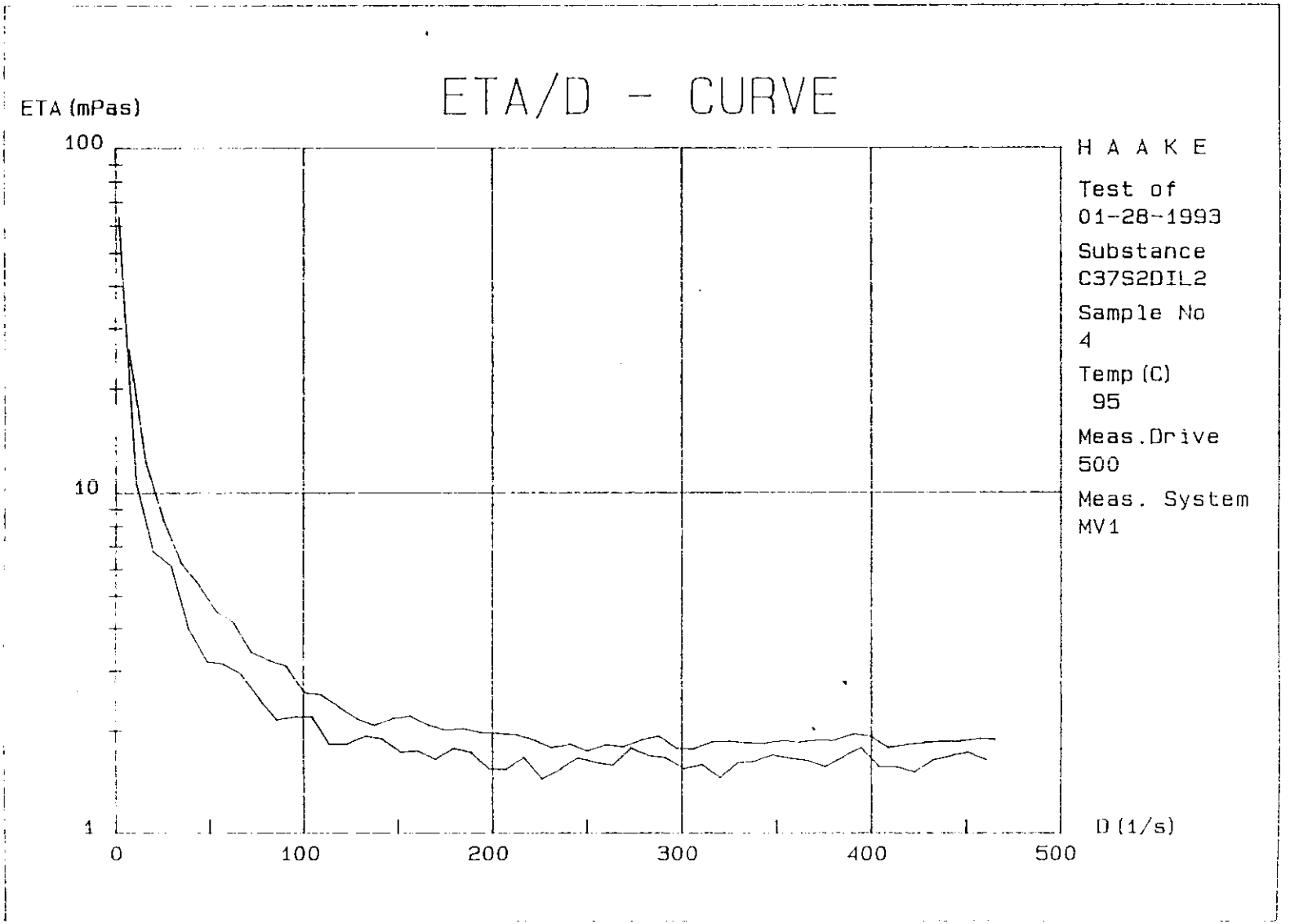

TAU/D - CURVE
TAU (Pa)
2
1.6
1.2
.8
.4
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S2DIL2
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1
Linear
A= 1.338E-1
B= 1.373E-3
R2= .9559

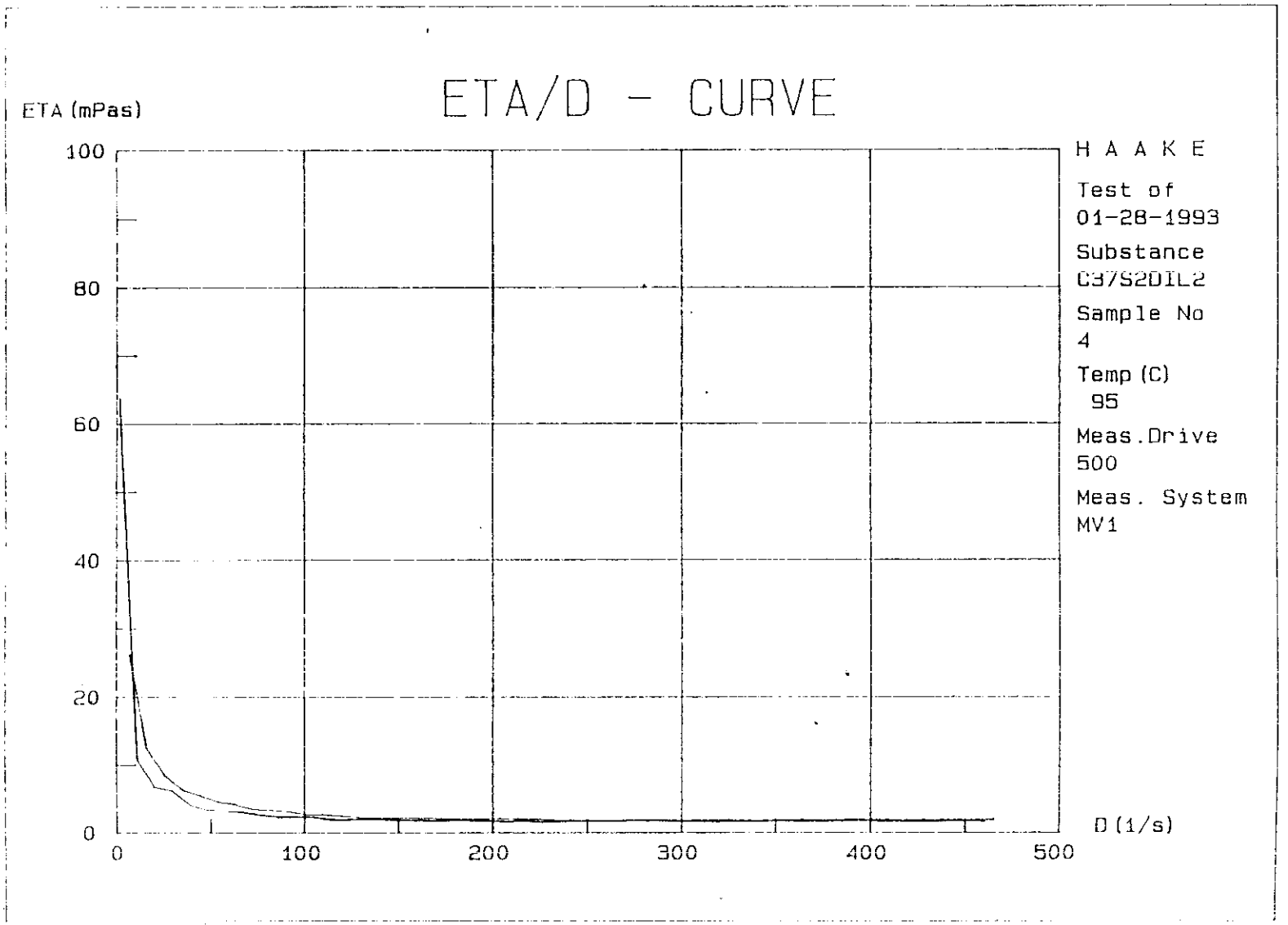

ETA/D - CURVE
ETA (mPas)
25
20
15
10
5
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S2DIL23
Sample No
3
2/5/93
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

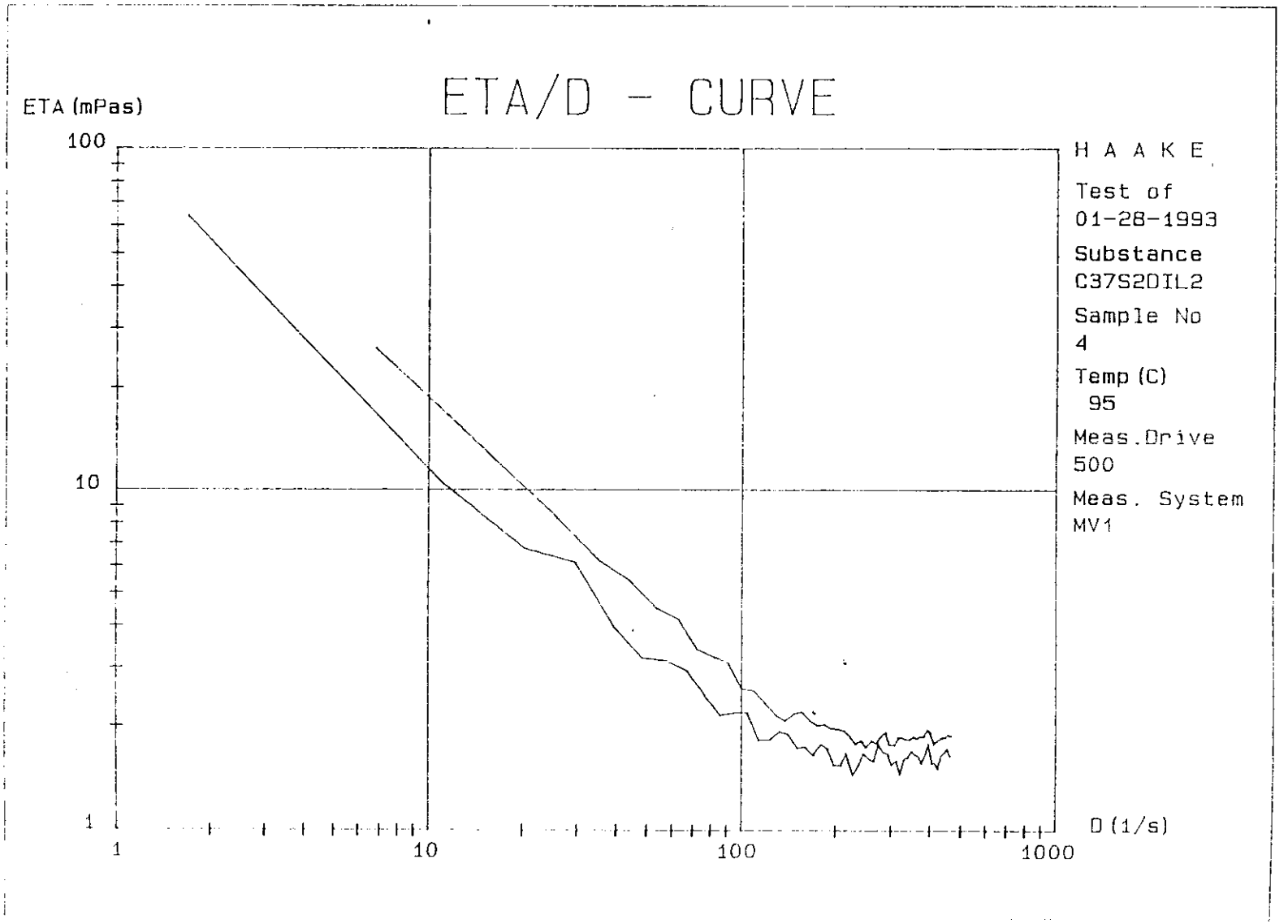

ETA/D - CURVE
ETA (mPas)
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S2DIL23
Sample No 9-T
2/5/93
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

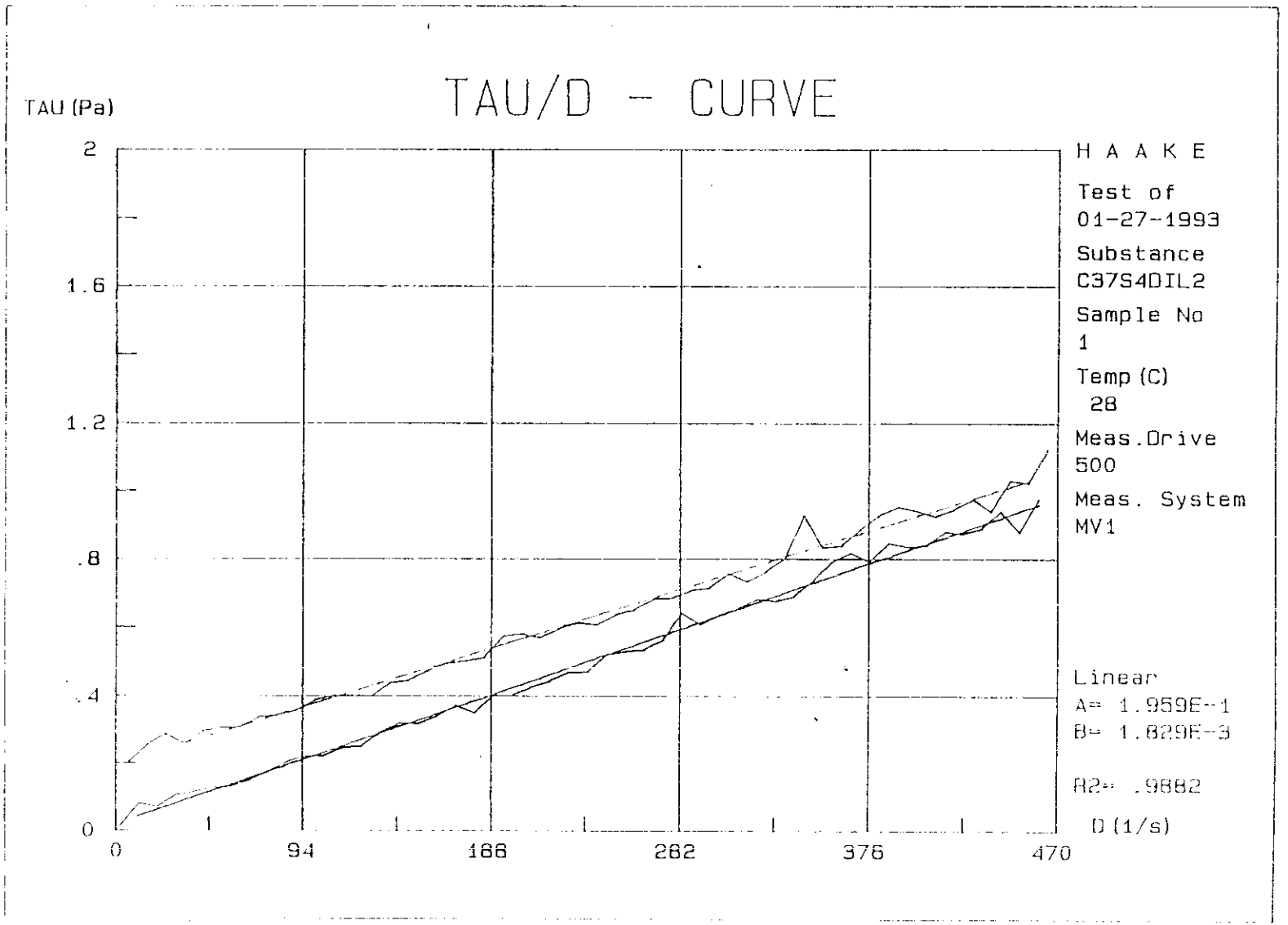

ETA/D - CURVE
ETA (mPas)
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S2DIL23
Sample No
13
2/5/93
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

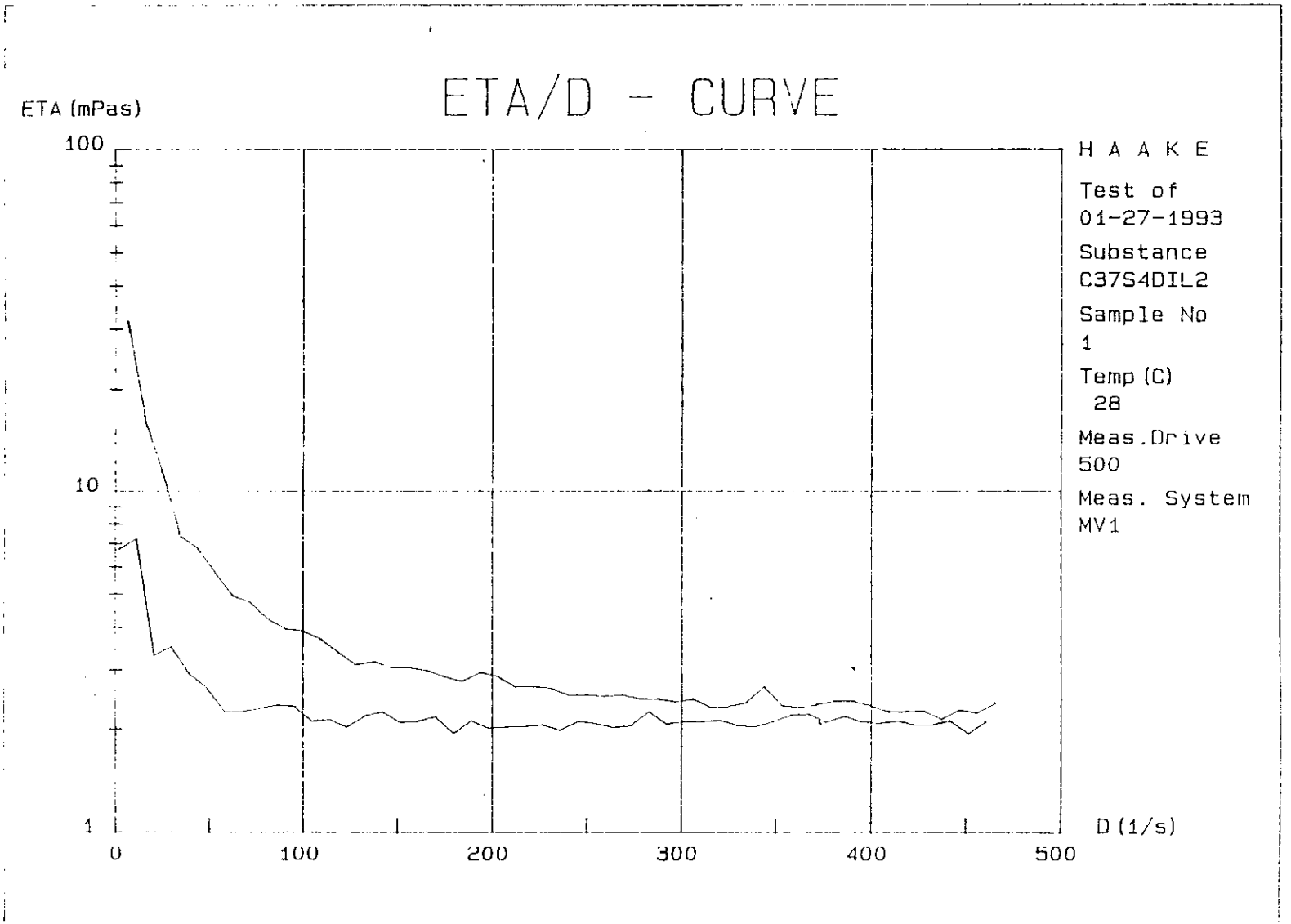

TAU/D - CURVE
TAU (Pa)
2
1.6
1.2
.8
.4
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S2DIL2
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1
Linear
A= 1.201E-1
B= 1.517E-3
R2= .9719

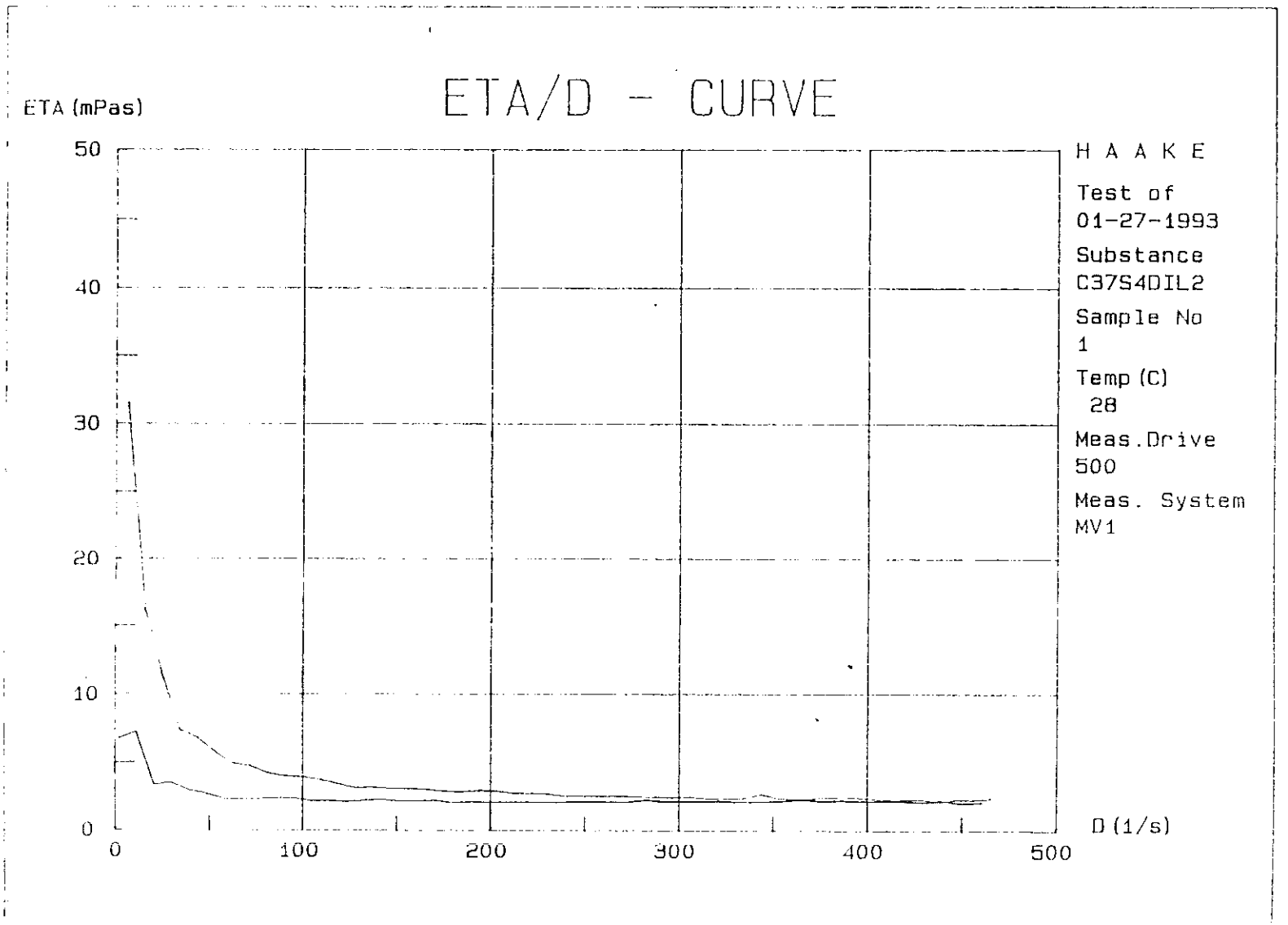

ETA/D - CURVE
ETA (mPas)
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S2DIL2
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

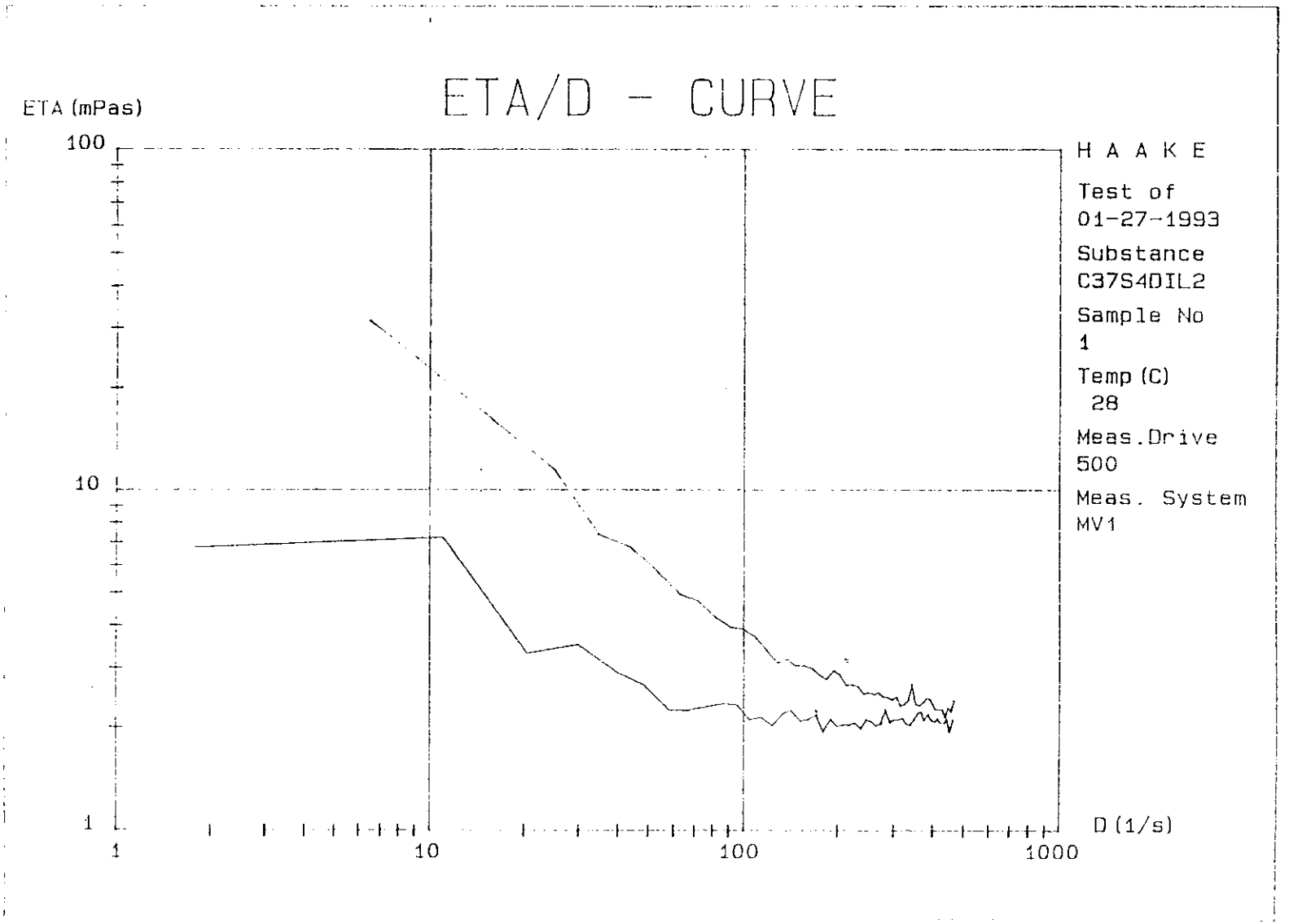

ETA/D - CURVE
ETA (mPas)
100
80
60
40
20
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S2DIL2
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

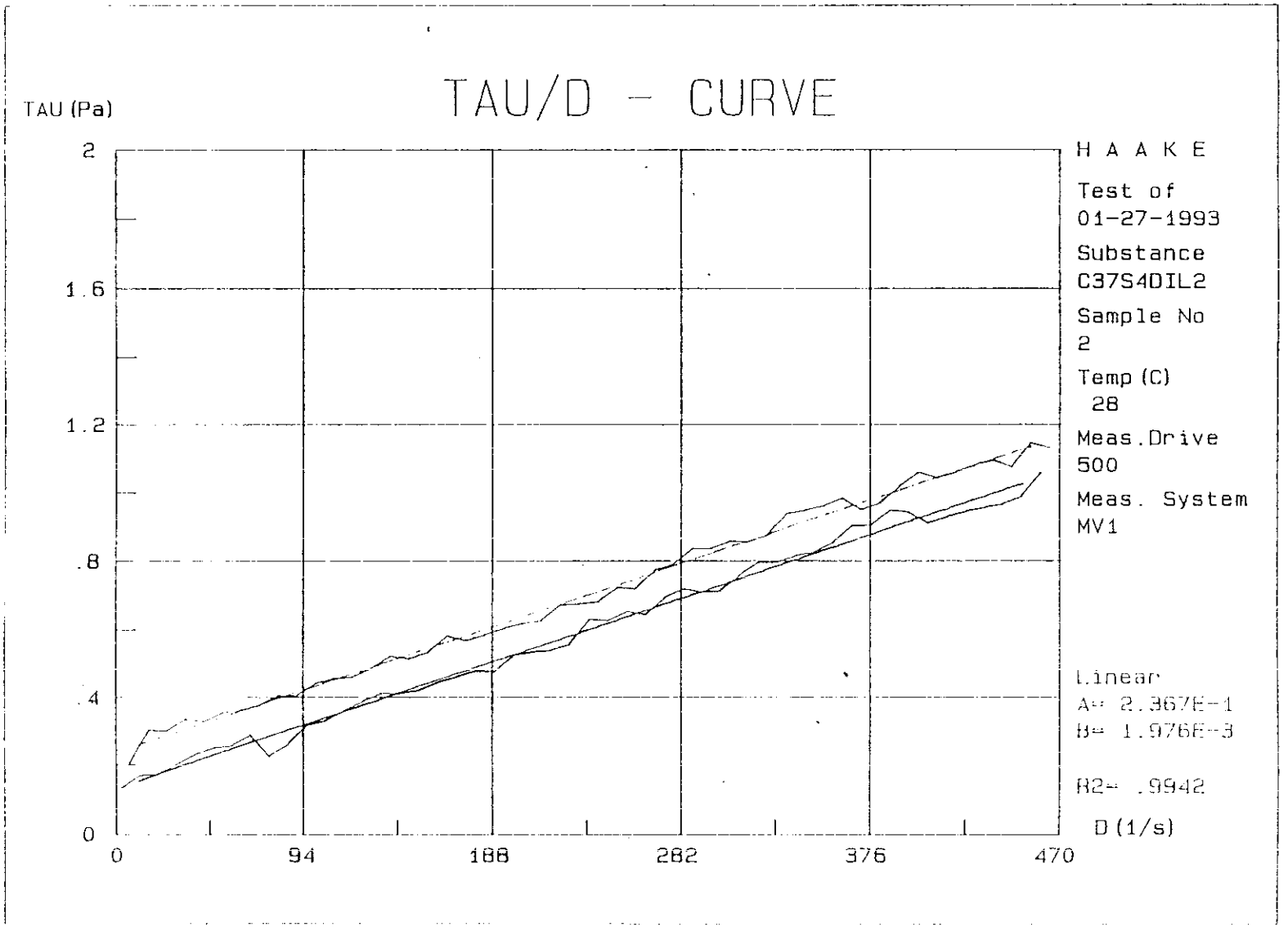

ETA/D - CURVE
ETA (mPas)
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S2DIL2
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

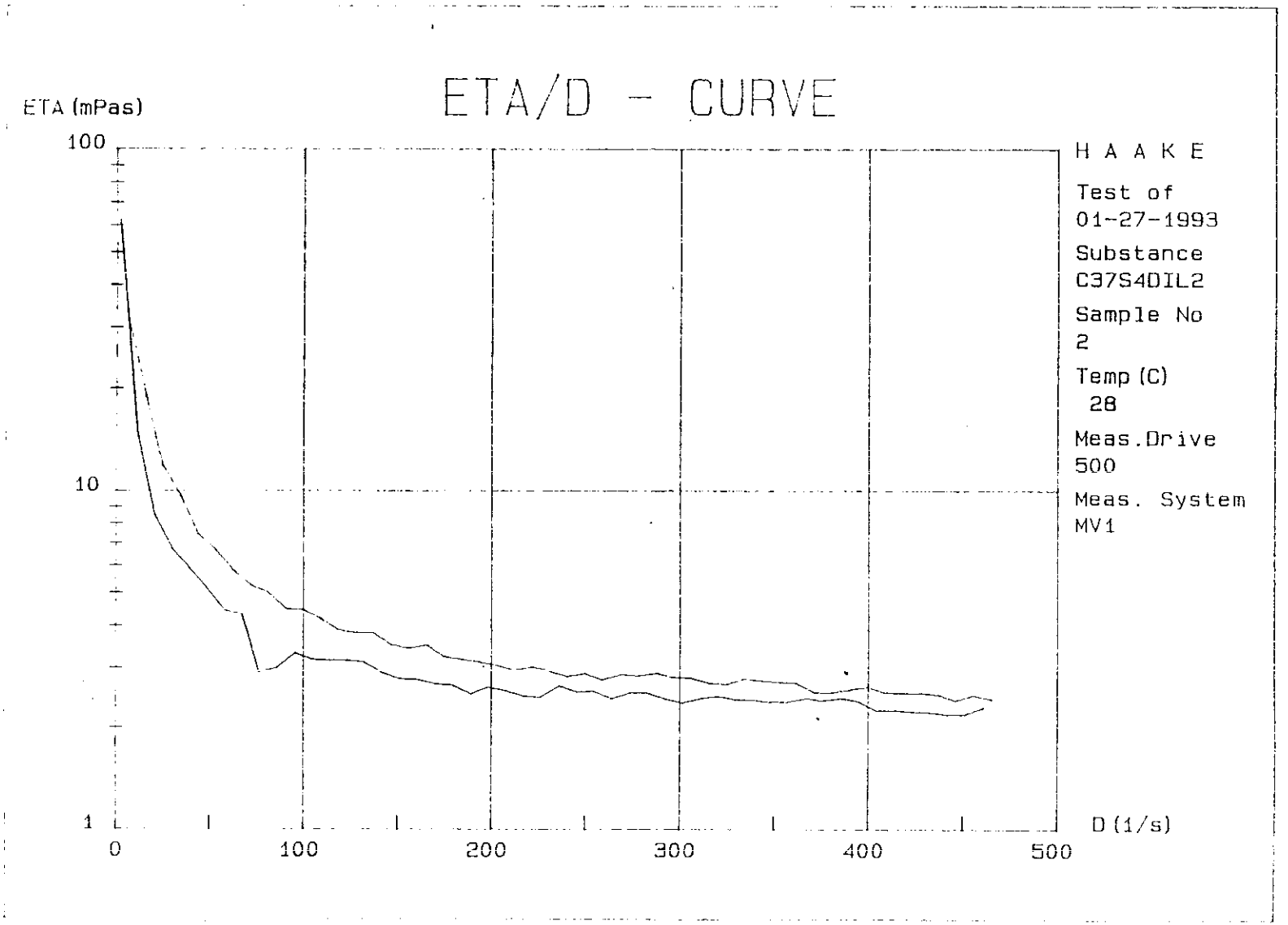

TAU/D - CURVE
TAU (Pa)
2
1.6
1.2
.8
.4
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S4DIL2
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1
Linear
A= 1.959E-1
B= 1.829E-3
R2= .9882

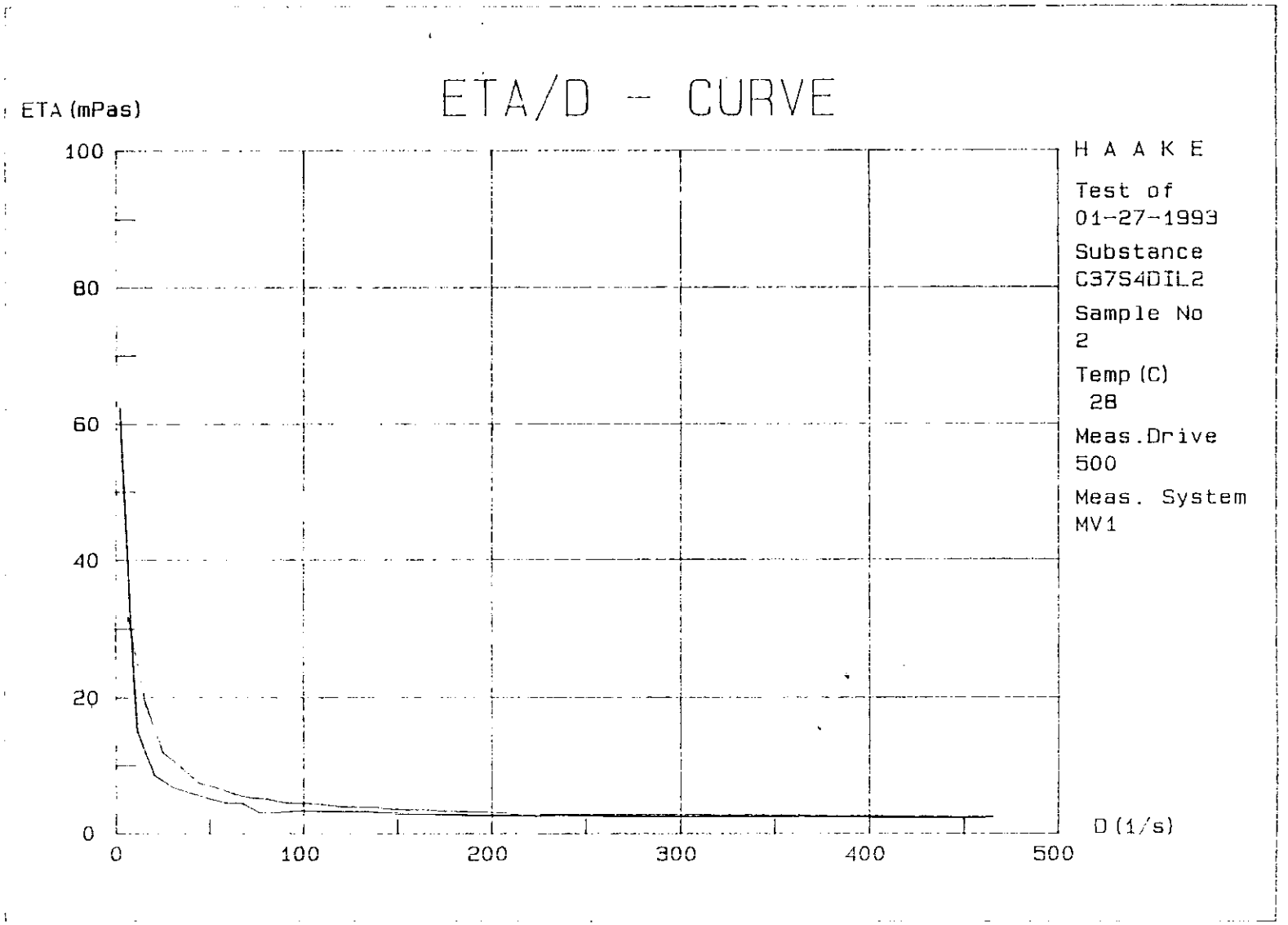

ETA/D - CURVE
ETA (mPas)
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S4DIL2
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

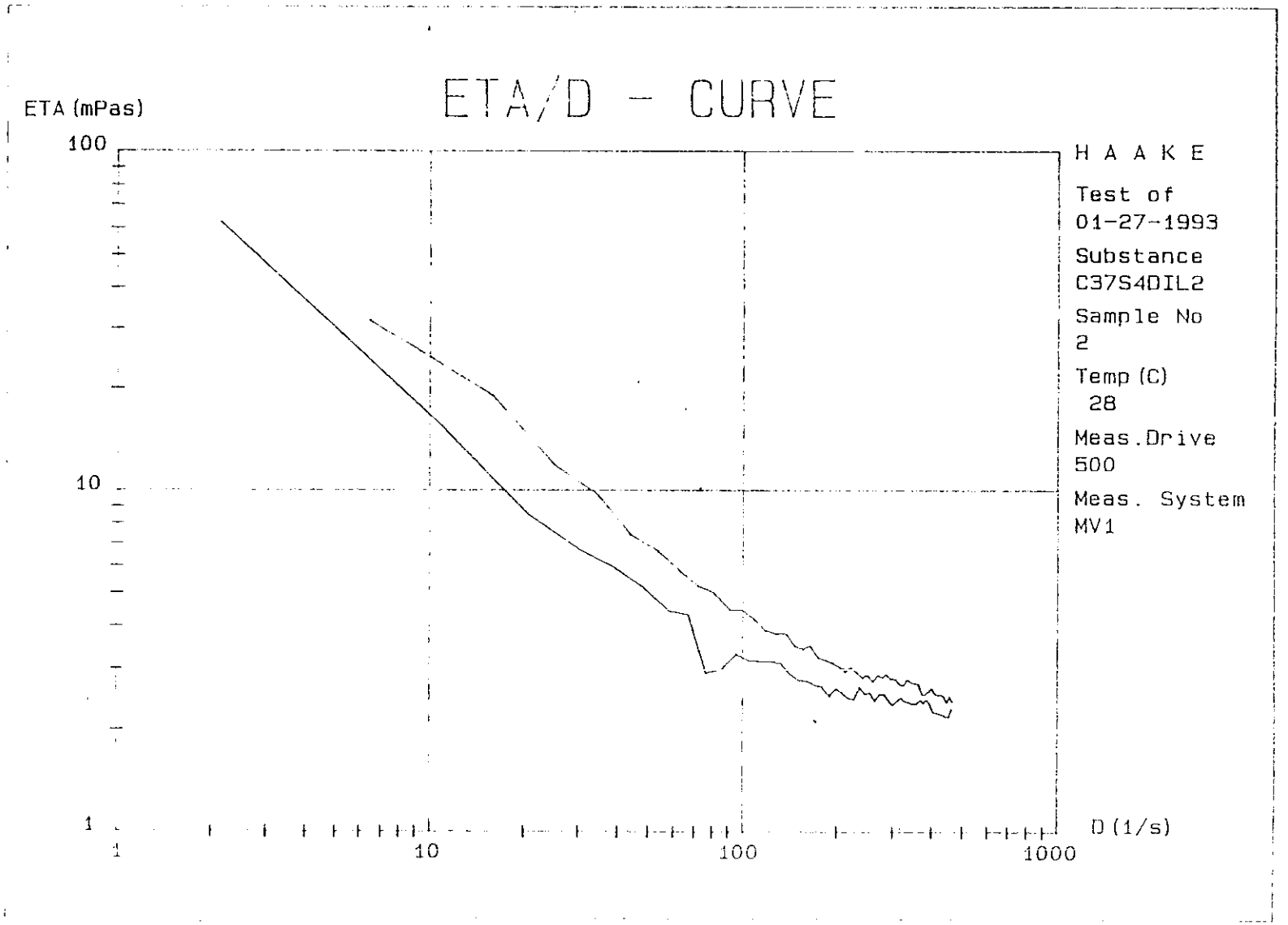

ETA/D - CURVE
ETA (mPas)
50
40
30
20
10
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S4DIL2
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

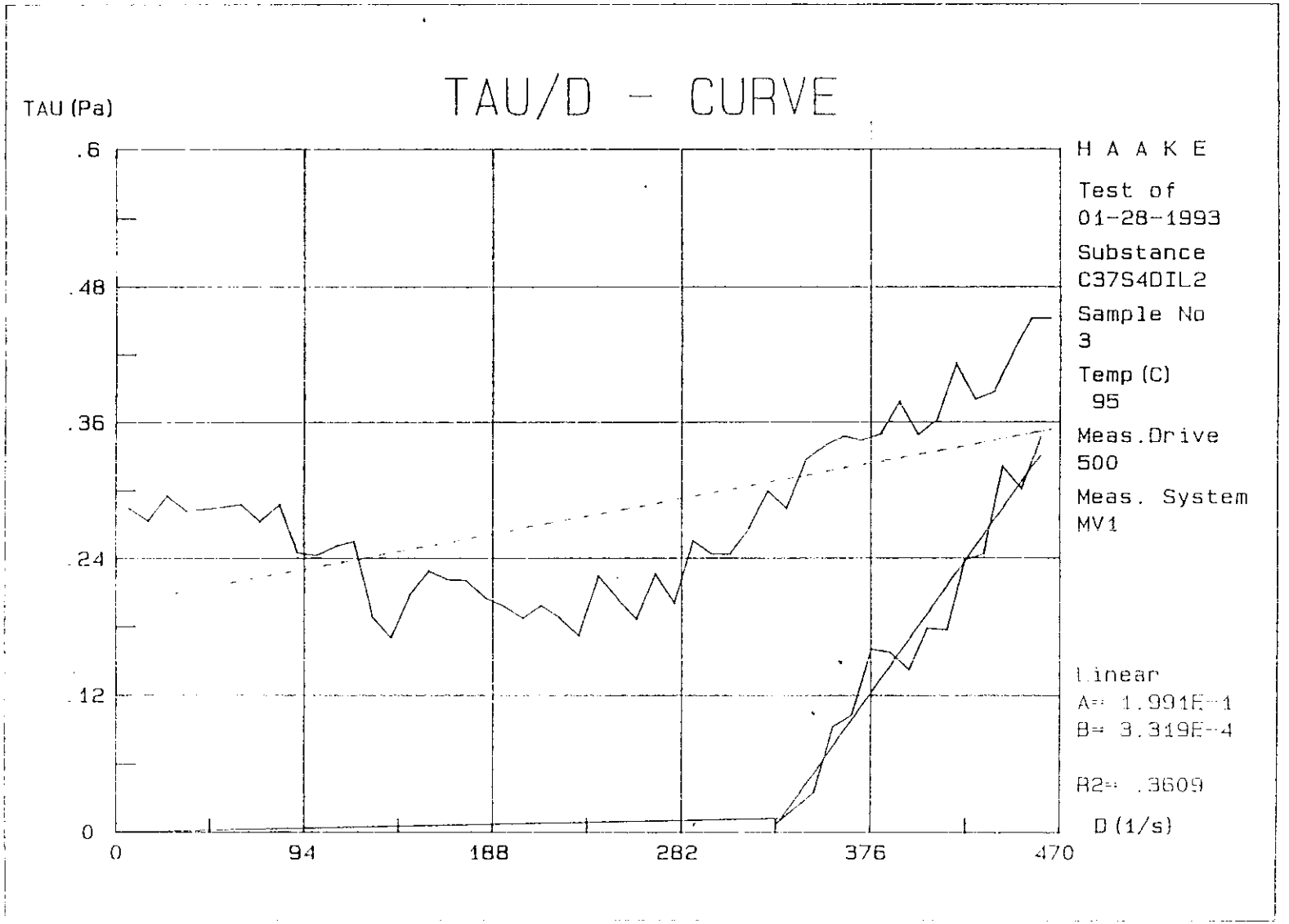

ETA/D - CURVE
ETA (mPas)
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S4DIL2
Sample No
1
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

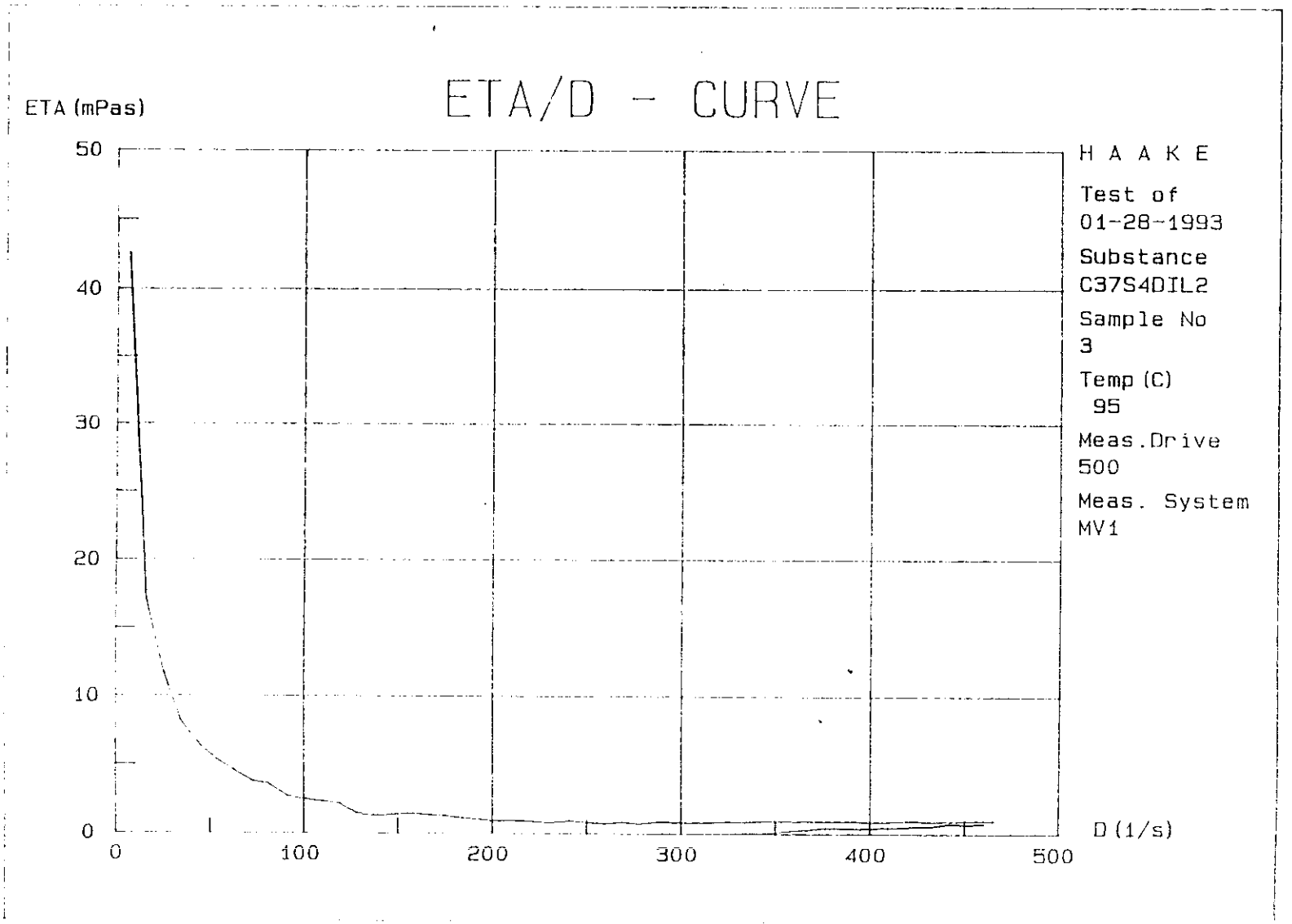

TAU/D - CURVE
TAU (Pa)
2
1.6
1.2
.8
.4
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S4DIL2
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1
Linear
A= 2.367E-1
B= 1.976E-3
R2= .9942

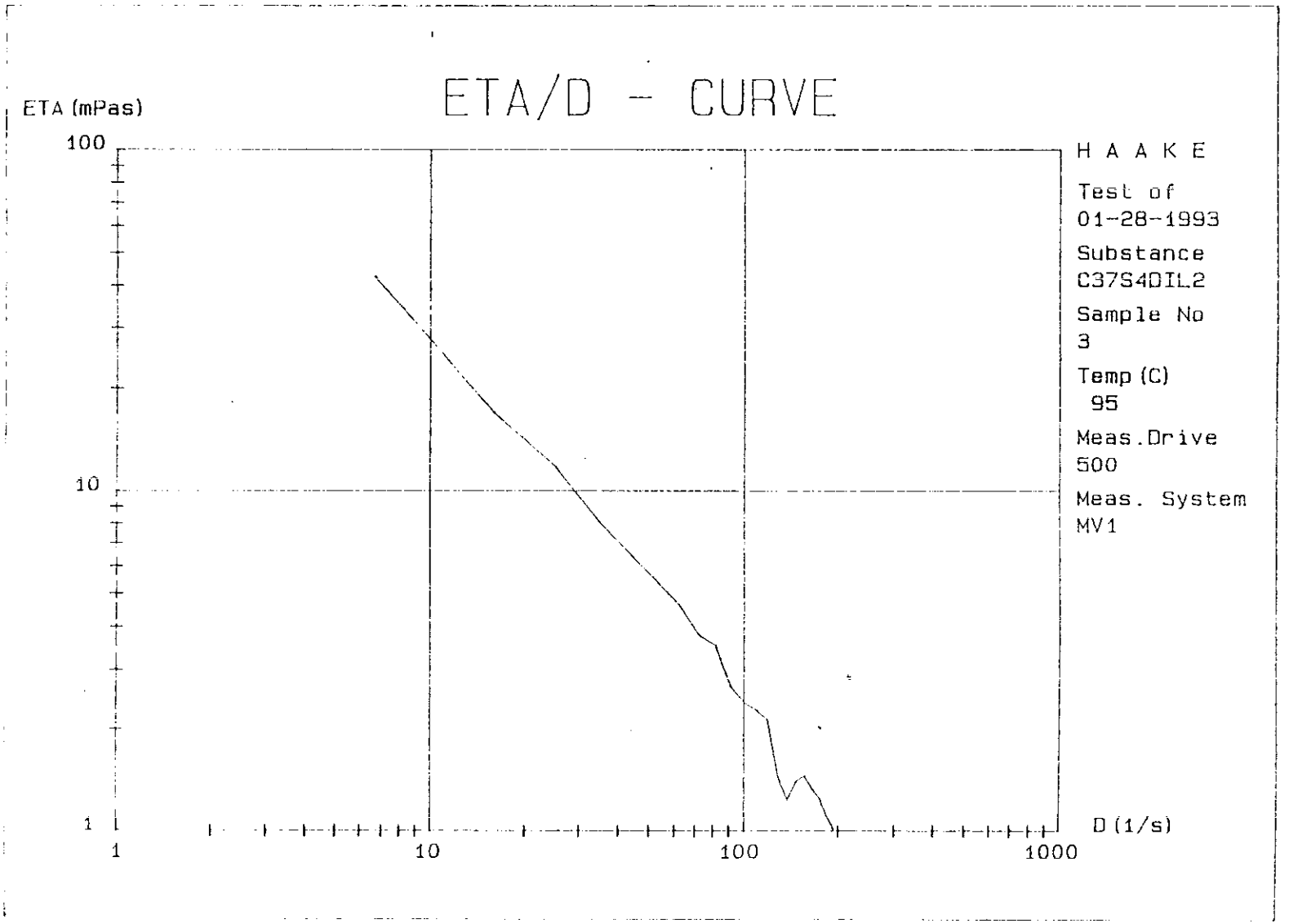

ETA/D - CURVE
ETA (mPas)
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S4DIL2
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

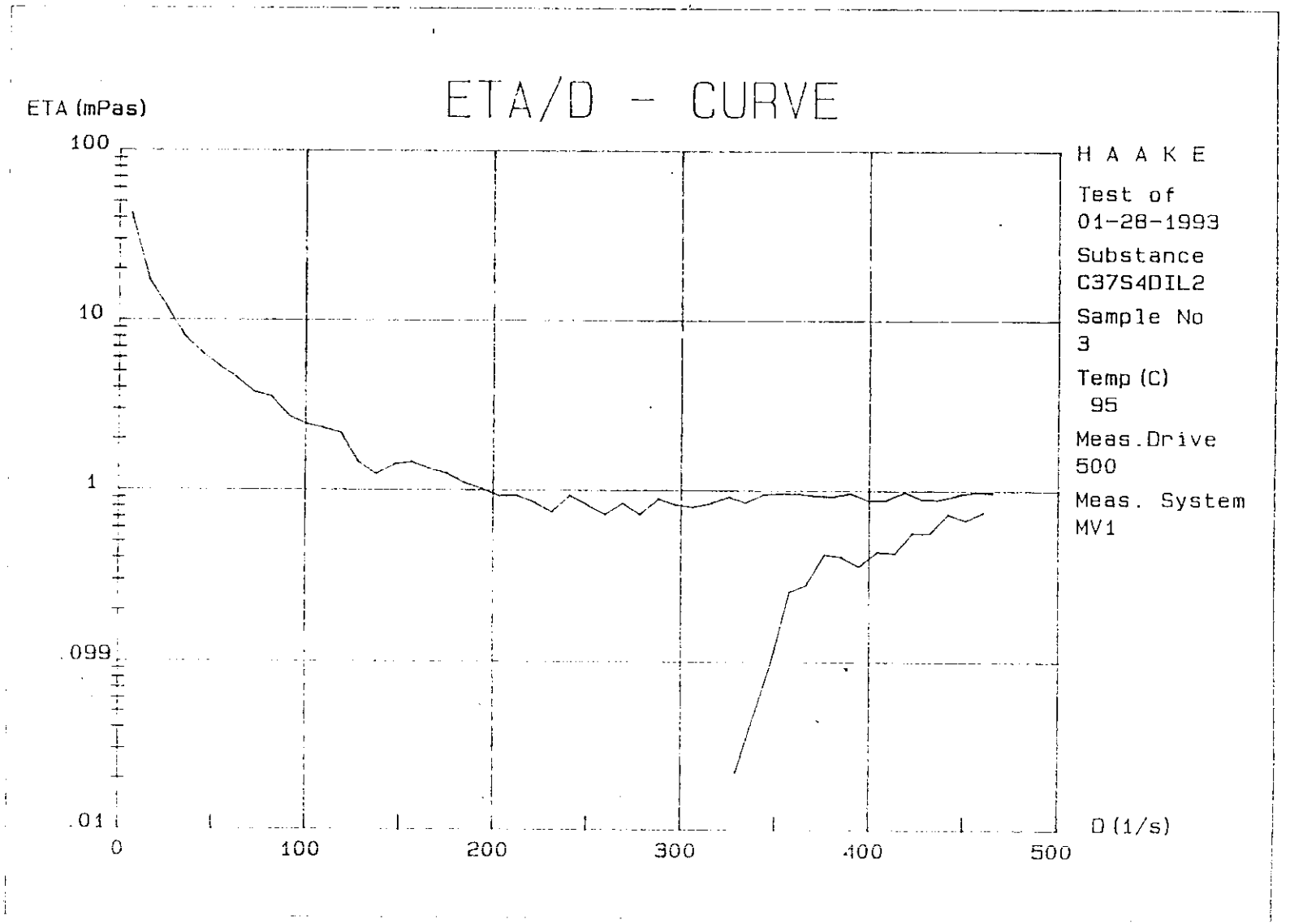

ETA/D - CURVE
ETA (mPas)
100
80
60
40
20
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S4DIL2
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

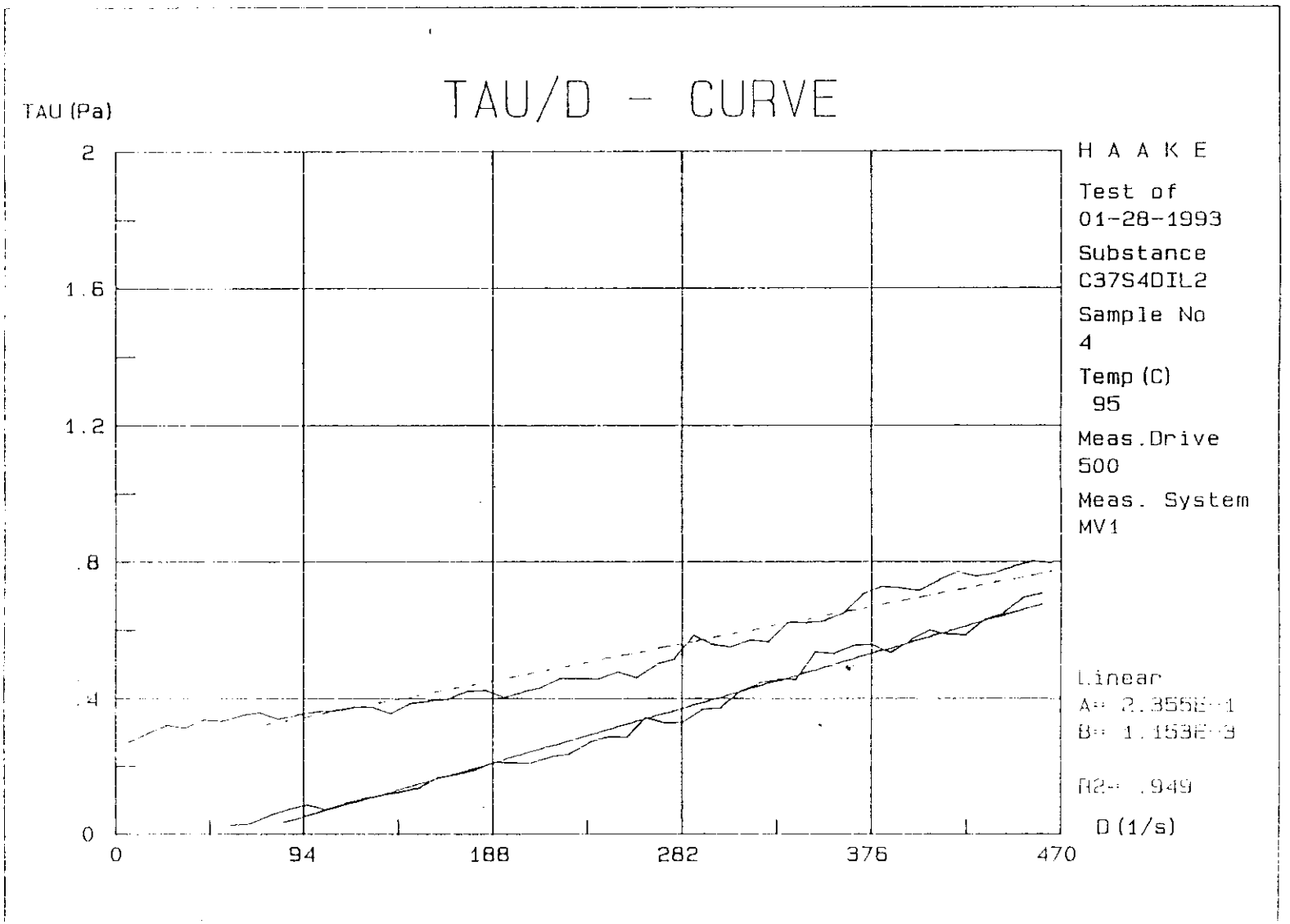

ETA/D - CURVE
ETA (mPas)
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-27-1993
Substance
C37S4DIL2
Sample No
2
Temp (C)
28
Meas.Drive
500
Meas. System
MV1

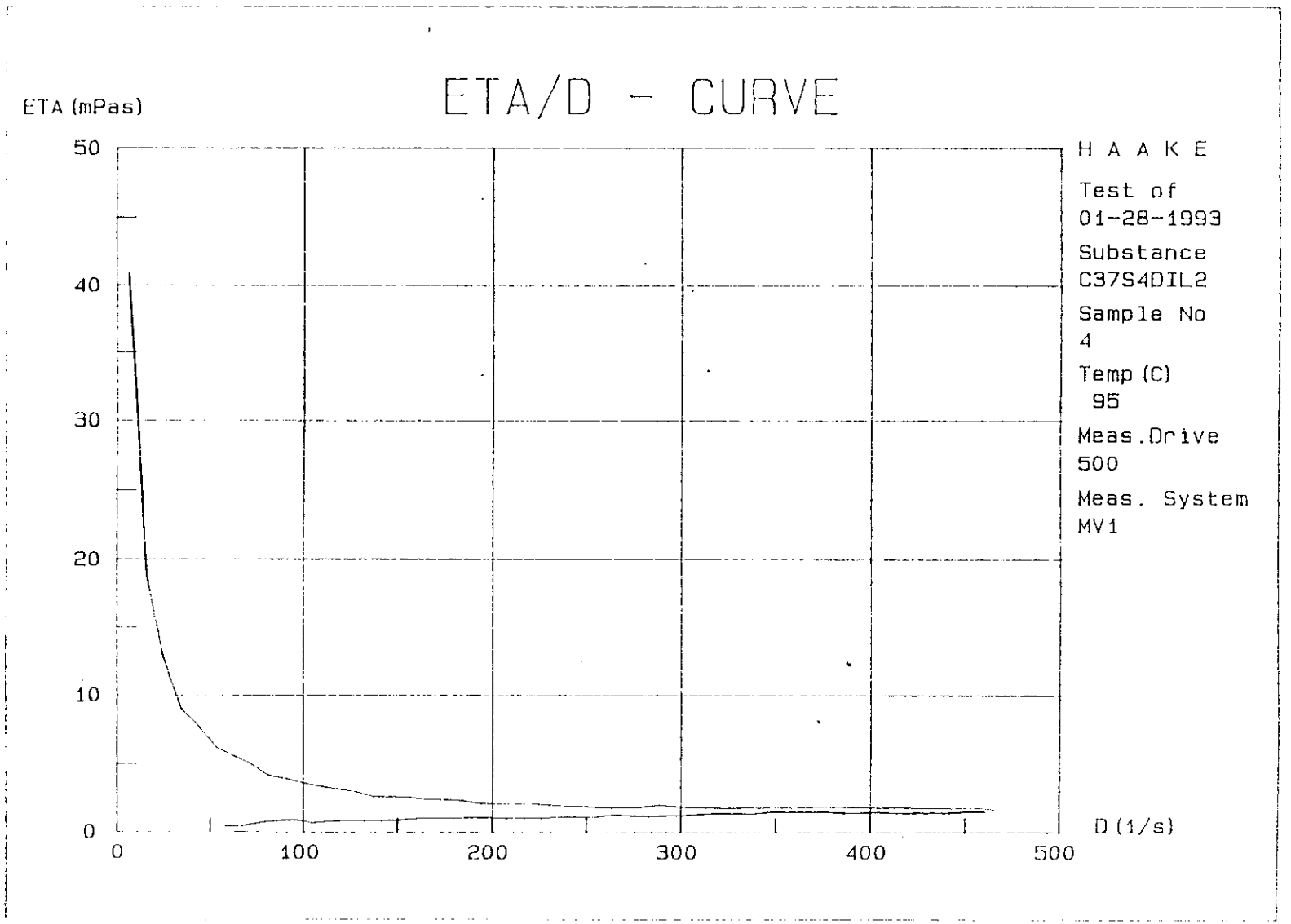

TAU/D - CURVE
TAU (Pa)
.6
.48
.36
.24
.12
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S4DIL2
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1
Linear
A= 1.991E-1
B= 3.319E-4
R2= .3609

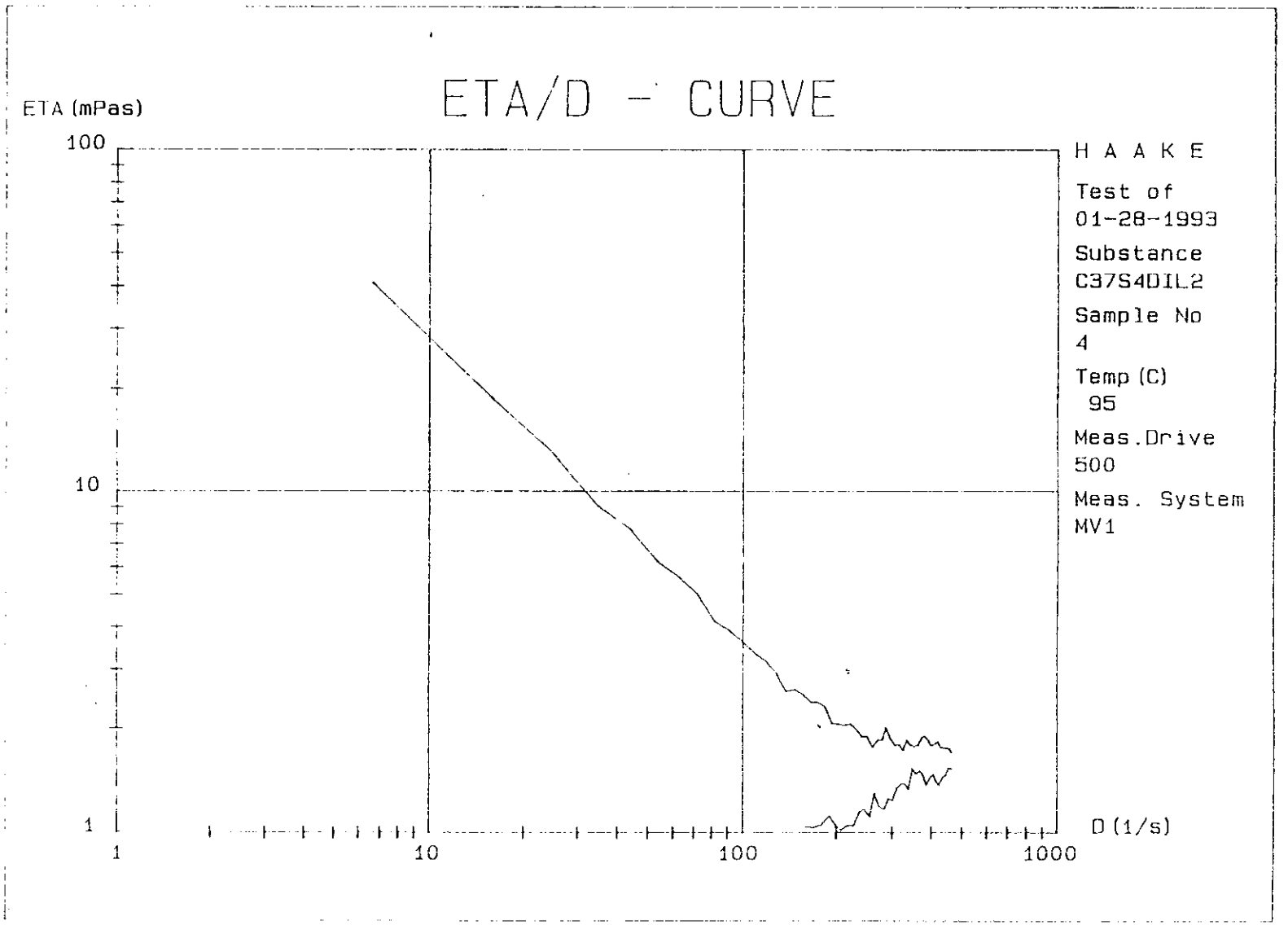

ETA/D - CURVE
ETA (mPas)
50
40
30
20
10
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S4DIL2
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

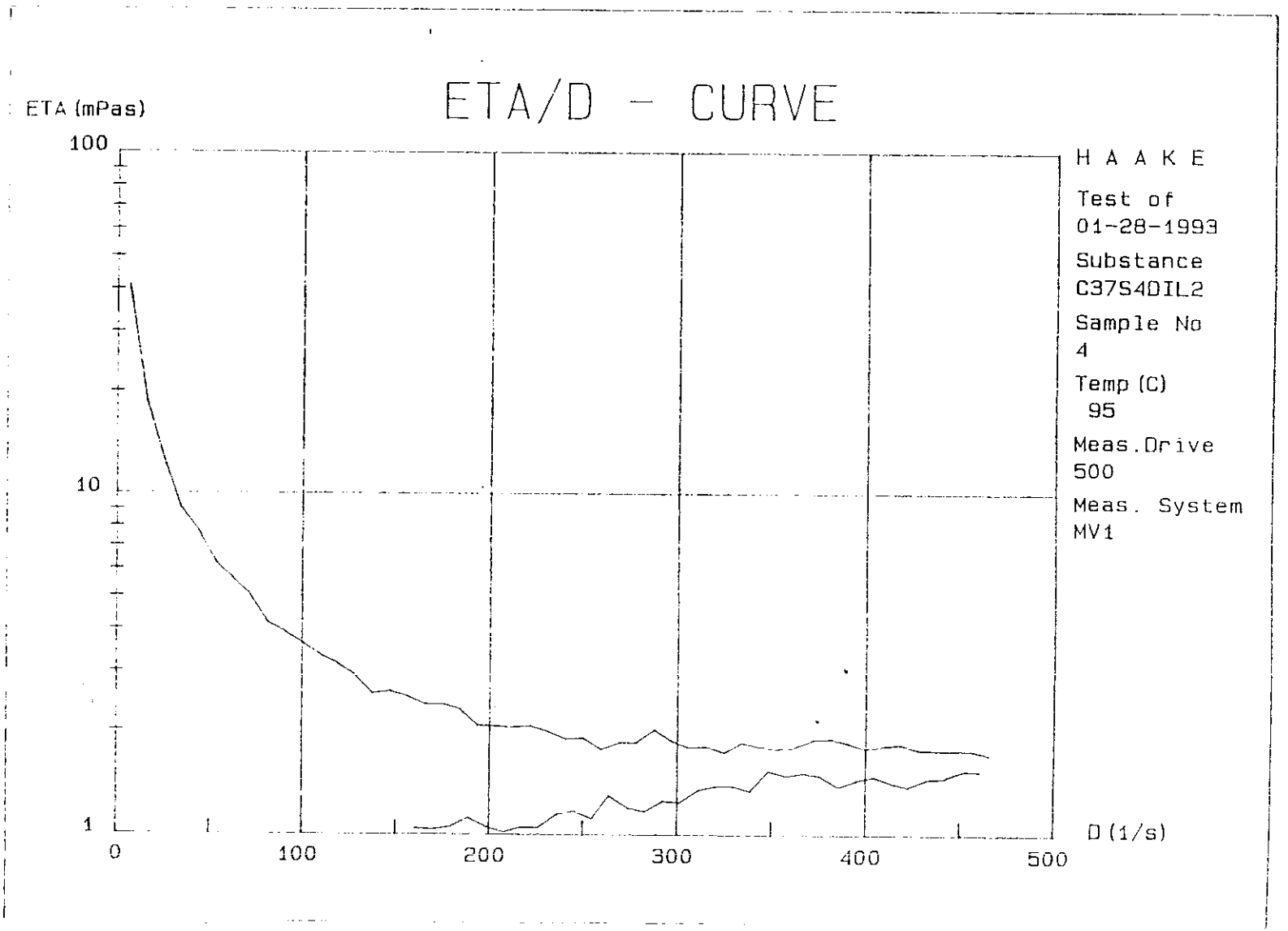

ETA/D - CURVE
ETA (mPas)
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S4DIL2
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1


ETA/D - CURVE
ETA (mPas)
100
10
1
.099
.01
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S4DIL2
Sample No
3
Temp (C)
95
Meas.Drive
500
Meas. System
MV1


TAU/D - CURVE
TAU (Pa)
2
1.6
1.2
.8
.4
0
0
94
188
282
376
470
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S4DIL2
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1
Linear
A= 2.355E-1
B= 1.153E-3
R2= .949


ETA/D - CURVE
ETA (mPas)
50
40
30
20
10
0
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S4DIL2
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1


ETA/D - CURVE
ETA (mPas)
100
10
1
1
10
100
1000
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S4DIL2
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1


ETA/D - CURVE
ETA (mPas)
100
10
1
0
100
200
300
400
500
D (1/s)
H A A K E
Test of
01-28-1993
Substance
C37S4DIL2
Sample No
4
Temp (C)
95
Meas.Drive
500
Meas. System
MV1

SINGLE SHELL TANK WASTE CHARACTERIZATION PROJECT

APPENDIX D

RADIOCHEMISTRY

Cores 37/38/39 DATA REPORT

Tank C-110

Revision 0

Pacific Northwest Laboratory

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D1 - INTRODUCTION

Introduction to Radioanalytical Primary Data Package

This section of Cores 37/38/39 Primary Data Package contains primary or "raw" data collected during preparation and analysis of Cores 37/38/39 radiochemistry samples. Much of the analytical information is listed on the Sample Traveler card. Assessment of this information will require in-depth knowledge of the methodology.

D2 - LABORATORY ANALYST

SIGNATURE LIST

SST RADIOCHEMISTRY LABORATORY ANALYST SIGNATURE LIST

ANALYST NAME	INITIALS	WRITTEN NAME	INITIALS
Rebecca J. Barrington	RJB	Rebecca J. Barrington	RJB
Gwen G. Brodaczynski	GGB	Gwen G. Brodaczynski	GGB
Sandra K. Fadeff	SKF	Sandra K. Fadeff	SKF
Lawrence R. Greenwood	LRG	Lawrence R. Greenwood	LRG
Clark O. Harvey	COH	Clark O Harvey	COH
James H. Kaye	JHK	James H. Kaye	J.H.K.
Lloyd S. Kellogg	LSK	Lloyd S. Kellogg	LSK
Anne E. Kozelisky	AEK	Anne E. Kozelisky	AEK
Diana L. McMullin	DLM	Diana L. McMullin	DLM
Kathy A. Poeppel	KAP	Kathy A. Poeppel	KAP
Pat J. Raney	PJR	P.J. Raney	PJR
Robert S. Strebin	RSS	Robert S. Strebin Jr	RS
Shannon W. Thompson	SWT	[illegible]	ST
Malin R. Weiler	MRW	Malin R. Weiler	MRW
Nancy L. Wynhoff	NLW	N. L. Wynhoff	NLW

D3 - Pu AND U ISOTOPIC ANALYSIS

BY MASS SPECTROMETRY

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CURRENT DATE: November 24, 1992

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - Pu & Pu/U MS

Data Package/Report - Cores 37, 38, & 39

ALO Numbers -	Core 37:	92-08302-H1	92-08302-H2	92-08302-H3	92-08304-H1
		92-08304-H2			
	Core 38:	92-09437-A1	92-09437-A2	92-09437-A3	92-08306-H1
		92-08306-H2	92-08306-H3		
	Core 39:	92-08308-H1	92-08308-H2	92-08310-H1	92-08310-H2

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

12/1/92
Date

RADIOCHEMICAL ANALYSIS

The radiochemical analyses were performed on three core composite segments # 37, 38, 39 and on the drainable liquid from core 38. Duplicate and blank samples were analyzed for Pu and U isotopic composition as well as total alpha Pu through solvent extraction. If uranium concentration was determined in order to size the sample for clean-up for isotopic analysis, those results are also reported. Less than (<) values reported are the minimum detectable activity (MDA) values for that sample.

Plutonium and Isotopic Analysis-- The Plutonium analyses are reported as total alpha Pu. The Pu process blank results were more than three orders of magnitude lower than the samples indicating little contamination of samples during preparation. By using a large sample for clean-up and concentrating the prepared sample to a small volume the Pu concentration was sufficiently high that isotopic analyses were possible except for the drainable liquid. The residual uranium in one of the samples from core 39 was high enough to cause interference with the Pu-238 measurement, in this case, Pu-238 was determined by alpha energy analysis. The difference in isotopic composition of 92-8304-H2 and its duplicate was verified by alpha energy analysis.

Uranium Isotopic Analysis-- Isotopic analyses for uranium were performed for all samples. No attempt was made on the process blanks. If U concentrations were determined they were also reported even though not requested.

DATA REPORT
PNL Analytical Chemistry Lab.
Radioanalytical Group, 325 Building

TANK C-110

Cognizant Scientist: G O Harvey Date: 12-1-92
Reviewed by: Ka Poppet Date: 12-1-92

Uranium Analysis Results

Sample ID	*	Uranium ug/g	U MS Isotopic Mass Percent 234	235	236	238
Core 37 - solid core composite						
92-08302-H1	F/smp	2.67E+3	0.0050	0.6788	0.0066	99.3096
92-08302-H2	F/dup	2.10E+3	0.0055	0.6827	0.0059	99.3060
92-08302-H3	F/blk	< 2				
92-08304-H1	F/smp	2.09E+3	0.0057	0.6723	0.0058	99.3162
92-08304-H2	F/dup	1.44E+4	0.0062	0.6809	0.0048	99.3081
STANDARD (% RECOVERY)		91				
BLANK		<4E-4				
Core 38 - Drainable Liquid Composite						
92-09437-A1	W/smp		0.0047	0.6838	0.0055	99.3060
92-09437-A2	W/dup		0.0054	0.6853	0.0052	99.3041
92-09437-A3	W/blk					
STANDARD (% RECOVERY)						
BLANK						
Core 38 - Solid Core Composite						
92-08306-H1	F/smp	1.28E+3	0.0062	0.6782	0.0054	99.3102
92-08306-H2	F/dup	1.31E+3	0.0054	0.6780	0.0065	99.3102
92-08306-H3	F/blk	< 2				
Core 39 - Solid Core Composite						
92-08308-H1	F/smp	1.22E+3	0.0058	0.6904	0.0054	99.2983
92-08308-H2	F/dup	1.25E+3	0.0053	0.6825	0.0049	99.3073
92-08310-H1	F/smp	1.17E+3	0.0058	0.6911	0.0050	99.2981
92-08310-H2	F/dup	1.40E+3	0.0058	0.6839	0.0048	99.3055

Plutonium Analysis Results

Sample ID	*	Plutonium (alpha) uCi/g	ERROR +/- %	Pu MS Isotopic Mass Percent 238	239	240	241	242
Core 37 - solid core composite								
92-08302-H1	F/smp	1.74E-1	7	0.0047	98.3967	1.5786	0.0131	0.0069
92-08302-H2	F/dup	1.70E-1	7	0.0128	98.3884	1.5796	0.0137	0.0055
92-08302-H3	F/blk	6.8E-5	42	#				
92-08304-H1	F/smp	1.83E-1	8	0.0165	98.3933	1.5795	0.0087	0.0020
92-08304-H2	F/dup	1.73E-1	7	0.1351	97.7759	1.9019	0.1059	0.0812
STANDARD (% RECOVERY)		91						
BLANK (uCi/ml)		< 2E-7						
Core 38 - Drainable Liquid Composite								
92-09437-A1	W/smp	1.94E-4		#				
92-09437-A2	W/dup	2.49E-4		#				
92-09437-A3	W/blk	<3E-5		#				
STANDARD (% RECOVERY)		99						
BLANK (uCi/ml)		<2E-7						
Core 38 - Solid Core Composite								
92-08306-H1	F/smp	1.19E-1	8	0.0048	98.3461	1.6360	0.0079	0.0053
92-08306-H2	F/dup	1.54E-1	7	0.0139	98.3537	1.6210	0.0073	0.0041
92-08306-H3	F/blk	3.9E-5	62	#				
Core 39 - Solid Core Composite								
92-08308-H1	F/smp	1.09E-1	8	0.0108	98.3432	1.6325	0.0097	0.0038
92-08308-H2	F/dup	1.38E-1	8	0.0344	98.2566	1.6767	0.0257	0.0066
92-08310-H1	F/smp	1.32E-1	8	@ 0.0027	98.3551	1.6273	0.0135	0.0056
92-08310-H2	F/dup	1.47E-1	8	0.0149	98.3238	1.6472	0.0102	0.0039
STANDARD (% RECOVERY)		91						
BLANK uCi/ml		<2E-7						

Pu concentration too low for isotopic analysis

* A = acid, F = fusion, W = water, smp = sample, dup, = duplicate, blk = blank

@ Pu-238 calculated from alpha energy analysis due to U-238 interference in the mass spec analysis.

Pacific Northwest Laboratory 0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10/16/92 Work order M90482 ARF(SOW) : T1 164

A.L.D. No. : 92-8303-H1 Description : Core 37 Tank C-110

0.5238g → 100 ml #13 #14 #3

DF --- 0.09885 ml +7 0.99492 ml --- 0.01976 ml --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst La Rocque Date 10/21/92

M. & T.E.	WM____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.01976	U-235 (Mass %)	
Reading 1	.29	U-236 (Mass %)	
Reading 2	.59	U-238 (Mass %)	

Analyst La Rocque

Pacific Northwest Laboratory 92230

Uranium Laser....PNL-ALO-445 -

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 164

A.L.O. No. 92-8302-H1 Description : CORE 37, TANK C-110

DF ---- .52380 ---> 100.00000 ---- .09885 -+-> .99492 ---- .01976

Dilution Factor = 1.0690E+05 +/- 2.29%

M. & T.E.	WM_____			Mass Run
Log Book:	BNW____ p __			
Spike Conc.	1.0030 ug/ml		U-234 (Mass f)	.00000000
V. of Spike	.01976		U-235 (Mass f)	.00000000
Reading 1	.29000		U-236 (Mass f)	.00000000
Reading 2	.52000		U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	2.67E+00	5.	8.48E-02

Calculated by [signature] Date 10-22-92

Reviewed by [signature] Date 10-22-92

Pacific Northwest Laboratory 0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : T1 164

A.L.O. No. : 92-8302-A2 Description : Core 37 TANK C-110

0.5281g → 100 ml

	#13	#14	#3			
DF	--- 0.09885 ml	+) 0.99492 ml	--- 0.01976 ml ---	---	---	---

Pipet LRB BNW _____ Page(s) No. _____

Std _____ LRB BNW _____ Page(s) No. _____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst L. Pappas Date 10/31/92

M. & T.E. Log Book:	WM____ BNW____ p __		Mass Run
Spike Conc.	1.003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.01976	U-235 (Mass %)	
Reading 1	.24	U-236 (Mass %)	
Reading 2	.48	U-238 (Mass %)	

Analyst L. Pappas

Pacific Northwest Laboratory 92230

Uranium Laser....PNL-ALO-445 -

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 164

A.L.O. No. 92-8302-H2 Description : CORE 37, TANK C-110

DF ---- .52810 ---> 100.00000 ---- .09885 ---> .99492 ---- .01976

Dilution Factor = 1.0603E+05 +/- 2.29%

			Mass Run
M. & T.E.	WM_____		
Log Book:	BNW____ p __		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.24000	U-236 (Mass f)	.00000000
Reading 2	.48000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	2.10E+00	6.	9.14E-02

Calculated by L. J. Barrington Date 10-22-92

Reviewed by G. O. Harvey Date 10-22-92

Pacific Northwest Laboratory 92230

Uranium Laser....PNL-ALO-445

Customer : SST Date Received 10/ 16/ 92 Work order : M90482 ARF(SOW) : TI 164

A.L.O. No. 92-8302-H3 Description : CORE 37, TANK C-110

DF ---- .52600 ---> 100.00000 ---- .01976

Dilution Factor = 9.6212E+03 +/- 2.12%

Instrument	U Laser		Mass Spec.
Spike Conc.	.1000 ug/ml	U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.01000	U-236 (Mass f)	.00000000
Reading 2	.34000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	5.76E-04	100.	1.19E-03

Calculated by G O Harvey Date 11-16-92

Reviewed by L J Bassington Date 11-16-92

Pacific Northwest Laboratory 0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : / / Work order : m90487 ARF(SOW) : _____

A.L.O. No. : Standard Description : W-96-5 1.0063 ug U/ml 7-1-92 #3

DF --- 0.01976 ml --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std W-96-5 LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst [illegible] Date 10/21/92

M. & T.E.	WM_____		Mass Run
Log Book:	BNW_____ p __		
Spike Conc.	1.003 ug/ml		
		U-234 (Mass %)	_____
V. of Spike	0.01976	U-235 (Mass %)	_____
Reading 1	.22	U-236 (Mass %)	_____
Reading 2	.46	U-238 (Mass %)	_____

Analyst [illegible]

Pacific Northwest Laboratory 92116

Uranium Laser....PNL-ALO-445 -

Customer : sst Date Received 5/ 21/ 92 Work order : ARF(SOW) : ti 132 rev 1

A.L.O. No. STANDARD Description :

DF ---- .01976

Dilution Factor = 5.0607E+01 +/- 2.00%

M. & T.E.	WM_____		Mass Run
Log Book:	BNW_____ p __		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.22000	U-236 (Mass f)	.00000000
Reading 2	.46000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/ML	Uncertainties %	Less than mg/ML
Total uranium	9.19E-04	6.	4.56E-05

91.3% recovery

Calculated by L Barrington Date 10-22-92

Reviewed by G O Harvey Date 10-22-92

Pacific Northwest Laboratory 0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : / / Work order : 1170487 ARF(SOW) : _____

A.L.O. No. : Blank Description : _____

DF --- 5 ml --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst [illegible] Date 10/21/93

M. & T.E.	WM____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	2003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.01976	U-235 (Mass %)	
Reading 1	.00	U-236 (Mass %)	
Reading 2	.24	U-238 (Mass %)	

Calculate using a reading 1 of -0

Analyst [illegible]

Pacific Northwest Laboratory 92116

Uranium Laser....PNL-ALO-445 -

Customer : sst Date Received 5/ 21/ 92 Work order : ARF(SOW) : ti 132 rev 1

A.L.O. No. BLANK Description :

DF ---- 5.00000

Dilution Factor = 2.0000E-01 +/- .20%

M. & T.E.	WM		Mass Run
Log Book:	BNW p		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.01000	U-236 (Mass f)	.00000000
Reading 2	.24000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/ML	Uncertainties %	Less than mg/ML
Total uranium	1.72E-07	100.	3.60E-07

Calculated by [signature] Date 10-22-92

Reviewed by [signature] Date 10-22-92

Pacific Northwest Laboratory 0

Uranium ~~Laser.....PNL-ALO-445~~ Isotopics Cell

Customer : SST Date Received : 10/16/92 Work order : M90483 ARF(SOW) : T1 164

A.L.O. No. : 92-8302-M1 Description : Core 37 Tank C-110

MS No. 119281

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy A Poeppel Date 10/20/92

M. & T.E.	WM_____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	_____ ug/ml		
		U-234 (Mass %)	_____
V. of Spike	_____	U-235 (Mass %)	_____
Reading 1	_____	U-236 (Mass %)	_____
Reading 2	_____	U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 3 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 37 Tnk C-110 RUN DATE: 10-26-92
LABORATORY LOG-IN NUMBER: 119281 ANALYST: RE Brinson R E Brinson
ALO LOG-IN NUMBER: 92-8302H1 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000540	0.0069070	0.0000870	1.0000000
0.0001053	0.0070759	0.0000626	1.0000000
0.0000541	0.0069578	0.0000670	1.0000000
0.0000455	0.0068715	0.0000658	1.0000000
0.0000546	0.0069287	0.0000485	1.0000000
0.0000597	0.0069507	0.0000721	1.0000000
0.0000364	0.0068705	0.0000788	1.0000000
0.0000418	0.0069688	0.0000676	1.0000000
0.0000595	0.0069243	0.0000517	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000568	0.0069395	0.0000668	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000199	0.0000619	0.0000121	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000153	0.0000476	0.0000093	0.0000000

CYCLE # 2 REJECTED AT THE 95% LEVEL
DUE TO THE 234/ 238 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000507	0.0069224	0.0000673	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000085	0.0000373	0.0000128	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000071	0.0000312	0.0000107	0.0000000

MASS	ATOM %	MASS %
234	0.0050354	0.0049512
235	0.6874026	0.6787976
236	0.0066826	0.0066271
238	99.3008794	99.3096242

Pacific Northwest Laboratory 0

Uranium ~~Laser.....PNL-ALO-445~~ Isotopics
C84

Customer : SST Date Received : 10/16/92 Work order : M92482 ARF(SOW) : T1 164

A.L.O. No. : 92-8302-H2 Description : Core 37 Tank C-110

MS NO. 119282

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy A Pollard Date 10/20/92

M. & T.E.	WM_____		Mass Run
Log Book:	BNW_____ p __		
Spike Conc.	_____ ug/ml		
		U-234 (Mass %)	_____
V. of Spike	_____	U-235 (Mass %)	_____
Reading 1	_____	U-236 (Mass %)	_____
Reading 2	_____	U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 4 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 37 Tnk C-110 RUN DATE: 10-26-92
LABORATORY LOG-IN NUMBER: 119282 ANALYST: RE Brinson R C Brinson
ALO LOG-IN NUMBER: 92-8302H2 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000436	0.0069352	0.0000600	1.0000000
0.0000628	0.0069429	0.0000446	1.0000000
0.0000566	0.0070365	0.0000527	1.0000000
0.0000519	0.0068971	0.0000555	1.0000000
0.0000499	0.0070447	0.0000598	1.0000000
0.0000641	0.0070631	0.0000739	1.0000000
0.0000608	0.0069333	0.0000712	1.0000000
0.0000583	0.0069987	0.0000528	1.0000000
0.0000546	0.0068070	0.0000697	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000559	0.0069621	0.0000600	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000066	0.0000822	0.0000098	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000051	0.0000632	0.0000076	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0055467	0.0054539
235	0.6913125	0.6826589
236	0.0059611	0.0059115
238	99.2971797	99.3059756

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 1 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: NBS-950 U Std RUN DATE: 10-26-92
LABORATORY LOG-IN NUMBER: 9509207 ANALYST: RE Brinson R C Brinson
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 54 RCB

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000599	0.0071607	-0.0000051	1.0000000
0.0000631	0.0072443	0.0000065	1.0000000
0.0000578	0.0073025	0.0000039	1.0000000
0.0000700	0.0072828	0.0000057	1.0000000
0.0000449	0.0071848	0.0000089	1.0000000
0.0000769	0.0072729	-0.0000020	1.0000000
0.0000875	0.0072212	-0.0000176	1.0000000
0.0000558	0.0072888	0.0000040	1.0000000
0.0000531	0.0071938	0.0000050	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000632	0.0072391	0.0000010	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000130	0.0000513	0.0000082	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000100	0.0000394	0.0000063	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0062759	0.0061709
235	0.7186581	0.7096644
236	0.0001025	0.0001017
238	99.2749635	99.2840629

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 1 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: NBS-005 U Std RUN DATE: 10-27-92
LABORATORY LOG-IN NUMBER: 0059202 ANALYST: RE Brinson R E Brinson
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000252	0.0050129	0.0000672	1.0000000
0.0000246	0.0048333	0.0000518	1.0000000
0.0000334	0.0048409	0.0000489	1.0000000
0.0000328	0.0049048	0.0000652	1.0000000
0.0000364	0.0049051	0.0000545	1.0000000
0.0000139	0.0049431	0.0000460	1.0000000
0.0000180	0.0049259	0.0000592	1.0000000
-0.0000217	0.0050310	0.0000571	1.0000000
0.0000156	0.0048890	0.0000127	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000198	0.0049207	0.0000514	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000175	0.0000677	0.0000161	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000135	0.0000521	0.0000124	0.0000000

CYCLE # 9 REJECTED AT THE 95% LEVEL
DUE TO THE 236/ 238 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000203	0.0049246	0.0000562	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000187	0.0000713	0.0000075	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000156	0.0000596	0.0000063	0.0000000

MASS	ATOM %	MASS %
234	0.0020223	0.0019885
235	0.4900125	0.4838661
236	0.0055954	0.0055488
238	99.5023698	99.5085966

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.5

CUSTOMER: SST/ Harvey RUN # 1 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: NIST005 RUN DATE: 10-28-92
LABORATORY LOG-IN NUMBER: 0059203 ANALYST: M.J. Goheen
ALO LOG-IN NUMBER: N/A LRB: SNW 53337 PAGE 55

REFERENCE MASS: 238 REVIEWED BY: S G Bond
DATE: 10/29/92

MEASURED MASSES:

234	235	236	238
RATIOS:			
0.0000286	0.0048954	0.0000505	1.0000000
0.0000199	0.0048573	0.0000627	1.0000000
0.0000178	0.0049187	0.0000462	1.0000000
0.0000274	0.0049823	0.0000498	1.0000000
0.0000227	0.0049532	0.0000534	1.0000000
0.0000191	0.0049549	0.0000536	1.0000000
0.0000217	0.0048635	0.0000391	1.0000000
0.0000517	0.0049685	0.0000485	1.0000000
0.0000262	0.0049102	0.0000514	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000261	0.0049227	0.0000506	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000103	0.0000452	0.0000063	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000079	0.0000347	0.0000049	0.0000000

CYCLE # 8 REJECTED AT THE 95% LEVEL
DUE TO THE 234/ 238 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000229	0.0049169	0.0000508	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000040	0.0000446	0.0000067	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000034	0.0000377	0.0000056	0.0000000

MASS	ATOM %	MASS %
234	0.0022796	0.0022414
235	0.4892527	0.4831158
236	0.0050563	0.0050141
238	99.5034114	99.5096286

Pacific Northwest Laboratory 92230

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 164

A.L.O. No. 92-8302-H1 Description : CORE 37, TANK C-110

DF ---- .52380 ---> 100.00000 ---- .99832 ---> 1.99664 ---- .49544

Dilution Factor = 7.7068E+02 +/- 1.22%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	.5090	0.37927	0.4
			Date	10/ 30/ 92	/ /	/ /
Total counts	0	1	Total counts	7210		
Edge Bkg	0	0	Count time	30		
System Bkg	0	0	Bkg C/M	.510		
Net counts	.0	1.0	Bkg cnt time	100		
A fraction	.0000	1.0000	Corrected C/M	239.82		

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	7.0	4.19E+02	8.39E+02
Pu-~~239 & 240~~	3.86E+05	7.0	4.19E+02	8.39E+02
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	7.0	1.89E-04	3.78E-04
Pu-~~239 & 240~~	1.74E-01	7.0	1.89E-04	3.78E-04

total alpha Pu

Calculated by [signature] Date 11-2-92

Reviewed by [signature] Date 11-11-92

Rerun

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : II/64

A.L.O. No. : 92-8302 #1 Description : Core 37, Tank C-110

DF --- 0.5238 g --> 100 ml --- 0.99832 ml (#77) --> 2(0.99832) ml (#77) --- 0.49544 ml (Glass) --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92-229-RR Blank card ID 92229-RR

Analyst PJ Rony Date 10-28-92 29

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p 8	BNW52825 p	BNW54273 p
Instrument	P.A.C. - 1	G.E. ASC.	Ludlum -
Eff. Factor	0.50 9	0.37927	0.4
Date	10/30/92	/ /	/ /
Total counts	720		
Count time	30		
Bkg C/M	0.51		
Bkg cnt time	100		
Corrected C/M			

Analyst Anne Edgelich

Pacific Northwest Laboratory 92230

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 164

A.L.O. No. 92-8302-H2 Description : CORE 37, TANK C-110

DF ---- .52810 ---> 100.00000 ---- .99832 ---> 1.99664 ---- .49854

Dilution Factor = 7.5965E+02 +/- 1.22%

Analysts Yield Factor .9430 +/- 6.0%

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	.5090	0.37927	0.4
			Date	10/ 30/ 92	/ /	/ /
Total counts	0	1	Total counts	7144		
Edge Bkg	0	0	Count time	30		
System Bkg	0	0	Bkg C/M	.510		
Net counts	.0	1.0	Bkg cnt time	100		
A fraction	.0000	1.0000	Corrected C/M	237.62		

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	7.0	4.13E+02	8.27E+02
Pu-~~239 & 240~~	3.77E+05	7.0	4.13E+02	8.27E+02
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	7.0	1.86E-04	3.72E-04
Pu-~~239 & 240~~	1.70E-01	7.0	1.86E-04	3.72E-04

total alpha Pu
CoH
11-4-92

Calculated by [signature] Date 11-4-92

Reviewed by [signature] Date 11-11-92

Pacific Northwest Laboratory

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : H90482 ARF(SOW) : TI16Y

A.L.O. No. : 92-8302 H-2 Description : Core 37, Tank 7, C-110 #77 #77 Glass 88R 10-28-92

DF --- 0.5281 g --> 100 ml --- 0.99832 ml --> 2(0.99832) ml --- 0.49854 ml --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92 29

Analyst Recovery_____ +/- _____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p 25	BNW52825 p	BNW54273 p
Instrument	P.A.C. - 1	G.E. ASC.	Ludlum -
Eff. Factor	0.509	0.37927	0.4
Date	10/30/92	/ /	/ /
Total counts	7144		
Count time	30		
Bkg C/M	0.51	.	.
Bkg cnt time	160		
Corrected C/M	.	.	.

Analyst [signature]

Pacific Northwest Laboratory 92230

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : M90482 ARF(SOW) : TI 164

A.L.O. No. 92-8302-H3 Description : CORE 37, TANK C-110

DF ---- .52600 ---> 100.00000 ---- .99832 ---> 1.99664 ---- 1.00070

Dilution Factor = 3.7995E+02 +/- 1.11%

Analysts Yield Factor .9430 +/- 6.0%

	Pu-238	Pu-239&240
Total counts	0	1
Edge Bkg	0	0
System Bkg	0	0
Net counts	.0	1.0
A fraction	.0000	1.0000

Instrument	LUDLUM 4
Eff. Factor	.4364
Date	11/ 3/ 92
Total counts	163
Count time	420
Bkg C/M	.226
Bkg cnt time	900
Corrected C/M	.16

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	42.0	4.45E+01	8.90E+01
Pu-~~239 & 240~~	1.50E+02	42.0	4.45E+01	8.90E+01
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	42.0	2.00E-05	4.01E-05
Pu-~~239 & 240~~	6.76E-05	42.0	2.00E-05	4.01E-05

total alpha Pu 11-17-92 cdf

Calculated by [signature] Date 11-11-92

Reviewed by [signature] Date 11-12-92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/14/92 Work order : H9048 ARF(SOW) : 1

A.L.O. No. : 92-8302, #3 Description : Core 37 Tank C-110 #77 / Glass

DF --- 0.5260 g --> 100 ml --- 0.99832 ml --> 2(0.99832) ml --- 1.00070 ml ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92 29

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p.5
			Instrument	P.A.C. -	G.E. ASC.	Ludlum - 4
			Eff. Factor	0.50	0.37927	0.4364
			Date	/ /	/ /	11/3/92
Total counts			Total counts			63
Edge Correction			Count time			420
Background			Bkg C/M			0.224
Net counts			Bkg cnt time			900
Alpha fract			Corrected C/M			

Analyst [signature]

Pacific Northwest Laboratory 92245

Pu-238, 239&240...PNL-ALO-423

Customer : Date Received 0/ 0/ 0 Work order : ARF(SOW) :

A.L.O. No. STANDARD-3 Description :

DF ---- .10023 ---> 1.99664 ---- .24973

Dilution Factor = 7.9768E+01 +/- 1.11%

Analysts Yield Factor 1.0000 +/- 6.0%

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNWS2341 p	BNWS2825 p	BNWS4273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	.5050	0.37927	0.4
			Date	10/ 29/ 92	/ /	/ /
Total counts	0	1	Total counts	8236		
Edge Bkg	0	0	Count time	10		
System Bkg	0	0	Bkg C/M	1.830		
Net counts	.0	1.0	Bkg cnt time	100		
A fraction	.0000	1.0000	Corrected C/M	821.77		

Calculation and Results

	Activities dpm/ML	Uncertainties %	Less than dpm/ML	MDA dpm/ML
Pu-238	0.00E+00	6.9	1.19E+02	2.39E+02
Pu-239 & 240	1.30E+05	6.9	1.19E+02	2.39E+02
	uCi/ML	%	uCi/ML	uCi/ML
Pu-238	0.00E+00	6.9	5.37E-05	1.07E-04
Pu-239 & 240	5.85E-02	6.9	5.37E-05	1.07E-04

Recovery 91.2%
Historical average recovery of 94% used in the calculation of individual samples run with this standard

Calculated by [signature] Date 11-4-92

Reviewed by [signature] Date 11-12-92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : H90432 ARF(SOW) : TT 165/160

A.L.O. No. : Pu Std #3 Description : with 900x 1x 5m KOH

DF --- 0.10083 ml #40 --> 2 (0.99537 ml #77) --- 0.24973 ml Glass --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst PG Ramey Date 10-28-92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p 75	BNW52825-p	BNW54273 p
			Instrument	P.A.C. - 2	G.E. ASC.	Ludlum -
			Eff. Factor	0.505	0.37927	0.4
			Date	10/29/92	/ /	/ /
Total counts			Total counts	8236		
Edge Correction			Count time	10		
Background			Bkg C/M	1.83		
Net counts			Bkg cnt time	100		
Alpha fract			Corrected C/M			

Analyst Anne E Kopelich

91.2 %

Pacific Northwest Laboratory 92262

Pu-238, 239&240...PN_-ALO-423

Customer : Date Received 0/ 0/ 0 Work order : ARF(SOW) :

A.L.O. No. PU BLANK Description :

DF ---- .99832 ---> 1.99664 ---- 1.00070

Dilution Factor = 1.9986E+00 +/- .87%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240
Total counts	0	1
Edge Bkg	0	0
System Bkg	0	0
Net counts	.0	1.0
A fraction	.0000	1.0000

Instrument	LUDLUM 1
Eff. Factor	.4217
Date	11/ 3/ 92
Total counts	85
Count time	420
Bkg C/M	.196
Bkg cnt time	900
Corrected C/M	.01

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	812.5	2.52E-01	4.52E-01
Pu-~~239 & 240~~	3.22E-02	812.5	2.52E-01	4.52E-01
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	812.5	1.14E-07	2.04E-07
Pu-~~239 & 240~~	1.45E-08	812.5	1.14E-07	2.04E-07

total alpha Pu
cold
11-12-92

Calculated by [signature] Date 11-11-92

Reviewed by [signature] Date 11-12-92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : TI 105166

A.L.O. No. : Pu Blank Description : 1X Sim KOH Fusion

#77 #77 : Glass

DF --- 0.49832 ml. -> 2(0.49832 ml) --- 1.00070 ml --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92 29

Analyst Recovery_____ +/- _____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p	BNW52825 p	BNW54273 p 5
Instrument	P.A.C. -	G.E. ASC.	Ludlum - 1
Eff. Factor	0.50	0.37927	0.4217
Date	/ /	/ /	11/3/92
Total counts			85
Count time			420
Bkg C/M			0.196
Bkg cnt time			900
Corrected C/M			

Analyst [signature]

Pacific Northwest Laboratory 0

Plutonium-~~239-240,238.....PNL-ALO-~~423 Isotopics

Customer : SST Date Received : 10/14/92 Work order : M90482 ARF(SOW) : T1 164

A.L.O. No. : 92-8302-H1 Description : Core 37 Tank C-110

DF --- 20 ml --- 0.1 ml --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kelly A Rudd Date 10/28/92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005___	WA42546	WA_____
Log Book:	BNW52341 p __	BNW52825 p ___	BNW54273 p__
Instrument	F.A.C. - ___	G.E. ASC.	Ludlum -___
Eff. Factor	0.50____	0.37927	0.4_____
Date	__/__/__	__/__/__	__/__/__
Total counts			
Count time			
Bkg C/M			
Bkg cnt time			
Corrected C/M			

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 1 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: Core 37 Tank C-110 RUN DATE: 11-6-92
LABORATORY LOG-IN NUMBER: 1292037 ANALYST: JH Ennen J. H. Ennen
ALO LOG-IN NUMBER: 92-8302-H1 LRB: BNW 53337 PAGE 55

REFERENCE MASS: 239 REVIEWED BY: R E Brown
DATE: 11-6-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0000094	1.0000000	0.0153093	0.0001050	0.0000555
0.0002017	1.0000000	0.0162207	0.0001753	0.0000398
0.0001149	1.0000000	0.0163737	0.0002065	0.0000879
-0.0000115	1.0000000	0.0157067	0.0000334	0.0000572
-0.0000001	1.0000000	0.0150670	0.0001308	0.0000552
0.0000408	1.0000000	0.0162109	0.0001587	0.0000504
-0.0000086	1.0000000	0.0161698	0.0000998	0.0000914
0.0001833	1.0000000	0.0157819	0.0000721	0.0007221
0.0000405	1.0000000	0.0167530	0.0001467	0.0001153

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000634	1.0000000	0.0159548	0.0001254	0.0001417

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000829	0.0000000	0.0005352	0.0000537	0.0002190

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000637	0.0000000	0.0004114	0.0000412	0.0001684

CYCLE # 8 REJECTED AT THE 95% LEVEL
DUE TO THE 242/ 239 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000484	1.0000000	0.0159764	0.0001320	0.0000692

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000744	0.0000000	0.0005679	0.0000532	0.0000261

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000611	0.0000000	0.0004749	0.0000445	0.0000218

MASS	ATOM %	MASS %
238	0.0047609	0.0047407
239	98.4033098	98.3966659
240	1.5721310	1.5786023
241	0.0129920	0.0130998
242	0.0068063	0.0068913

Pacific Northwest Laboratory

0

Plutonium-~~239-240,238.....PNL-ALO-~~423 Isotopics ca H

Customer : SST Date Received : 10/6/92 Work order M90442 ARF(SOW) : T1 164

A.L.O. No. : 92-8302-H2 Description : Core 27 Tank C-110

DF --- 20 ml --- 0.1 ml --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst [illegible] Date 10/28/92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005___	WA42546	WA_____
			Log Book:	BNW52341 p __	BNW52825 p ___	BNW54273 p__
			Instrument	P.A.C. - ___	G.E. ASC.	Ludlum -___
			Eff. Factor	0.50____	0.37927	0.4_____
			Date	__/__/__	__/__/__	__/__/__
Total counts			Total counts			
Edge Correction			Count time			
Background			Bkg C/M			
Net counts			Bkg cnt time			
Alpha fract			Corrected C/M			

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 2 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: Core 37 Tank C-110 RUN DATE: 11-6-92
LABORATORY LOG-IN NUMBER: 1292038 ANALYST: JH Ennen J. H. Ennen
ALO LOG-IN NUMBER: 92-8302-H2 LRB: BNW 53337 PAGE 55

REFERENCE MASS: 239 REVIEWED BY: [illegible]
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0001280	1.0000000	0.0159920	0.0001083	0.0000856
0.0002023	1.0000000	0.0159721	0.0001109	-0.0000495
0.0001171	1.0000000	0.0159226	0.0001566	0.0000508
0.0001586	1.0000000	0.0161967	0.0001044	0.0000526
0.0001085	1.0000000	0.0160791	0.0001133	0.0000243
0.0001688	1.0000000	0.0158312	0.0000952	0.0000593
0.0001419	1.0000000	0.0157615	0.0001631	0.0000513
0.0001237	1.0000000	0.0159878	0.0001354	0.0000496
0.0000957	1.0000000	0.0161283	0.0002318	0.0000690

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001383	1.0000000	0.0159857	0.0001355	0.0000437

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000334	0.0000000	0.0001378	0.0000432	0.0000386

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000257	0.0000000	0.0001059	0.0000332	0.0000297

CYCLE # 2 REJECTED AT THE 95% LEVEL
DUE TO THE 242/ 239 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001303	1.0000000	0.0159874	0.0001385	0.0000553

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000248	0.0000000	0.0001472	0.0000451	0.0000176

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000208	0.0000000	0.0001231	0.0000377	0.0000147

MASS	ATOM %	MASS %
238	0.0128199	0.0127654
239	98.3950272	98.3884247
240	1.5730805	1.5795564
241	0.0136299	0.0137431
242	0.0054424	0.0055104

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.5

CUSTOMER: SST/Harvey RUN # 1 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: NIST-946 Pu Std RUN DATE: 11-6-92
LABORATORY LOG-IN NUMBER: 9469212 ANALYST: JH Ennen J. H. Ennen
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 55

REFERENCE MASS: 239 REVIEWED BY: R C Duncan
DATE: 11-6-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0024651	1.0000000	0.1439013	0.0174120	0.0068879
0.0025079	1.0000000	0.1444411	0.0173989	0.0068226
0.0025733	1.0000000	0.1442768	0.0177303	0.0067654
0.0025793	1.0000000	0.1451612	0.0172884	0.0066936
0.0024211	1.0000000	0.1449982	0.0173075	0.0065890
0.0025204	1.0000000	0.1447337	0.0174250	0.0066411
0.0025843	1.0000000	0.1451286	0.0174869	0.0066993
0.0025433	1.0000000	0.1462553	0.0176674	0.0068527
0.0025710	1.0000000	0.1449755	0.0176749	0.0069430

MEAN RATIO FOR EACH ISOTOPE IS:

0.0025295	1.0000000	0.1448746	0.0174879	0.0067661

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000568	0.0000000	0.0006700	0.0001643	0.0001191

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000436	0.0000000	0.0005150	0.0001263	0.0000916

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
238	0.2158921	0.2148371
239	85.3491254	85.2889355
240	12.3649240	12.4079036
241	1.4925798	1.5040086
242	0.5774788	0.5843151

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: C. Harvey RUN # 1 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Pu. Std. RUN DATE: 11-9-92
LABORATORY LOG-IN NUMBER: 54693/J ~~+2320401~~ ANALYST: JHE J. H. Cuneen
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 55

REFERENCE MASS: 239 REVIEWED BY: M W Sulgrove
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0024950	1.0000000	0.1446431	0.0174851	0.0068051
0.0025230	1.0000000	0.1449682	0.0175426	0.0067815
0.0025476	1.0000000	0.1458243	0.0174559	0.0065745
0.0024917	1.0000000	0.1450343	0.0175741	0.0066984
0.0025426	1.0000000	0.1450710	0.0175542	0.0067268
0.0025200	1.0000000	0.1444714	0.0174038	0.0068102
0.0025033	1.0000000	0.1451141	0.0174141	0.0065779
0.0025024	1.0000000	0.1451009	0.0174006	0.0067295
0.0025646	1.0000000	0.1448274	0.0173050	0.0067764

MEAN RATIO FOR EACH ISOTOPE IS:

0.0025322	1.0000000	0.1450061	0.0174595	0.0067200

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000361	0.0000000	0.0003785	0.0000881	0.0000896

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000277	0.0000000	0.0002909	0.0000678	0.0000689

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
238	0.2161127	0.2150567
239	85.3447802	85.2846167
240	12.3755113	12.4185311
241	1.4900755	1.5014855
242	0.5735204	0.5803100

Pacific Northwest Laboratory 92230

Uranium Laser....PNL-ALO-445 -

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 164

A.L.O. No. 92-8304-H1 Description : CORE 37, TANK C-110

DF ---- .50860 ---> 100.00000 ---- .09885 -+-> .99492 ---- .01976

Dilution Factor = 1.1010E+05 +/- 2.29%

M. & T.E.	WM_____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.23000	U-236 (Mass f)	.00000000
Reading 2	.47000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	2.09E+00	6.	9.70E-02

Calculated by [signature] Date 10-22-92

Reviewed by [signature] Date 10-22-92

Pacific Northwest Laboratory 0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : T1 1C4

A.L.O. No. : 92-8304-H1 Description : Core 37 Tank C-110

0.5086g → 100ml

DF	---	#13	#14	#3	---	---	---
	---	0.09885 ml	0.99492 ml	0.01976 ml	---	---	---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst [illegible] Date 10/31/92

M. & T.E.	WM_____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.01976	U-235 (Mass %)	
Reading 1	.23	U-236 (Mass %)	
Reading 2	.47	U-238 (Mass %)	

Analyst [illegible]

Pacific Northwest Laboratory 92230

Uranium Laser....PNL-ALO-445 -

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 164

A.L.O. No. 92-8304-H2 Description : CORE 37, TANK C-110

DF ---- .50590 ---> 100.00000 ---- .09885 -+-> .99492 ---- .00995

Dilution Factor = 2.1982E+05 +/- 2.29%

M. & T.E.	WM_____		Mass Run
Log Book:	BNW_____ p __		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.00995	U-235 (Mass f)	.00000000
Reading 1	.79000	U-236 (Mass f)	.00000000
Reading 2	.91000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	1.44E+01	4.	4.93E-02

Result verified
CSH 11-23-92

Calculated by [signature] Date 10-22-92

Reviewed by [signature] Date 10-22-92

Pacific Northwest Laboratory

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10/16/92 Work order [illegible] ARF(SOW) : T1 104

A.L.O. No. : 92-8304-112 Description : Core 37 TANK C-110

0.5059 → 100 ml #13 #14 #93

DF --- 0.09885 ml → 0.99492 ml --- 0.00995 ml --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst [illegible] Date 10/21/92

M. & T.E.	WM____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.00995	U-235 (Mass %)	
Reading 1	.79	U-236 (Mass %)	
Reading 2	.91	U-238 (Mass %)	

Analyst [illegible]

Pacific Northwest Laboratory 0

Uranium ~~Laser~~ Isotopics ~~PNL-ALO-445~~ CRP

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : TI 164

A.L.O. No. : 92-8304-A1 Description : Core 37 Tank C-110

m S NO: 92-19283

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy A Pueppel Date 10/20/92

M. & T.E. Log Book:	WM_____ BNW____ p __		Mass Run
Spike Conc.	_____ ug/ml		
		U-234 (Mass %)	_____
V. of Spike	_____	U-235 (Mass %)	_____
Reading 1	_____	U-236 (Mass %)	_____
Reading 2	_____	U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 1 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: Core 37 Tnk C-110 RUN DATE: 10-27-92
LABORATORY LOG-IN NUMBER: 119283 ANALYST: RE Brinson R C Brinson
ALO LOG-IN NUMBER: 92-8304H1 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238

REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000486	0.0068408	0.0000531	1.0000000
0.0000857	0.0067382	0.0000776	1.0000000
0.0000519	0.0069804	0.0000546	1.0000000
0.0000583	0.0069385	0.0000524	1.0000000
0.0000588	0.0068975	0.0000533	1.0000000
0.0000754	0.0067961	0.0000716	1.0000000
0.0000601	0.0068581	0.0000928	1.0000000
0.0000432	0.0068507	0.0000396	1.0000000
0.0000453	0.0067970	0.0000356	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000587	0.0068552	0.0000590	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000140	0.0000752	0.0000184	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000108	0.0000578	0.0000141	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0058260	0.0057286
235	0.6807777	0.6722551
236	0.0058549	0.0058062
238	99.3075414	99.3162101

Pacific Northwest Laboratory 0

Uranium ~~Laser.....PNL-ALO-445~~ Isotopics
COH

Customer : SST Date Received : 10/16/93 Work order : 1192482 ARF(SOW) : T1 ~~[illegible]~~ Kip 10/25/93 16:

A.L.O. No. : 92-8304-A2 Description : CSF ~~[illegible]~~ Kip 10/25/93 37, TANK C-110

MS NO: 119284

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kelly L. Pulupol Date 10/30/93

M. & T.E. Log Book:	WM_____ BNW____ p __		Mass Run
Spike Conc.	_____ ug/ml		
		U-234 (Mass %)	_____
V. of Spike	_____	U-235 (Mass %)	_____
Reading 1	_____	U-236 (Mass %)	_____
Reading 2	_____	U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 2 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: Core 37 Tnk C-110 RUN DATE: 10-27-92
LABORATORY LOG-IN NUMBER: 119284 ANALYST: RE Brinson R C Brinson
ALO LOG-IN NUMBER: 92-8304H2 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000531	0.0070952	0.0000601	1.0000000
0.0000715	0.0069414	0.0000803	1.0000000
0.0000551	0.0068249	0.0000454	1.0000000
0.0000703	0.0070742	0.0000426	1.0000000
0.0000778	0.0070384	0.0000536	1.0000000
0.0000653	0.0068150	0.0000419	1.0000000
0.0000732	0.0068370	0.0000301	1.0000000
0.0000577	0.0069651	0.0000339	1.0000000
0.0000497	0.0069016	0.0000496	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000637	0.0069437	0.0000486	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000101	0.0001080	0.0000150	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000077	0.0000830	0.0000116	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0063291	0.0062233
235	0.6995012	0.6808702
236	0.0048270	0.0047868
238	99.2993427	99.3081197

Pacific Northwest Laboratory 92230

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : M90482 ARF(SOW) : TI 164

A.L.O. No. 92-8304-H1 Description : CORE 37, TANK C-110

DF ---- .50860 ---> 100.00000 ---- .99832 ---> 1.99664 ---- .49544

Dilution Factor = 7.937'E+02 +/- 1.22%

Analysts Yield Factor .9400 +/- 6.0%

Instrument	PAC 2
Eff. Factor	.5050
Date	11/ 13/ 92
Total counts	12222
Count time	50
Bkg C/M	1.740
Bkg cnt time	100
Corrected C/M	242.70

AEA not performed

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Total Pu Alpha	4.06E+05	6.9	6.55E+02	1.31E+03
	uCi/GM	%	uCi/GM	uCi/GM
Total Pu Alpha	1.83E-01	6.9	2.95E-04	5.90E-04

Calculated by [signature] Date 11-16-92

Reviewed by [signature] Date 12/1/92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : M9048 ARF(SCW) : TI 16 V

A.L.O. No. : 92-8304/H1 Description : Core 37 Tank C-110

11-13-92 ~~#77~~ #7 #77 #77 Glass

DF --- 0.5086 g --> 100 ml ---0.99832 ml --> 2(0.99832) ml --- 0.49954 ml --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blark card ID _____

Analyst [signature] Date 11-13-92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p 25	BNW52825 p	BNW54273 p
			Instrument	P.A.C. - 2	G.E. ASC.	Ludlum -
			Eff. Factor	0.505	0.37927	0.4
			Date	11/13/92	/ /	/ /
Total counts			Total counts	12222		
Edge Correction			Count time	50		
Background			Bkg C/M	1.74		
Net counts			Bkg cnt time	100		
Alpha fract			Corrected C/M			

Analyst [signature]

Pacific Northwest Laboratory 92230

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 164

A.L.O. No. 92-8304-H2 Description : CORE 37, TANK C-110

DF ---- .50590 ---> 100.00000 ---- .99832 ---> 1.99664 ---- .49854

Dilution Factor = 7.9299E+02 +/- 1.22%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	.5050	0.37927	0.4
			Date	10/ 30/ 92	/ /	/ /
Total counts	0	1	Total counts	6955		
Edge Bkg	0	0	Count time	30		
System Bkg	0	0	Bkg C/M	1.990	.	.
Net counts	.0	1.0	Bkg cnt time	100		
A fraction	.0000	1.0000	Corrected C/M	229.84	.	.

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	7.0	8.34E+02	1.67E+03
Pu-~~239 & 240~~	3.84E+05	7.0	8.34E+02	1.67E+03
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	7.0	3.76E-04	7.52E-04
Pu-~~239 & 240~~	1.73E-01	7.0	3.76E-04	7.52E-04

total alpha Pu
CDH
11-11-92

Calculated by K Barrington Date 11-4-92

Reviewed by G O Henry Date 11-11-92

Pacific Northwest Laboratory

0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : M9048 ARF(SOW) : TI 164

A.L.O. No. : 92-8304/H2 Description : Core 37 Tank C-110

DF --- 0.5059 g --> 100 ml --- 0.99832 ml #77 --> 2 (0.99832 ml #77) -- 0.49857 ml Glass --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92 29

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p 25	BNW52825 p	BNW54273 p
Instrument	P.A.C. - 2	G.E. ASC.	Ludlum -
Eff. Factor	0.505	0.37927	0.4
Date	10/30/92	/ /	/ /
Total counts	6955		
Count time	30		
Bkg C/M	1.99		
Bkg cnt time	100		
Corrected C/M			

Analyst [signature]

Pacific Northwest Laboratory 0

Plutonium-~~239-240,238.....PNL-ALO-~~423 Isotopics

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : T1 164

A.L.O. No. : 92-8304-H1 Description : Core 37 TANK C-110

DF --- 20 ml --- 0.1 ml --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy A Poppel Date 10/28/92

Analyst Recovery_____+/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
Instrument	P A.C. -	G.E. ASC.	Ludlum -
Eff. Factor	0.50	0.37927	0.4
Date	/ /	/ /	/ /
Total counts			
Count time			
Bkg C/M			
Bkg cnt time			
Corrected C/M			

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.S

CUSTOMER: C. Harvey RUN # 4 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 37,Tank C-110 RUN DATE: 11-9-92
LABORATORY LOG-IN NUMBER: 1292039 ANALYST: JHE JH Ewen
ALO LOG-IN NUMBER: 92-8304-H1 LRB: BNW 53337 PAGE 56

REFERENCE MASS: 239 REVIEWED BY: [illegible]
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0001146	1.0000000	0.0156438	0.0000744	0.0000359
0.0000733	1.0000000	0.0159761	0.0001318	-0.0000021
0.0002807	1.0000000	0.0165100	0.0000936	-0.0000126
0.0002029	1.0000000	0.0158013	0.0003117	-0.0000028
0.0000567	1.0000000	0.0156569	0.0001469	0.0000047
0.0001814	1.0000000	0.0155846	0.0000511	0.0000299
0.0001681	1.0000000	0.0160739	0.0001315	0.0000706
0.0001969	1.0000000	0.0163432	0.0000389	-0.0000238
0.0002765	1.0000000	0.0160979	0.0000367	0.0000553

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001724	1.0000000	0.0159653	0.0001130	0.0000172

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000796	0.0000000	0.0003239	0.0000854	0.0000322

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000612	0.0000000	0.0002490	0.0000656	0.0000248

CYCLE # 4 REJECTED AT THE 95% LEVEL
DUE TO THE 241/ 239 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001685	1.0000000	0.0159858	0.0000881	0.0000197

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000842	0.0000000	0.0003400	0.0000446	0.0000335

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000704	0.0000000	0.0002843	0.0000373	0.0000290

MASS	ATOM %	MASS %
238	0.0165841	0.0165136
239	98.3998043	98.3933013
240	1.5730001	1.5794773
241	0.0086708	0.0087427
242	0.0019407	0.0019650

Pu ~~AEA~~ 92-A-8304 #1
Run 10-29-92

(15)
11-30-92
Collarney

TN-1750 P H A
LT= 2641 RT= 2641
2641 2641 0 3072 0 512 34816 0 0

0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	1	0	0
16	0	0	0	0	0	1	0	0
24	1	0	0	0	1	0	0	0
32	0	1	0	0	0	1	0	1
40	0	0	1	0	1	1	0	0
48	1	0	0	0	0	0	0	0
56	0	0	0	0	0	0	1	0
64	0	0	1	0	0	1	0	1
72	0	2	1	0	0	1	0	0
80	1	0	0	2	0	0	0	0
88	0	1	1	1	2	0	3	4
96	0	1	2	1	0	0	1	1
104	0	2	2	2	1	1	1	1
112	1	2	1	3	0	0	0	1
120	2	2	0	1	0	1	2	3
128	1	1	2	2	2	1	1	2
136	1	2	2	5	3	0	5	1
144	2	3	2	1	5	4	2	4
152	2	3	2	5	4	4	5	3
160	3	0	6	7	5	6	8	5
168	5	5	9	5	11	7	9	11
176	14	10	17	12	15	18	12	19
184	20	19	23	24	36	32	34	44
192	37	44	59	62	83	85	90	106
200	128	151	168	228	254	303	352	336
208	271	100	14	1	0	0	0	0
216	0	0	0	0	0	2	0	1
224	1	0	2	1	0	0	1	1
232	1	1	1	3	1	3	1	3
240	1	0	0	0	0	0	0	0
248	0	0	0	0	0	0	0	0
256	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0
272	0	0	0	0	0	0	0	0
280	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0
296	0	0	0	0	0	0	0	0
304	0	0	0	0	0	0	0	0
312	0	0	0	0	0	0	0	0
320	0	0	0	0	0	0	0	0
328	0	0	0	0	0	0		

$Pu^{239+240}$
2063-0-0

Pu^{238}
14-0-0

$\frac{Pu^{238}}{Pu^{239+240}} = .0068$

Pacific Northwest Laboratory 0

Plutonium ~~239+240,238.....PNL-ALO-423~~ Isotopics
Cell

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) TI 164

A.L.O. No. : 92-8304-A2 Description : Core 37 Tank C-110

DF --- 20 ml --- 0.1 ml --- --- --- --- ---

Pipet LRB BNW _____ Page(s) No. _____

Std _____ LRB BNW _____ Page(s) No. _____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy O Pappas Date 10/28/92

Analyst Recovery _____ +/- _____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
Instrument	P.A.C. -	G.E. ASC.	Ludlum -
Eff. Factor	0.50	0.37927	0.4
Date	/ /	/ /	/ /
Total counts			
Count time			
Bkg C/M			
Bkg cnt time			
Corrected C/M			

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: C. Harvey RUN # 5 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 37,Tank C-1'0 RUN DATE: 11-9-92
LABORATORY LOG-IN NUMBER: 1292040 ANALYST: JHE J. H. Eaneu
ALO LOG-IN NUMBER: 92-8304-H2 LRB: BNW 53337 PAGE 56

REFERENCE MASS: 239 REVIEWED BY: [illegible]
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0011679	1.0000000	0.0191494	0.0010287	0.0007370
0.0034797	1.0000000	0.0178240	0.0009417	0.0007634
0.0012036	1.0000000	0.0193434	0.0009092	0.0005698
0.0016283	1.0000000	0.0193855	0.0010788	0.0006823
0.0012340	1.0000000	0.0201749	0.0008887	0.0009332
0.0015304	1.0000000	0.0188751	0.0012666	0.0011643
0.0013485	1.0000000	0.0194555	0.0013636	0.0006982
0.0015131	1.0000000	0.0185954	0.0009645	0.0008343
0.0014750	1.0000000	0.0199853	0.0010895	0.0009435

MEAN RATIO FOR EACH ISOTOPE IS:

0.0016201	1.0000000	0.0191987	0.0010590	0.0008140

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0007159	0.0000000	0.0007119	0.0001629	0.0001778

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0005503	0.0000000	0.0005472	0.0001252	0.0001367

CYCLE # 2 REJECTED AT THE 95% LEVEL
DUE TO THE 238/ 239 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0013876	1.0000000	0.0193706	0.0010737	0.0008203

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0001728	0.0000000	0.0005249	0.0001677	0.0001890

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0001445	0.0000000	0.0004389	0.0001402	0.0001580

MASS	ATOM %	MASS %
238	0.1356881	0.1351079
239	97.7849564	97.7759189
240	1.8941497	1.9018992
241	0.1049920	0.1058608
242	0.0802137	0.0812131

Pu AEA 92-8307-H2 Run 10-29-92 (Ha) 11-30-92 [illegible]

TN-1750 P H A
LT= 2498 RT= 2498
2498 2498 0 3584 0 512 34816 0 0

0	0	0	0	0	0	0	0	0	
8	1	0	0	0	0	0	0	0	
16	0	1	0	1	1	0	0	0	
24	0	0	1	0	1	0	0	0	
32	1	1	0	0	0	0	0	0	
40	0	0	0	0	0	0	0	0	
48	0	0	0	1	0	1	0	0	
56	0	0	0	0	0	0	1	0	
64	0	0	1	0	0	1	1	0	
72	0	1	0	0	0	0	0	0	
80	0	0	0	2	0	0	1	0	
88	0	0	0	0	0	0	0	0	
96	0	0	0	0	1	0	0	0	
104	0	0	0	0	1	0	0	1	
112	0	0	1	1	0	0	0	0	
120	0	0	2	0	0	0	0	0	
128	0	0	1	0	0	0	0	0	
136	1	0	1	0	0	1	0	[illegible]	
144	0	0	1	1	1	0	0	[illegible]	
152	1	0	0	0	0	0	0	0	
160	1	1	0	0	2	1	1	1	
168	4	2	1	1	0	0	2	2	
176	2	2	2	1	3	2	8	4	$Pu^{239+240}$
184	11	5	8	8	10	12	12	20	
192	20	20	33	27	39	56	76	99	3187.0-0
200	156	133	203	240	303	363	488	522	
208	598	450	223	58	3	0	0	0	
216	0	0	0	1	0	1	2	1	
224	0	0	4	1	4	7	4	3	Pu^{238}
232	10	10	17	26	29	37	36	35	243.0-0
240	45	18	2	0	0	0	0	0	
248	0	0	0	0	0	0	0	0	
256	0	1	0	0	0	0	0	0	
264	0	0	0	0	0	0	0	0	
272	0	0	0	0	0	0	0	0	
280	0	0	0	0	0	0	0	0	
288	0	0	0	0	0	0	0	0	$\frac{Pu^{238}}{Pu^{239+240}} = .0763$
296	0	0	0	0	0	0	0	0	
304	0	0	0	0	0	0	0	0	
312	0	0	0	0	0	0	0	0	
320	0	0	0	0	0	0	0	0	
328	0	0	0	0	0	0	0	0	
336	0	0	0	0	0	0	0	0	
344	0	0	0	0	0	0	0	0	
352	0	0	0	0	0	0	0	0	
360	0	0	0	0	0	0	0	0	
368	0	0	0	0	0	0	0	0	
376	0	0	0	0	0	0	0	0	
384	0	0	0	0	0	0	0	0	
392	0	0	0	0	0	0	0	0	
400	0	0	0	0	0	0	0	0	
408	0	0	0	0	0	0	0	0	
416	0	0	0	0	0	0	0	0	

Pacific Northwest Laboratory 92229

Uranium Laser....PNL-ALO-445 -

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8306-H1 Description : CORE 38, 39 TANK C-110

DF ---- .50620 ---> 100.00000 ---- .09885 -+-> .99492 ---- .01976

Dilution Factor = 1.1062E+05 +/- 2.29%

M. & T.E.	WM_____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.14000	U-236 (Mass f)	.00000000
Reading 2	.38000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	1.28E+00	8.	1.22E-01

Calculated by [signature] Date 10-22-92

Reviewed by [signature] Date 10-22-92

Pacific Northwest Laboratory 0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10/14/92 Work order : M90482 ARF(SOW) : T1 163 168

A.L.O. No. : 92-8306-H1 Description : Core 38, 39 Tank C-110

0.5062g → 100 ml

	#13	#14	#3				
DF	---	0.09885 ml	0.99492 ml	0.01976 ml	---	---	---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst [illegible] Date 10/31/92

M. & T.E. Log Book:	WM_____ BNW_____ p __		Mass Run
Spike Conc.	1.003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.01976	U-235 (Mass %)	
Reading 1	.14	U-236 (Mass %)	
Reading 2	.38	U-238 (Mass %)	

Analyst [illegible]

Pacific Northwest Laboratory 92229

Uranium Laser....PNL-ALO-445 -

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8306-H2 Description : CORE 38, 39 TANK C-110

DF ---- .54160 ---> 100.00000 ---- .09885 -+-> .99492 ---- .01976

Dilution Factor = 1.0339E+05 +/- 2.29%

M. & T.E.	WM_____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.16000	U-236 (Mass f)	.00000000
Reading 2	.41000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	1.31E+00	8.	1.05E-01

Calculated by [signature] Date 10-22-92

Reviewed by [signature] Date 10-22-92

Pacific Northwest Laboratory 0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10/16/92 Work order M50482 ARF(SOW) : T1 105 106

A.L.O. No. : 92-8306-A2 Description : Core 38, 39 Trade C-110

0.5416g → 100 ml

	A13	A14	A3			
DF	--- 0.09885 ml	++ 0.99492 ml	--- 0.01976 ml	---	---	---

Pipet LRB BNW _____ Page(s) No. _____

Std _____ LRB BNW _____ Page(s) No. _____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst L. A. Poggiolo Date 10/21/92

M. & T.E.	WM____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1.003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.01976	U-235 (Mass %)	
Reading 1	.14	U-236 (Mass %)	
Reading 2	.41	U-238 (Mass %)	

Analyst L. A. Poggiolo

Pacific Northwest Laboratory 92229

Uranium Laser....PNL-ALO-445

Customer : SST Date Received 10/ 16/ 92 Work order : M90482 ARF(SOW) : TI 165, 166

A.L.O. No. 92-8306-H3 Description : CORE 38, 39 TANK C-110

DF ---- .52390 ---> 100.00000 ---- .01976

Dilution Factor = 9.6597E+03 +/- 2.12%

Instrument	U Laser		Mass Spec.
Spike Conc.	.1000 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.01000	U-236 (Mass f)	.00000000
Reading 2	.33000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	5.96E-04	100.	1.23E-03

Calculated by L. O. Harvey Date 11-13-92

Reviewed by S. Farrington Date 11-16-92

92329
0

Pacific Northwest Laboratory

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : T1 165 1L6

A.L.O. No. : 92-830643 Description : Core 38, 39 Tank C-110

Pipet Nos.:
DF --- 0.5239 g → 100 ml --- 3 0.01976 ml --- --- --- ---

Pipet checks are recorded in control logbook by pipet number

Std_____ LRB BNW_____ Page(s) No._____

Standard card ID _____ Blank card ID _____

Analyst: K. Pappas Date 11-13-92

Equipment Log Book:	U Laser BNW____ p __		Mass Spec.
Spike Conc.	0.1000 ug/ml		
V. of Spike	0.01976	U-234 (Mass %)	
Reading 1	.01	U-235 (Mass %)	
Reading 2	.33	U-236 (Mass %)	
		U-238 (Mass %)	

Analyst K. Pappas 11-13-92

Pacific Northwest Laboratory 0

Uranium ~~Laser.....PNL-ALO~~ Isotopics 445 Calc

Customer : SST Date Received : 10/6/92 Work order : 1190483 ARF(SOW) : T1 1L5, 168

A.L.O. No. : 92-8306-H1 Description : Core 38, 39 Tank C-110

MS NO ~~92-13~~ 119285

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kelly O Pepper Date 10/30/92

M. & T.E.	WM_____		Mass Run
Log Book:	BNW_____ p __		
Spike Conc.	_____ ug/ml		
		U-234 (Mass %)	_____
V. of Spike	_____	U-235 (Mass %)	_____
Reading 1	_____	U-236 (Mass %)	_____
Reading 2	_____	U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 3 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: Core 38,39 Tnk C-110 RUN DATE: 10-27-92
LABORATORY LOG-IN NUMBER: 119285 ANALYST: RE Brinson R E Brinson
ALO LOG-IN NUMBER: 92-8306H1 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000510	0.0067894	0.0000282	1.0000000
0.0000588	0.0068750	0.0000452	1.0000000
0.0000545	0.0068638	0.0000590	1.0000000
0.0000517	0.0070302	0.0000657	1.0000000
0.0000779	0.0068305	0.0000918	1.0000000
0.0000713	0.0069972	0.0000633	1.0000000
0.0000866	0.0069696	0.0000275	1.0000000
0.0000779	0.0068873	0.0000395	1.0000000
0.0000452	0.0070000	0.0000704	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000639	0.0069159	0.0000545	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000147	0.0000852	0.0000212	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000113	0.0000655	0.0000163	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0063435	0.0062374
235	0.6867595	0.6781626
236	0.0054126	0.0053675
238	99.3014844	99.3102324

Pacific Northwest Laboratory 0

Uranium ~~Laser.....PNL-ALO-~~ Isotopics 445 Cost

Customer : SST Date Received : 10/16/92 Work order M90482 ARF(SOW) : T1 165 168

A.L.O. No. : 92-8306-H2 Description : Core 38, 38 Tank C-110

MS NO: 119286

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy A Poppe Date 10/30/92

M. & T.E. Log Book:	WM____ BNW____ p __		Mass Run
Spike Conc.	_____ ug/ml		
		U-234 (Mass %)	_____
V. of Spike	_____	U-235 (Mass %)	_____
Reading 1	_____	U-236 (Mass %)	_____
Reading 2	_____	U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.8

CUSTOMER: SST/Harvey RUN # 4 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: Core 38,39 Tnk C-1[illegible]0 RUN DATE: 10-27-92
LABORATORY LOG-IN NUMBER: 119286 ANALYST: RE Brinson R E Brinson
ALO LOG-IN NUMBER: 92-8306H2 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000529	0.0069398	0.0000581	1.0000000
0.0000473	0.0068858	0.0000560	1.0000000
0.0000639	0.0069635	0.0000714	1.0000000
0.0000521	0.0069536	0.0000845	1.0000000
0.0000481	0.0069005	0.0000555	1.0000000
0.0000478	0.0068990	0.0000487	1.0000000
0.0000667	0.0068239	0.0000496	1.0000000
0.0000672	0.0069763	0.0000968	1.0000000
0.0000480	0.0068873	0.0000696	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000549	0.0069144	0.0000656	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000085	0.0000482	0.0000165	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000066	0.0000370	0.0000127	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0054492	0.0053581
235	0.6866119	0.6780168
236	0.0065136	0.0064594
238	99.3014253	99.3101657

Pacific Northwest Laboratory 92229

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8306-H1 Description : CORE 38, 39 TANK C-110

DF ---- .50620 ---> 100.00000 ---- .99832 ---> 1.99664 ---- .49544

Dilution Factor = 7.9747E+02 +/- 1.22%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	.5050	0.37927	0.4
			Date	10/ 30/ 92	/ /	/ /
Total counts	0	1	Total counts	4771		
Edge Bkg	0	0	Count time	30		
System Bkg	0	0	Bkg C/M	1.990	.	.
Net counts	.0	1.0	Bkg cnt time	100		
A fraction	.0000	1.0000	Corrected C/M	157.04	.	.

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	7.2	8.39E+02	1.68E+03
~~Pu-239 & 240~~	2.64E+05	7.2	8.39E+02	1.68E+03
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	7.2	3.78E-04	7.56E-04
~~Pu-239 & 240~~	1.19E-01	7.2	3.78E-04	7.56E-04

total alpha Pu
CDH 11-11-92

Calculated by D. Barrington Date 11-4-92

Reviewed by C. O. Harvey Date 11-11-92

Pacific Northwest Laboratory

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : TI 165166

A.L.O. No. : 92-8306, H1 Description : Core 38, 39 Tank C-110
#77 #77 Glass

DF --- 0.5062 g --> 100 ml --- 0.99832 ml --> 2(0.99832) ml --- 0.49544 ml --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst R J Raney Date 10-28-92
29

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p 75	BNW52825 p	BNW54273 p
Instrument	P.A.C. - 2	G.E. ASC.	Ludlum L
Eff. Factor	0.505	0.37927	0.4
Date	10/30/92	/ /	/ /
Total counts	4771		
Count time	30		
Bkg C/M	1.99		
Bkg cnt time	100		
Corrected C/M			

Analyst Anne E Kaplan

Pacific Northwest Laboratory 92229

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8306-H2 Description : CORE 38, 39 TANK C-110

DF ---- .54160 ---> 100.00000 ---- .99832 ---> 1.99664 ---- .49854

Dilution Factor = 7.4072E+02 +/- 1.22%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240				
			M. & T.E.	WM005___	WA42546	WA_____
			Log Book:	BNW52341 p __	BNW52825 p ___	BNW54273 p__
			Instrument	P.A.C. - ____	G.E. ASC.	Ludlum -___
			Eff. Factor	.5050	0.37927	0.4_____
			Date	10/ 30/ 92	___/___/___	___/___/___
Total counts	0	1	Total counts	6613		
Edge Bkg	0	0	Count time	30		
System Bkg	0	0	Bkg C/M	1.990		
Net counts	.0	1.0	Bkg cnt time	100		
A fraction	.0000	1.0000	Corrected C/M	218.44		

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	7.0	7.79E+02	1.56E+03
Pu-~~239 & 240~~	3.41E+05	7.0	7.79E+02	1.56E+03
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	7.0	3.51E-04	7.02E-04
Pu-~~239 & 240~~	1.54E-01	7.0	3.51E-04	7.02E-04

total alpha Pu

cot 11-11-92

Calculated by S. Cassington Date 11-4-92

Reviewed by L. C. Harvey Date 11-11-92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : I165, 166

A.L.O. No. : 92-8306, H2 Description : Core 38, 39 Tank C-110
#77 #77 Glass

DF --- 0.5416 g --> 100 ml --- 0.99832 ml --> 2(0.99832) ml --- 0.49854 ml --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92
29

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p 75	BNW52825 p	BNW54273 p
Instrument	P.A.C. - 2	G.E. ASC.	Sudium -
Eff. Factor	0.505	0.37927	0.4
Date	10/30/92	/ /	/ /
Total counts	16613		
Count time	30		
Bkg C/M	1.99		
Bkg cnt time	100		
Corrected C/M			

Analyst [signature]

Pacific Northwest Laboratory 92229

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : M90482 ARF(SOW) : TI 165, 166

A.L.O. No. 92-8306-H3 Description : CORE 38, 39 TANK C-110

DF ---- .52390 ---> 100.00000 ---- .99832 ---> 1.99664 ---- 1.00070

Dilution Factor = 3.8149E+02 +/- 1.11%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240
Total counts	0	1
Edge Bkg	0	0
System Bkg	0	0
Net counts	.0	1.0
A fraction	.0000	1.0000

Instrument	LUDLUM 6
Eff. Factor	.4222
Date	11/ 3/ 92
Total counts	108
Count time	420
Bkg C/M	.167
Bkg cnt time	900
Corrected C/M	.09

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	61.8	3.99E+01	7.98E+01
Pu-~~239 & 240~~	8.66E+01	61.8	3.99E+01	7.98E+01
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	61.8	1.80E-05	3.59E-05
Pu-~~239 & 240~~	3.90E-05	61.8	1.80E-05	3.59E-05

total alpha Pu calc 11-12-92

Calculated by [signature] Date 11-11-92

Reviewed by [signature] Date 11-12-92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Brk order 990482 ABF(SOW) : TL 165/166

A.L.O. No. : 92-8306, H3 Description : Core 38, 39 Tank 101

DF --- 0.5239 g → 100 ml --- 0.99832 ml #77 --- 2(0.99832) ml #77 --- 100070 ml Glass ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92 29

Analyst Recovery_____ +/- _____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WMD05	WA42546	WA
Log Book:	BNW52341 p	BNW52825 p	BNW54273 p 5
Instrument	P.A.C. -	G.E. ASC.	Ludlum - 6
Eff. Factor	0.50	0.37927	0.4 222
Date	/ /	/ /	11/3/92
Total counts			103
Count time			420
Bkg C/M			0.167
Bkg cnt time			900
Corrected C/M			

Analyst [signature]

Pacific Northwest Laboratory

Plutonium-~~239-240,238.....PNL-ALO-4~~23 Isotopics Cell

Customer : SST Date Received : 10/6/92 Work order : M90482 ARF(SOW) : T1 165, 168

A.L.O. No. : 92-8306-H1 Description : Core 38, 39 TANK C-110

DF --- 20 ml --- 0.1 ml --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst [illegible] Date 10/28/92

Analyst Recovery_____ +/- _____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005___	WA42546	WA_____
Log Book:	BNW52341 p __	BNW52825 p ___	BNW54273 p__
Instrument	P.A.C. - ___	G.E. ASC.	Ludlum -___
Eff. Factor	0.50____	0.37927	0.4_____
Date	__/__/__	__/__/__	__/__/__
Total counts			
Count time			
Bkg C/M			
Bkg cnt time			
Corrected C/M			

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: C. Harvey RUN # 2 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 37,Tank C-110 RUN DATE: 11-9-92
LABORATORY LOG-IN NUMBER: 1292041 ANALYST: JHE J. H. Emmerson
ALO LOG-IN NUMBER: 92-8306-H1 LRB: BNW 53337 PAGE 55

REFERENCE MASS: 239 REVIEWED BY: [illegible]
DATE: 11-16-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0001140	1.0000000	0.0172514	0.0000059	0.0001635
0.0000596	1.0000000	0.0168537	0.0001327	0.0000753
-0.0000188	1.0000000	0.0165532	-0.0000464	0.0000115
0.0000045	1.0000000	0.0163223	0.0000599	0.0000391
0.0000296	1.0000000	0.0161504	0.0001574	-0.0000028
0.0000794	1.0000000	0.0161924	0.0001675	0.0000302
0.0000989	1.0000000	0.0165934	0.0000813	-0.0000148
0.0000473	1.0000000	0.0164490	0.0000731	0.0000966
0.0000299	1.0000000	0.0167225	0.0000813	0.0000799

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000494	1.0000000	0.0165654	0.0000792	0.0000532

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000434	0.0000000	0.0003470	0.0000692	0.0000564

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000334	0.0000000	0.0002667	0.0000532	0.0000434

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
238	0.0048576	0.0048370
239	98.3528744	98.3460616
240	1.6292521	1.6359557
241	0.0077871	0.0078517
242	0.0052288	0.0052941

Pacific Northwest Laboratory 0

Plutonium-~~239-240,238.....PNL-ALO-~~423 Isotopes

Customer : SST Date Received : 10/16/92 Work order M90482 ARF(SOW) : TI165 163

A.L.O. No. : 92-8306-M2 Description : Core 38, 39 Tank C-110

DF --- 20 ml --- 0.1 ml --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy U Pospaal Date 10/28/92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
Instrument	P.A.C. -	G.E. ASC.	Ludlum -
Eff. Factor	0.50	0.37927	0.4
Date	/ /	/ /	/ /
Total counts			
Count time			
Bkg C/M			
Bkg cnt time			
Corrected C/M			

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: C. Harvey RUN # 3 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 37,Tank C-110 RUN DATE: 11-9-92
LABORATORY LOG-IN NUMBER: 1292042 ANALYST: JHE J. H. Emmer
ALO LOG-IN NUMBER: 92-8306-H2 LRB: BNW 53337 PAGE 55

REFERENCE MASS: 239 REVIEWED BY: [illegible]
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0001420	1.0000000	0.0162782	0.0001361	0.0002025
0.0000971	1.0000000	0.0164450	0.0001136	0.0000439
0.0001478	1.0000000	0.0163539	0.0000737	0.0000232
0.0001384	1.0000000	0.0162351	0.0000946	0.0000398
0.0001379	1.0000000	0.0163475	0.0001048	0.0000069
0.0001153	1.0000000	0.0163494	0.0000813	0.0000553
0.0002182	1.0000000	0.0165234	-0.0000155	0.0000132
0.0001190	1.0000000	0.0164202	0.0000427	0.0000452
0.0001636	1.0000000	0.0166252	0.0000907	0.0001044

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001421	1.0000000	0.0163975	0.0000802	0.0000594

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000346	0.0000000	0.0001213	0.0000444	0.0000608

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000266	0.0000000	0.0000933	0.0000341	0.0000467

CYCLE # 1 REJECTED AT THE 95% LEVEL
DUE TO THE 242/ 239 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001422	1.0000000	0.0164125	0.0000732	0.0000415

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000370	0.0000000	0.0001206	0.0000418	0.0000305

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000310	0.0000000	0.0001003	0.0000350	0.0000255

MASS	ATOM %	MASS %
238	0.0139832	0.0139237
239	98.3603963	98.3537008
240	1.6143353	1.6209795
241	0.0072032	0.0072630
242	0.0040820	0.0041329

Pacific NorthWest Laboratory 92229

Uranium Laser....PNL-ALO-445 -

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8308-H1 Description : CORE 38, 39 TANK C-110

DF ---- .50930 ---> 100.00000 ---- .09885 ---> .99492 ---- .01976

Dilution Factor = 1.0995E+05 +/- 2.29%

M. & T.E.	WM_____		Mass Run
Log Book:	BNW____ P __		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.14000	U-236 (Mass f)	.00000000
Reading 2	.39000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	1.22E+00	8.	1.18E-01

Calculated by [signature] Date 10-23-92

Reviewed by [signature] Date 10-22-92

Pacific Northwest Laboratory 0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10/14/92 Work order M9-483 ARF(SOW) : T1 165 168

A.L.O. No. : 92-8308 H1 Description : Core 38, 39 TANK C-110

0.5093g → none #13 #14 #3

DF --- 0.09885 ml → 0.99493 ml --- 0.01976 ml --- --- --- ---

Pipet LRB BNW _____ Page(s) No. _____

Std _____ LRB BNW _____ Page(s) No. _____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst K. Roppel Date 10/31/92

M. & T.E.	WM____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1.003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.01976	U-235 (Mass %)	
Reading 1	.14	U-236 (Mass %)	
Reading 2	.39	U-238 (Mass %)	

Analyst K. Roppel

Pacific Northwest Laboratory 92229

Uranium Laser....PNL-ALC-445 -

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8308-H2 Description : CORE 38, 39 TANK C-110

DF ---- .51920 ---> 100.00000 ---- .09885 -+-> .99492 ---- .01976

Dilution Factor = 1.0785E+05 +/- 2.29%

M. & T.E.	WM_____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.14000	U-236 (Mass f)	.00000000
Reading 2	.38000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	1.25E+00	8.	1.19E-01

Calculated by L. Barrington Date 10-22-92

Reviewed by G. O. Henry Date 10-22-92

Pacific Northwest Laboratory 0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10,16,92 Work order : M90-182 ARF(SOW) : T1165 168

A.L.O. No. : 92-8302 H2 Description : Core 38, 39 TANK C-110

0.5,925g → 100ml

	#13	#14	#3				
DF	---	0.09885 ml	0.99492 ml	0.01976 ml	---	---	---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst La Poppel Date 10/21/92

M. & T.E.	WM_____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1.003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.01976	U-235 (Mass %)	
Reading 1	.14	U-236 (Mass %)	
Reading 2	.38	U-238 (Mass %)	

Analyst La Poppel

Pacific Northwest Laboratory

Uranium ~~Laser.....PNL-ALO-445~~ Isotopics

Customer : SST Date Received : 10/16/92 Work order : M90-182 ARF(SOW) : T1 1C5, 1C3

A.L.O. No. : 92-8308-M1 Description : Core 38, 39 Tank C-110

MS NO: 119287

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Lorry A Poppe Date 10/20/92

M. & T.E.	WM_____		Mass Run
Log Book:	BNW_____ p __		
Spike Conc.	_____ ug/ml		
		U-234 (Mass %)	_____
V. of Spike	_____	U-235 (Mass %)	_____
Reading 1	_____	U-236 (Mass %)	_____
Reading 2	_____	U-238 (Mass %)	_____

Analyst: _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 5 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: Core 38,39 Tnk C-110 RUN DATE: 10-27-92
LABORATORY LOG-IN NUMBER: 119287 ANALYST: RE Brinson R C Brinson
ALO LOG-IN NUMBER: 92-8308H1 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238
RATIOS:			
0.0000538	0.0070665	0.0000495	1.0000000
0.0000821	0.0069528	0.0000454	1.0000000
0.0000421	0.0071096	0.0000438	1.0000000
0.0000594	0.0070282	0.0000685	1.0000000
0.0000601	0.0070847	0.0000731	1.0000000
0.0000685	0.0071353	0.0000753	1.0000000
0.0000519	0.0069650	0.0000610	1.0000000
0.0000525	0.0069607	0.0000491	1.0000000
0.0000650	0.0070748	0.0000289	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000595	0.0070420	0.0000550	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000115	0.0000684	0.0000155	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000089	0.0000526	0.0000119	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0059046	0.0058059
235	0.6991925	0.6904410
236	0.0054575	0.0054122
238	99.2894454	99.2983410

Pacific Northwest Laboratory 0

Uranium ~~Laser.....PNL-ALO-445~~ Isotopics

Customer : SST Date Received : 10/20/92 Work order : M40782 ARF(SOW) : T1 165,168

A.L.O. No. : 92-8308-M2 Description : Core 38, 39 Tank C-110

MS NO: 119288

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy C Popper Date 10/20/92

M. & T.E. Log Book:	WM_____ BNW_____ p __		Mass Run
Spike Conc.	_____ ug/ml		
		U-234 (Mass %)	_____
V. of Spike	_____	U-235 (Mass %)	_____
Reading 1	_____	U-236 (Mass %)	_____
Reading 2	_____	U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 6 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: Core 38,39 Tnk C-110 RUN DATE: 10-27-92
LABORATORY LOG-IN NUMBER: 119288 ANALYST: RE Brinson R C Brinson
ALO LOG-IN NUMBER: 92-8308H2 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000663	0.0069409	0.0000566	1.0000000
0.0000574	0.0070453	0.0000696	1.0000000
0.0000258	0.0069605	0.0000533	1.0000000
0.0000681	0.0069762	0.0000350	1.0000000
0.0000497	0.0069784	0.0000611	1.0000000
0.0000530	0.0068930	0.0000620	1.0000000
0.0000546	0.0070135	0.0000495	1.0000000
0.0000498	0.0069076	0.0000432	1.0000000
0.0000597	0.0069265	0.0000203	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000538	0.0069602	0.0000501	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000124	0.0000493	0.0000152	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000095	0.0000379	0.0000117	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0053448	0.0052554
235	0.6911390	0.6824875
236	0.0049730	0.0049316
238	99.2985433	99.3073255

Pacific Northwest Laboratory 92229

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8308-H1 Description : CORE 38, 39 TANK C-110

DF ---- .50930 ---> 100.00000 ---- .99832 ---> 1.99664 ---- .49544

Dilution Factor = 7.9262E+02 +/- 1.22%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	.5090	0.37927	0.4
			Date	10/ 30/ 92	/ /	/ /
Total counts	0	1	Total counts	4411		
Edge Bkg	0	0	Count time	30		
System Bkg	0	0	Bkg C/M	.510		
Net counts	.0	1.0	Bkg cnt time	100		
A fraction	.0000	1.0000	Corrected C/M	146.52		

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	7.2	4.31E+02	8.62E+02
Pu-239 & 240	2.43E+05	7.2	4.31E+02	8.62E+02
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	7.2	1.94E-04	3.88E-04
Pu-239 & 240	1.09E-01	7.2	1.94E-04	3.88E-04

total Alpha Pu

calc 11-11-92

Calculated by [signature] Date 11-4-92

Reviewed by [signature] Date 11-11-92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : H9082 ARF(SOW) : TI 165/166

A.L.O. No. : 92-8308, H/ Description : Core 38, 39 Tank C-110 Glass

#77 #77

DF --- 0.5093 g --> 100 ml --- 0.99832 ml --- 2(0.99832) ml --- 0.49954 ml --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92 29

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240				
			M. & T.E. Log Book:	WM005 BNW52341 p 75	WA42546 BNW52825 p ___	WA ___ BNW54273 p ___
			Instrument	P.A.C. - 1	G E. ASC.	Ludlum - ___
			Eff. Factor	0.509	0.37927	0.4
			Date	10/30/92	/ /	/ /
Total counts			Total counts	4411		
Edge Correction			Count time	30		
Background			Bkg C/M	0.51		
Net counts			Bkg cnt time	100		
Alpha fract			Corrected C/M			

Analyst [signature]

Pacific Northwest Laboratory 92229

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SCW) : TI 165, 166

A.L.O. No. 92-8308-H2 Description : CORE 38, 39 TANK C-110

DF ---- .51920 ---> 100.00000 ---- .99832 ---> 1.99664 ---- .49854

Dilution Factor = 7.7267E+02 +/- 1.22%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	.5090	0.37927	0.4
			Date	10/ 30/ 92	/ /	/ /
Total counts	0	1	Total counts	5723		
Edge Bkg	0	0	Count time	30		
System Bkg	0	0	Bkg C/M	.510		
Net counts	.0	1.0	Bkg cnt time	100		
A fraction	.0000	1.0000	Corrected C/M	190.26		

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	7.1	4.20E+02	8.41E+02
Pu-~~239 & 240~~	3.07E+05	7.1	4.20E+02	8.41E+02
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	7.1	1.89E-04	3.79E-04
Pu-~~239 & 240~~	1.38E-01	7.1	1.89E-04	3.79E-04

total alpha Pu

ebH 11-11-92

Calculated by R. Barrington Date 11-4-92

Reviewed by G. O. Harvey Date 11-11-92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : H9 0482 ARF(SOW) : TI 165/166

A.L.O. No. : 92-8308, H2 Description : Core 38, 39 Tank C-110 #77 #77 Glass

DF --- 0.5192 g --> 100 ml --- 0.99832 ml --> 2(0.99832) ml --- 0.49854 ml --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92-229-RR

Analyst P J Pang Date 10-28-92 29

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p 75	BNW52825 p	BNW54273 p
Instrument	P.A.C. - 1	G.E. ASC.	Ludlum -
Eff. Factor	0.509	0.37927	0.4
Date	10/30/92	/ /	/ /
Total counts	5723		
Count time	30		
Bkg C/M	0.51		
Bkg cnt time	100		
Corrected C/M			

Analyst Anne E Kaplitz

Pacific Northwest Laboratory 0

Plutonium ~~239-240,238.....PNL-ALO-423~~ Isotopics Cs137

Customer : SST Date Received : 10/14/92 Work order : M90482 ARF(SOW) : T1 165 167

A.L.O. No. : 92-8308-H1 Description : Core 38, 39 Tank C-110

DF --- 20 ml --- 0.1 ml --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy A Pulsipher Date 10/28/92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240	M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	0.50	0.37927	0.4
			Date	/ /	/ /	/ /
Total counts			Total counts			
Edge Correction			Count time			
Background			Bkg C/M			
Net counts			Bkg cnt time			
Alpha fract			Corrected C/M			

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: C. Harvey RUN # 6 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 37,Tank C-110 RUN DATE: 11-9-92
LABORATORY LOG-IN NUMBER: 1292043 ANALYST: JHE J. H. Emmen
ALO LOG-IN NUMBER: 92-8308-H1 LRB: BNW 53337 PAGE 56

REFERENCE MASS: 239 REVIEWED BY: M W Gilliam
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0001830	1.0000000	0.0163391	0.0000921	0.0000513
0.0001672	1.0000000	0.0164154	0.0000912	0.0000250
0.0001179	1.0000000	0.0166162	0.0001381	0.0000735
0.0000229	1.0000000	0.0164327	0.0001004	0.0000347
0.0001230	1.0000000	0.0165720	0.0001020	0.0000215
0.0000743	1.0000000	0.0165758	0.0002580	0.0000368
0.0000703	1.0000000	0.0167726	0.0000851	0.0000383
0.0000907	1.0000000	0.0165957	0.0001046	0.0000239
0.0001094	1.0000000	0.0165024	0.0000658	0.0000367

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001065	1.0000000	0.0165358	0.0001153	0.0000380

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000494	0.0000000	0.0001294	0.0000569	0.0000162

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000380	0.0000000	0.0000995	0.0000437	0.0000124

CYCLE # 6 REJECTED AT THE 95% LEVEL
DUE TO THE 241/ 239 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001106	1.0000000	0.0165308	0.0000974	0.0000381

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000512	0.0000000	0.0001374	0.0000206	0.0000173

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000428	0.0000000	0.0001149	0.0000172	0.0000145

MASS	ATOM %	MASS %
238	0.0108732	0.0108270
239	98.3499968	98.3432266
240	1.6258012	1.6324913
241	0.0095806	0.0096601
242	0.0037482	0.0037950

Pacific Northwest Laboratory 0

Plutonium-~~239-240,238~~ Isotopics ~~PNL-ALO-423~~ Calc

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : T1 1L5, 1L8

A.L.O. No. : 92-8308-H2 Description : Curo 38, 39 Tank C-110

DF --- 20 ml --- 0.1 ml --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy A Boppell Date 10/28/92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005___	WA42546	WA_____
			Log Book:	BNW52341 p __	BNW52825 p ___	BNW54273 p__
			Instrument	P.A.C. - ___	G.E. ASC.	Ludlum -___
			Eff. Factor	0.50____	0.37927	0.4_____
			Date	___/___/___	___/___/___	___/___/___
Total counts			Total counts			
Edge Correction			Count time			
Background			Bkg C/M			
Net counts			Bkg cnt time			
Alpha fract			Corrected C/M			

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: C. Harvey RUN # 1 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 38,39 Tank C-110 RUN DATE: 11-10-92
LABORATORY LOG-IN NUMBER: 1292044 ANALYST: JH Ennen J. H. Ennen
ALO LOG-IN NUMBER: 92-8308-H2 LRB: BNW 53337 PAGE 56

REFERENCE MASS: 239 REVIEWED BY: [illegible]
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242
RATIOS:				
0.0002809	1.0000000	0.0168727	0.0002541	0.0000438
0.0002904	1.0000000	0.0169025	0.0002903	0.0001399
0.0002800	1.0000000	0.0169867	0.0000809	0.0000590
0.0003841	1.0000000	0.0173686	0.0001000	-0.0000855
0.0002129	1.0000000	0.0168299	0.0002872	0.0000479
0.0005566	1.0000000	0.0178879	0.0002241	0.0001562
0.0003037	1.0000000	0.0169493	0.0002764	0.0001341
0.0004262	1.0000000	0.0169309	0.0005330	0.0001414
0.0006322	1.0000000	0.0171062	0.0002529	0.0000512

MEAN RATIO FOR EACH ISOTOPE IS:

0.0003741	1.0000000	0.0170927	0.0002554	0.0000765

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0001406	0.0000000	0.0003392	0.0001301	0.0000766

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0001081	0.0000000	0.0002607	0.0001000	0.0000589

CYCLE # 6 REJECTED AT THE 95% LEVEL
DUE TO THE 240/ 239 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0003513	1.0000000	0.0169933	0.0002594	0.0000665

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0001313	0.0000000	0.0001728	0.0001385	0.0000754

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0001098	0.0000000	0.0001445	0.0001158	0.0000631

MASS	ATOM %	MASS %

238	0.0345187	0.0343718
239	98.2636368	98.2566237
240	1.6698271	1.6766942
241	0.0254850	0.0256965
242	0.0065323	0.0066138

Pacific Northwest Laboratory 92229

Uranium Laser....PNL-ALO-445 -

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8310-H1 Description : CORE 38, 39 TANK C-110

DF ---- .51370 ---> 100.00000 ---- .09885 -+-> .99492 ---- .01976

Dilution Factor = 1.0901E+05 +/- 2.29%

M. & T.E.	WM_____		Mass Run
Log Book:	BNW____ P __		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.13000	U-236 (Mass f)	.00000000
Reading 2	.37000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	1.17E+00	9.	1.23E-01

Calculated by [signature] Date 10-22-92

Reviewed by [signature] Date 10-22-92

Pacific Northwest Laboratory

0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10/20/92 Work order 1190482 ARF(SOW) : TI 165 1C8

A.L.O. No. : 92-8310 A1 Description : Core 38, 39 TANK C-110

0.5137g → 100ml

	#13	#14	#3				
DF	---	0.09885 ml	0.99493 ml	0.01976 ml	---	---	---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst K O Poppe Date 10/21/93

M. & T.E.	WM____		Mass Run
Log Book:	BNW____ p _		
Spike Conc.	1.003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.01976	U-235 (Mass %)	
Reading 1	.13	U-236 (Mass %)	
Reading 2	.37	U-238 (Mass %)	

Analyst K O Poppe

Pacific Northwest Laboratory 92229

Uranium Laser....PNL-ALO-445 -

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8310-H2 Description : CORE 38, 39 TANK C-110

DF ---- .50330 ---> 100.00000 ---- .09885 -+-> .99492 ---- .01976

Dilution Factor = 1.1126E+05 +/- 2.29%

M. & T.E.	WM_____		. Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1.0030 ug/ml		
		U-234 (Mass f)	.00000000
V. of Spike	.01976	U-235 (Mass f)	.00000000
Reading 1	.14000	U-236 (Mass f)	.00000000
Reading 2	.36000	U-238 (Mass f)	.00000000

* No Uranium Mass Spectroscopy Analysis Performed

Calculation and Results

	Concentration mg/GM	Uncertainties %	Less than mg/GM
Total uranium	1.40E+00	8.	1.30E-01

Calculated by L Barrington Date 10-22-92

Reviewed by G O Harvey Date 10-22-92

Pacific Northwest Laboratory 0

Uranium Laser.....PNL-ALO-445

Customer : SST Date Received : 10/14/92 Work order : M90482 ARF(SOW) : T1 165, 166

A.L.O. No. : 92-8310 H2 Description : Core 38, 39 Tank C-110

0.5033g → 100ml #13 #14 #3

DF --- 0.09885 ml +/- 0.99492 ml --- 0.01976 ml --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst La Polpper Date 10/21/92

M. & T.E.	WM____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	1.003 ug/ml		
		U-234 (Mass %)	
V. of Spike	0.01976	U-235 (Mass %)	
Reading 1	.14	U-236 (Mass %)	
Reading 2	.36	U-238 (Mass %)	

Analyst La Polpper 10/21/92

Pacific Northwest Laboratory

Uranium ~~Laser.....PNL-ALO-445~~ Isotopics LGT

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : T1 165, 168

A.L.O. No. : 92-3310-M1 Description : Core 38, 39 Tank C-110
MS No. 119289

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Lilly C. Rodgers Date 10/20/92

M. & T.E. Log Book:	WM_____ BNW_____ p __		Mass Run
Spike Conc.	_____ ug/ml		
V. of Spike	_____	U-234 (Mass %)	_____
Reading 1	_____	U-235 (Mass %)	_____
Reading 2	_____	U-236 (Mass %)	_____
		U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 457806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/ Harvey RUN # 1 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: Core38,39 Tank C-110 RUN DATE: 10-28-92
LABORATORY LOG-IN NUMBER: 119289 ANALYST: M.W. Goheen
ALO LOG-IN NUMBER: 92-8310H1 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238

REVIEWED BY:
DATE: 10/27/92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000510	0.0070649	0.0000422	1.0000000
0.0000452	0.0071111	0.0000527	1.0000000
0.0000621	0.0069917	0.0000587	1.0000000
0.0000569	0.0069310	0.0000570	1.0000000
0.0000728	0.0071191	0.0000480	1.0000000
0.0000557	0.0069616	0.0000542	1.0000000
0.0000777	0.0069806	0.0000492	1.0000000
0.0000612	0.0071274	0.0000465	1.0000000
0.0000522	0.0071537	0.0000486	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000594	0.0070490	0.0000508	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000104	0.0000834	0.0000053	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000080	0.0000641	0.0000041	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0058995	0.0058008
235	0.6998903	0.6911301
236	0.0050430	0.0050011
238	99.2891672	99.2980679

Pacific Northwest Laboratory

Uranium ~~Laser.....PNL-NEO-445~~ Isotopics

Customer : SST Date Received : 10/16/92 Work order 1090-182 ARF(SOW) : TI 165,168

A.L.O. No. : 92-8310-12 Description : Core 38, 39 Tank C-110

m S NO : 119290

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy A Pragel Date 10/20/92

M. & T.E. Log Book:	WM_____ BNW_____ p __		Mass Run
Spike Conc.	_____ ug/ml		
V. of Spike	_____	U-234 (Mass %)	_____
Reading 1	_____	U-235 (Mass %)	_____
Reading 2	_____	U-236 (Mass %)	_____
		U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 457806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/ Harvey RUN # 1 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: Core38,39 Tank C-110 RUN DATE: 10-28-92
LABORATORY LOG-IN NUMBER: 119290 ANALYST: M.W. Goheen
ALO LOG-IN NUMBER: 92-8310H2 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY:
DATE: 10/29/92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000962	0.0069570	0.0000480	1.0000000
0.0000465	0.0069118	0.0000317	1.0000000
0.0000794	0.0067496	0.0000238	1.0000000
0.0000363	0.0071769	0.0000754	1.0000000
0.0000424	0.0069454	0.0000168	1.0000000
0.0000625	0.0069268	0.0000769	1.0000000
0.0000335	0.0070094	0.0001129	1.0000000
0.0000706	0.0072013	0.0000209	1.0000000
0.0000699	0.0068928	0.0000327	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000597	0.0069746	0.0000488	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000214	0.0001406	0.0000328	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000164	0.0001081	0.0000252	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0059267	0.0058275
235	0.6925510	0.6838820
236	0.0048446	0.0048043
238	99.2966777	99.3054860

Pacific Northwest Laboratory 92229

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8310-H1 Description : CORE 38, 39 TANK C-110

DF ---- .51370 ---> 100.00000 ---- .99832 ---> 1.99664 ---- .49544

Dilution Factor = 7.8583E+02 +/- 1.22%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	.5090	0.37927	0.4
			Date	11/ 2/ 92	/ /	/ /
Total counts	0	1	Total counts	5352		
Edge Bkg	0	0	Count time	30		
System Bkg	0	0	Bkg C/M	.550		
Net counts	.0	1.0	Bkg cnt time	100		
A' fraction	.0000	1.0000	Corrected C/M	177.85		

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	7.1	4.43E+02	8.86E+02
Pu-~~239 & 240~~	2.92E+05	7.1	4.43E+02	8.86E+02
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	7.1	2.00E-04	3.99E-04
Pu-~~239 & 240~~	1.32E-01	7.1	2.00E-04	3.99E-04

total Pu alpha calc 11-11-92

2.92E+5 (.993) = 2.9055 dpm/mL $Pu^{239+240}$

(.007) = 2.0453 dpm/mL Pu^{238}

Calculated by [signature] Date 11-4-92

Reviewed by [signature] Date 11-11-92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : TI 165,166

A.L.O. No. : 92-8310, H1 Description : Core 38, 39 Tank C-110
#77 #77 Glass

DF --- 0.5137 g --> 100 ml --- 0.99832 ml --> 2(0.99832) ml --- 0.49544 ml --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92
29

Analyst Recovery_____ +/- _____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p 25	BNW52825 p	BNW54273 p
			Instrument	F.A.C. - 1	G E. ASC.	Ludlum -
			Eff. Factor	0.509	0.37927	0.4
			Date	11/2/92	/ /	/ /
Total counts			Total counts	5352		
Edge Correction			Count time	30		
Background			Bkg C/M	0.55		
Net counts			Bkg cnt time	120		
Alpha fract			Corrected C/M			

Analyst [signature]

AEA Pu 92 8310-11 / 13

11-16-92
C O Harvey

TN-1750 P H A
LT= 12592 RT= 12593
12592 12593 0 2048 0 512 34816 0 0

0	0	0	0	0	0	0	0	1
8	1	1	0	0	0	1	2	1
16	0	1	1	1	0	1	2	1
24	1	1	0	2	0	1	0	1
32	1	2	2	0	0	1	0	0
40	1	2	0	0	5	0	1	1
48	0	0	1	0	0	0	1	1
56	3	1	0	0	2	1	1	1
64	2	1	2	0	0	1	2	1
72	3	0	1	2	3	1	2	3
80	2	2	1	0	2	1	1	3
88	1	2	1	0	0	0	0	3
96	4	3	2	4	2	5	2	1
104	2	3	5	1	3	4	6	3
112	2	1	5	2	5	1	1	2
120	5	3	5	2	1	6	5	4
128	7	5	3	7	6	5	4	3
136	4	5	7	6	8	4	6	7
144	6	13	11	8	17	12	11	14
152	11	19	11	16	11	16	22	20
160	6	17	22	14	19	27	22	17
168	27	23	22	27	27	35	30	33
176	60	41	60	53	45	59	53	75
184	86	79	82	104	110	131	124	165
192	183	157	207	247	309	372	414	520
200	664	801	953	1171	1351	1511	1785	1822
208	1108	294	22	0	0	1	1	1
216	3	0	1	0	1	2	1	7
224	0	4	1	2	2	4	3	10
232	11	8	14	6	11	12	6	2
240	0	0	0	0	0	0	1	0
248	0	0	0	0	0	0	0	0
256	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0
272	0	0	0	0	0	0	0	0
280	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0
296	0	0	0	0	0	0	0	0
304	0	0	0	0	0	0	0	0
312	0	0	0	0	0	0	0	0
320	0	0	0	0	0	0	0	0
328	0	0	0	0	0	0	0	0
336	0	0	0	0	0	0	0	0
344	0	0	0	0	0	0	0	0
352	0	0	0	0	0	0	0	0
360	0	0	0	0	0	0	0	0
368	0	0	0	0	0	0	0	0
376	0	0	0	0	0	0	0	0
384	0	0	0	0	0 x			

10502 − 1 − 1 = 1050
.193

78 − 0 − 1 = 77
.007

.1577

Pacific Northwest Laboratory 92229

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 16/ 92 Work order : ARF(SOW) : TI 165, 166

A.L.O. No. 92-8310-H2 Description : CORE 38, 39 TANK C-110

DF ---- .50330 ---> 100.00000 ---- .99832 ---> 1.99664 ---- .49854

Dilution Factor = 7.9708E+02 +/- 1.22%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240			
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	.5090	0.37927	0.4
			Date	11/ 2/ 92	/ /	/ /
Total counts	0	1	Total counts	5876		
Edge Bkg	0	0	Count time	30		
System Bkg	0	0	Bkg C/M	.550		
Net counts	.0	1.0	Bkg cnt time	100		
A fraction	.0000	1.0000	Corrected C/M	195.32		

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	7.1	4.49E+02	8.99E+02
Pu-~~239 & 240~~	3.25E+05	7.1	4.49E+02	8.99E+02
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	7.1	2.02E-04	4.05E-04
Pu-~~239 & 240~~	1.47E-01	7.1	2.02E-04	4.05E-04

total alpha Pu

Calculated by [signature] Date 11-4-92

Reviewed by [signature] Date 11-11-92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/6/92 Work order : 190482 ARF(SOW) : TI 165/166

A.L.O. No. : 92-83/9/#2 Description : Core 38, 39 Tank C-110

#77 #77 Glass

OF --- 0.5033 g → 100 ml --- 0.99832 ml --- 2(0.99832) ml --- 0.49854 ml --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92 29

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p 25	BNW52825 p	BNW54273 p
Instrument	P.A.C. - 1	G.E. ASC.	Ludlum -
Eff. Factor	0.509	0.37927	0.4
Date	11/2/92	/ /	/ /
Total counts	5876		
Count time	30		
Bkg C/M	0.55		
Bkg cnt time	100		
Corrected C/M			

Analyst [signature]

Pacific Northwest Laboratory 92245

Pu-238, 239&240...PNL-ALO-423

Customer : Date Received 0/ 0/ 0 Work order : ARF(SOW) :

A.L.O. No. STANDARD-3 Description :

DF ---- .10023 ---> 1.99664 ---- .24973

Dilution Factor = 7.9768E+01 +/- 1.11%

Analysts Yield Factor 1.0000 +/- 6.0%

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum -
			Eff. Factor	.5050	0.37927	0.4
			Date	10/ 29/ 92	/ /	/ /
Total counts	0	1	Total counts	8236		
Edge Bkg	.0	0	Count time	10		
System Bkg	0	0	Bkg C/M	1.830		
Net counts	.0	1.0	Bkg cnt time	100		
A fraction	.0000	1.0000	Corrected C/M	821.77		

Calculation and Results

	Activities dpm/ML	Uncertainties %	Less than dpm/ML	MDA dpm/ML
Pu-238	0.00E+00	6.9	1.19E+02	2.39E+02
Pu-239 & 240	1.30E+05	6.9	1.19E+02	2.39E+02
	uCi/ML	%	uCi/ML	uCi/ML
Pu-238	0.00E+00	6.9	5.37E-05	1.07E-04
Pu-239 & 240	5.85E-02	6.9	5.37E-05	1.07E-04

Recovery 91.2%
Historical average recovery of 94% used in the calculation of individual samples run with this standard

Calculated by [signature] Date 11-4-92

Reviewed by [signature] Date 11-12-92

Pacific Northwest Laboratory

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : H40452 ARF(SOW) : TT165160

A.L.O. No. : Pu Std Description : with 900λ 1x 5m KCH

	#40	#3	#77	Glass			
DF	--- 0.10093 ml	--72	(0.44837 ml) ---	0.24973 ml ---	---	---	---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p 75	BNW52825 p	BNW54273 p
Instrument	P.A.C. - 2	G.E. ASC.	Sudlum -
Eff. Factor	0.505	0.37927	0.4
Date	10/29/92	/ /	/ /
Total counts	8236		
Count time	10		
Bkg C/M	1.83		
Bkg cnt time	100		
Corrected C/M			

Analyst [signature]

91.2 %

Pacific Northwest Laboratory 92262

Pu-238, 239&240...PNL-ALO-423

Customer : Date Received 0/ 0/ 0 Work order : ARF(SOW) :

A.L.O. No. PU BLANK Description :

DF ---- .99832 ---> 1.99664 ---- 1.00070

Dilution Factor = 1.9986E+00 +/- .87%

Analysts Yield Factor .9400 +/- 6.0%

	Pu-238	Pu-239&240
Total counts	0	1
Edge Bkg	0	0
System Bkg	0	0
Net counts	.0	1.0
A fraction	.0000	1.0000

Instrument	LUDLUM 1
Eff. Factor	.4217
Date	11/ 3/ 92
Total counts	85
Count time	420
Bkg C/M	.196
Bkg cnt time	900
Corrected C/M	.01

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Pu-238	0.00E+00	812.5	2.52E-01	4.52E-01
Pu-~~239 & 240~~	3.22E-02	812.5	2.52E-01	4.52E-01
	uCi/GM	%	uCi/GM	uCi/GM
Pu-238	0.00E+00	812.5	1.14E-07	2.04E-07
Pu-~~239 & 240~~	1.45E-08	812.5	1.14E-07	2.04E-07

total alpha Pu cutt 11-12-92

Calculated by G. O. Harvey Date 11-11-92

Reviewed by J. Barrington Date 11-12-92

Pacific Northwest Laboratory 0

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/16/92 Work order : M90452 ARF(SCW) : [illegible]

A.L.O. No. : Pu Blank Description : 1X Sim KCH Fusion

#77 #77 Glass

DF --- 0.49832 ml. -> 2(0.49832 ml) --- 1.00070 mg --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92229-RR Blank card ID 92229-RR

Analyst [signature] Date 10-28-92 29

Analyst Recovery_____ +/- _____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52625 p	BNW54273 p 5
			Instrument	P.A.C. -	G.E. ASC.	Ludlum - 1
			Eff. Factor	0.50	0.37927	0.4217
			Date	/ /	/ /	11/3/92
Total counts			Total counts			85
Edge Correction			Count time			420
Background			Bkg C/M			0.196
Net counts			Bkg cnt time			900
Alpha fract			Corrected C/M			

Analyst [signature]

Pacific Northwest Laboratory 0

Plutonium-~~239-240,238.....PNL-ALO-~~423 Isotopics Cont

Customer : SST Date Received : 10/16/92 Work order : M90-482 ARF(SOW) : T1 105 108

A.L.O. No. : 92-8310-H1 Description : Core 38, 39 Tank C-110

DF --- 20 ml --- 0.1 ml --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kevin C. Poppel Date 10/28/92

Analyst Recovery_____+/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
Instrument	P.A.C. -	G.E. ASC.	Ludlum -
Eff. Factor	0.50	0.37927	0.4
Date	/ /	/ /	/ /
Total counts			
Count time			
Bkg C/M			
Bkg cnt time			
Corrected C/M			

Analyst _____

Pu-238 MASS FRACTION CALCULATION

ALO # 92-8310-H1 SAMPLE ID Core 39 Tank C-110

A = Mass fraction of Pu-239 (from mass spec analysis)
B = Specific activity of Pu-239 (1.376 E11 dpm/g)
C = Mass fraction of Pu-240 (from mass spec analysis)
D = Specific activity of Pu-240 (5.035 E11 dpm/g)
E = Specific activity of Pu-238 (3.801 E13 dpm/g)
F = dpm Pu-239 + Pu-240 (from Pu separation + AEA)
G = dpm Pu-238 (from Pu separation + AEA)

$$\text{Mass Fraction Pu-238} = \frac{[(A)(B) + (C)(D)]\,(G)}{(E)(F)}$$

$$= \frac{[(.99357)(1.376E11) + (.01627)(5.035E11)]\,(2.04E3)}{(3.801E13)(2.90E5)}$$

$$= 2.66E-5$$

Correction Factor = ~~2.66E-5~~ .99997 11-17-92

Corrected Mass %

238	0.0027
239	98.3551
240	1.6273
241	0.0135
242	0.0056

Calculated by : L O Harvey 11-17-92

Reviewed by: L Bassington 11-18-92

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: C. Harvey RUN # 2 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 38,39 Tank C-110 RUN DATE: 11-10-92
LABORATORY LOG-IN NUMBER: 1292045 ANALYST: JH Ennen J. K. Ennen
ALO LOG-IN NUMBER: 92-8310-H1 LRB: BNW 53337 PAGE 56

REFERENCE MASS: 239 REVIEWED BY: M L Wilson
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

-0.0003061	1.0000000	0.0171444	0.0000300	-0.0000390
-0.0001681	1.0000000	0.0169008	0.0000720	0.0002689
-0.0002590	1.0000000	0.0166085	0.0008349	-0.0000369
-0.0001430	1.0000000	0.0172777	0.0000494	-0.0003580
0.0002052	1.0000000	0.0164549	0.0003669	-0.0000278
0.0008080	1.0000000	0.0166727	0.0018118	0.0021799
0.0002696	1.0000000	0.0162366	-0.0001183	-0.0000116
-0.0000978	1.0000000	0.0157355	0.0001161	0.0001507
0.0001504	1.0000000	0.0154549	-0.0002586	0.0005057

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000510	1.0000000	0.0164985	0.0003227	0.0002924

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0003511	0.0000000	0.0006093	0.0006403	0.0007471

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0002699	0.0000000	0.0004684	0.0004922	0.0005743

CYCLE # 6 REJECTED AT THE 95% LEVEL
DUE TO THE 242/ 239 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

-0.0000436	1.0000000	0.0164767	0.0001365	0.0000565

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0002208	0.0000000	0.0006477	0.0003350	0.0002556

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0001846	0.0000000	0.0005415	0.0002801	0.0002137

MASS	ATOM %	MASS %

238	-0.0042898	-0.0042715
239	98.3645796	98.3577129
240	1.6207204	1.6273880
241	0.0134313	0.0135428
242	0.0055585	0.0056279

Pacific Northwest Laboratory 0

Plutonium-~~239-240,238.....PNL-ALO-423~~ Isotopics cont

Customer : SST Date Received : 10/16/92 Work order : M90482 ARF(SOW) : 71 165 168

A.L.O. No. : 92-8310-H2 Description : Core 38, 39 Tank C-110

DF --- 20 ml --- 0.1 ml --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kelly C. Ruegsegger Date 10/28/92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005___	WA42546	WA_____
			Log Book:	BNW52341 p __	BNW52825 p ___	BNW54273 p__
			Instrument	P.A.C. - ___	G.E. ASC.	Ludlum -___
			Eff. Factor	0.50____	0.37927	0.4_____
			Date	___/___/___	___/___/___	___/___/___
Total counts			Total counts			
Edge Correction			Count time			
Background			Bkg C/M			
Net counts			Bkg cnt time			
Alpha fract			Corrected C/M			

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: C. Harvey RUN # 3 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 38,39 Tank C-110 RUN DATE: 11-10-92
LABORATORY LOG-IN NUMBER: 1292046 ANALYST: JH Ennen J. H. Ennen
ALO LOG-IN NUMBER: 92-8310-H2 LRB: BNW 53337 PAGE 56

REFERENCE MASS: 239 REVIEWED BY: [illegible]
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242
RATIOS:				
0.0001658	1.0000000	0.0166063	0.0000981	0.0000515
0.0001087	1.0000000	0.0168795	0.0001355	0.0000394
0.0001239	1.0000000	0.0165477	0.0001095	0.0000193
0.0000611	1.0000000	0.0167689	0.0000745	0.0000861
0.0002320	1.0000000	0.0164956	0.0001362	0.0000336
0.0001723	1.0000000	0.0167025	0.0000902	0.0000271
0.0001055	1.0000000	0.0168185	0.0000935	0.0004480
0.0001450	1.0000000	0.0167115	0.0000572	0.0000098
0.0002055	1.0000000	0.0167559	0.0001219	0.0000451

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001466	1.0000000	0.0166985	0.0001018	0.0000844

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000533	0.0000000	0.0001265	0.0000268	0.0001381

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000410	0.0000000	0.0000972	0.0000206	0.0001062

CYCLE # 7 REJECTED AT THE 95% LEVEL
DUE TO THE 242/ 239 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001518	1.0000000	0.0166835	0.0001029	0.0000390

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000546	0.0000000	0.0001264	0.0000284	0.0000234

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000456	0.0000000	0.0001057	0.0000238	0.0000195

MASS ATOM % MASS %

238	0.0149249	0.0148615
239	98.3305292	98.3238111
240	1.6404979	1.6472477
241	0.0101167	0.0102006
242	0.0038313	0.0038791

Pacific Northwest Laboratory 0

Uranium ~~Laser.....PNL-ALO-~~445 Isotopics CoH

Customer : SST Date Received : 10/6/92 Work order M90482 ARF(SOW) : T1 165

A.L.O. No. : 92-9437 #1 Description : Core 38 Drainable Liquid

MS NO: 119279

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy O Pollard Date 10/20/92

M. & T.E.	WM_____		Mass Run
Log Book:	BNW____ p __		
Spike Conc.	_____ ug/ml		
		U-234 (Mass %)	_____
V. of Spike	_____	U-235 (Mass %)	_____
Reading 1	_____	U-236 (Mass %)	_____
Reading 2	_____	U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 1 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 38 Dr Liq RUN DATE: 10-26-92
LABORATORY LOG-IN NUMBER: 119279 ANALYST: RE Brinson R E Brinson
ALO LOG-IN NUMBER: 92-9437#1 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000465	0.0069073	0.0000459	1.0000000
0.0000518	0.0069971	0.0000557	1.0000000
0.0000452	0.0071006	0.0000398	1.0000000
0.0000488	0.0069588	0.0000666	1.0000000
0.0000429	0.0068739	0.0000945	1.0000000
0.0000392	0.0071129	0.0000605	1.0000000
0.0000610	0.0069935	0.0000638	1.0000000
0.0000374	0.0069040	0.0000367	1.0000000
0.0000569	0.0069174	0.0000384	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000478	0.0069740	0.0000558	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000078	0.0000859	0.0000184	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000060	0.0000660	0.0000142	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0047424	0.0046631
235	0.6924943	0.6838259
236	0.0055364	0.0054904
238	99.2972269	99.3060206

Pacific Northwest Laboratory 0

Uranium ~~Laser.....PNL-ALO-445~~ Isotopics Cat

Customer : SST Date Received : 10/6/92 Work order M90483 ARF(SOW) : T1 165

A.L.O. No. : 92-9437 #2 Description : Core 38 Drainable Liquid

MS NO : 119280

DF --- --- --- --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Terry A Poppel Date 10/20/92

M. & T.E. Log Book:	WM_____ BNW_____ p __		Mass Run
Spike Conc.	_____ ug/ml		
		U-234 (Mass %)	_____
V. of Spike	_____	U-235 (Mass %)	_____
Reading 1	_____	U-236 (Mass %)	_____
Reading 2	_____	U-238 (Mass %)	_____

Analyst _____

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 2 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Core 38 Dr Liq RUN DATE: 10-26-92
LABORATORY LOG-IN NUMBER: 119280 ANALYST: RE Brinson RC Brinson
ALO LOG-IN NUMBER: 92-9437#2 LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238

REVIEWED BY: [signature]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000568	0.0070859	0.0000322	1.0000000
0.0000535	0.0069228	0.0000500	1.0000000
0.0000682	0.0069964	0.0000552	1.0000000
0.0000645	0.0070804	0.0000584	1.0000000
0.0000622	0.0068725	0.0000763	1.0000000
0.0000532	0.0070195	0.0000523	1.0000000
0.0000499	0.0070944	0.0000516	1.0000000
0.0000522	0.0068892	0.0000448	1.0000000
0.0000417	0.0069405	0.0000551	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000558	0.0069891	0.0000529	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000082	0.0000867	0.0000117	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000063	0.0000666	0.0000090	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0055414	0.0054488
235	0.6939804	0.6852936
236	0.0052496	0.0052060
238	99.2952285	99.3040516

Pacific Northwest Laboratory 92219

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 6/ 92 Work order : M90482 ARF(SOW) : T1 165

A.L.O. No. 92-9437-A1 Description : CORE 38 DRAINABLE LIQUID

DF ---- .45390 ---> 100.00000 ---- 1.98984 ---> 2.00140 ---- 1.00070

Dilution Factor = 2.2144E+02 +/- 1.11%

Analysts Yield Factor .9500 +/- 6.0%

Instrument	LUDLUM 1
Eff. Factor	.4217
Date	11/ 13/ 92
Total counts	309
Count time	330
Bkg C/M	.157
Bkg cnt time	900
Corrected C/M	.78

AEA not performed

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Total Pu Alpha	4.31E+02	15.3	2.42E+01	4.84E+01
	uCi/GM	%	uCi/GM	uCi/GM
Total Pu Alpha	1.94E-04	15.3	1.09E-05	2.18E-05

Calculated by G. O. Harvey Date 11-16-92

Reviewed by L. Barrington Date 11-16-92

92219
0
Recount

Pacific Northwest Laboratory

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/6/92 Work order : M90482 ARF(SOW) : T1 165

A.L.O. No. : 92-9437 A1 Description : Core 38 Drainable Liquid

DF ---0.4539 g --> 100 ml --- #14 2(0.99492) ml --- Glass 2(1.00070) ml --- Glass 1.00070 ml ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst R.G. Pospeal Date_____

Analyst Recovery_____+/-_____

	Pu-238	Pu-239&240
Total counts		
Edge Correction		
Background		
Net counts		
Alpha fract		

M. & T.E.	WM005	WA42546	WA
Log Book:	BNW52341 p	BNW52825 p	BNW54273 p 6
Instrument	P.A.C. -	G.E. ASC.	Ludlum - 1
Eff. Factor	0.50	0.37927	0.4217
Date	/ /	/ /	11/13/92
Total counts			309
Count time			330
Bkg C/M			0.457
Bkg cnt time			400
Corrected C/M			0.279

Analyst Anne E. Hagberg

Pacific Northwest Laboratory 92219

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 6/ 92 Work order : M90482 ARF(SOW) : TI 165

A.L.O. No. 92-9437-A2 Description : CORE 38 DRAINABLE LIQUID

DF ---- .45390 ---> 100.00000 ---- 1.98984 ---> 2.00140 ---- 1.00070

Dilution Factor = 2.2144E+02 +/- 1.11%

Analysts Yield Factor .9500 +/- 6.0%

Instrument	LUDLUM 2
Eff. Factor	.4163
Date	11/ 3/ 92
Total counts	490
Count time	420
Bkg C/M	.181
Bkg cnt time	900
Corrected C/M	.99

AEA not performed

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less than dpm/GM	MDA dpm/GM
Total Pu Alpha	5.52E+02	12.7	2.42E+01	4.83E+01
	uCi/GM	%	uCi/GM	uCi/GM
Total Pu Alpha	2.49E-04	12.7	1.09E-05	2.18E-05

Calculated by G O Harvey Date 11-12-92

Reviewed by L A Poppel Date 11-13-92

92219
0
Rerun

Pacific Northwest Laboratory

Plutonium-239-240,238.....PNL-ALO-423

Customer : 551 Date Received : 10/6/92 Work order M90487 ARF(SOW) : TI 165

A.L.O. No. : 92-9437-A2 Description : Core 38 Drainable Liquid

DF ---0.4539 g → 100 ml ---2(0.99492 ml) → 2(1.00070 ml) 1.00070 ml ---

#17 Glass Glass

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92219 Rerun Blank card ID 92219 Rerun

Analyst Kathy A Roeppel Date 10/28/92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p 75	BNW52825 p	BNW54273 p
			Instrument	P.A.C. - 2	G.E. ASC.	Ludlum - 2
			Eff. Factor	0.505	0.37927	0.4163
			Date	/ /	/ /	11/3/92
Total counts			Total counts	327		490
Edge Correction			Count time	100		120
Background			Bkg C/M	1.99		0.151
Net counts			Bkg cnt time	100		400
Alpha fract			Corrected C/M			

Analyst Anne E Kozlowski

Pacific Northwest Laboratory 92219

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 10/ 6/ 92 Work order : M90482 ARF(SOW) : TI 165

A.L.O. No. 92-9437-A3 Description : CORE 38 DRAINABLE LIQUID

DF ---- .45340 ---> 100.00000 ---- 1.98984 ---> 2.00140 ---- 1.00070

Dilution Factor = 2.2168E+02 +/- 1.11%

Analysts Yield Factor .9500 +/- 6.0%

Instrument	LUDLUM 3
Eff. Factor	.4355
Date	11/ 3/ 92
Total counts	129
Count time	420
Bkg C/M	.229
Bkg cnt time	900
Corrected C/M	.08

AEA not performed

Calculation and Results

	Activities dpm/GM	Uncertainties %	Less thar dpm/GM	MDA dpm/GM
Total Pu Alpha	4.19E+01	79.0	2.59E+01	5.18E+01
	uCi/GM	%	uCi/GM	uCi/GM
Total Pu Alpha	1.89E-05	79.0	1.17E-05	2.33E-05

Calculated by G O Harvey Date 11-12-92

Reviewed by L a Poeppel Date 11-13-92

92319
0
Rorum

Pacific Northwest Laboratory

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/6/92 Work order : A190488 ARF(SOW) : 41165

A.L.O. No. : 92-9437-A3 Description : Core 38 Drainable Liquid

DF --0.4534 g AVG → 100 ml --- #14 2(0.99492) ml → Glass 2(1.00070) ml --- Glass 1.00070 ml ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92319 Rorum Blank card ID 92319 Rorum

Analyst Lolly G Pappas Date 10/28/92

Analyst Recovery_____ +/-_____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p 5
			Instrument	F.A.C. -	G.E. ASC.	Ludlum - 3
			Eff. Factor	0.50	0.37927	0.4355
			Date	/ /	/ /	11/3/92
Total counts			Total counts			129
Edge Correction			Count time			420
Background			Bkg C/M			0.229
Net counts			Bkg cnt time			400
Alpha fract			Corrected C/M			

Analyst Anne E Kofeldt

Pacific Northwest Laboratory 92168

Pu-238, 239&240...PNL-ALO-423

Customer : SST Date Received 8/ 3/ 92 Work order : M ARF(SOW) : TI 148

A.L.O. No. BLANK Description :

DF ---- .99492 ---> 2.00140 ---- 1.00070

Dilution Factor = 2.0102E+00 +/- .87%

Analysts Yield Factor .9500 +/- 6.0%

Instrument	LUDLUM 5
Eff. Factor	.4194
Date	11/ 3/ 92
Total counts	104
Count time	420
Bkg C/M	.206
Bkg cnt time	900
Corrected C/M	.04

AEA not performed

Calculation and Results

	Activities dpm/ML	Uncertainties %	Less than dpm/ML	MDA dpm/ML
Total Pu Alpha	2.10E-01	134.9	4.48E-01	4.63E-01

	uCi/ML	%	uCi/ML	uCi/ML
Total Pu Alpha	9.46E-08	134.9	2.02E-07	2.09E-07

Calculated by G O Harvey Date 11-12-92

Reviewed by K A Pogozel Date 11-13-92

92219
0
Rowe

Pacific Northwest Laboratory

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/6/92 Work order : M90482 ARF(SOW) : T.165

A.L.O. No. : Blank Description : D_2H_2O

OF	#14 0.99492 ml	Glass 2(1.00070) ml	Glass 1.00070 ml	---	---	---

Pipet LRB BNW _____ Page(s) No. _____

Std _____ LRB BNW _____ Page(s) No. _____

M. & T.E. _____

Standard card ID _____ Blank card ID _____

Analyst Kathy A. Roppel Date 10/28/92

Samples: 92-9437 A1, A2, A3, Rerun 5

Analyst Recovery _____ +/- _____

	Pu-238	Pu-239&240				
			M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p	BNW52825 p	BNW54273 p
			Instrument	P.A.C. -	G.E. ASC.	Ludlum - 5
			Eff. Factor	0.50	0.37927	0.4199
			Date	/ /	/ /	11/3/92
Total counts			Total counts			104
Edge Correction			Count time			420
Background			Bkg C/M			0.106
Net counts			Bkg cnt time			400
Alpha fract			Corrected C/M			

Analyst Anne G. Kaplish

Pacific Northwest Laboratory 92262

Pu-238, 239&240...PNL-ALO-423

Customer : Date Received 0/ 0/ 0 Work order : ARF(SOW) :

A.L.O. No. STANDARD-1 Description :

DF ---- .09885 ---> 2.00140 ---- .24997

Dilution Factor = 8.0997E+01 +/- 1.11%

Analysts Yield Factor 1.0000 +/- 6.0%

	Pu-238	Pu-239&240
Total counts	0	1
Edge Bkg	0	0
System Bkg	0	0
Net counts	.0	1.0
A fraction	.0000	1.0000

Instrument	FAC 2
Eff. Factor	.5050
Date	10/ 30/ 92
Total counts	8725
Count time	10
Bkg C/M	1.990
Bkg cnt time	100
Corrected C/M	870.51

Calculation and Results

	Activities dpm/ML	Uncertainties %	Less than dpm/ML	MDA dpm/ML
Pu-238	0.00E+00	6.9	1.26E+02	2.52E+02
Pu-~~239 & 240~~	1.40E+05	6.9	1.26E+02	2.52E+02
	uCi/ML	%	uCi/ML	uCi/ML
Pu-238	0.00E+00	6.9	5.69E-05	1.14E-04
Pu-~~239 & 240~~	6.29E-02	6.9	5.69E-05	1.14E-04

total alpha Pu wt 11-12-92

Calculated by LeO Harvey Date 11-12-92

Reviewed by La Poppel Date 11-13-92

Recovery 99-7

Historical average recovery of 95% used in calculation of individual samples run with this standard

CAH 11-12-92

92217
0
Rerun

Pacific Northwest Laboratory

Plutonium-239-240,238.....PNL-ALO-423

Customer : SST Date Received : 10/6/92 Work order : M90-482 ARF(SOW) : T1 10.5

A.L.O. No. : Standard-1 Description : W-92-1 1.42E5 dpm/mL

OF --- A13 0.09885 mL --> Glass 2(1.00070) mL --- Glass 0.24997 mL --- --- --- ---

Pipet LRB BNW_____ Page(s) No._____

Std_____ LRB BNW_____ Page(s) No._____

M. & T.E. _____

Standard card ID 92219 Rerun Blank card ID 92219 Rerun

Analyst Kathy A Poppard Date 10/28/92

Analyst Recovery_____ +/- _____

	Pu-238	Pu-239&240	M. & T.E.	WM005	WA42546	WA
			Log Book:	BNW52341 p 75	BNW52825 p	BNW54273 p
			Instrument	P.A.C. - 2	G.E. ASC.	Ludlum -
			Eff. Factor	0.505	0.37927	0.4
			Date	10/30/92	/ /	/ /
Total counts			Total counts	8725		
Edge Correction			Count time	10		
Background			Bkg C/M	1.99		
Net counts			Bkg cnt time	100		
Alpha fract			Corrected C/M	870.51		

Analyst Anne E Hopkins

$$\frac{870.51}{.505} \quad \frac{2(1.0070)}{(.09885)(.24997)} = 1.405 E 5$$

98.66 %

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-387, 2-30.6

CUSTOMER: SST/Harvey RUN # 1 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: NBS-950 U Std RUN DATE: 10-26-92
LABORATORY LOG-IN NUMBER: 9509207 ANALYST: RE Brinson R C Brinson
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000599	0.0071607	-0.0000051	1.0000000
0.0000631	0.0072443	0.0000065	1.0000000
0.0000578	0.0073025	0.0000039	1.0000000
0.0000700	0.0072828	0.0000057	1.0000000
0.0000449	0.0071848	0.0000089	1.0000000
0.0000769	0.0072729	-0.0000020	1.0000000
0.0000875	0.0072212	-0.0000176	1.0000000
0.0000558	0.0072888	0.0000040	1.0000000
0.0000531	0.0071938	0.0000050	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000632	0.0072391	0.0000010	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000130	0.0000513	0.0000082	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000100	0.0000394	0.0000063	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0062753	0.0061709
235	0.7186581	0.7096544
236	0.0001025	0.0001017
238	99.2749635	99.2840729

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/ Harvey RUN # 1 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: NIST005 RUN DATE: 10-28-92
LABORATORY LOG-IN NUMBER: 0059203 ANALYST: M.W. Goheen
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 55

REFERENCE MASS: 238

REVIEWED BY: S G Bo
DATE: 10/29/92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000286	0.0048954	0.0000505	.0000000
0.0000199	0.0048573	0.0000627	.0000000
0.0000178	0.0049187	0.0000462	1.0000000
0.0000274	0.0049823	0.0000498	1.0000000
0.0000227	0.0049532	0.0000534	1.0000000
0.0000191	0.0049549	0.0000536	1.0000000
0.0000217	0.0048635	0.0000391	1.0000000
0.0000517	0.0049685	0.0000485	1.0000000
0.0000262	0.0049102	0.0000514	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000261 0.0049227 0.0000506 1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000103 0.0000452 0.0000063 0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000079 0.0000347 0.0000049 0.0000000

CYCLE # 8 REJECTED AT THE 95% LEVEL
DUE TO THE 234/ 238 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000229 0.0049169 0.0000508 1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000040 0.0000446 0.0000067 0.0000000 S = .0041

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000034 0.0000373 0.0000056 0.0000000

MASS	ATOM %	MASS %
234	0.0022796	0.0022414
235	0.4892527	0.4831158
236	0.0050563	0.0050141
238	99.5034114	99.5096286

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 457806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: C. Harvey RUN # 1 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Pu. Std. RUN DATE: 11-10-92
LABORATORY LOG-IN NUMBER: 9489201 ANALYST: JHE J. H. Emmen
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 56

REFERENCE MASS: 239 REVIEWED BY: [illegible]
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0001077	1.0000000	0.0859133	0.0020799	0.0003660
0.0001148	1.0000000	0.0866717	0.0021267	0.0003610
0.0001117	1.0000000	0.0865217	0.0020638	0.0003575
0.0001053	1.0000000	0.0865310	0.0020382	0.0003438
0.0001038	1.0000000	0.0864771	0.0020060	0.0013898
0.0001200	1.0000000	0.0861704	0.0020681	0.0003788
0.0001056	1.0000000	0.0866813	0.0020860	0.0003933
0.0001045	1.0000000	0.0856798	0.0020647	0.0003580
0.0001058	1.0000000	0.0862430	0.0020031	0.0003684

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001088	1.0000000	0.0863210	0.0020596	0.0004796

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000056	0.0000000	0.0003478	0.0000391	0.0003416

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000043	0.0000000	0.0002573	0.0000301	0.0002626

CYCLE # 5 REJECTED AT THE 95% LEVEL
DUE TO THE 242/ 239 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0001094	1.0000000	0.0863015	0.0020683	0.0003659

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000056	0.0000000	0.0003665	0.0000359	0.0000150

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000047	0.0000000	0.0003064	0.0000300	0.0000125

MASS ATOM % MASS %

238	0.0100476	0.0102021
239	91.8405943	91.3083412
240	7.9259842	7.9563521
241	0.1897719	0.1912927
242	0.0336020	0.0340118

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 1 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: NIST-946 Pu Std RUN DATE: 11-6-92
LABORATORY LOG-IN NUMBER: 9469212 ANALYST: JH Ennen J. H. Ennen
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 55

REFERENCE MASS: 239 REVIEWED BY: R C Duncan
DATE: 11-6-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0024651	1.0000000	0.1439013	0.0174120	0.0068879
0.0025079	1.0000000	0.1444411	0.0173989	0.0068226
0.0025733	1.0000000	0.1442768	0.0177303	0.0067654
0.0025793	1.0000000	0.1451612	0.0172884	0.0066936
0.0024211	1.0000000	0.1449982	0.0173075	0.0065890
0.0025204	1.0000000	0.1447337	0.0174250	0.0066411
0.0025843	1.0000000	0.1451286	0.0174869	0.0066993
0.0025433	1.0000000	0.1462553	0.0176674	0.0068527
0.0025710	1.0000000	0.1449755	0.0176749	0.0069430

MEAN RATIO FOR EACH ISOTOPE IS:

0.0025295	1.0000000	0.1448746	0.0174879	0.0067661

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000568	0.0000000	0.0006700	0.0001643	0.0001191

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000436	0.0000000	0.0005150	0.0001263	0.0000916

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
238	0.2158921	0.2148371
239	85.3491254	85.2889355
240	12.3649240	12.4079038
241	1.4925798	1.5040086
242	0.5774788	0.5843151

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: C. Harvey RUN # 1 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: Pu. Std. RUN DATE: 11-9-92
LABORATORY LOG-IN NUMBER: 94692/J ANALYST: JHE J. H. Emerson
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 55

REFERENCE MASS: 239 REVIEWED BY: [illegible]
DATE: 11-11-92

MEASURED MASSES:

238	239	240	241	242

RATIOS:

0.0024950	1.0000000	0.1446431	0.0174851	0.0068051
0.0025230	1.0000000	0.1449682	0.0175426	0.0067815
0.0025476	1.0000000	0.1458243	0.0174559	0.0065745
0.0024917	1.0000000	0.1450343	0.0175741	0.0066984
0.0025426	1.0000000	0.1450710	0.0175542	0.0067268
0.0025200	1.0000000	0.1444714	0.0174038	0.0068102
0.0025033	1.0000000	0.1451141	0.0174141	0.0065779
0.0025024	1.0000000	0.1451009	0.0174006	0.0067295
0.0025646	1.0000000	0.1448274	0.0173050	0.0067764

MEAN RATIO FOR EACH ISOTOPE IS:

0.0025322	1.0000000	0.1450061	0.0174595	0.0067200

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000361	0.0000000	0.0003785	0.0000881	0.0000896

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000277	0.0000000	0.0002909	0.0000678	0.0000689

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
238	0.2161127	0.2150567
239	85.3447802	85.2846167
240	12.3755113	12.4189311
241	1.4900755	1.5014955
242	0.5735204	0.5803100

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-537, 2-30.6

CUSTOMER: SST/Harvey RUN # 1 MASS DISC. FACTOR: 0.0000
SAMPLE I.D.: NBS-950 U Std RUN DATE: 10-26-92
LABORATORY LOG-IN NUMBER: 9509207 ANALYST: RE Brinson R C Brinson
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 54 RCB

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000599	0.0071607	-0.0000051	1.0000000
0.0000631	0.0072443	0.0000065	1.0000000
0.0000578	0.0073025	0.0000039	1.0000000
0.0000700	0.0072828	0.0000057	1.0000000
0.0000449	0.0071848	0.0000089	1.0000000
0.0000769	0.0072729	-0.0000020	1.0000000
0.0000875	0.0072212	-0.0000176	1.0000000
0.0000558	0.0072888	0.0000040	1.0000000
0.0000531	0.0071938	0.0000050	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000632	0.0072391	0.0000010	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000130	0.0000513	0.0000082	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000100	0.0000394	0.0000063	0.0000000

NO SCANS REJECTED AT THE 95% LEVEL

MASS	ATOM %	MASS %
234	0.0062759	0.0061709
235	0.7186581	0.7096644
236	0.0001025	0.0001017
238	99.2749635	99.2840629

MASS SPECTROMETER LABORATORIES

ANALYTICAL CHEMISTRY
325 BUILDING

CEC21-703A(M&TE 467806)
PROCEDURE NO.: PNL-MA-597, 2-30.6

CUSTOMER: SST/Harvey RUN # 1 MASS DISC. FACTOR: 0.0015
SAMPLE I.D.: NBS-005 U Std RUN DATE: 10-27-92
LABORATORY LOG-IN NUMBER: 0059202 ANALYST: RE Brinson R E Brinson
ALO LOG-IN NUMBER: N/A LRB: BNW 53337 PAGE 54

REFERENCE MASS: 238 REVIEWED BY: [illegible]
DATE: 10-29-92

MEASURED MASSES:

234	235	236	238

RATIOS:

0.0000252	0.0050129	0.0000672	1.0000000
0.0000246	0.0048333	0.0000518	1.0000000
0.0000334	0.0048409	0.0000489	1.0000000
0.0000328	0.0049048	0.0000652	1.0000000
0.0000364	0.0049051	0.0000545	1.0000000
0.0000139	0.0049431	0.0000460	1.0000000
0.0000180	0.0049259	0.0000592	1.0000000
-0.0000217	0.0050310	0.0000571	1.0000000
0.0000156	0.0048890	0.0000127	1.0000000

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000198	0.0049207	0.0000514	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000175	0.0000677	0.0000161	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000135	0.0000521	0.0000124	0.0000000

CYCLE # 9 REJECTED AT THE 95% LEVEL
DUE TO THE 236/ 238 RATIO

MEAN RATIO FOR EACH ISOTOPE IS:

0.0000203	0.0049246	0.0000562	1.0000000

STANDARD DEVIATION OF RATIO FOR EACH ISOTOPE IS:

0.0000187	0.0000711	0.0000075	0.0000000

95% CONFIDENCE LEVEL FOR EACH ISOTOPE IS:

0.0000195	0.0000739	0.0000081	0.0000000

MASS	ATOM %	MASS %
234	0.0020223	0.0019885
235	0.4900125	0.4838667
236	0.0055854	0.0055488
238	99.5023698	99.5085966

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

SINGLE SHELL TANK
WASTE CHARACTERIZATION PROJECT

APPENDIX E

ORGANIC

RECORD COPY

Cores 37/38/39 DATA REPORT

Tank C-110

Revision 0

Pacific Northwest Laboratory

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E1 - INTRODUCTION

Introduction to Organic Primary Data Package

This section of Cores 37/38/39 Primary Data Package contains primary or "raw" data collected during preparation and analysis of Cores 37/38/39 organic samples. All analytical information is tracked by the laboratory sample number. Assessment of the primary analytical data will require in-depth knowledge of the methodology.

E2 - LABORATORY ANALYST

SIGNATURE LIST

ORGANIC LABORATORY ANALYST SIGNATURE LIST

ANALYST NAME	INITIALS	WRITTEN NAME	INITIALS
Diana L. Bellofatto	DLB	Diana L. Bellofatto	DLB
Eric W. Hoppe	EWH	Eric Hoppe	EWH
George S. Klinger	GSK	George S. Klinger	GSK
Gerald A. Ross	GAR	GA Ross	GAR
Marilyn J. Steele	MJS	MJ Steele	MJS
Robert W. Stromatt	RWS	RW Stromatt	RWS

E3 - SEMI-VOLATILE ORGANIC ANALYSIS

CORE 37

SEMI-VOLATILE ORGANIC ANALYSIS

CURRENT DATE: December 28, 1992

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - Semi-VOA

Data Package/Report - Core 37

ALO Numbers - 92-08303-E1 92-08303-E2 92-08303-E3 92-08303-E4 92-08305-E1 92-08305-E2

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

1/20/93
Date

ORGANIC COMPOUND ANALYSIS REPORT

SEMIVOLATILE COMPOUNDS

SAMPLE ANALYSIS REPORTED

Analysis of SST Core 37 samples for semivolatile organic compounds by gas chromatography/mass spectrometry (GC/MS) is the subject of this report.

SAMPLE DESCRIPTION AND PREPARATION

Sample ID	ACL Lab Number
Core 37	92-08303
Core 37	92-08305

The samples were received at ambient temperature on 10/12/92, and were refrigerated after receipt. Extractions of both samples and spiked samples were performed.

- Extraction procedure — PNL-ALO-120
- Extraction location — Lab 306, 325 building
- Extraction type — Sonication, med level, soil
- Sample/Extract storage temperature — 4°C(+/-2°)

ANALYSIS METHOD

- GC/MS procedure: — PNL-ALO-345.
- GC/MS instrumentation: — HP-5890/5970 GC/MS (WB46867)
- GC/MS location: — Lab 325, 325 building.

QUALITY CONTROL

The QC features in the analytical procedure were followed as described below. The following lists the attached CLP forms that relate to QC and summarizes the QC results.

Form	Information	Comments
2D	Surrogate Recovery	Phenol-d5 and 2-fluorophenol were out high on the two matrix spike samples. See problems section.

3D	MS/MSD Recovery	High recoveries on 10 of 22 spikes. See problems section.
4B	Method Blank Summary	Met requirements.
5B	Tune/Mass Calibration	Met requirements.
6B,C	Initial Calibration	Met requirements.
7B,C	Daily Calibration	Met requirements.
8B,C	Internal Standards	Met requirements.

DATA

The data and calibration are archived on magnetic tape in the 325 building 325 laboratory. The following is the list of the pertinent files.

File Name	Sample Number	Sample Analyzed
>Y0801		Mass calibration and tune check
>Y0802		Continuing calibration
>Y0803		Method blank
>Y0804	92-08303-E1	Core 37
>Y0805	92-08303-E2	Core 37 duplicate
>Y0806	92-08303-E3	Core 37 MS
>Y0807	92-08303-E4	Core 37 MSD
>Y0808	92-08305-E1	Core 37
>Y0809	92-08305-E2	Core 37 duplicate

Laboratory data is maintained as follows:

Activity	Location
• GC/MS injection log	BNW-53728 pg. 38-39
• Extraction bench sheet:	filed with data in the ACL/ALO records center
• GC/MS data, sample report:	filed with data in the ACL/ALO records center

PROBLEMS

Some acid surrogate recoveries for the blank and first sample from the first GC/MS analysis sequence were observed to be high, so the analyses were stopped and the problem investigated. Three problems were found: 1) a systematic error in extract volume; 2) a significant difference (≥17%) between

acid surrogate standard concentrations used for the GC/MS calibration (vendor A standard) and the stock used for the spike addition (prepared from the vendor B standard), and 3) a solvent effect from methanol in the concentrated extract. The reason that the methanol concentration in the concentrated extract is high is unclear. There may be an increased amount of methanol in the unconcentrated extract because of the high ionic strength of the sample. The methanol content in the extract would be greater during the concentration process because its vapor pressure is less than that of the methylene chloride extractant.

The extract volume measurement problem was corrected, and surrogate standards were purchased from a third supplier (vendor C). Analysis of the spike standards in methylene chloride solvent showed better agreement: the difference between vendors A and B acid surrogate concentrations was about 8% with vendor C results in between. This spread is within vendor acceptable limits. The larger spread of results in the first analysis resulted from the methanol solvent used for the sample spike stock solution. This was verified by analyzing the vendor A standard in a methylene chloride solvent and in methanol. The acid surrogate differences ranged from about 8 to 20%.

There was insufficient sample for re-extraction. However, the volumes of the remaining extracts were corrected, and the samples re-analyzed. The phenol-d5 and 2-fluorophenol surrogate recoveries were out of limits high on the two matrix spiked samples which do have slightly more methanol in the extracts due to the additional methanol added with the matrix spike solution.

High recoveries were also obtained for some of the matrix spike compounds with the acidic compounds showing more variance. Methanol in the extract is probably the cause as is the case for the surrogate spike compounds.

The only sample in the Cores 37, 38, 39, 40, and 41 series of samples in sufficient quantity for re-extraction and re-analysis was Core 38, 92-08307. An Interim Change Notice was written to change the procedure so that more concentrated spiking solutions could be used resulting in less methanol in the final extracts. The re-run of this sample after the modified extraction resulted in a significant improvement in surrogate and matrix spike recoveries.

RESULTS

CLP Target Compounds: As seen in the attached 1B,C Forms, there were no target compounds found. The problems noted above have no effect on analyte detection. The only effect would be high bias in results.

Tentatively Identified Compounds (TIC): The attached 1F Forms show results for the TIC's. Concentration estimates for the TIC's are made assuming that the response factor for each TIC is one. The peak area for each TIC is then compared to the area of the nearest internal standard (for which

concentrations are known) to estimate the TIC concentrations. Identification of the TIC is made by a computer search of the NIST mass spectral library to attempt a match with the spectrum of each of the TIC's. The TIC's reported as "Unknown" did not have satisfactory matches with library spectra. The TIC concentration estimate and identification are reported only if the TIC peak area is 10% or greater than the nearest internal standard peak area.

The TIC's found were:

	µg/Kg		
Sample	Tridecane	Tetradecane	Tributylphosphate
92-08303-E1	8700		
92-08303-E2	detected		8100
92-08395-E1	9100		34000
92-08305-E2	9600	9000	45000

The following defines the Q-flags in the Form 1's

"Q" Flag	Definition
U	Indicates the compound was analyzed for but not detected, the U-flagged concentration is the Contract Required Quantitation Limit.
J	Indicates an estimated value for target and tentatively identified compounds, spectra meet criteria but response is below Contract Required Quantitation Limit for the target compounds.
B	Indicates compound was found in the blank.
X	Indicates compound was manually deleted because all requirements were not met.
D	Indicates analysis was performed on a diluted sample.
E	Indicates that quantitation was outside of the calibration range.
A	Aldol condensation product.

ANALYST [signature] DATE 12/16/92 REVIEW [signature] DATE 12-17-92

CORE 37

Sample Analysis Report Forms

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKY08

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLAN

Sample wt/vol: 1 (g/mL) G Lab File ID: >Y0803

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	10000.	U
111-44-4	bis(2-Chloroethyl)Ether	10000.	U
95-57-8	2-Chlorophenol	10000.	U
541-73-1	1,3-Dichlorobenzene	10000.	U
106-46-7	1,4-Dichlorobenzene	10000.	U
100-51-6	Benzyl_alcohol	10000.	U
95-50-1	1,2-Dichlorobenzene	10000.	U
95-48-7	2-Methylphenol	10000.	U
39638-32-9	bis(2-chloroisopropyl)ether	10000.	U
106-44-5	4-Methylphenol	10000.	U
621-64-7	N-Nitroso-Di-n-propylamine	10000.	U
67-72-1	Hexachloroethane	10000.	U
98-95-3	Nitrobenzene	10000.	U
78-59-1	Isophorone	10000.	U
88-75-5	2-Nitrophenol	10000.	U
105-67-9	2,4-Dimethylphenol	10000.	U
65-85-0	Benzoic_acid	50000.	U
111-91-1	bis(2-Chloroethoxy)methane	10000.	U
120-83-2	2,4-Dichlorophenol	10000.	U
120-82-1	1,2,4-Trichlorobenzene	10000.	U
91-20-3	Naphthalene	10000.	U
106-47-8	4-Chloroaniline	10000.	U
87-68-3	Hexachlorobutadiene	10000.	U
59-50-7	4-Chloro-3-methylphenol	10000.	U
91-57-6	2-Methylnaphthalene	10000.	U
77-47-4	Hexachlorocyclopentadiene	10000.	U
88-06-2	2,4,6-Trichlorophenol	10000.	U
95-95-4	2,4,5-Trichlorophenol	50000.	U
91-58-7	2-Chloronaphthalene	10000.	U
88-74-4	2-Nitroaniline	50000.	U
131-11-3	Dimethylphthalate	10000.	U
208-96-8	Acenaphthylene	10000.	U
606-20-2	2,6-Dinitrotoluene	10000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKY08

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLAN

Sample wt/vol: 1 (g/mL) G Lab File ID: >Y0803

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	50000.	U
83-32-9	Acenaphthene	10000.	U
51-28-5	2,4-Dinitrophenol	50000.	U
100-02-7	4-Nitrophenol	50000.	U
132-64-9	Dibenzofuran	10000.	U
121-14-2	2,4-Dinitrotoluene	10000.	U
84-66-2	Diethylphthalate	10000.	U
7005-72-3	4-Chlorophenyl-phenylether	10000.	U
86-73-7	Fluorene	10000.	U
100-01-6	4-Nitroaniline	50000.	U
534-52-1	4,6-Dinitro-2-methylphenol	50000.	U
86-30-6	N-Nitrosodiphenylamine (1)	10000.	U
101-55-3	4-Bromophenyl-phenylether	10000.	U
118-74-1	Hexachlorobenzene	10000.	U
87-86-5	Pentachlorophenol	50000.	U
85-01-8	Phenanthrene	10000.	U
120-12-7	Anthracene	10000.	U
84-74-2	Di-n-butylphthalate	10000.	U
206-44-0	Fluoranthene	10000.	U
129-00-0	Pyrene	10000.	U
85-68-7	Butylbenzylphthalate	10000.	U
91-94-1	3,3'-Dichlorobenzidine	20000.	U
56-55-3	Benzo(a)anthracene	10000.	U
218-01-9	Chrysene	10000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10000.	U
117-84-0	Di-n-octylphthalate	10000.	U
205-99-2	Benzo(b)fluoranthene	10000.	U
207-08-9	Benzo(k)fluoranthene	10000.	U
50-32-8	Benzo(a)pyrene	10000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000.	U
53-70-3	Dibenz(a,h)anthracene	10000.	U
191-24-2	Benzo(g,h,i)perylene	10000.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKY08

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLAN

Sample wt/vol: 1.0000 (g/mL) G Lab File ID: >Y0803

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08303-E1

Sample wt/vol: 0.9446 (g/mL) G Lab File ID: >Y0804

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.54 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	11000.	U
111-44-4	bis(2-Chloroethyl)Ether	11000.	U
95-57-8	2-Chlorophenol	11000.	U
541-73-1	1,3-Dichlorobenzene	11000.	U
106-46-7	1,4-Dichlorobenzene	11000.	U
100-51-6	Benzyl alcohol	11000.	U
95-50-1	1,2-Dichlorobenzene	11000.	U
95-48-7	2-Methylphenol	11000.	U
39638-32-9	bis(2-chloroisopropyl)ether	11000.	U
106-44-5	4-Methylphenol	11000.	U
621-64-7	N-Nitroso-Di-n-propylamine	11000.	U
67-72-1	Hexachloroethane	11000.	U
98-95-3	Nitrobenzene	11000.	U
78-59-1	Isophorone	11000.	U
88-75-5	2-Nitrophenol	11000.	U
105-67-9	2,4-Dimethylphenol	11000.	U
65-85-0	Benzoic acid	53000.	U
111-91-1	bis(2-Chloroethoxy)methane	11000.	U
120-83-2	2,4-Dichlorophenol	11000.	U
120-82-1	1,2,4-Trichlorobenzene	11000.	U
91-20-3	Naphthalene	11000.	U
106-47-8	4-Chloroaniline	11000.	U
87-68-3	Hexachlorobutadiene	11000.	U
59-50-7	4-Chloro-3-methylphenol	11000.	U
91-57-6	2-Methylnaphthalene	11000.	U
77-47-4	Hexachlorocyclopentadiene	11000.	U
88-06-2	2,4,6-Trichlorophenol	11000.	U
95-95-4	2,4,5-Trichlorophenol	53000.	U
91-58-7	2-Chloronaphthalene	11000.	U
88-74-4	2-Nitroaniline	53000.	U
131-11-3	Dimethylphthalate	11000.	U
208-96-8	Acenaphthylene	11000.	U
606-20-2	2,6-Dinitrotoluene	11000.	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08303-E1

Sample wt/vol: 0.9446 (g/mL) G Lab File ID: >Y0804

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.54 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	53000.	U
83-32-9	Acenaphthene	11000.	U
51-28-5	2,4-Dinitrophenol	53000.	U
100-02-7	4-Nitrophenol	53000.	U
132-64-9	Dibenzofuran	11000.	U
121-14-2	2,4-Dinitrotoluene	11000.	U
84-66-2	Diethylphthalate	11000.	U
7005-72-3	4-Chlorophenyl-phenylether	11000.	U
86-73-7	Fluorene	11000.	U
100-01-6	4-Nitroaniline	53000.	U
534-52-1	4,6-Dinitro-2-methylphenol	53000.	U
86-30-6	N-Nitrosodiphenylamine (1)	11000.	U
101-55-3	4-Bromophenyl-phenylether	11000.	U
118-74-1	Hexachlorobenzene	11000.	U
87-86-5	Pentachlorophenol	53000.	U
85-01-8	Phenanthrene	11000.	U
120-12-7	Anthracene	11000.	U
84-74-2	Di-n-butylphthalate	11000.	U
206-44-0	Fluoranthene	11000.	U
129-00-0	Pyrene	11000.	U
85-68-7	Butylbenzylphthalate	11000.	U
91-94-1	3,3'-Dichlorobenzidine	21000.	U
56-55-3	Benzo(a)anthracene	11000.	U
218-01-9	Chrysene	11000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	11000.	U
117-84-0	Di-n-octylphthalate	11000.	U
205-99-2	Benzo(b)fluoranthene	11000.	U
207-08-9	Benzo(k)fluoranthene	11000.	U
50-32-8	Benzo(a)pyrene	11000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	11000.	U
53-70-3	Dibenz(a,h)anthracene	11000.	U
191-24-2	Benzo(g,h,i)perylene	11000.	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 37

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08303-E1

Sample wt/vol: 0.9446 (g/mL) G Lab File ID: >Y0804

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.54 Dilution Factor: 1.00000

Number TICs found: 1

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	629505	Tridecane	17.80	8700.	J
2.					
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08303-E2

Sample wt/vol: 1.008 (g/mL) G Lab File ID: >Y0805

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.54 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	9900.	U
111-44-4	bis(2-Chloroethyl)Ether	9900.	U
95-57-8	2-Chlorophenol	9900.	U
541-73-1	1,3-Dichlorobenzene	9900.	U
106-46-7	1,4-Dichlorobenzene	9900.	U
100-51-6	Benzyl alcohol	9900.	U
95-50-1	1,2-Dichlorobenzene	9900.	U
95-48-7	2-Methylphenol	9900.	U
39638-32-9	bis(2-chloroisopropyl)ether	9900.	U
106-44-5	4-Methylphenol	9900.	U
621-64-7	N-Nitroso-Di-n-propylamine	9900.	U
67-72-1	Hexachloroethane	9900.	U
98-95-3	Nitrobenzene	9900.	U
78-59-1	Isophorone	9900.	U
88-75-5	2-Nitrophenol	9900.	U
105-67-9	2,4-Dimethylphenol	9900.	U
65-85-0	Benzoic acid	50000.	U
111-91-1	bis(2-Chloroethoxy)methane	9900.	U
120-83-2	2,4-Dichlorophenol	9900.	U
120-82-1	1,2,4-Trichlorobenzene	9900.	U
91-20-3	Naphthalene	9900.	U
106-47-8	4-Chloroaniline	9900.	U
87-68-3	Hexachlorobutadiene	9900.	U
59-50-7	4-Chloro-3-methylphenol	9900.	U
91-57-6	2-Methylnaphthalene	9900.	U
77-47-4	Hexachlorocyclopentadiene	9900.	U
88-06-2	2,4,6-Trichlorophenol	9900.	U
95-95-4	2,4,5-Trichlorophenol	50000.	U
91-58-7	2-Chloronaphthalene	9900.	U
88-74-4	2-Nitroaniline	50000.	U
131-11-3	Dimethylphthalate	9900.	U
208-96-8	Acenaphthylene	9900.	U
606-20-2	2,6-Dinitrotoluene	9900.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08303-E2

Sample wt/vol: 1.008 (g/mL) G Lab File ID: >Y0805

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.54 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	50000.	U
83-32-9	Acenaphthene	9900.	U
51-28-5	2,4-Dinitrophenol	50000.	U
100-02-7	4-Nitrophenol	50000.	U
132-64-9	Dibenzofuran	9900.	U
121-14-2	2,4-Dinitrotoluene	9900.	U
84-66-2	Diethylphthalate	9900.	U
7005-72-3	4-Chlorophenyl-phenylether	9900.	U
86-73-7	Fluorene	9900.	U
100-01-6	4-Nitroaniline	50000.	U
534-52-1	4,6-Dinitro-2-methylphenol	50000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9900.	U
101-55-3	4-Bromophenyl-phenylether	9900.	U
118-74-1	Hexachlorobenzene	9900.	U
87-86-5	Pentachlorophenol	50000.	U
85-01-8	Phenanthrene	9900.	U
120-12-7	Anthracene	9900.	U
84-74-2	Di-n-butylphthalate	9900.	U
206-44-0	Fluoranthene	9900.	U
129-00-0	Pyrene	9900.	U
85-68-7	Butylbenzylphthalate	9900.	U
91-94-1	3,3'-Dichlorobenzidine	20000.	U
56-55-3	Benzo(a)anthracene	9900.	U
218-01-9	Chrysene	9900.	U
117-81-7	bis(2-Ethylhexyl)phthalate	9900.	U
117-84-0	Di-n-octylphthalate	9900.	U
205-99-2	Benzo(b)fluoranthene	9900.	U
207-08-9	Benzo(k)fluoranthene	9900.	U
50-32-8	Benzo(a)pyrene	9900.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9900.	U
53-70-3	Dibenz(a,h)anthracene	9900.	U
191-24-2	Benzo(g,h,i)perylene	9900.	U

(1) - Cannot be separated from Diphenylamine

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 37 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08303-E2

Sample wt/vol: 1.008 (g/mL) G Lab File ID: >Y0805

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sept/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.54 Dilution Factor: 1.00000

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 126738	Phosphoric acid, tributyl es	23.20	8100.	J
2.				
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37 MS

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08303-E3

Sample wt/vol: 1.0276 (g/mL) G Lab File ID: >Y0806

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.54 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	250000.	
111-44-4	bis(2-Chloroethyl)Ether	9700.	U
95-57-8	2-Chlorophenol	240000.	
541-73-1	1,3-Dichlorobenzene	9700.	U
106-46-7	1,4-Dichlorobenzene	97000.	
100-51-6	Benzyl alcohol	9700.	U
95-50-1	1,2-Dichlorobenzene	9700.	U
95-48-7	2-Methylphenol	9700.	U
39638-32-9	bis(2-chloroisopropyl)ether	9700.	U
106-44-5	4-Methylphenol	9700.	U
621-64-7	N-Nitroso-Di-n-propylamine	110000.	
67-72-1	Hexachloroethane	9700.	U
98-95-3	Nitrobenzene	9700.	U
78-59-1	Isophorone	9700.	U
88-75-5	2-Nitrophenol	9700.	U
105-67-9	2,4-Dimethylphenol	9700.	U
65-85-0	Benzoic acid	49000.	U
111-91-1	bis(2-Chloroethoxy)methane	9700.	U
120-83-2	2,4-Dichlorophenol	9700.	U
120-82-1	1,2,4-Trichlorobenzene	97000.	
91-20-3	Naphthalene	9700.	U
106-47-8	4-Chloroaniline	9700.	U
87-68-3	Hexachlorobutadiene	9700.	U
59-50-7	4-Chloro-3-methylphenol	220000.	
91-57-6	2-Methylnaphthalene	9700.	U
77-47-4	Hexachlorocyclopentadiene	9700.	U
88-06-2	2,4,6-Trichlorophenol	9700.	U
95-95-4	2,4,5-Trichlorophenol	49000.	U
91-58-7	2-Chloronaphthalene	9700.	U
88-74-4	2-Nitroaniline	49000.	U
131-11-3	Dimethylphthalate	9700.	U
208-96-8	Acenaphthylene	9700.	U
606-20-2	2,6-Dinitrotoluene	9700.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37 MS

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08303-E3

Sample wt/vol: 1.0276 (g/mL) G Lab File ID: >Y0806

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.54 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg.	Q
99-09-2	3-Nitroaniline	49000.	U
83-32-9	Acenaphthene	110000.	
51-28-5	2,4-Dinitrophenol	49000.	U
100-02-7	4-Nitrophenol	140000.	
132-64-9	Dibenzofuran	9700.	U
121-14-2	2,4-Dinitrotoluene	95000.	
84-66-2	Diethylphthalate	9700.	U
7005-72-3	4-Chlorophenyl-phenylether	9700.	U
86-73-7	Fluorene	9700.	U
100-01-6	4-Nitroaniline	49000.	U
534-52-1	4,6-Dinitro-2-methylphenol	49000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9700.	U
101-55-3	4-Bromophenyl-phenylether	9700.	U
118-74-1	Hexachlorobenzene	9700.	U
87-86-5	Pentachlorophenol	150000.	
85-01-8	Phenanthrene	9700.	U
120-12-7	Anthracene	9700.	U
84-74-2	Di-n-butylphthalate	9700.	U
206-44-0	Fluoranthene	9700.	U
129-00-0	Pyrene	110000.	
85-68-7	Butylbenzylphthalate	9700.	U
91-94-1	3,3'-Dichlorobenzidine	19000.	U
56-55-3	Benzo(a)anthracene	9700.	U
218-01-9	Chrysene	9700.	U
117-81-7	bis(2-Ethylhexyl)phthalate	9700.	U
117-84-0	Di-n-octylphthalate	9700.	U
205-99-2	Benzo(b)fluoranthene	9700.	U
207-08-9	Benzo(k)fluoranthene	9700.	U
50-32-8	Benzo(a)pyrene	9700.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9700.	U
53-70-3	Dibenz(a,h)anthracene	9700.	U
191-24-2	Benzo(g,h,i)perylene	9700.	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

CORE 37 MSD

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08303-E4

Sample wt/vol: 1.0855 (g/mL) G Lab File ID: >Y0807

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.54 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	240000.	
111-44-4	bis(2-Chloroethyl)Ether	9200.	U
95-57-8	2-Chlorophenol	240000.	
541-73-1	1,3-Dichlorobenzene	9200.	U
106-46-7	1,4-Dichlorobenzene	100000.	
100-51-6	Benzyl_alcohol	9200.	U
95-50-1	1,2-Dichlorobenzene	9200.	U
95-48-7	2-Methylphenol	9200.	U
39638-32-9	bis(2-chloroisopropyl)ether	9200.	U
106-44-5	4-Methylphenol	9200.	U
621-64-7	N-Nitroso-Di-n-propylamine	120000.	
67-72-1	Hexachloroethane	9200.	U
98-95-3	Nitrobenzene	9200.	U
78-59-1	Isophorone	9200.	U
88-75-5	2-Nitrophenol	9200.	U
105-67-9	2,4-Dimethylphenol	9200.	U
65-85-0	Benzoic_acid	46000.	U
111-91-1	bis(2-Chloroethoxy)methane	9200.	U
120-83-2	2,4-Dichlorophenol	9200.	U
120-82-1	1,2,4-Trichlorobenzene	98000.	
91-20-3	Naphthalene	9200.	U
106-47-8	4-Chloroaniline	9200.	U
87-68-3	Hexachlorobutadiene	9200.	U
59-50-7	4-Chloro-3-methylphenol	210000.	
91-57-6	2-Methylnaphthalene	9200.	U
77-47-4	Hexachlorocyclopentadiene	9200.	U
88-06-2	2,4,6-Trichlorophenol	9200.	U
95-95-4	2,4,5-Trichlorophenol	46000.	U
91-58-7	2-Chloronaphthalene	9200.	U
88-74-4	2-Nitroaniline	46000.	U
131-11-3	Dimethylphthalate	9200.	U
208-96-8	Acenaphthylene	9200.	U
606-20-2	2,6-Dinitrotoluene	9200.	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37 MSD

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08303-E4

Sample wt/vol: 1.0855 (g/mL) G Lab File ID: >Y0807

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.54 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	46000.	U
83-32-9	Acenaphthene	100000.	
51-28-5	2,4-Dinitrophenol	46000.	U
100-02-7	4-Nitrophenol	110000.	
132-64-9	Dibenzofuran	9200.	U
121-14-2	2,4-Dinitrotoluene	94000.	
84-66-2	Diethylphthalate	9200.	U
7005-72-3	4-Chlorophenyl-phenylether	9200.	U
86-73-7	Fluorene	9200.	U
100-01-6	4-Nitroaniline	46000.	U
534-52-1	4,6-Dinitro-2-methylphenol	46000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9200.	U
101-55-3	4-Bromophenyl-phenylether	9200.	U
118-74-1	Hexachlorobenzene	9200.	U
87-86-5	Pentachlorophenol	110000.	
85-01-8	Phenanthrene	9200.	U
120-12-7	Anthracene	9200.	U
84-74-2	Di-n-butylphthalate	9200.	U
206-44-0	Fluoranthene	9200.	U
129-00-0	Pyrene	100000.	
85-68-7	Butylbenzylphthalate	9200.	U
91-94-1	3,3'-Dichlorobenzidine	18000.	U
56-55-3	Benzo(a)anthracene	9200.	U
218-01-9	Chrysene	9200.	U
117-81-7	bis(2-Ethylhexyl)phthalate	9200.	U
117-84-0	Di-n-octylphthalate	9200.	U
205-99-2	Benzo(b)fluoranthene	9200.	U
207-08-9	Benzo(k)fluoranthene	9200.	U
50-32-8	Benzo(a)pyrene	9200.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9200.	U
53-70-3	Dibenz(a,h)anthracene	9200.	U
191-24-2	Benzo(g,h,i)perylene	9200.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08305-E1

Sample wt/vol: 0.9736 (g/mL) G Lab File ID: >Y0808

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg.	Q
108-95-2	Phenol	10000.	U
111-44-4	bis(2-Chloroethyl)Ether	10000.	U
95-57-8	2-Chlorophenol	10000.	U
541-73-1	1,3-Dichlorobenzene	10000.	U
106-46-7	1,4-Dichlorobenzene	10000.	U
100-51-6	Benzyl alcohol	10000.	U
95-50-1	1,2-Dichlorobenzene	10000.	U
95-48-7	2-Methylphenol	10000.	U
39638-32-9	bis(2-chloroisopropyl)ether	10000.	U
106-44-5	4-Methylphenol	10000.	U
621-64-7	N-Nitroso-Di-n-propylamine	10000.	U
67-72-1	Hexachloroethane	10000.	U
98-95-3	Nitrobenzene	10000.	U
78-59-1	Isophorone	10000.	U
88-75-5	2-Nitrophenol	10000.	U
105-67-9	2,4-Dimethylphenol	10000.	U
65-85-0	Benzoic acid	51000.	U
111-91-1	bis(2-Chloroethoxy)methane	10000.	U
120-83-2	2,4-Dichlorophenol	10000.	U
120-82-1	1,2,4-Trichlorobenzene	10000.	U
91-20-3	Naphthalene	10000.	U
106-47-8	4-Chloroaniline	10000.	U
87-68-3	Hexachlorobutadiene	10000.	U
59-50-7	4-Chloro-3-methylphenol	10000.	U
91-57-6	2-Methylnaphthalene	10000.	U
77-47-4	Hexachlorocyclopentadiene	10000.	U
88-06-2	2,4,6-Trichlorophenol	10000.	U
95-95-4	2,4,5-Trichlorophenol	51000.	U
91-58-7	2-Chloronaphthalene	10000.	U
88-74-4	2-Nitroaniline	51000.	U
131-11-3	Dimethylphthalate	10000.	U
208-96-8	Acenaphthylene	10000.	U
606-20-2	2,6-Dinitrotoluene	10000.	U

FORM I SV-1 1/87 Rev.

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08305-E1

Sample wt/vol: 0.9736 (g/mL) G Lab File ID: >Y0808

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	51000.	U
83-32-9	Acenaphthene	10000.	U
51-28-5	2,4-Dinitrophenol	51000.	U
100-02-7	4-Nitrophenol	51000.	U
132-64-9	Dibenzofuran	10000.	U
121-14-2	2,4-Dinitrotoluene	10000.	U
84-66-2	Diethylphthalate	10000.	U
7005-72-3	4-Chlorophenyl-phenylether	10000.	U
86-73-7	Fluorene	10000.	U
100-01-6	4-Nitroaniline	51000.	U
534-52-1	4,6-Dinitro-2-methylphenol	51000.	U
86-30-6	N-Nitrosodiphenylamine (1)	10000.	U
101-55-3	4-Bromophenyl-phenylether	10000.	U
118-74-1	Hexachlorobenzene	10000.	U
87-86-5	Pentachlorophenol	51000.	U
85-01-8	Phenanthrene	10000.	U
120-12-7	Anthracene	10000.	U
84-74-2	Di-n-butylphthalate	10000.	U
206-44-0	Fluoranthene	10000.	U
129-00-0	Pyrene	10000.	U
85-68-7	Butylbenzylphthalate	10000.	U
91-94-1	3,3'-Dichlorobenzidine	21000.	U
56-55-3	Benzo(a)anthracene	10000.	U
218-01-9	Chrysene	10000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10000.	U
117-84-0	Di-n-octylphthalate	10000.	U
205-99-2	Benzo(b)fluoranthene	10000.	U
207-08-9	Benzo(k)fluoranthene	10000.	U
50-32-8	Benzo(a)pyrene	10000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000.	U
53-70-3	Dibenz(a,h)anthracene	10000.	U
191-24-2	Benzo(g,h,i)perylene	10000.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 37

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08305-E1

Sample wt/vol: 0.9736 (g/mL) G Lab File ID: >Y0808

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

Number TICs found: 2

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	629505	Tridecane	17.80	9100.	J
2.	126738	Phosphoric acid tributyl est	23.21	34000.	J
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FORM I SV-TIC 1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08305-E2

Sample wt/vol: 1.0730 (g/mL) G Lab File ID: >Y0809

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	9300.	U
111-44-4	bis(2-Chloroethyl)Ether	9300.	U
95-57-8	2-Chlorophenol	9300.	U
541-73-1	1,3-Dichlorobenzene	9300.	U
106-46-7	1,4-Dichlorobenzene	9300.	U
100-51-6	Benzyl alcohol	9300.	U
95-50-1	1,2-Dichlorobenzene	9300.	U
95-48-7	2-Methylphenol	9300.	U
39638-32-9	bis(2-chloroisopropyl)ether	9300.	U
106-44-5	4-Methylphenol	9300.	U
621-64-7	N-Nitroso-Di-n-propylamine	9300.	U
67-72-1	Hexachloroethane	9300.	U
98-95-3	Nitrobenzene	9300.	U
78-59-1	Isophorone	9300.	U
88-75-5	2-Nitrophenol	9300.	U
105-67-9	2,4-Dimethylphenol	9300.	U
65-85-0	Benzoic acid	47000.	U
111-91-1	bis(2-Chloroethoxy)methane	9300.	U
120-83-2	2,4-Dichlorophenol	9300.	U
120-82-1	1,2,4-Trichlorobenzene	9300.	U
91-20-3	Naphthalene	9300.	U
106-47-8	4-Chloroaniline	9300.	U
87-68-3	Hexachlorobutadiene	9300.	U
59-50-7	4-Chloro-3-methylphenol	9300.	U
91-57-6	2-Methylnaphthalene	9300.	U
77-47-4	Hexachlorocyclopentadiene	9300.	U
88-06-2	2,4,6-Trichlorophenol	9300.	U
95-95-4	2,4,5-Trichlorophenol	47000.	U
91-58-7	2-Chloronaphthalene	9300.	U
88-74-4	2-Nitroaniline	47000.	U
131-11-3	Dimethylphthalate	9300.	U
208-96-8	Acenaphthylene	9300.	U
606-20-2	2,6-Dinitrotoluene	9300.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 37 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08305-E2

Sample wt/vol: 1.0730 (g/mL) G Lab File ID: >Y0809

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg.	Q
99-09-2	3-Nitroaniline	47000.	U
83-32-9	Acenaphthene	9300.	U
51-28-5	2,4-Dinitrophenol	47000.	U
100-02-7	4-Nitrophenol	47000.	U
132-64-9	Dibenzofuran	9300.	U
121-14-2	2,4-Dinitrotoluene	9300.	U
84-66-2	Diethylphthalate	9300.	U
7005-72-3	4-Chlorophenyl-phenylether	9300.	U
86-73-7	Fluorene	9300.	U
100-01-6	4-Nitroaniline	47000.	U
534-52-1	4,6-Dinitro-2-methylphenol	47000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9300.	U
101-55-3	4-Bromophenyl-phenylether	9300.	U
118-74-1	Hexachlorobenzene	9300.	U
87-86-5	Pentachlorophenol	47000.	U
85-01-8	Phenanthrene	9300.	U
120-12-7	Anthracene	9300.	U
84-74-2	Di-n-butylphthalate	9300.	U
206-44-0	Fluoranthene	9300.	U
129-00-0	Pyrene	9300.	U
85-68-7	Butylbenzylphthalate	9300.	U
91-94-1	3,3'-Dichlorobenzidine	19000.	U
56-55-3	Benzo(a)anthracene	9300.	U
218-01-9	Chrysene	9300.	U
117-81-7	bis(2-Ethylhexyl)phthalate	9300.	U
117-84-0	Di-n-octylphthalate	9300.	U
205-99-2	Benzo(b)fluoranthene	9300.	U
207-08-9	Benzo(k)fluoranthene	9300.	U
50-32-8	Benzo(a)pyrene	9300.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9300.	U
53-70-3	Dibenz(a,h)anthracene	9300.	U
191-24-2	Benzo(g,h,i)perylene	9300.	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 37 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08305-E2

Sample wt/vol: 1.0730 (g/mL) G Lab File ID: >Y0809

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/08/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

Number TICs found: 3

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	629505	Tridecane	17.80	9600.	J
2.	629594	Tetradecane	19.51	9000.	J
3.	126738	Phosphoric acid tributyl est	23.20	45000.	J
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FORM I SV-TIC 1/87 Rev.

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: BATTELLE-PNL Contract: -------

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

Level: (low/med) MED

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	SBLKY08	99	99	108	98	99	89		0
02	CORE 37	103	107	105	106	107	103		0
03	CORE 37 DU	102	104	104	109	111	103		0
04	CORE 37 MS	115	111	109	128 *	126 *	109		2
05	CORE 37 MS	118	110	106	125 *	126 *	103		2
06	CORE 37	92	97	96	97	98	81		0
07	CORE 37 DU	105	103	105	110	114	76		0
08									
09									
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(23-120)
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)
S3 (TPH)	= Terphenyl-d14	(18-137)
S4 (PHL)	= Phenol-d5	(24-113)
S5 (2FP)	= 2-Fluorophenol	(25-121)
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)

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

3D
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:BATTELLE-PNL Contract:-------

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

Matrix Spike - EPA Sample No.: CORE 37 Level:(low/med) MED

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	195000.00	0.00	248000.00	127 *	26- 90
2-Chlorophenol	195000.00	0.00	243000.00	125 *	25-102
1,4-Dichlorobenzene	97300.00	0.00	97400.00	100	28-104
N-Nitroso-di-n-prop.(1)	97300.00	0.00	113000.00	116	41-126
1,2,4-Trichlorobenzene	97300.00	0.00	97000.00	100	38-107
4-Chloro-3-methylphenol	195000.00	0.00	223000.00	114 *	26-103
Acenaphthene	97300.00	0.00	107000.00	110	31-137
4-Nitrophenol	195000.00	0.00	139000.00	71	11-114
2,4-Dinitrotoluene	97300.00	0.00	94800.00	97 *	28- 89
Pentachlorophenol	195000.00	0.00	154000.00	79	17-109
Pyrene	97300.00	0.00	105000.00	108	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	184000.00	244000.00	133 *	5	35	26- 90
2-Chlorophenol	184000.00	244000.00	133 *	6	50	25-102
1,4-Dichlorobenzene	92100.00	101000.00	110 *	10	27	28-104
N-Nitroso-di-n-prop.(1)	92100.00	123000.00	134 *	15	38	41-126
1,2,4-Trichlorobenzene	92100.00	97800.00	106	6	23	38-107
4-Chloro-3-methylphenol	184000.00	213000.00	116 *	2	33	26-103
Acenaphthene	92100.00	104000.00	113	3	19	31-137
4-Nitrophenol	184000.00	107000.00	58	20	50	11-114
2,4-Dinitrotoluene	92100.00	93900.00	102 *	5	47	28- 89
Pentachlorophenol	184000.00	111000.00	60	27	47	17-109
Pyrene	92100.00	102000.00	111	3	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: 0 out of 11 outside limits
Spike Recovery: 10 out of 22 outside limits

COMMENTS: _____

FORM III SV-2 1/87 Rev.

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: BATTELLE-PNL Contract: -------

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

Lab File ID: >Y0803 Lab Sample ID: METHOD BLAN

Date Extracted 11/11/92 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/08/92 Time Analyzed: 14:17

Matrix: (soil/water) SOIL Level: (low/med) MED

Instrument ID: BNA2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	CORE 37	92-08303-E1	>Y0804	12/08/92
02	CORE 37 DUP	92-08303-E2	>Y0805	12/08/92
03	CORE 37 MS	92-08303-E3	>Y0806	12/08/92
04	CORE 37 MSD	92-08303-E4	>Y0807	12/08/92
05	CORE 37	92-08305-E1	>Y0808	12/08/92
06	CORE 37 DUP	92-08305-E2	>Y0809	12/08/92
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COMMENTS:

5B
SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: BATTELLE-PNL Contract: -------

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

Lab File ID: >Y0801 DFTPP Injection Date: 12/08/92

Instrument ID: BNA2 DFTPP Injection Time: 12:01

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	42.9
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	58.
70	Less than 2.0% of mass 69	.2(.4)1
127	40.0 - 60.0% of mass 198	48.4
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	6.4
275	10.0 - 30.0% of mass 198	18.8
365	Greater than 1.00% of mass 198	2.21
441	Present, but less than mass 443	10.3
442	Greater than 40.0% of mass 198	78.6
443	17.0 - 23.0% of mass 442	15.3(19.4)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	SSTD050	CONT CALIB	>Y0802	12/08/92	13:13
02	SBLKY08	METHOD BLANK	>Y0803	12/08/92	14:17
03	CORE 37	92-08303-E1	>Y0804	12/08/92	15:14
04	CORE 37 DUP	92-08303-E2	>Y0805	12/08/92	16:11
05	CORE 37 MS	92-08303-E3	>Y0806	12/08/92	17:08
06	CORE 37 MSD	92-08303-E4	>Y0807	12/08/92	18:05
07	CORE 37	92-08305-E1	>Y0808	12/08/92	19:03
08	CORE 37 DUP	92-08305-E2	>Y0809	12/08/92	20:00
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FORM V SV 1/87 Rev.

6B
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: BATTELLE-PNL Contract: -------

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

Instrument ID: BNA2 Calibration Date(s): 11/05/92 ----

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>X0408 RRF50 =>X0407
RRF80 =>X0409 RRF120=>X0410 RRF160=>X0411

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Phenol *	1.464	1.414	1.479	1.545	1.475	1.476	3.2*
bis(2-Chloroethyl)ether	1.282	1.218	1.231	1.201	1.114	1.209	5.1
2-Chlorophenol	1.370	1.296	1.319	1.267	1.190	1.288	5.2
1,3-Dichlorobenzene	1.580	1.516	1.522	1.470	1.403	1.498	4.4
1,4-Dichlorobenzene *	1.575	1.521	1.539	1.474	1.400	1.502	4.5*
Benzyl alcohol	.774	.782	.816	.806	.769	.789	2.6
1,2-Dichlorobenzene	1.523	1.456	1.486	1.415	1.273	1.431	6.3
2-Methylphenol	1.086	1.025	1.048	1.016	.932	1.021	5.6
bis(2-chloroisopropyl)ether	1.159	1.141	1.179	1.208	1.172	1.172	2.[illegible]
4-Methylphenol	1.149	1.084	1.104	1.051	.951	1.068	7.0
N-Nitroso-di-n-propylamine #	.616	.636	.665	.637	.595	.630	4.2#
Hexachloroethane	.580	.592	.603	.561	.513	.570	6.2
Nitrobenzene	.355	.349	.365	.349	.346	.353	2.2
Isophorone	.714	.676	.717	.705	.691	.701	2.4
2-Nitrophenol *	.227	.228	.244	.245	.239	.236	3.[illegible]*
2,4-Dimethylphenol	.299	.282	.295	.289	.281	.289	2.[illegible]
Benzoic acid	0.000	.228	.259	.245	.241	.243	5.2
bis(2-Chloroethoxy)methane	.448	.423	.438	.420	.420	.430	3.0
2,4-Dichlorophenol *	.361	.336	.351	.340	.337	.345	3.[illegible]*
1,2,4-Trichlorobenzene	.410	.381	.399	.376	.364	.386	4.8
Naphthalene	1.051	.986	1.013	.970	.938	.992	4.[illegible]
4-Chloroaniline	.480	.461	.481	.462	.447	.466	3.[illegible]
Hexachlorobutadiene *	.230	.215	.223	.210	.204	.217	4.8*
4-Chloro-3-methylphenol *	.313	.307	.320	.306	.298	.309	2.6*
2-Methylnaphthalene	.711	.672	.676	.630	.600	.658	6.5
Hexachlorocyclopentadiene #	.380	.429	.479	.474	.460	.445	9.2#
2,4,6-Trichlorophenol *	.465	.474	.502	.489	.483	.483	3.0*
2,4,5-Trichlorophenol	0.000	.519	.536	.489	.483	.507	4.9
2-Chloronaphthalene	1.353	1.292	1.304	1.276	1.244	1.294	3.1
2-Nitroaniline	0.000	.360	.391	.391	.389	.383	4.0
Dimethylphthalate	1.612	1.564	1.640	1.642	1.602	1.612	2.0
Acenaphthylene	2.081	2.021	2.058	1.956	1.899	2.003	3.7
2,6-Dinitrotoluene	.342	.379	.410	.399	.382	.382	6.7
3-Nitroaniline	0.000	.406	.429	.430	.422	.422	2.6
Acenaphthene *	1.217	1.180	1.216	1.174	1.155	1.188	2.[illegible]*
2,4-Dinitrophenol #	0.000	.260	.304	.319	.316	.300	9.2#
4-Nitrophenol #	0.000	.219	.243	.234	.223	.230	4.6#

FORM VI SV-1 1/87 Rev.

6C
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: BATTELLE-PNL Contract: -------

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

Instrument ID: BNA2 Calibration Date(s): 11/05/92 ----

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>X0408 RRF50 =>X0407
RRF80 =>X0409 RRF120=>X0410 RRF160=>X0411

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Dibenzofuran	1.805	1.770	1.834	1.749	1.707	1.773	2.8
2,4-Dinitrotoluene	.521	.559	.594	.603	.597	.575	6.0
Diethylphthalate	1.649	1.612	1.677	1.580	1.585	1.621	2.6
4-Chlorophenyl-phenylether	.726	.688	.720	.701	.700	.707	2.2
Fluorene	1.429	1.352	1.440	1.356	1.344	1.384	3.3
4-Nitroaniline	0.000	.429	.461	.465	.450	.451	3.5
4,6-Dinitro-2-methylphenol	0.000	.187	.207	.207	.201	.200	4.8
N-Nitrosodiphenylamine (1) *	.566	.519	.533	.513	.497	.525	4.9*
4-Bromophenyl-phenylether	.239	.228	.236	.227	.216	.229	3.9
Hexachlorobenzene	.283	.267	.277	.271	.262	.272	3.0
Pentachlorophenol *	0.000	.172	.169	.176	.167	.171	2.3*
Phenanthrene	1.120	1.057	1.062	1.004	.976	1.044	5.3
Anthracene	1.148	1.056	1.064	1.033	.989	1.058	5.5
Di-n-butylphthalate	1.455	1.425	1.449	1.401	1.335	1.413	3.4
Fluoranthene *	1.157	1.105	1.152	1.109	1.049	1.115	3.9*
Pyrene	1.493	1.469	1.531	1.661	1.539	1.539	4.8
Butylbenzylphthalate	.754	.797	.831	.879	.831	.818	5.7
3,3'-Dichlorobenzidine	.466	.442	.462	.516	.487	.475	6.0
Benzo(a)anthracene	1.311	1.296	1.338	1.450	1.345	1.348	4.5
Chrysene	1.303	1.286	1.318	1.410	1.338	1.331	3.6
bis(2-Ethylhexyl)phthalate	1.090	1.120	1.136	1.189	1.132	1.134	3.2
Di-n-octylphthalate *	1.697	1.751	1.814	1.682	1.649	1.718	3.8*
Benzo(b)fluoranthene	1.170	1.191	1.207	1.311	1.303	1.237	5.3
Benzo(k)fluoranthene	1.238	1.176	1.217	1.035	.944	1.122	11.3
Benzo(a)pyrene *	1.130	1.113	1.168	1.114	1.106	1.126	2.2*
Indeno(1,2,3-cd)pyrene	.947	1.003	1.088	1.272	1.253	1.112	13.1
Dibenz(a,h)anthracene	.905	.968	1.006	.977	.972	.966	3.8
Benzo(g,h,i)perylene	1.077	1.075	1.126	1.101	1.079	1.092	2.0
Nitrobenzene-d5	.330	.333	.364	.353	.346	.345	4.1
2-Fluorobiphenyl	1.451	1.374	1.422	1.385	1.364	1.399	2.6
Terphenyl-d14	1.100	1.058	1.119	1.185	1.112	1.115	4.2
Phenol-d5	1.365	1.325	1.404	1.374	1.291	1.352	3.1
2-Fluorophenol	1.193	1.190	1.226	1.209	1.165	1.197	1.9
2,4,6-Tribromophenol	.128	.124	.133	.129	.128	.128	2.6

(1) Cannot be separated from Diphenylamine

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/08/92 Time: 13:13

Lab File ID: >Y0802 Init. Calib. Date(s): 11/05/90 12/08/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Phenol	*	1.476	1.644	11.4	*
bis(2-Chloroethyl)ether		1.209	1.463	21.0	
2-Chlorophenol		1.288	1.392	8.0	
1,3-Dichlorobenzene		1.498	1.491	.5	
1,4-Dichlorobenzene	*	1.502	1.547	3.0	*
Benzyl alcohol		.789	.853	8.0	
1,2-Dichlorobenzene		1.431	1.453	1.6	
2-Methylphenol		1.021	1.141	11.7	
bis(2-chloroisopropyl)ether		1.172	1.352	15.4	
4-Methylphenol		1.068	1.224	14.6	
N-Nitroso-di-n-propylamine	#	.630	.781	24.0	#
Hexachloroethane		.570	.654	14.8	
Nitrobenzene		.353	.417	18.4	
Isophorone		.701	.797	13.8	
2-Nitrophenol	*	.236	.218	8.0	*
2,4-Dimethylphenol		.289	.308	6.6	
Benzoic acid		.243	.190	21.7	
bis(2-Chloroethoxy)methane		.430	.489	13.7	
2,4-Dichlorophenol	*	.345	.315	8.7	*
1,2,4-Trichlorobenzene		.386	.341	11.7	
Naphthalene		.992	1.058	6.7	
4-Chloroaniline		.466	.471	1.0	
Hexachlorobutadiene	*	.217	.176	18.6	*
4-Chloro-3-methylphenol	*	.309	.323	4.5	*
2-Methylnaphthalene		.658	.658	.0	
Hexachlorocyclopentadiene	#	.445	.364	18.0	#
2,4,6-Trichlorophenol	*	.483	.437	9.4	*
2,4,5-Trichlorophenol		.507	.472	6.9	
2-Chloronaphthalene		1.294	1.302	.6	
2-Nitroaniline		.383	.452	18.0	
Dimethylphthalate		1.612	1.566	2.9	
Acenaphthylene		2.003	2.063	3.0	
2,6-Dinitrotoluene		.382	.369	3.6	
3-Nitroaniline		.422	.416	1.3	
Acenaphthene	*	1.188	1.201	1.1	*
2,4-Dinitrophenol	#	.300	.197	34.4	#
4-Nitrophenol	#	.230	.228	.6	#

FORM VII SV-1 1/87 Rev.

7C
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/08/92 Time: 13:13

Lab File ID: >Y0802 Init. Calib. Date(s): 11/05/90 12/08/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Dibenzofuran		1.773	1.772	.1	
2,4-Dinitrotoluene		.575	.535	6.9	
Diethylphthalate		1.621	1.630	.6	
4-Chlorophenyl-phenylether		.707	.651	7.9	
Fluorene		1.384	1.368	1.2	
4-Nitroaniline		.451	.445	1.5	
4,6-Dinitro-2-methylphenol		.200	.165	17.4	
N-Nitrosodiphenylamine (1)	*	.525	.531	1.0	*
4-Bromophenyl-phenylether		.229	.204	10.8	
Hexachlorobenzene		.272	.248	8.9	
Pentachlorophenol	*	.171	.151	11.6	*
Phenanthrene		1.044	1.088	4.2	
Anthracene		1.058	1.105	4.5	
Di-n-butylphthalate		1.413	1.561	10.4	
Fluoranthene	*	1.115	1.096	1.7	*
Pyrene		1.539	1.471	4.4	
Butylbenzylphthalate		.818	.890	8.8	
3,3'-Dichlorobenzidine		.475	.359	24.4	
Benzo(a)anthracene		1.348	1.294	4.0	
Chrysene		1.331	1.282	3.7	
bis(2-Ethylhexyl)phthalate		1.134	1.233	8.8	
Di-n-octylphthalate	*	1.718	1.953	13.6	*
Benzo(b)fluoranthene		1.237	1.201	2.8	
Benzo(k)fluoranthene		1.122	1.158	3.1	
Benzo(a)pyrene	*	1.126	1.133	.6	*
Indeno(1,2,3-cd)pyrene		1.112	1.036	6.9	
Dibenz(a,h)anthracene		.966	.987	2.2	
Benzo(g,h,i)perylene		1.092	1.093	.1	
Nitrobenzene-d5		.345	.402	16.5	
2-Fluorobiphenyl		1.399	1.373	1.9	
Terphenyl-d14		1.115	1.061	4.8	
Phenol-d5		1.352	1.721	27.3	
2-Fluorophenol		1.197	1.395	16.6	
2,4,6-Tribromophenol		.128	.132	2.8	

(1) Cannot be separated from Diphenylamine

8B
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: -----

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

Lab File ID (Standard): >Y0802 Date Analyzed: 12/08/92

Instrument ID: BNA2 Time Analyzed: 13:13

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	50670.	11.79	174428.	15.70	83613.	20.96
	UPPER LIMIT	101340.		348856.		167226.	
	LOWER LIMIT	25335.		87214.		41806.	
	EPA SAMPLE NO.						
01	SBLKY08	40091.	11.79	137007.	15.69	68491.	20.94
02	CORE 37	47230.	11.79	166035.	15.69	79764.	20.94
03	CORE 37 DUP	44935.	11.80	163447.	15.69	79524.	20.94
04	CORE 37 MS	36513.	11.83	139416.	15.73	70441.	20.97
05	CORE 37 MSD	42121.	11.80	162016.	15.70	81630.	20.94
06	CORE 37	46329.	11.80	166801.	15.69	81834.	20.94
07	CORE 37 DUP	44397.	11.79	162609.	15.69	80745.	20.94
08							
09							
10							
11							
12							
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19							
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21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

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

Column used to flag internal standard area values with an asterisk

FORM VIII SV-1 1/87 Rev.

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: -----

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

Lab File ID (Standard): >Y0802 Date Analyzed: 12/08/92

Instrument ID: BNA2 Time Analyzed: 13:13

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS3(PRY) AREA #	RT
	12 HOUR STD	145474.	25.35	109320.	33.22	117436.	37.13
	UPPER LIMIT	290948.		218640.		234872.	
	LOWER LIMIT	72737.		54660.		58718.	
	EPA SAMPLE NO.						
01	SBLKY08	114404.	25.34	78561.	33.18	85900.	37.11
02	CORE 37	135545.	25.34	103466.	33.18	111660.	37.11
03	CORE 37 DUP	134877.	25.34	101034.	33.18	109143.	37.10
04	CORE 37 MS	122717.	25.38	94958.	33.22	102656.	37.14
05	CORE 37 MSD	141702.	25.34	110443.	33.19	113528.	37.10
06	CORE 37	136547.	25.33	105516.	33.19	115171.	37.10
07	CORE 37 DUP	137788.	25.33	102500.	33.18	111886.	37.10
08							
09							
10							
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12							
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17							
18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%
of internal stansard 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.

CORE 37

Sample Analysis Raw Data

SS-DM-01 (R7)
Addendum 3
Rev. 0-A

Due to the large volume,
a copy of the data
supporting the Data
Validation Report and
the Sample Data Summary,

Pages E03-039 thru E03-17,

is available only from
Central Files.

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CORE 38

SEMI-VOLATILE ORGANIC ANALYSIS

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CURRENT DATE: January 4, 1993

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - Semi-VOA

Data Package/Report - Core 38

ALO Numbers - 92-08307-E1R 92-08307-E2R 92-08307-E3R 92-08307-E4R
92-09437-E1 92-09437-E2 92-09437-E3 92-09437-E4

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

1/24/93
Date

ORGANIC COMPOUND ANALYSIS REPORT

SEMIVOLATILE COMPOUNDS

SAMPLE ANALYSIS REPORTED

Analysis of SST Core 38 "solids" and drainable liquid samples for semivolatile organic compounds by gas chromatography/mass spectrometry (GC/MS) is the subject of this report.

SAMPLE DESCRIPTION AND PREPARATION

Sample ID	ACL Lab Number
Core 38	92-08307
Core 38 Drainable Liquid	92-09437

The samples were received at ambient temperature on 10/12/92, and were refrigerated after receipt. Extractions of both samples and spiked samples were performed.

- Extraction procedure: PNL-ALO-120 for the "solids", and PNL-ALO-122.1 for the drainable liquid samples
- Extraction location: Lab 306, 325 building
- Extraction type: Sonication, med level, soil
- Sample/Extract storage temperature: 4°C(+/-2°)

ANALYSIS METHOD

- GC/MS procedure: PNL-ALO-345.
- GC/MS instrumentation: HP-5890/5970 GC/MS (WB46867)
- GC/MS location: Lab 325, 325 building.

QUALITY CONTROL

The QC features in the analytical procedure were followed as described below. The following lists the attached CLP forms that relate to QC and summarizes the QC results.

Form	Information	Comments
2D	Surrogate Recovery	Requirements were met for all samples.

3D	MS/MSD Recovery	92-08307: Recoveries were high on 3 of 22 spikes, and RPD's were high on 8 of 11 spikes. See problems section. 92-09437: Recoveries were high in 6 of 22 spikes. See problem section.
4B	Method Blank Summary	Both sets of sample data met requirements.
5B	Tune/Mass Calibration	Both sets of sample data met requirements.
6B,C	Initial Calibration	Both sets of sample data met requirements.
7B,C	Daily Calibration	Both sets of sample data met requirements.
8B,C	Internal Standards	Both sets of sample data met requirements.

DATA

The data and calibration are archived on magnetic tape in the 325 building 325 laboratory. The following is the list of the pertinent files.

File Name	Sample Number	Sample Analyzed
>Y1401		Mass calibration and tune check
>Y1402		Continuing calibration
>Y1403		Method blank
>Y1404	92-08307-E1R	Core 38 rerun
>Y1405	92-08307-E2R	Core 38 rerun duplicate
>Y1406	92-08307-E3R	Core 38 rerun MS
>Y1407	92-08307-E4R	Core 38 rerun MSD
>Y1501		Mass calibration and tune check
>Y1502		Continuing calibration
>Y1503		Method blank
>Y1504	92-09437-E1	Core 38 drainable liquid
>Y1505	92-09437-E2	Core 38 drainable liquid duplicate
>Y1506	92-09437-E3	Core 38 drainable liquid MS
>Y1507	92-09437-E4	Core 38 drainable liquid MSD

Laboratory data is maintained as follows:

Activity	Location
• GC/MS injection log	BNW-53728 pg. 40-41
• Extraction bench sheet:	filed with data in the ACL/ALO records center
• GC/MS data, sample report:	filed with data in the ACL/ALO records center

PROBLEMS

High recoveries of some surrogate and matrix compounds were observed in the analyses of Core 37 and 39 and the initial analysis of Core 38. Three problems causing the high recoveries were identified during the initial stages of these analyses: 1) a systematic error in extract volume; 2) a significant difference (≥17%) between acid surrogate standard concentrations used for the GC/MS calibration (vendor A standard) and the stock used for spike the addition (prepared from the vendor B standard), and 3) a solvent effect from methanol in the concentrated extract. The reason that the methanol concentration in the concentrated extract is high is unclear. There may be an increased amount of methanol in the unconcentrated extract because of the high ionic strength of the sample. The methanol content in the extract would increase during the concentration process, because its vapor pressure is less than that of the methylene chloride extractant. This would lead to a higher concentration of the methanol in the concentrated extract, and a resulting chromatographic solvent effect.

The only sample in the Cores 37, 38, 39, 40, and 41 series of samples in sufficient quantity for re-extraction and re-analysis was Core 38, 92-08307. An Interim Change Notice was written to change the procedure so that more concentrated spiking solutions could be used resulting in less methanol in the final extracts. In addition, the extract volume measurement problem was corrected, and vendor A surrogate spike standards were used in both the sample preparation and in the GC/MS calibration. The re-analysis of this sample after the modified extraction resulted in a significant improvement in surrogate and matrix spike recoveries. The Core 38 drainable liquid sample 93-09437 was not re-analyzed, but the extract volume was corrected.

92-08307 "Solids": All the surrogate recoveries were within limits. However, there were problems with the MS/MSD samples. The recoveries of the MS compounds were within range, but were significantly lower than for the MSD sample. This was a consequence of considerable foaming causing loss of sample during extraction of the MS sample. The foaming was kept under control for the MSD sample. Consequently, the RPD (relative percent difference) values were high as shown on form 3D. The three high MSD compound recoveries probably reflect an insignificant matrix effect of this sample.

92-09437 Drainable Liquid: All the surrogate recoveries were within limits, but with phenol-d5 and 2-fluorophenol recoveries lower than usual due to nitration reactions (see the RESULTS section for a description of the nitration reactions observed). The MS/MSD RPD values were within limits, but three MS/MSD compound recoveries were high. The high 4-nitrophenol may have resulted from nitration of phenol.

RESULTS

CLP Target Compounds: As seen in the attached 1B,C Forms, the only target compounds found was bis(2-ethylhexyl)phthalate as follows:

Sample	µg/Kg
92-08307-E1	1500
92-08307-E2	1900

Tentatively Identified Compounds (TIC): The attached 1F Forms show results for the TIC's. Concentration estimates for the TIC's are made assuming that the response factor for each TIC is one. The peak area for each TIC is then compared to the area of the nearest internal standard (for which concentrations are known) to estimate the TIC concentrations. Identification of the TIC is made by a computer search of the NIST mass spectral library to attempt a match with the spectrum of each of the TIC's. The TIC's reported as "Unknown" did not have satisfactory matches with library spectra. The TIC concentration estimate and identification are reported only if the TIC peak area is 10% or greater than the nearest internal standard peak area.

The TIC's found were:

	Sample and Concentration, µg/Kg			
Compound	92-08307-E1	92-08307-E2	92-09437-E1	92-09437-E2
Undecane	18000	20000		
Dodecane	830000	890000		
Tridecane	1900000	2000000		9500
Unknown alkane		8500		
Tetradecane	1400000	750000		11000
Pentadecane	58000	67000		
Tributylphosphate	9600	7100		
• 2-Nitrophenol-d4			45000	43000
• 2-Fluoro-4-nitrophenol			19000	17000
• 2-Fluoronitrophenol			34000	31000
• 2-Chloronitrophenol-d3			12000	11000
• 4-Nitrophenol-d4			39000	37000

The TIC's denoted with bullets above are all nitration reaction products of the matrix with surrogate compounds. The two deuterated nitrophenol isomers come from the surrogate compound phenol-d5, and the two 2-fluoronitrophenol isomers come from the surrogate compound 2-fluorophenol. The 2-chloronitrophenol-d3 comes from 2-chlorophenol-d4, which is one of the 3/90 Contract Laboratory Program Statement of Work listed surrogates that is in the surrogate mix used for the spiking.

The following defines the Q-flags in the Form 1's

"Q" Flag	Definition
U	Indicates the compound was analyzed for but not detected, the U-flagged concentration is the Contract Required Quantitation Limit.
J	Indicates an estimated value for target and tentatively identified compounds, spectra meet criteria but response is below Contract Required Quantitation Limit for the target compounds.
B	Indicates compound was found in the blank.
X	Indicates compound was manually deleted because all requirements were not met.
D	Indicates analysis was performed on a diluted sample.
E	Indicates that quantitation was outside of the calibration range.
A	Aldol condensation product.

ANALYST _____ DATE 12/4/92 REVIEW _____ DATE 12-22-92

CORE 38

Sample Analysis Report Forms

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKY14

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLAN

Sample wt/vol: 1 (g/mL) G Lab File ID: >Y1403

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	10000.	U
111-44-4	bis(2-Chlorcethyl)Ether	10000.	U
95-57-8	2-Chlorophenol	10000.	U
541-73-1	1,3-Dichlorobenzene	10000.	U
106-46-7	1,4-Dichlorobenzene	10000.	U
100-51-6	Benzyl_alcohol	10000.	U
95-50-1	1,2-Dichlorobenzene	10000.	U
95-48-7	2-Methylphenol	10000.	U
39638-32-9	bis(2-chloroisopropyl)ether	10000.	U
106-44-5	4-Methylphenol	10000.	U
621-64-7	N-Nitroso-Di-n-propylamine	10000.	U
67-72-1	Hexachloroethane	10000.	U
98-95-3	Nitrobenzene	10000.	U
78-59-1	Isophcrone	10000.	U
88-75-5	2-Nitrophenol	10000.	U
105-67-9	2,4-Dimethylphenol	10000.	U
65-85-0	Benzoic_acid	50000.	U
111-91-1	bis(2-Chloroethoxy)methane	10000.	U
120-83-2	2,4-Dichlorophenol	10000.	U
120-82-1	1,2,4-Trichlorobenzene	10000.	U
91-20-3	Naphthalene	10000.	U
106-47-8	4-Chloroaniline	10000.	U
87-68-3	Hexachlorobutadiene	10000.	U
59-50-7	4-Chloro-3-methylphenol	10000.	U
91-57-6	2-Methylnaphthalene	10000.	U
77-47-4	Hexachlorocyclopentadiene	10000.	U
88-06-2	2,4,6-Trichlorophenol	10000.	U
95-95-4	2,4,5-Trichlorophenol	50000.	U
91-58-7	2-Chloronaphthalene	10000.	U
88-74-4	2-Nitroaniline	50000.	U
131-11-3	Dimethylphthalate	10000.	U
208-96-8	Acenaphthylene	10000.	U
606-20-2	2,6-Dinitrotoluene	10000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKY14

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLAN

Sample wt/vol: 1 (g/mL) G Lab File ID: >Y1403

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	50000.	U
83-32-9	Acenaphthene	10000.	U
51-28-5	2,4-Dinitrophenol	50000.	U
100-02-7	4-Nitrophenol	50000.	U
132-64-9	Dibenzofuran	10000.	U
121-14-2	2,4-Dinitrotoluene	10000.	U
84-66-2	Diethylphthalate	10000.	U
7005-72-3	4-Chlorophenyl-phenylether	10000.	U
86-73-7	Fluorene	10000.	U
100-01-6	4-Nitroaniline	50000.	U
534-52-1	4,6-Dinitro-2-methylphenol	50000.	U
86-30-6	N-Nitrosodiphenylamine (1)	10000.	U
101-55-3	4-Bromophenyl-phenylether	10000.	U
118-74-1	Hexachlorobenzene	10000.	U
87-86-5	Pentachlorophenol	50000.	U
85-01-8	Phenanthrene	10000.	U
120-12-7	Anthracene	10000.	U
84-74-2	Di-n-butylphthalate	10000.	U
206-44-0	Fluoranthene	10000.	U
129-00-0	Pyrene	10000.	U
85-68-7	Butylbenzylphthalate	10000.	U
91-94-1	3,3'-Dichlorobenzidine	20000.	U
56-55-3	Benzo(a)anthracene	10000.	U
218-01-9	Chrysene	10000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10000.	U
117-84-0	Di-n-octylphthalate	10000.	U
205-99-2	Benzo(b)fluoranthene	10000.	U
207-08-9	Benzo(k)fluoranthene	10000.	U
50-32-8	Benzo(a)pyrene	10000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000.	U
53-70-3	Dibenz(a,h)anthracene	10000.	U
191-24-2	Benzo(g,h,i)perylene	10000.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKY14

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLAN

Sample wt/vol: 1 (g/mL) G Lab File ID: >Y1403

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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FORM I SV-TIC 1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 36 R

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08307-E1

Sample wt/vol: 1.0188 (g/mL) G Lab File ID: >Y1404

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	9800.	U
111-44-4	bis(2-Chloroethyl)Ether	9800.	U
95-57-8	2-Chlorophenol	9800.	U
541-73-1	1,3-Dichlorobenzene	9800.	U
106-46-7	1,4-Dichlorobenzene	9800.	U
100-51-6	Benzyl alcohol	9800.	U
95-50-1	1,2-Dichlorobenzene	9800.	U
95-48-7	2-Methylphenol	9800.	U
39638-32-9	bis(2-chloroisopropyl)ether	9800.	U
106-44-5	4-Methylphenol	9800.	U
621-64-7	N-Nitroso-Di-n-propylamine	9800.	U
67-72-1	Hexachloroethane	9800.	U
98-95-3	Nitrobenzene	9800.	U
78-59-1	Isophorone	9800.	U
88-75-5	2-Nitrophenol	9800.	U
105-67-9	2,4-Dimethylphenol	9800.	U
65-85-0	Benzoic acid	49000.	U
111-91-1	bis(2-Chloroethoxy)methane	9800.	U
120-83-2	2,4-Dichlorophenol	9800.	U
120-82-1	1,2,4-Trichlorobenzene	9800.	U
91-20-3	Naphthalene	9800.	U
106-47-8	4-Chloroaniline	9800.	U
87-68-3	Hexachlorobutadiene	9800.	U
59-50-7	4-Chloro-3-methylphenol	9800.	U
91-57-6	2-Methylnaphthalene	9800.	U
77-47-4	Hexachlorocyclopentadiene	9800.	U
88-06-2	2,4,6-Trichlorophenol	9800.	U
95-95-4	2,4,5-Trichlorophenol	49000.	U
91-58-7	2-Chloronaphthalene	9800.	U
88-74-4	2-Nitroaniline	49000.	U
131-11-3	Dimethylphthalate	9800.	U
208-96-8	Acenaphthylene	9800.	U
606-20-2	2,6-Dinitrotoluene	9800.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 33 R

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08307-E1

Sample wt/vol: 1.0188 (g/mL) G Lab File ID: >Y1404

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

GPC Cleanup: (Y/N) N pH:10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	49000.	U
83-32-9	Acenaphthene	9800.	U
51-28-5	2,4-Dinitrophenol	49000.	U
100-02-7	4-Nitrophenol	49000.	U
132-64-9	Dibenzofuran	9800.	U
121-14-2	2,4-Dinitrotoluene	9800.	U
84-66-2	Diethylphthalate	9800.	U
7005-72-3	4-Chlorophenyl-phenylether	9800.	U
86-73-7	Fluorene	9800.	U
100-01-6	4-Nitroaniline	49000.	U
534-52-1	4,6-Dinitro-2-methylphenol	49000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9800.	U
101-55-3	4-Bromophenyl-phenylether	9800.	U
118-74-1	Hexachlorobenzene	9800.	U
87-86-5	Pentachlorophenol	49000.	U
85-01-8	Phenanthrene	9800.	U
120-12-7	Anthracene	9800.	U
84-74-2	Di-n-butylphthalate	9800.	U
206-44-0	Fluoranthene	9800.	U
129-00-0	Pyrene	9800.	U
85-68-7	Butylbenzylphthalate	9800.	U
91-94-1	3,3'-Dichlorobenzidine	20000.	U
56-55-3	Benzo(a)anthracene	9800.	U
218-01-9	Chrysene	9800.	U
117-81-7	bis(2-Ethylhexyl)phthalate	1500.	J
117-84-0	Di-n-octylphthalate	9800.	U
205-99-2	Benzo(b)fluoranthene	9800.	U
207-08-9	Benzo(k)fluoranthene	9800.	U
50-32-8	Benzo(a)pyrene	9800.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9800.	U
53-70-3	Dibenz(a,h)anthracene	9800.	U
191-24-2	Benzo(g,h,i)perylene	9800.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 38 R

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08307-E1

Sample wt/vol: 1.0188 (g/mL) G Lab File ID: >Y1404

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

Number TICs found: 6

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	1120214	Undecane	13.81	18000.	J
2.	112403	Dodecane	15.91	830000.	J
3.	629505	Tridecane	17.82	1900000.	J
4.	629594	Tetradecane	19.51	1400000.	J
5.	629629	Pentadecane	21.02	58000.	J
6.	126738	Phosphoric acid tributyl est	23.10	9600.	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

CORE 38 R

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08307-E2

Sample wt/vol: 0.9537 (g/mL) G Lab File ID: >Y1405

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	10000.	U
111-44-4	bis(2-Chloroethyl)Ether	10000.	U
95-57-8	2-Chlorophenol	10000.	U
541-73-1	1,3-Dichlorobenzene	10000.	U
106-46-7	1,4-Dichlorobenzene	10000.	U
100-51-6	Benzyl_alcohol	10000.	U
95-50-1	1,2-Dichlorobenzene	10000.	U
95-48-7	2-Methylphenol	10000.	U
39638-32-9	bis(2-chloroisopropyl)ether	10000.	U
106-44-5	4-Methylphenol	10000.	U
621-64-7	N-Nitroso-Di-n-propylamine	10000.	U
67-72-1	Hexachloroethane	10000.	U
98-95-3	Nitrobenzene	10000.	U
78-59-1	Isophorone	10000.	U
88-75-5	2-Nitrophenol	10000.	U
105-67-9	2,4-Dimethylphenol	10000.	U
65-85-0	Benzoic_acid	52000.	U
111-91-1	bis(2-Chloroethoxy)methane	10000.	U
120-83-2	2,4-Dichlorophenol	10000.	U
120-82-1	1,2,4-Trichlorobenzene	10000.	U
91-20-3	Naphthalene	10000.	U
106-47-8	4-Chloroaniline	10000.	U
87-68-3	Hexachlorobutadiene	10000.	U
59-50-7	4-Chloro-3-methylphenol	10000.	U
91-57-6	2-Methylnaphthalene	10000.	U
77-47-4	Hexachlorocyclopentadiene	10000.	U
88-06-2	2,4,6-Trichlorophenol	10000.	U
95-95-4	2,4,5-Trichlorophenol	52000.	U
91-58-7	2-Chloronaphthalene	10000.	U
88-74-4	2-Nitroaniline	52000.	U
131-11-3	Dimethylphthalate	10000.	U
208-96-8	Acenaphthylene	10000.	U
606-20-2	2,6-Dinitrotoluene	10000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38 R

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08307-E2

Sample wt/vol: 0.9537 (g/mL) G Lab File ID: >Y1405

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	52000.	U
83-32-9	Acenaphthene	10000.	U
51-28-5	2,4-Dinitrophenol	52000.	U
100-02-7	4-Nitrophenol	52000.	U
132-64-9	Dibenzofuran	10000.	U
121-14-2	2,4-Dinitrotoluene	10000.	U
84-66-2	Diethylphthalate	10000.	U
7005-72-3	4-Chlorophenyl-phenylether	10000.	U
86-73-7	Fluorene	10000.	U
100-01-6	4-Nitroaniline	52000.	U
534-52-1	4,6-Dinitro-2-methylphenol	52000.	U
86-30-6	N-Nitrosodiphenylamine (1)	10000.	U
101-55-3	4-Bromophenyl-phenylether	10000.	U
118-74-1	Hexachlorobenzene	10000.	U
87-86-5	Pentachlorophenol	52000.	U
85-01-8	Phenanthrene	10000.	U
120-12-7	Anthracene	10000.	U
84-74-2	Di-n-butylphthalate	10000.	U
206-44-0	Fluoranthene	10000.	U
129-00-0	Pyrene	10000.	U
85-68-7	Butylbenzylphthalate	10000.	U
91-94-1	3,3'-Dichlorobenzidine	21000.	U
56-55-3	Benzo(a)anthracene	10000.	U
218-01-9	Chrysene	10000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	1900.	J
117-84-0	Di-n-octylphthalate	10000.	U
205-99-2	Benzo(b)fluoranthene	10000.	U
207-08-9	Benzo(k)fluoranthene	10000.	U
50-32-8	Benzo(a)pyrene	10000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000.	U
53-70-3	Dibenz(a,h)anthracene	10000.	U
191-24-2	Benzo(g,h,i)perylene	10000.	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 38 R

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08307-E2

Sample wt/vol: 0.9537 (g/mL) G Lab File ID: >Y1405

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

Number TICs found: 7

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	1120214	Undecane	13.80	20000.	J
2.	112403	Dodecane	15.92	890000.	J
3.		Unknown alkane	17.20	8500.	J
4.	629505	Tridecane	17.84	2000000.	J
5.	629594	Tetradecane	19.52	1500000.	J
6.	629629	Pentadecane	21.02	67000.	J
7.	126738	Phosphoric acid tributyl est	23.10	7100.	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

CORE 38R MS

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08307-E3

Sample wt/vol: 0.9478 (g/mL) G Lab File ID: >Y1406

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	150000.	
111-44-4	bis(2-Chloroethyl)Ether	11000.	U
95-57-8	2-Chlorophenol	150000.	
541-73-1	1,3-Dichlorobenzene	11000.	U
106-46-7	1,4-Dichlorobenzene	61000.	
100-51-6	Benzyl alcohol	11000.	U
95-50-1	1,2-Dichlorobenzene	11000.	U
95-48-7	2-Methylphenol	11000.	U
39638-32-9	bis(2-chloroisopropyl)ether	11000.	U
106-44-5	4-Methylphenol	11000.	U
621-64-7	N-Nitroso-Di-n-propylamine	69000.	
67-72-1	Hexachloroethane	11000.	U
98-95-3	Nitrobenzene	11000.	U
78-59-1	Isophorone	11000.	U
88-75-5	2-Nitrophenol	11000.	U
105-67-9	2,4-Dimethylphenol	11000.	U
65-85-0	Benzoic acid	53000.	U
111-91-1	bis(2-Chloroethoxy)methane	11000.	U
120-83-2	2,4-Dichlorophenol	11000.	U
120-82-1	1,2,4-Trichlorobenzene	63000.	
91-20-3	Naphthalene	11000.	U
106-47-8	4-Chloroaniline	11000.	U
87-68-3	Hexachlorobutadiene	11000.	U
59-50-7	4-Chloro-3-methylphenol	140000.	
91-57-6	2-Methylnaphthalene	11000.	U
77-47-4	Hexachlorocyclopentadiene	11000.	U
88-06-2	2,4,6-Trichlorophenol	11000.	U
95-95-4	2,4,5-Trichlorophenol	53000.	U
91-58-7	2-Chloronaphthalene	11000.	U
88-74-4	2-Nitroaniline	53000.	U
131-11-3	Dimethylphthalate	11000.	U
208-96-8	Acenaphthylene	11000.	U
606-20-2	2,6-Dinitrotoluene	11000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38R MS

Lab Name: PATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08307-E3

Sample wt/vol: 0.9478 (g/mL) G Lab File ID: >Y1406

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	53000.	U
83-32-9	Acenaphthene	66000.	
51-28-5	2,4-Dinitrophenol	53000.	U
100-02-7	4-Nitrophenol	110000.	
132-64-9	Dibenzofuran	11000.	U
121-14-2	2,4-Dinitrotoluene	58000.	
84-66-2	Diethylphthalate	11000.	U
7005-72-3	4-Chlorophenyl-phenylether	11000.	U
86-73-7	Fluorene	11000.	U
100-01-6	4-Nitroaniline	53000.	U
534-52-1	4,6-Dinitro-2-methylphenol	53000.	U
86-30-6	N-Nitrosodiphenylamine (1)	11000.	U
101-55-3	4-Bromophenyl-phenylether	11000.	U
118-74-1	Hexachlorobenzene	11000.	U
87-86-5	Pentachlorophenol	150000.	
85-01-8	Phenanthrene	11000.	U
120-12-7	Anthracene	11000.	U
84-74-2	Di-n-butylphthalate	11000.	U
206-44-0	Fluoranthene	11000.	U
129-00-0	Pyrene	69000.	
85-68-7	Butylbenzylphthalate	11000.	U
91-94-1	3,3'-Dichlorobenzidine	21000.	U
56-55-3	Benzo(a)anthracene	11000.	U
218-01-9	Chrysene	11000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	14000.	
117-84-0	Di-n-octylphthalate	5700.	J
205-99-2	Benzo(b)fluoranthene	11000.	U
207-08-9	Benzo(k)fluoranthene	11000.	U
50-32-8	Benzo(a)pyrene	11000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	11000.	U
53-70-3	Dibenz(a,h)anthracene	11000.	U
191-24-2	Benzo(g,h,i)perylene	11000.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38R MS

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08307-E4

Sample wt/vol: 1.0363 (g/mL) G Lab File ID: >Y1407

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	200000.	
111-44-4	bis(2-Chloroethyl)Ether	9700.	U
95-57-8	2-Chlorophenol	190000.	
541-73-1	1,3-Dichlorobenzene	9700.	U
106-46-7	1,4-Dichlorobenzene	91000.	
100-51-6	Benzyl alcohol	9700.	U
95-50-1	1,2-Dichlorobenzene	9700.	U
95-48-7	2-Methylphenol	9700.	U
39638-32-9	bis(2-chloroisopropyl)ether	9700.	U
106-44-5	4-Methylphenol	9700.	U
621-64-7	N-Nitroso-Di-n-propylamine	110000.	
67-72-1	Hexachloroethane	9700.	U
98-95-3	Nitrobenzene	9700.	U
78-59-1	Isophorone	9700.	U
88-75-5	2-Nitrophenol	9700.	U
105-67-9	2,4-Dimethylphenol	9700.	U
65-85-0	Benzoic acid	48000.	U
111-91-1	bis(2-Chloroethoxy)methane	9700.	U
120-83-2	2,4-Dichlorophenol	9700.	U
120-82-1	1,2,4-Trichlorobenzene	97000.	
91-20-3	Naphthalene	9700.	U
106-47-8	4-Chloroaniline	9700.	U
87-68-3	Hexachlorobutadiene	9700.	U
59-50-7	4-Chloro-3-methylphenol	190000.	
91-57-6	2-Methylnaphthalene	9700.	U
77-47-4	Hexachlorocyclopentadiene	9700.	U
88-06-2	2,4,6-Trichlorophenol	9700.	U
95-95-4	2,4,5-Trichlorophenol	48000.	U
91-58-7	2-Chloronaphthalene	9700.	U
88-74-4	2-Nitroaniline	48000.	U
131-11-3	Dimethylphthalate	9700.	U
208-96-8	Acenaphthylene	9700.	U
606-20-2	2,6-Dinitrotoluene	9700.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38R MS

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08307-E4

Sample wt/vol: 1.0363 (g/mL) G Lab File ID: >Y1407

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/14/92

GPC Cleanup: (Y/N) N pH: 10.25 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	48000.	U
83-32-9	Acenaphthene	97000.	
51-28-5	2,4-Dinitrophenol	48000.	U
100-02-7	4-Nitrophenol	160000.	
132-64-9	Dibenzofuran	9700.	U
121-14-2	2,4-Dinitrotoluene	95000.	
84-66-2	Diethylphthalate	9700.	U
7005-72-3	4-Chlorophenyl-phenylether	9700.	U
86-73-7	Fluorene	9700.	U
100-01-6	4-Nitroaniline	48000.	U
534-52-1	4,6-Dinitro-2-methylphenol	48000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9700.	U
101-55-3	4-Bromophenyl-phenylether	9700.	U
118-74-1	Hexachlorobenzene	9700.	U
87-86-5	Pentachlorophenol	210000.	
85-01-8	Phenanthrene	9700.	U
120-12-7	Anthracene	9700.	U
84-74-2	Di-n-butylphthalate	9700.	U
206-44-0	Fluoranthene	9700.	U
129-00-0	Pyrene	100000.	
85-68-7	Butylbenzylphthalate	9700.	U
91-94-1	3,3'-Dichlorobenzidine	19000.	U
56-55-3	Benzo(a)anthracene	9700.	U
218-01-9	Chrysene	9700.	U
117-81-7	bis(2-Ethylhexyl)phthalate	3000.	J
117-84-0	Di-n-octylphthalate	9700.	U
205-99-2	Benzo(b)fluoranthene	9700.	U
207-08-9	Benzo(k)fluoranthene	9700.	U
50-32-8	Benzo(a)pyrene	9700.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9700.	U
53-70-3	Dibenz(a,h)anthracene	9700.	U
191-24-2	Benzo(g,h,i)perylene	9700.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: BATTELLE-PNL Contract: -------

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

Level: (low/med) MED

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	SBLKY14	87	93	99	107	107	114		0
02	CORE 38 R	99	105	112	106	106	105		0
03	CORE 38 R	100	102	107	108	106	111		0
04	CORE 38R M	64	66	75	71	70	77		0
05	CORE 38R M	103	100	110	103	102	118		0
06									
07									
08									
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(23-120)
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)
S3 (TPH)	= Terphenyl-d14	(18-137)
S4 (PHL)	= Phenol-d5	(24-113)
S5 (2FP)	= 2-Fluorophenol	(25-121)
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)

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

FORM II SV-2 1/87 Rev.

3D
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix Spike - EPA Sample No.: CORE 38 R Level: (low/med) MED

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	211000.00	0.00	149000.00	71	26- 90
2-Chlorophenol	211000.00	0.00	147000.00	70	25-102
1,4-Dichlorobenzene	106000.00	0.00	60800.00	57	28-104
N-Nitroso-di-n-prop.(1)	106000.00	0.00	69100.00	65	41-126
1,2,4-Trichlorobenzene	106000.00	0.00	63000.00	59	38-107
4-Chloro-3-methylphenol	211000.00	0.00	144000.00	68	26-103
Acenaphthene	106000.00	0.00	65600.00	62	31-137
4-Nitrophenol	211000.00	0.00	115000.00	55	11-114
2,4-Dinitrotoluene	106000.00	0.00	58000.00	55	28- 89
Pentachlorophenol	211000.00	0.00	150000.00	71	17-109
Pyrene	106000.00	0.00	69200.00	65	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	193000.00	197000.00	102 *	36 *	35	26- 90
2-Chlorophenol	193000.00	190000.00	98	33	50	25-102
1,4-Dichlorobenzene	96500.00	91400.00	95	50 *	27	28-104
N-Nitroso-di-n-prop.(1)	96500.00	108000.00	112	66 *	38	41-126
1,2,4-Trichlorobenzene	96500.00	96800.00	100	51 *	23	38-107
4-Chloro-3-methylphenol	193000.00	195000.00	101	51 *	33	26-103
Acenaphthene	96500.00	97300.00	101	39 *	19	31-137
4-Nitrophenol	193000.00	163000.00	84	41	50	11-114
2,4-Dinitrotoluene	96500.00	95100.00	99 *	57 *	47	28- 89
Pentachlorophenol	193000.00	213000.00	110 *	43	47	17-109
Pyrene	96500.00	104000.00	108	50 *	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: 8 out of 11 outside limits
Spike Recovery: 3 out of 22 outside limits

COMMENTS: _____

FORM III SV-2 1/87 Rev.

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: BATTELLE-PNL Contract: -------

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

Lab File ID: >Y1403 Lab Sample ID: METHOD BLAN

Date Extracted 11/11/92 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/14/92 Time Analyzed: 12:45

Matrix: (soil/water) SOIL Level: (low/med) MED

Instrument ID: BNA2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	CORE 38 R	92-08307-E1R	>Y1404	12/14/92
02	CORE 38 R	92-08307-E2R	>Y1405	12/14/92
03	CORE 38R MS	92-08307-E3R	>Y1406	12/14/92
04	CORE 38R MS	92-08307-E4R	>Y1407	12/14/92
05				
06				
07				
08				
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COMMENTS: _____

5B
SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: BATTELLE-PNL Contract: -------

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

Lab File ID: >Y1401 DFTPP Injection Date: 12/14/92

Instrument ID: BNA2 DFTPP Injection Time: 11:05

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	42.6
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	66.
70	Less than 2.0% of mass 69	0.0(0.0)1
127	40.0 - 60.0% of mass 198	43.8
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	6.8
275	10.0 - 30.0% of mass 198	21.0
365	Greater than 1.00% of mass 198	2.68
441	Present, but less than mass 443	13.8
442	Greater than 40.0% of mass 198	95.5
443	17.0 - 23.0% of mass 442	18.0(18.9)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	SSTD050	CONT CALIB	>Y1402	12/14/92	11:39
02	SBLKY14	METHOD BLANK	>Y1403	12/14/92	12:45
03	CORE 38 R	92-08307-E1R	>Y1404	12/14/92	13:43
04	CORE 38 R	92-08307-E2R	>Y1405	12/14/92	14:41
05	CORE 38R MS	92-08307-E3R	>Y1406	12/14/92	15:39
06	CORE 38R MS	92-08307-E4R	>Y1407	12/14/92	16:37
07					
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6B
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: BATTELLE-PNL Contract: -------

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

Instrument ID: BNA2 Calibration Date(s): 11/05/92 ----

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>X0408 RRF50 =>X0407
RRF80 =>X0409 RRF120=>X0410 RRF160=>X0411

COMPOUND		RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD	
Phenol	*	1.464	1.414	1.479	1.545	1.475	1.476	3.2	*
bis(2-Chloroethyl)ether		1.282	1.218	1.231	1.201	1.114	1.209	5.1	
2-Chlorophenol		1.370	1.296	1.319	1.267	1.190	1.288	5.2	
1,3-Dichlorobenzene		1.580	1.516	1.522	1.470	1.403	1.498	4.4	
1,4-Dichlorobenzene	*	1.575	1.521	1.539	1.474	1.400	1.502	4.5	*
Benzyl alcohol		.774	.782	.816	.806	.769	.789	2.6	
1,2-Dichlorobenzene		1.523	1.456	1.486	1.415	1.273	1.431	6.8	
2-Methylphenol		1.086	1.025	1.048	1.016	.932	1.021	5.6	
bis(2-chloroisopropyl)ether		1.159	1.141	1.179	1.208	1.172	1.172	2.1	
4-Methylphenol		1.149	1.084	1.104	1.051	.951	1.068	7.0	
N-Nitroso-di-n-propylamine	#	.616	.636	.665	.637	.595	.630	4.2	#
Hexachloroethane		.580	.592	.603	.561	.513	.570	6.2	
Nitrobenzene		.355	.349	.365	.349	.346	.353	2.2	
Isophorone		.714	.676	.717	.705	.691	.701	2.4	
2-Nitrophenol	*	.227	.228	.244	.245	.239	.236	3.7	*
2,4-Dimethylphenol		.299	.282	.295	.289	.281	.289	2.7	
Benzoic acid		0.000	.228	.259	.245	.241	.243	5.2	
bis(2-Chloroethoxy)methane		.448	.423	.438	.420	.420	.430	3.0	
2,4-Dichlorophenol	*	.361	.336	.351	.340	.337	.345	3.1	*
1,2,4-Trichlorobenzene		.410	.381	.399	.376	.364	.386	4.8	
Naphthalene		1.051	.986	1.013	.970	.938	.992	4.3	
4-Chloroaniline		.480	.461	.481	.462	.447	.466	3.1	
Hexachlorobutadiene	*	.230	.215	.223	.210	.204	.217	4.8	*
4-Chloro-3-methylphenol	*	.313	.307	.320	.306	.298	.309	2.6	*
2-Methylnaphthalene		.711	.672	.676	.630	.600	.658	6.5	
Hexachlorocyclopentadiene	#	.380	.429	.479	.474	.460	.445	9.2	#
2,4,6-Trichlorophenol	*	.465	.474	.502	.489	.483	.483	3.0	*
2,4,5-Trichlorophenol		0.000	.519	.536	.489	.483	.507	4.9	
2-Chloronaphthalene		1.353	1.292	1.304	1.276	1.244	1.294	3.1	
2-Nitroaniline		0.000	.360	.391	.391	.389	.383	4.0	
Dimethylphthalate		1.612	1.564	1.640	1.642	1.602	1.612	2.0	
Acenaphthylene		2.081	2.021	2.058	1.956	1.899	2.003	3.7	
2,6-Dinitrotoluene		.342	.379	.410	.399	.382	.382	6.7	
3-Nitroaniline		0.000	.406	.429	.430	.422	.422	2.6	
Acenaphthene	*	1.217	1.180	1.216	1.174	1.155	1.188	2.3	*
2,4-Dinitrophenol	#	0.000	.260	.304	.319	.316	.300	9.2	#
4-Nitrophenol	#	0.000	.219	.243	.234	.223	.230	4.6	#

FORM VI SV-1 1/87 Rev

6C
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: BATTELLE-PNL Contract: -------

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

Instrument ID: BNA2 Calibration Date(s): 11/05/92 ----

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>X0408 RRF50 =>X0407
RRF80 =>X0409 RRF120=>X0410 RRF160=>X0411

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Dibenzofuran	1.805	1.770	1.834	1.749	1.707	1.773	2.8
2,4-Dinitrotoluene	.521	.559	.594	.603	.597	.575	6.0
Diethylphthalate	1.649	1.612	1.677	1.580	1.585	1.621	2.0
4-Chlorophenyl-phenylether	.726	.688	.720	.701	.700	.707	2.1
Fluorene	1.429	1.352	1.440	1.356	1.344	1.384	3.1
4-Nitroaniline	0.000	.429	.461	.465	.450	.451	3.3
4,6-Dinitro-2-methylphenol	0.000	.187	.207	.207	.201	.200	4.9
N-Nitrosodiphenylamine (1) *	.566	.519	.533	.513	.497	.525	4.9 *
4-Bromophenyl-phenylether	.239	.228	.236	.227	.216	.229	3.3
Hexachlorobenzene	.283	.267	.277	.271	.262	.272	3.0
Pentachlorophenol *	0.000	.172	.169	.176	.167	.171	2.3 *
Phenanthrene	1.120	1.057	1.062	1.004	.976	1.044	5.1
Anthracene	1.148	1.056	1.064	1.033	.989	1.058	5.8
Di-n-butylphthalate	1.455	1.425	1.449	1.401	1.335	1.413	3.4
Fluoranthene *	1.157	1.105	1.152	1.109	1.049	1.115	3.9 *
Pyrene	1.493	1.469	1.531	1.661	1.539	1.539	4.8
Butylbenzylphthalate	.754	.797	.831	.879	.831	.818	5.7
3,3'-Dichlorobenzidine	.466	.442	.462	.516	.487	.475	6.0
Benzo(a)anthracene	1.311	1.296	1.338	1.450	1.345	1.348	4.5
Chrysene	1.303	1.286	1.318	1.410	1.338	1.331	3.6
bis(2-Ethylhexyl)phthalate	1.090	1.120	1.136	1.189	1.132	1.134	3.2
Di-n-octylphthalate *	1.697	1.751	1.814	1.682	1.649	1.718	3.8 *
Benzo(b)fluoranthene	1.170	1.191	1.207	1.311	1.303	1.237	5.3
Benzo(k)fluoranthene	1.238	1.176	1.217	1.035	.944	1.122	11.3
Benzo(a)pyrene *	1.130	1.113	1.168	1.114	1.106	1.126	2.2 *
Indeno(1,2,3-cd)pyrene	.947	1.003	1.088	1.272	1.253	1.112	13.1
Dibenz(a,h)anthracene	.905	.968	1.006	.977	.972	.966	3.8
Benzo(g,h,i)perylene	1.077	1.075	1.126	1.101	1.079	1.092	2.0
Nitrobenzene-d5	.330	.333	.364	.353	.346	.345	4.1
2-Fluorobiphenyl	1.451	1.374	1.422	1.385	1.364	1.399	2.6
Terphenyl-d14	1.100	1.058	1.119	1.185	1.112	1.115	4.1
Phenol-d5	1.365	1.325	1.404	1.374	1.291	1.352	3.3
2-Fluorophenol	1.193	1.190	1.226	1.209	1.165	1.197	1.9
2,4,6-Tribromophenol	.128	.124	.133	.129	.128	.128	2.6

(1) Cannot be separated from Diphenylamine

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/14/92 Time: 11:39

Lab File ID: >Y1402 Init. Calib. Date(s): 11/05/90 12/14/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Phenol	*	1.476	1.650	11.9	*
bis(2-Chloroethyl)ether		1.209	1.480	22.4	
2-Chlorophenol		1.288	1.372	6.5	
1,3-Dichlorobenzene		1.498	1.494	.3	
1,4-Dichlorobenzene	*	1.502	1.513	.8	*
Benzyl alcohol		.789	.865	9.5	
1,2-Dichlorobenzene		1.431	1.444	1.0	
2-Methylphenol		1.021	1.123	10.0	
bis(2-chloroisopropyl)ether		1.172	1.479	26.2	
4-Methylphenol		1.068	1.214	13.7	
N-Nitroso-di-n-propylamine	#	.630	.824	30.8	#
Hexachloroethane		.570	.654	14.8	
Nitrobenzene		.353	.432	22.4	
Isophorone		.701	.817	16.6	
2-Nitrophenol	*	.236	.217	8.1	*
2,4-Dimethylphenol		.289	.299	3.5	
Benzoic acid		.243	.215	11.8	
bis(2-Chloroethoxy)methane		.430	.497	15.6	
2,4-Dichlorophenol	*	.345	.316	8.3	*
1,2,4-Trichlorobenzene		.386	.347	10.2	
Naphthalene		.992	1.039	4.8	
4-Chloroaniline		.466	.459	1.6	
Hexachlorobutadiene	*	.217	.191	11.9	*
4-Chloro-3-methylphenol	*	.309	.332	7.6	*
2-Methylnaphthalene		.658	.645	1.9	
Hexachlorocyclopentadiene	#	.445	.394	11.3	#
2,4,6-Trichlorophenol	*	.483	.442	8.5	*
2,4,5-Trichlorophenol		.507	.467	7.8	
2-Chloronaphthalene		1.294	1.260	2.6	
2-Nitroaniline		.383	.476	24.3	
Dimethylphthalate		1.612	1.533	4.9	
Acenaphthylene		2.003	2.023	1.0	
2,6-Dinitrotoluene		.382	.365	4.5	
3-Nitroaniline		.422	.390	7.6	
Acenaphthene	*	1.188	1.195	.5	*
2,4-Dinitrophenol	#	.300	.144	52.0	#
4-Nitrophenol	#	.230	.234	1.9	#

7C
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/14/92 Time: 11:39

Lab File ID: >Y1402 Init. Calib. Date(s): 11/05/90 12/14/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND	RRF	RRF50	%D	
Dibenzofuran	1.773	1.720	3.0	
2,4-Dinitrotoluene	.575	.535	7.0	
Diethylphthalate	1.621	1.613	.5	
4-Chlorophenyl-phenylether	.707	.654	7.4	
Fluorene	1.384	1.349	2.5	
4-Nitroaniline	.451	.410	9.2	
4,6-Dinitro-2-methylphenol	.200	.137	31.7	
N-Nitrosodiphenylamine (1)	.525	.509	3.1	*
4-Bromophenyl-phenylether	.229	.220	3.8	
Hexachlorobenzene	.272	.272	.0	
Pentachlorophenol *	.171	.165	3.2	*
Phenanthrene	1.044	1.047	.3	
Anthracene	1.058	1.047	1.0	
Di-n-butylphthalate	1.413	1.511	6.9	
Fluoranthene *	1.115	1.092	2.0	*
Pyrene	1.539	1.375	10.7	
Butylbenzylphthalate	.818	.769	6.0	
3,3'-Dichlorobenzidine	.475	.340	28.4	
Benzo(a)anthracene	1.348	1.213	10.0	
Chrysene	1.331	1.219	8.4	
bis(2-Ethylhexyl)phthalate	1.134	1.122	1.0	
Di-n-octylphthalate *	1.718	1.790	4.2	*
Benzo(b)fluoranthene	1.237	1.117	9.6	
Benzo(k)fluoranthene	1.122	1.151	2.6	
Benzo(a)pyrene *	1.126	1.090	3.2	*
Indeno(1,2,3-cd)pyrene	1.112	1.075	3.4	
Dibenz(a,h)anthracene	.966	1.047	8.4	
Benzo(g,h,i)perylene	1.092	1.135	4.0	
Nitrobenzene-d5	.345	.422	22.3	
2-Fluorobiphenyl	1.399	1.369	2.1	
Terphenyl-d14	1.115	1.025	8.1	
Phenol-d5	1.352	1.525	12.8	
2-Fluorophenol	1.197	1.247	4.2	
2,4,6-Tribromophenol	.128	.144	12.1	

(1) Cannot be separated from Diphenylamine

8B
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: -----

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

Lab File ID (Standard): >Y1402 Date Analyzed: 12/14/92

Instrument ID: BNA2 Time Analyzed: 11:39

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	39721.	11.68	137728.	15.59	68596.	20.85
	UPPER LIMIT	79442.		275456.		137192.	
	LOWER LIMIT	19861.		68864.		34298.	
	EPA SAMPLE NO.						
01	SBLKY14	52705.	11.68	182046.	15.59	88316.	20.84
02	CORE 38 R	42720.	11.67	146134.	15.58	72146.	20.84
03	CORE 38 R	50287.	11.68	171022.	15.59	85880.	20.85
04	CORE 38R MS	48598.	11.69	170371.	15.60	87421.	20.86
05	CORE 38R MSD	48675.	11.68	169186.	15.59	87685.	20.86
06							
07							
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20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = - 100% of internal stansard area.
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: BATTELLE-PNL Contract: -----

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

Lab File ID (Standard): >Y1402 Date Analyzed: 12/14/93

Instrument ID: BNA2 Time Analyzed: 11:39

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS3(PRY) AREA #	RT
	12 HOUR STD	122456.	25.24	99461.	33.10	111551.	37.00
	UPPER LIMIT	244912.		198922.		223102.	
	LOWER LIMIT	61228.		49730.		55775.	
	EPA SAMPLE NO.						
01	SBLKY14	157371.	25.23	129174.	33.08	142333.	37.00
02	CORE 38 R	126810.	25.23	102473.	33.07	115061.	36.98
03	CORE 38 R	151614.	25.24	125486.	33.08	140463.	36.99
04	CORE 38R MS	149387.	25.25	121322.	33.09	138953.	37.00
05	CORE 38R MSD	150992.	25.24	122206.	33.08	140111.	36.99
06							
07							
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16							
17							
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19							
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21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%
of internal stansard 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.

ORGANICS ANALYSIS BENCH SHEET

Battelle Memorial Institute Pacific Northwest Laboratories	EXTRACTION METHOD	DATE	EXTRACTION ANALYST	ANALYSIS METHOD	ANALYST
JOB NAME: pH - SST	DUL-AU-120	11-5-92	[illegible]		
MATRIX: Solid / Liquid					

SAMPLE NUMBER	WEIGHT VOLUME	Temp	pH	H_2SO_4 1:10	pH	~~FINAL~~ SOLVENT	FINAL VOLUME
92-8303-pH	.9917		10.54	125 ml	7.01		
92-8305-E3	1.0030		10.25	160	7.03		
8307-pH	.9719		10.02	85 ml	7.01		
8309 pH	1.1094		10.49	180 ml	6.93		
8311 pH	1.0508		10.57	140 ml	6.88		
11296-E1	.9418		9.64	70 ml	6.90		
11297-E1	1.0152		9.54	70 ml	6.45		
11298-E1	.9822		9.62	73 ml	6.87		
11299-E1	1.0034		9.61	63 ml	7.07		
92-0831 ~~9437~~	liquid primary sample		7.08	0	7.08		
OLD 12-29-92							
	added 5 ml DIW each except 943						
92-0943 ~~9347~~	liquid primary sample		10.42	0	10.42		
OLD 12-29-92							

SURROGATE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)	SPIKE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)

COMMENTS:

pH-meter 164453-92 pH 10 Buffer 88-2108 exp 9-6-93
2 point 7 & 4 Calib pH = 9.92
(7) #31148 5/93
(4) #588108 8-11-93

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL

ORGANICS ANALYSIS BENCH SHEET

page 1 of 1

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	EXTRACTION PROCEDURES: PNL-ALO-120.2	TEST INSTRUCTIONS: TI-SST-165	ANALYSIS PROCEDURES
WORK PKG: M90483	EXTRACTION ANALYST: mjd		ANALYST:
MATRIX: Sludge	DATE: 12-13-92	C-110 Core 38	DATE:

SAMPLE NUMBER	WEIGHT VOLUME	1:10 H_2SO_4 (ul)	CH_2Cl_2		FINAL SOLVENT	FINAL VOLUME
92-0507E1	1.0188	90	9.8		CH_2Cl_2	
E2	.9537	85	9.8			
E3	.9478	85	9.6			
E4	1.0363	90	9.6			
SBLK348	~~0~~	~~0~~	9.8			
	2.5g	Sodium	Sulfate	Each		
	100 ul	B/N	}			
	100 ul	Acid	}			
	100 ul	B/N	} Spike	E3+E4		
	100 ul	A	}			
	the method Blank is noted as SBLK348 on					
	Report forms - MM 12/18/92					

SURROGATE NAME	VOLUME (ul)	ID NUMBER 53201	CONC. (ug/ml)	SPIKE NAME	VOLUME (ul)	ID NUMBER 53201	CONC. (ug/ml)
Base/Neutral	100	34-29	1000	Base/Neutral	100	36-16	1000
Acid	100	34-35	2000	Acid	100	34-31	2000

COMMENTS: wt sheet dated 12-10-92
E3+E4 extract slightly cloudy
All very sludgy E3+E4 E3 caused problem with injecting into Microfugation

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL
mjd 12-13-92						
~~12-13-92~~						
PNL-ALO-120.2	12-13-92 MJF	dpmt	12-13-92	200/#16		

ORGANICS ANALYSIS BENCH SHEET

page 1 of 1

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	EXTRACTION PROCEDURES: PNL-ALO-1202	TEST INSTRUCTIONS: TI-SST-165	ANALYSIS PROCEDURES:
WORK PKG: M90483	EXTRACTION ANALYST: mjl		ANALYST:
MATRIX: Sludge	DATE: 12-13-92	C-110 Core 38	DATE:

SAMPLE NUMBER	WEIGHT VOLUME	1:10 H_2SO_4 (ul)	CH_2Cl_2			FINAL SOLVENT	FINAL VOLUME
92-0807E1	1.0188	90	9.8			CH_2Cl_2	1 ml
E2	.9537	85	9.8				
E3	.9478	85	9.6				
E4	1.0363	90	9.6				
5B1K348	~~0~~	~~0~~	9.8				
	2.5g	Sodium Sulfate	Excl.				
	100 ul	B/N	} Surrogate				
	100 ul	Acid					
	100 ul	B/N	} Spike E3 + E4				
	100 ul	A					

SURROGATE NAME	VOLUME (ul)	ID NUMBER 53201	CONC. (ug/ml)	SPIKE NAME	VOLUME (ul)	ID NUMBER 53201	CONC. (ug/ml)
Base/Neutral	100	34-29	1000	Base/Neutral	100	36-16	1000
Acid	100	34-35	2000	Acid	100	34-31	2000

COMMENTS: wt sheet dated 12-10-92
E3 + E4 extract slightly cloudy
All very sudsy E3 + E4 E3 general problem with bubbling into Microsnyder

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL
mjl 12-13-92						
~~12-13-92~~						
PNL-ALO-1202	12-3-92 mjl	Spent	12-13-92 1900	#160		

CORE 38

Sample Analysis Raw Data

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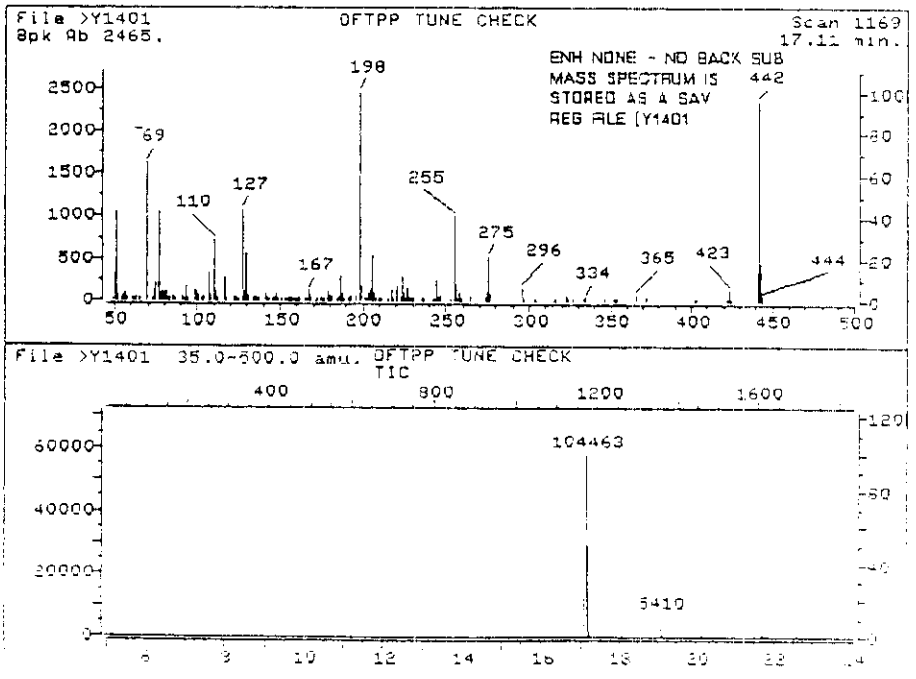
GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphosphine (DFTPP)

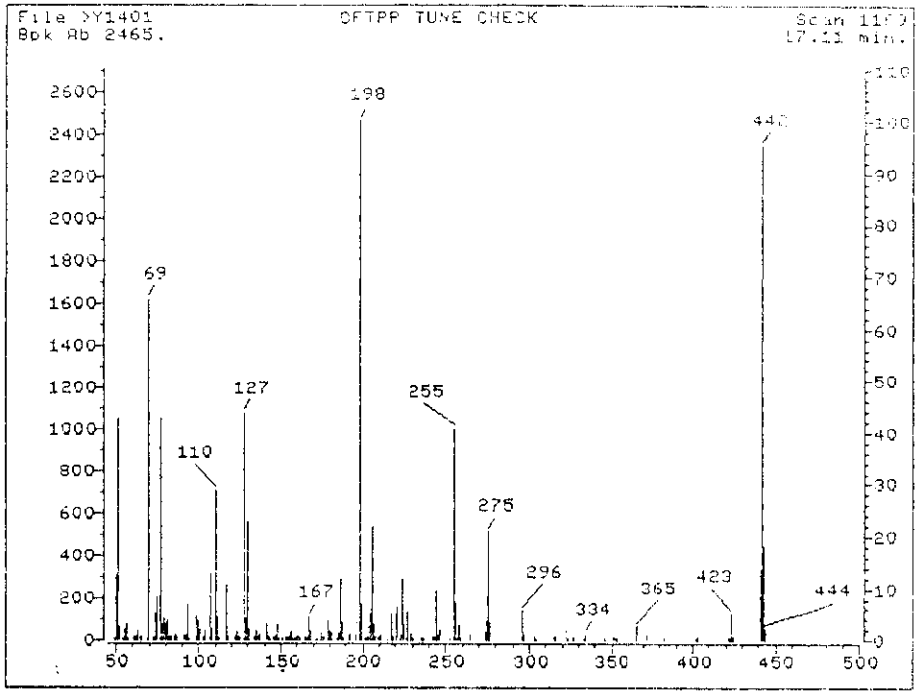
m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
51	30-60% of mass 198	42.64	42.64	OK
68	Less than 2% of mass 69	0.00	0.00	OK
69	(reference only)	65.80	65.80	OK
70	Less than 2% of mass 69	0.00	0.00	OK
127	40-60% of mass 198	43.81	43.81	OK
197	Less than 1% of mass 198	0.00	0.00	OK
198	Base peak, 100% relative abundance	100.00	100.00	OK
199	5-9% of mass 198	6.82	6.82	OK
275	10-30% of mass 198	21.01	21.01	OK
365	Greater than 1% of mass 198	2.68	2.68	OK
441	0-100% of mass 443	13.75	76.35	OK
442	Greater than 40% of mass 198	95.50	95.50	OK
443	17-23% of mass 442	18.01	18.36	OK

Injection Date: 12/14/92
Injection Time: 11:05
Data File: >Y1401
Scan: 1169



602

Instrument ID: 8NA2 Analyzed on: 12/14/92 11:05



Instrument ID: BNA2 Analyzed on: 12/14/92 11:05

>Y1401 DFTPP TUNE CHECK
1169 NRM

File: >Y1401 Scan #: 1169 Retn. time: 17.11

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
38.00	.771	101.05	1.988	156.05	1.663	203.95	2.921	272.95	1 785
39.10	3.692	103.05	.771	157.15	.446	205.05	5.112	273.95	3.854
44.00	1.542	104.05	1.704	158.95	.487	206.05	21.744	274.95	21 014
49.10	.527	107.05	13.022	159.95	.730	207.05	2.961	276.05	3 367
50.00	12.576	108.05	2.028	160.95	1.055	208.05	.811	276.95	2 153
51.10	42.637	110.05	28.763	161.85	.527	210.25	.609	296.00	5 761
52.00	2.353	111.05	4.381	164.95	.771	210.45	.649	297.00	1 014
54.90	.325	112.05	.365	165.95	.487	210.95	.933	303.00	690
56.00	1.988	117.05	10.710	166.25	.487	214.95	.243	304.10	203
57.00	3.043	118.05	.730	167.05	4.462	216.95	5.233	315.00	609
58.00	.365	122.05	1.136	167.95	1.907	218.05	.852	316.10	649
61.10	.649	123.05	1.663	171.15	.203	221.05	6.410	323.10	2 150
62.10	.649	123.95	.690	172.95	.487	222.95	1.176	324.10	406
63.00	1.704	125.05	.649	174.05	1.217	224.05	11.805	327.00	609
65.10	.690	127.05	43.813	174.95	1.460	225.05	3.043	332.90	294
69.00	65.801	128.05	4.097	176.15	.649	226.15	.446	334.00	1 298
72.90	.609	129.05	22.556	176.95	.811	226.95	5.598	346.10	487
74.00	5.193	130.05	1.988	178.95	3.692	228.15	.609	352.00	649
75.00	8.560	131.05	.487	180.05	1.907	229.95	.933	353.00	527
77.10	42.556	134.05	.811	180.95	1.298	230.85	.446	354.00	446
78.10	3.043	135.05	1.866	183.95	.365	235.95	.325	365.00	2.677
79.00	4.260	136.05	.771	185.05	1.298	236.95	.365	366.00	406
79.90	3.002	136.95	.933	186.05	11.886	241.35	.609	372.10	1.258
81.00	3.854	141.05	3.124	187.05	3.529	243.05	.690	383.00	365
82.00	.811	141.85	.771	187.95	.487	244.05	9.493	402.00	446
83.00	.892	142.05	.771	188.95	.487	244.95	1.258	403.00	649
85.00	.974	142.95	.446	191.95	1.095	246.05	1.988	421.00	.730
86.00	1.176	146.05	.690	193.05	1.095	252.35	.284	421.90	.487
86.90	.771	147.05	1.176	196.05	3.367	254.95	40.649	423.10	4.990
91.10	1.136	147.95	2.961	197.95	100.000	255.95	7.140	424.10	811
92.00	.933	148.95	.487	198.95	6.815	256.85	.487	441.00	13 753
93.00	6.775	151.15	.365	201.45	.487	257.95	2.759	442.00	95 497
94.00	.487	153.05	.852	201.65	.487	259.05	.446	443.10	19.012
98.05	4.787	154.05	.609	202.95	.649	264.95	1.258	444.00	2.150
99.05	3.854	154.95	1.420						

Instrument ID: BNA2 Analyzed on: 12/14/92 11:05

QUANT REPORT

Page 1

Operator ID: BCB
Output File: ^Y1402::OF
Data File: >Y1402::D2
Name: CONTINUING CALIB
Misc:

Quant Rev: 7 Quant Time: 921214 12:07
Injected at: 921214 1[illegible]:[illegible]
Dilution Factor: 1.00:00
Instrument ID: BNA2
BTL# 1

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:[illegible]

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.68	712	39721	40.00	ng/uL
2)	2-Fluorophenol	7.00	264	123819	91.27	ng/uL
3)	Phenol-d5	10.76	624	151442	91.63	ng/uL
4)	Phenol	10.80	628	81943	50.87	ng/uL
5)	bis(2-Chloroethyl)ether	11.02	649	73475	49.92	ng/uL
6)	2-Chlorophenol	11.00	647	68118	50.68	ng/uL
7)	1,3-Dichlorobenzene	11.47	692	74162	49.80	ng/uL
8)	1,4-Dichlorobenzene	11.74	718	75141	49.43	ng/uL
9)	Benzyl alcohol	12.26	767	42937	51.81	ng/uL
10)	1,2-Dichlorobenzene	12.18	760	71708	49.63	ng/uL
11)	2-Methylphenol	12.63	807	55759	51.10	ng/uL
12)	bis(2-Chloroisopropyl)ether	12.74	813	73425	46.41	ng/uL
13)	4-Methylphenol	13.13	855	60288	51.73	ng/uL
14)	N-Nitroso-di-n-propylamine	13.14	851	40892	50.20	ng/uL
15)	Hexachloroethane	13.23	860	32473	50.85	ng/uL
16)	*Naphthalene-d8	15.60	1086	137728	40.00	ng/uL
17)	Nitrobenzene-d5	13.46	882	72686	51.84	ng/uL
18)	Nitrobenzene	13.51	887	74314	50.35	ng/uL
19)	Isophorone	14.31	963	140582	51.27	ng/uL
20)	2-Nitrophenol	14.49	980	37438	49.31	ng/uL
21)	2,4-Dimethylphenol	14.78	1008	51554	51.25	ng/uL
22)	Benzoic acid	15.30	1058	36073	59.70	ng/uL
23)	bis(2-Chloroethoxy)methane	15.08	1037	85539	50.78	ng/uL
24)	2,4-Dichlorophenol	15.24	1052	54434	49.65	ng/uL
25)	1,2,4-Trichlorobenzene	15.46	1073	59661	48.44	ng/uL
26)	Naphthalene	15.66	1092	178816	51.36	ng/uL
27)	4-Chloroaniline	15.91	1116	78935	49.57	ng/uL
28)	Hexachlorobutadiene	16.11	1135	32886	46.11	ng/uL
29)	4-Chloro-3-methylphenol	17.46	1264	57199	51.34	ng/uL
30)	2-Methylnaphthalene	17.77	1294	111106	49.51	ng/uL
31)	*Acenaphthene-d10	20.85	1588	68596	40.00	ng/uL
32)	Hexachlorocyclopentadiene	18.26	1341	33811	46.35	ng/uL
33)	2,4,6-Trichlorophenol	18.65	1378	37872	51.42	ng/uL
34)	2,4,5-Trichlorophenol	18.73	1386	40067	48.55	ng/uL
35)	2-Chloronaphthalene	19.20	1431	108067	50.44	ng/uL
36)	2-Fluorobiphenyl	18.94	1406	117409	51.48	ng/uL
37)	2-Nitroaniline	19.58	1467	40790	51.24	ng/uL
38)	Dimethylphthalate	20.25	1531	131444	51.14	ng/uL
39)	Acenaphthylene	20.41	1546	173450	51.45	ng/uL
40)	2,6-Dinitrotoluene	20.38	1543	31321	50.02	ng/uL

QUANT REPORT Page 2

Operator ID: BOB
Output File: ^Y1402::OF
Data File: >Y1402::D2
Name: CONTINUING CALIB
Misc:

Quant Rev: 7 Quant Time: 921214 12:27
Injected at: 921214 11:39
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 1

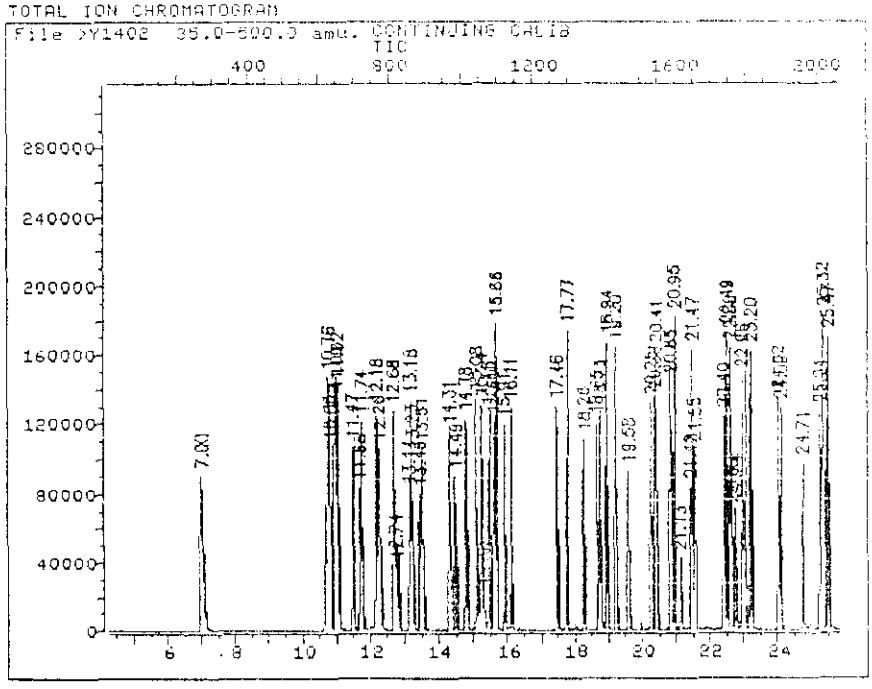
ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qual Time: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units
41)	3-Nitroaniline	20.83	1586	33398	50.77	ng/ul
42)	Acenaphthene	20.95	1598	102454	50.86	ng/ul
43)	2,4-Dinitrophenol	21.13	1615	12332	41.37	ng/ul
44)	4-Nitrophenol	21.42	1643	20079	52.40	ng/ul
45)	Dibenzofuran	21.47	1648	147447	50.43	ng/ul
46)	2,4-Dinitrotoluene	21.55	1655	45859	50.44	ng/ul
47)	Diethylphthalate	22.40	1736	138316	51.13	ng/ul
48)	4-Chlorophenyl-phenylether	22.58	1754	56114	49.68	ng/ul
49)	Fluorene	22.49	1745	115660	51.46	ng/ul
50)	4-Nitroaniline	22.65	1760	35137	51.40	ng/ul
51)	*Phenanthrene-d10	25.24	2008	122456	40.00	ng/ul
52)	4,6-Dinitro-2-methylphenol	22.74	1769	20915	58.21	ng/ul
53)	N-Nitrosodiphenylamine	22.96	1790	77949	51.05	ng/ul
54)	2,4,6-Tribromophenol	23.20	1813	44078	81.91	ng/ul
55)	4-Bromophenyl-phenylether	24.02	1891	33743	47.05	ng/ul
56)	Hexachlorobenzene	24.09	1898	41628	44.87	ng/ul
57)	Pentachlorophenol	24.71	1957	25331	51.80	ng/ul
58)	Phenanthrene	25.32	2016	160311	50.15	ng/ul
59)	Anthracene	25.47	2029	160303	49.43	ng/ul
60)	Di-n-butylphthalate	27.29	2204	231297	52.93	ng/ul
61)	Fluoranthene	28.83	2351	167170	49.97	ng/ul
62)	*Chrysene-d12	33.10	2759	99461	40.00	ng/ul
63)	Pyrene	29.48	2413	170910	48.93	ng/ul
64)	Terphenyl-d14	30.12	2474	127382	49.46	ng/ul
65)	Butylbenzylphthalate	31.73	2628	95601	51.77	ng/ul
66)	3,3'-Dichlorobenzidine	33.11	2760	42265	49.33	ng/ul
67)	Benzo(a)anthracene	33.07	2756	150835	50.42	ng/ul
68)	Chrysene	33.18	2767	151547	49.50	ng/ul
69)	Bis(2-Ethylhexyl)phthalate	33.55	2802	139515	52.89	ng/ul
70)	*Perylene-d12	37.00	3131	111551	40.00	ng/ul
71)	Di-n-octylphthalate	35.39	2978	249572	55.86	ng/ul
72)	Benzo(b)fluoranthene	36.03	3039	155786	51.24	ng/ul
73)	Benzo(k)fluoranthene	36.12	3047	160563	50.31	ng/ul
74)	Benzo(a)pyrene	36.85	3117	151998	52.31	ng/ul
75)	Indeno(1,2,3-cd)pyrene	40.23	3439	152148	52.37	ng/ul
76)	Dibenz(a,h)anthracene	40.37	3452	145971	51.77	ng/ul
77)	Benzo(g,h,i)perylene	41.19	3530	158333	50.96	ng/ul

* Compound is ISTD

TOTAL ION CHROMATOGRAM

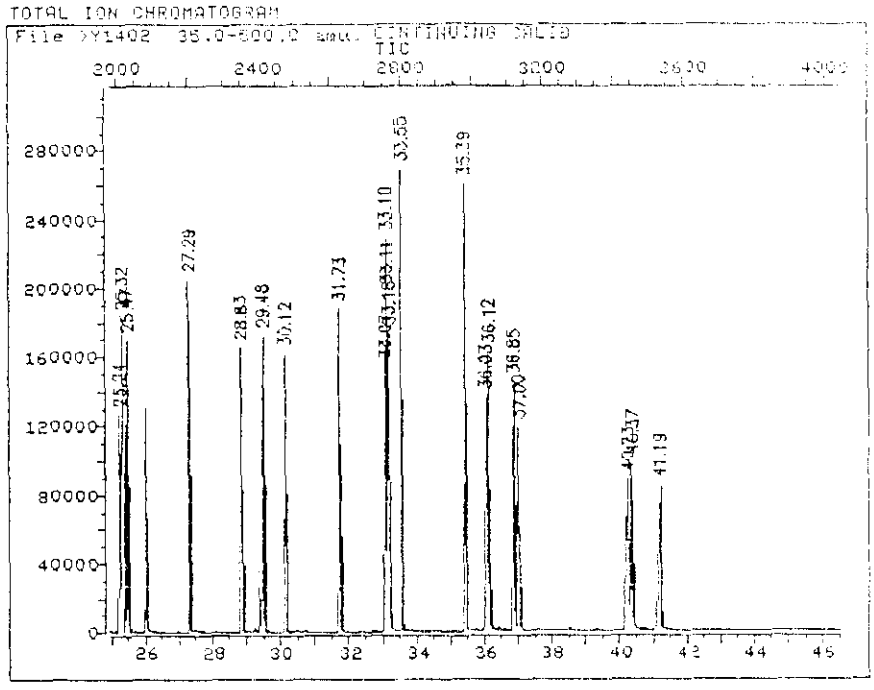


Data File: >Y1402::D2 Quant Output File: ^Y1402::CF
Name: CONTINUING CALIB Instrument ID: BNA2
Misc: BTL# 1

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40 Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921214 12:27
Injected at: 921214 11:39

Page 1 of 2



Data File: >Y1402::D2 Quant Output File: ^Y1402::QF
Name: CONTINUING CALIB Instrument ID: BNA2
Misc: BTL# 1

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40 Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921214 12:27
Injected at: 921214 11:39

Page 2 of 2

(CCC AND SPCC DAILY CALIBRATION CHECK OPERATOR REPORT BNA 5

DATA FILE NAME = >Y1402::D2
DATE AND TIME OF ANALYSIS = 12/14/92 11:39
SAMPLE = CONTINUING CALIB
MISCELLANEOUS =
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

CCC COMPOUND	DAILY CAL RF	5-POINT AVE RF	%D
Pentachlorophenol	.1655	.1710	3.22
1,4-Dichlorobenzene	1.5134	1.5019	.77
2-Nitrophenol	.2175	.2365	8.05
2,4-Dichlorophenol	.3162	.3449	9.08
Hexachlorobutadiene	.1910	.2167	11.85
4-Chloro-3-methylphenol	.3322	.3087	7.63
2,4,6-Trichlorophenol	.4417	.4826	8.48
Acenaphthene	1.1949	1.1884	.55
N-Nitrosodiphenylamine	.5092	.5254	3.08
Fluoranthene	1.0921	1.1145	2.01
Di-n-octylphthalate	1.7398	1.7184	4.16
Benzo(a)pyrene	1.0901	1.1261	3.20
Phenol	1.6504	1.4755	11.85

SPCC COMPOUND	DAILY RF
N-Nitroso-di-n-propylamine	.8236
Hexachlorocyclopentadiene	.3943
2,4-Dinitrophenol	.1438
4-Nitrophenol	.2342

DAILY CALIBRATION FOR BNA'S PASSED ALL CCC AND SPCC CRITERIA

THE RF AND RT VALUES WILL AUTOMATICALLY BE UPDATED IN YOUR IDFILE

[RRT AND RF DAILY CALIBRATION GC/MS OPERATOR REPORT BNA'3 PAGE 1

DATA FILE NAME = >Y1402::D2
DATE AND TIME OF ANALYSIS = 12/14/92 11:39
SAMPLE = CONTINUING CALIB
MISCELLANEOUS =
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

Compound Name	Retention Times: RRT FOUND	RRT IN THE IDFILE	RT DIFF-ERENCE	Response Factors: RF FOUND	AVE. RF FROM 5-POINT	RATIO RF FOUND TO RF IN IDFILE
bis(2-Chloroethyl)ether	.94359	.94295	-.0405	1.4798	1.2091	.99840
1,3-Dichlorobenzene	.98208	.98217	-.0510	1.4937	1.4982	.99596
Benzyl alcohol	1.0493	1.0481	-.0400	.86477	.7895	1.0363
1,2-Dichlorobenzene	1.0430	1.0428	-.0505	1.4442	1.4305	.99264
2-Methylphenol	1.0851	1.0838	-.0395	1.1030	1.0217	1.0221
bis(2-Chloroisopropyl)ether	1.0905	1.0900	-.0499	1.4788	1.1719	.90823
4-Methylphenol	1.1281	1.1265	-.0388	1.2142	1.0677	1.0347
Hexachloroethane	1.1326	1.1310	-.0388	.65402	.5698	1.0170
Nitrobenzene	.86651	.86629	-.0387	.43166	.3527	1.0170
Isophorone	.91743	.91770	-.0487	.81658	.7006	1.0259
2-Nitrophenol	.92884	.92840	-.0382	.21746	.2365	.95626
2,4-Dimethylphenol	.94760	.94712	-.0384	.29945	.2892	1.0291
Benzoic acid	.98117	.97991	-.0278	.20953	.2433	1.0941
bis(2-Chloroethoxy)methane	.96706	.96651	-.0383	.49686	.4299	1.0157
2,4-Dichlorophenol	.97713	.97655	-.0383	.31618	.3449	.99306
Naphthalene	1.0040	1.0040	-.0485	1.0387	.9915	1.0272
4-Chloroaniline	1.0201	1.0194	-.0380	.45850	.4601	.99150
Hexachlorobutadiene	1.0329	1.0328	-.0485	.19102	.2167	.92219
2-Methylnaphthalene	1.1394	1.1383	-.0375	.64536	.6578	.99017
Hexachlorocyclopentadiene	.87600	.87583	-.0372	.39432	.4445	.91701
2,4,6-Trichlorophenol	.89457	.89486	-.0479	.44168	.4826	1.0284
2,4,5-Trichlorophenol	.89860	.89838	-.0374	.46728	.5067	.97099
2-Chloronaphthalene	.92124	.92095	-.0369	1.2603	1.2938	1.0087
2-Nitroaniline	.93929	.93895	-.0369	.47571	.3826	1.0248
Dimethylphthalate	.97138	.97096	-.0367	1.5330	1.6121	1.0229
Acenaphthylene	.97892	.97899	-.0470	2.0229	2.0029	1.0290
2,6-Dinitrotoluene	.97741	.97698	-.0367	.36528	.3824	1.0004
3-Nitroaniline	.99899	.99849	-.0363	.38950	.4217	1.0153
2,4-Dinitrophenol	1.0136	1.0135	-.0467	.14382	.2998	.82739
Dibenzofuran	1.0301	1.0296	-.0363	1.7196	1.7731	1.0096
Diethylphthalate	1.0743	1.0736	-.0355	1.6131	1.6207	1.0336
4-Chlorophenyl-phenylether	1.0834	1.0831	-.0458	.65443	.7070	.99307
Fluorene	1.0788	1.0786	-.0459	1.3439	1.3840	1.0291
4-Nitroaniline	1.0864	1.0862	-.0458	.40978	.4515	1.0279
4,6-Dinitro-2-methylphenol	.90086	.90063	-.0352	.13664	.2002	1.0543
N-Nitrosodiphenylamine	.90958	.90975	-.0458	.50924	.5254	1.0213
4-Bromophenyl-phenylether	.95145	.95155	-.0458	.22044	.2291	.94130
Hexachlorobenzene	.95437	.95447	-.0457	.27195	.2719	.99965
Phenanthrene	1.0029	1.0029	-.0455	1.0473	1.0437	1.0031
Anthracene	1.0087	1.0087	-.0456	1.0473	1.0573	.99907

[RRT AND RF DAILY CALIBRATION GC/MS OPERATOR REPORT BNA'S PAGE 1]

DATA FILE NAME = >Y1402::D2
DATE AND TIME OF ANALYSIS = 12/14/92 11:39
SAMPLE = CONTINUING CALIB
MISCELLANEOUS =
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

Compound Name	Retention Times: RRT FOUND	RRT IN THE IDFILE	RT DIFF-ERENCE	Response factors: RF FOUND	AVE. RF FROM 5-POINT	RATIO RF FOUND TO RF IN IDFILE
Di-n-butylphthalate	1.0812	1.0811	-.0450	1.5111	1.4132	1.0887
Fluoranthene	1.1421	1.1418	-.0443	1.0921	1.1145	.99037
Butylbenzylphthalate	.95860	.95864	-.0436	.76895	.8182	1.0746
3,3'-Dichlorobenzidine	1.0003	1.0003	-.0442	.33995	.4745	.98256
Benzo(a)anthracene	.99904	.99904	-.0442	1.2132	1.3480	1.0084
Chrysene	1.0026	1.0026	-.0442	1.2189	1.3309	.99104
Bis(2-Ethylhexyl)phthalate	1.0137	1.0136	-.0441	1.1222	1.1337	1.0078
Di-n-octylphthalate	.95657	.95638	-.0438	1.7898	1.7184	1.1177
Benzo(b)fluoranthene	.97385	.97392	-.0541	1.1172	1.2365	1.0047
Benzo(k)fluoranthene	.97613	.97591	-.0435	1.1515	1.1223	1.0259
Benzo(a)pyrene	.99601	.99573	-.0426	1.0901	1.1261	1.0[illegible]
Indeno(1,2,3-cd)pyrene	1.0873	1.0877	-.0734	1.0911	1.1125	1.0[illegible]
Dibenz(a,h)anthracene	1.0910	1.0911	-.0629	1.0468	.9656	1.0[illegible]
Benzo(g,h,i)perylene	1.1132	1.1135	-.0738	1.1355	1.0915	1.0[illegible]92
Phenol	.92476	.92421	-.0406	1.6504	1.4755	1.0[illegible]73
2-Chlorophenol	.94179	.94116	-.0405	1.3719	1.2883	1.0[illegible]36
1,4-Dichlorobenzene	1.0054	1.0045	-.0404	1.5134	1.5019	.98854
N-Nitroso-di-n-propylamine	1.1245	1.1230	-.0388	.82358	.6299	1.0040
1,2,4-Trichlorobenzene	.99124	.99062	-.0383	.34654	.3859	.96889
4-Chloro-3-methylphenol	1.1193	1.1189	-.0480	.33224	.3087	1.0768
Acenaphthene	1.0050	1.0045	-.0362	1.1949	1.1884	1.0[illegible]71
4-Nitrophenol	1.0276	1.0271	-.0364	.23417	.2297	1.0[illegible]81
2,4-Dinitrotoluene	1.0337	1.0331	-.0363	.53483	.5748	1.0089
Pentachlorophenol	.97881	.97884	-.0453	.16549	.1710	1.0060
Pyrene	.89070	.89084	-.0440	1.3747	1.5386	.97963
2-Fluorophenol	.59943	.60132	-.0526	1.2469	1.1965	.91268
Phenol-d5	.92117	.92064	-.0406	1.5251	1.3519	.91483
Nitrobenzene-d5	.86315	.86295	-.0387	.42220	.3453	1.0767
2-Fluorobiphenyl	.90867	.90842	-.0373	1.3693	1.3992	1.0296
2,4,6-Tribromophenol	.91914	.91930	-.0459	.14399	.1284	.8[illegible]14
Terphenyl-d14	.90997	.91008	-.0437	1.0246	1.1149	.98359

QUANT REPORT

Operator ID: BOB
Output File: ^Y1402::DF
Data File: >Y1402::D2

Quant Rev: 7 Quant Time: 921214 12:[illegible]
Injected at: 921214 11:[illegible]
Dilution Factor: 1.0000

Name: CONTINUING CALIB
Misc:

Instrument ID: BNA2
BTL4

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Date: 921214 11:[illegible]

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.68	712	39721	40.00	ng/uL
2)	2-Fluorophenol	7.00	264	123819	100.00	ng/uL
3)	Phenol-d5	10.76	624	151442	100.00	ng/uL
4)	Phenol	10.80	628	81943	50.00	ng/uL
5)	bis(2-Chloroethyl)ether	11.02	649	73475	50.00	ng/uL
6)	2-Chlorophenol	11.00	647	68118	50.00	ng/uL
7)	1,3-Dichlorobenzene	11.47	692	74162	50.00	ng/uL
8)	1,4-Dichlorobenzene	11.74	718	75141	50.00	ng/uL
9)	Benzyl alcohol	12.26	767	42937	50.00	ng/uL
10)	1,2-Dichlorobenzene	12.18	760	71708	50.00	ng/uL
11)	2-Methylphenol	12.68	807	55759	50.00	ng/uL
12)	bis(2-Chloroisopropyl)ether	12.74	813	73425	50.00	ng/uL
13)	4-Methylphenol	13.18	855	60288	50.00	ng/uL
14)	N-Nitroso-di-n-propylamine	13.14	851	40920	50.00	ng/uL
15)	Hexachloroethane	13.23	860	32473	50.00	ng/uL
16)	*Naphthalene-d8	15.60	1086	137728	40.00	ng/uL
17)	Nitrobenzene-d5	13.46	882	72686	50.00	ng/uL
18)	Nitrobenzene	13.51	887	74314	50.00	ng/uL
19)	Isophorone	14.31	963	140582	50.00	ng/uL
20)	2-Nitrophenol	14.49	980	37438	50.00	ng/uL
21)	2,4-Dimethylphenol	14.78	1008	51554	50.00	ng/uL
22)	Benzoic acid	15.30	1058	36943	51.00	ng/uL
23)	bis(2-Chloroethoxy)methane	15.08	1037	85539	50.00	ng/uL
24)	2,4-Dichlorophenol	15.24	1052	54434	50.00	ng/uL
25)	1,2,4-Trichlorobenzene	15.46	1073	59661	50.00	ng/uL
26)	Naphthalene	15.66	1092	178816	50.00	ng/uL
27)	4-Chloroaniline	15.91	1116	78935	50.00	ng/uL
28)	Hexachlorobutadiene	16.11	1135	32886	50.00	ng/uL
29)	4-Chloro-3-methylphenol	17.46	1264	57199	50.00	ng/uL
30)	2-Methylnaphthalene	17.77	1294	111106	50.00	ng/uL
31)	*Acenaphthene-d10	20.85	1588	68596	40.00	ng/uL
32)	Hexachlorocyclopentadiene	18.26	1341	33811	50.00	ng/uL
33)	2,4,6-Trichlorophenol	18.65	1378	37872	50.00	ng/uL
34)	2,4,5-Trichlorophenol	18.73	1386	40067	50.00	ng/uL
35)	2-Chloronaphthalene	19.20	1431	108067	50.00	ng/uL
36)	2-Fluorobiphenyl	18.94	1406	117409	50.00	ng/uL
37)	2-Nitroaniline	19.58	1467	40790	50.00	ng/uL
38)	Dimethylphthalate	20.25	1531	131444	50.00	ng/uL
39)	Acenaphthylene	20.41	1546	173450	50.00	ng/uL
40)	2,6-Dinitrotoluene	20.38	1543	31321	50.00	ng/uL
41)	3-Nitroaniline	20.83	1586	33398	50.00	ng/uL
42)	Acenaphthene	20.95	1598	102454	50.00	ng/uL
43)	2,4-Dinitrophenol	21.13	1615	12332	50.00	ng/uL
44)	4-Nitrophenol	21.42	1643	20079	50.00	ng/uL
45)	Dibenzofuran	21.47	1648	147447	50.00	ng/uL
46)	2,4-Dinitrotoluene	21.55	1655	45859	50.00	ng/uL
47)	Diethylprthalate	22.40	1736	138316	50.00	ng/uL
48)	4-Chlorophenyl-phenylether	22.58	1754	56114	50.00	ng/uL
49)	Fluorene	22.45	1749	115650	50.00	ng/uL

50)	4-Nitroaniline	22.65	1760	35137	50.00 ng/uL
51)	*Phenanthrene-d10	25.24	2000	122456	40.00 ng/uL
52)	4,6-Dinitro-2-methylphenol	22.74	1763	20915	50.00 ng/uL
53)	N-Nitrosodiphenylamine	22.96	1791	77949	50.00 ng/uL
54)	2,4,6-Tribromophenol	23.20	1815	44079	100.00 ng/uL
55)	4-Bromophenyl-phenylether	24.02	1891	33743	50.00 ng/uL
56)	Hexachlorobenzene	24.09	1898	41628	50.00 ng/uL
57)	Pentachlorophenol	24.71	1957	25331	50.00 ng/uL
58)	Phenanthrene	25.32	2016	160311	50.00 ng/uL
59)	Anthracene	25.47	2029	160303	50.00 ng/uL
60)	Di-n-butylphthalate	27.29	2204	231297	50.00 ng/uL
61)	Fluoranthene	28.83	2351	167170	50.00 ng/uL
62)	*Chrysene-d12	33.10	2759	99461	40.00 ng/uL
63)	Pyrene	29.48	2413	170910	50.00 ng/uL
64)	Terphenyl-d14	30.12	2474	127382	50.00 ng/uL
65)	Butylbenzylphthalate	31.73	2628	95601	50.00 ng/uL
66)	3,3'-Dichlorobenzidine	33.11	2760	42265	50.00 ng/uL
67)	Benzo(a)anthracene	33.07	2756	150835	50.00 ng/uL
68)	Chrysene	33.18	2767	151547	50.00 ng/uL
69)	Bis(2-Ethylhexyl)phthalate	33.55	2802	139515	50.00 ng/uL
70)	*Perylene-d12	37.00	3131	111551	40.00 ng/uL
71)	Di-n-octylphthalate	35.39	2978	249572	50.00 ng/uL
72)	Benzo(b)fluoranthene	36.03	3039	155786	50.00 ng/uL
73)	Benzo(k)fluoranthene	36.12	3047	160565	50.00 ng/uL
74)	Benzo(a)pyrene	36.85	3117	151998	50.00 ng/uL
75)	Indeno(1,2,3-cd)pyrene	40.23	3439	149827	49.24 ng/uL
76)	Dibenz(a,h)anthracene	40.37	3452	145971	50.00 ng/uL
77)	Benzo(g,h,i)perylene	41.19	3530	158333	50.00 ng/uL

* Compound is ISTD

QUANT REPORT

Operator ID: BOB
Output File: ^Y1403::OF
Data File: >Y1403::D2
Name: METHOD BLANK
Misc: CORE 38 RERUN

Quant Rev: 7
Quant Time: 921214 13:33
Injected at: 921214 12:45
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 1

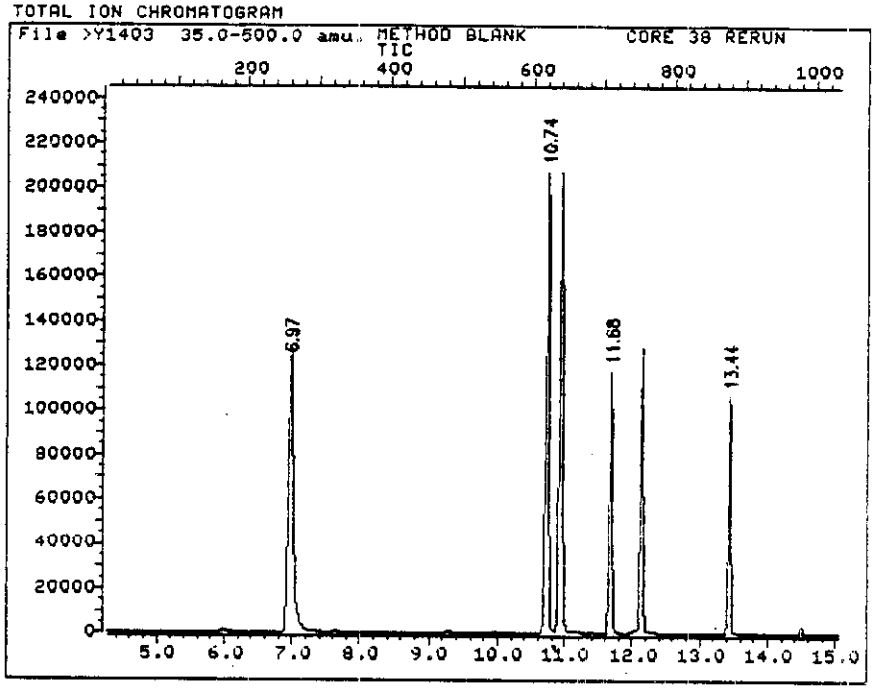
ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.68	711	52705	40.00	ng/uL
2)	2-Fluorophenol	6.97	260	176204	107.25	ng/uL
3)	Phenol-d5	10.74	621	214099	106.55	ng/uL
16)	*Naphthalene-d8	15.59	1085	182046	40.00	ng/uL
17)	Nitrobenzene-d5	13.44	879	83828	43.63	ng/uL
31)	*Acenaphthene-d10	20.84	1588	88316	40.00	ng/uL
36)	2-Fluorobiphenyl	18.93	1405	140047	46.32	ng/uL
51)	*Phenanthrene-d10	25.23	2009	157371	40.00	ng/uL
54)	2,4,6-Tribromophenol	23.18	1813	64602	114.05	ng/uL
62)	*Chrysene-d12	33.08	2761	129174	40.00	ng/uL
64)	Terphenyl-d14	30.12	2478	164327	49.66	ng/uL
70)	*Perylene-d12	37.00	3136	142333	40.00	ng/uL

* Compound is ISTD

Preliminary data
DCC 12-17-92



Data File: >Y1403::D2
Name: METHOD BLANK
Misc: CORE 38 RERUN

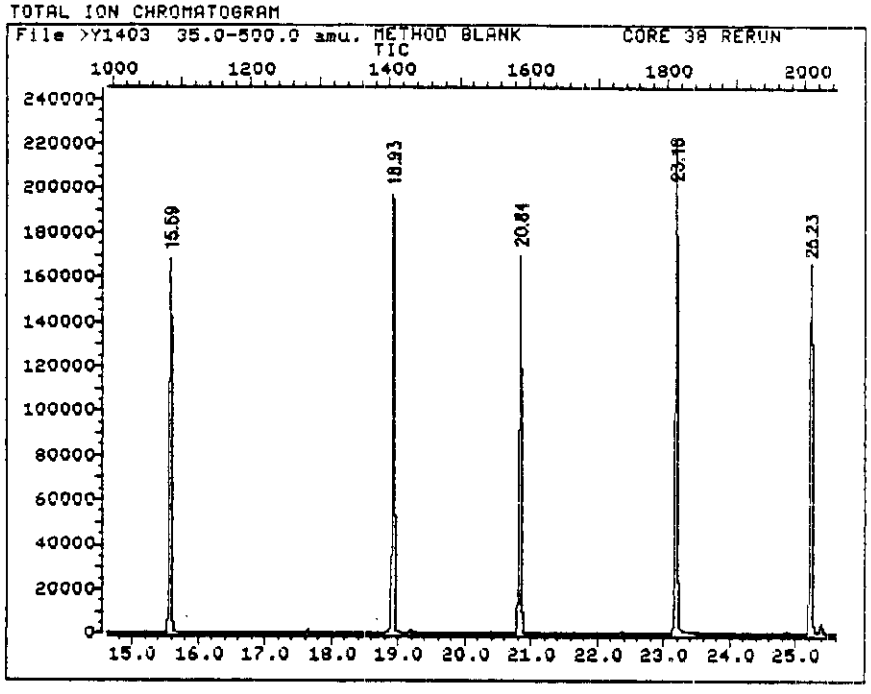
Quant Output File: ^Y1403::QF
Instrument ID: BNA2
BTL#

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 13:33
Injected at: 921214 12:45

Page 1 of 4



Data File: >Y1403::D2
Name: METHOD BLANK
Misc: CORE 38 RERUN

Quant Output File: ^Y1403::DF
Instrument ID: BNA2
BTL# 1

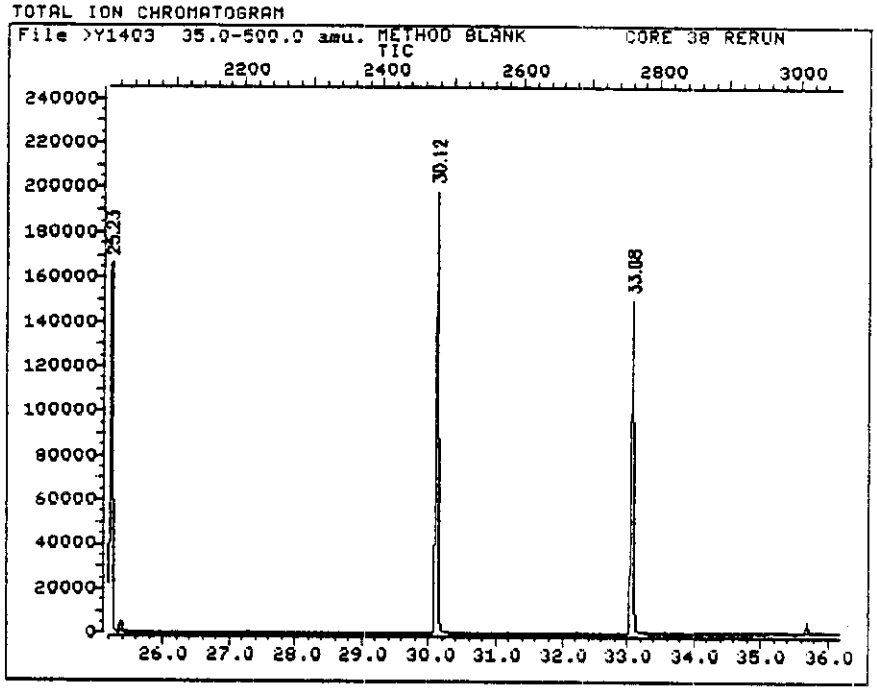
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 13:33
Injected at: 921214 12:45

Page 2 of 4

TOTAL ION CHROMATOGRAM



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Name: METHOD BLANK
Misc: CORE 38 RERUN

Quant Output File: ^Y1403::OF
Instrument ID: BNA2

BTL# 1

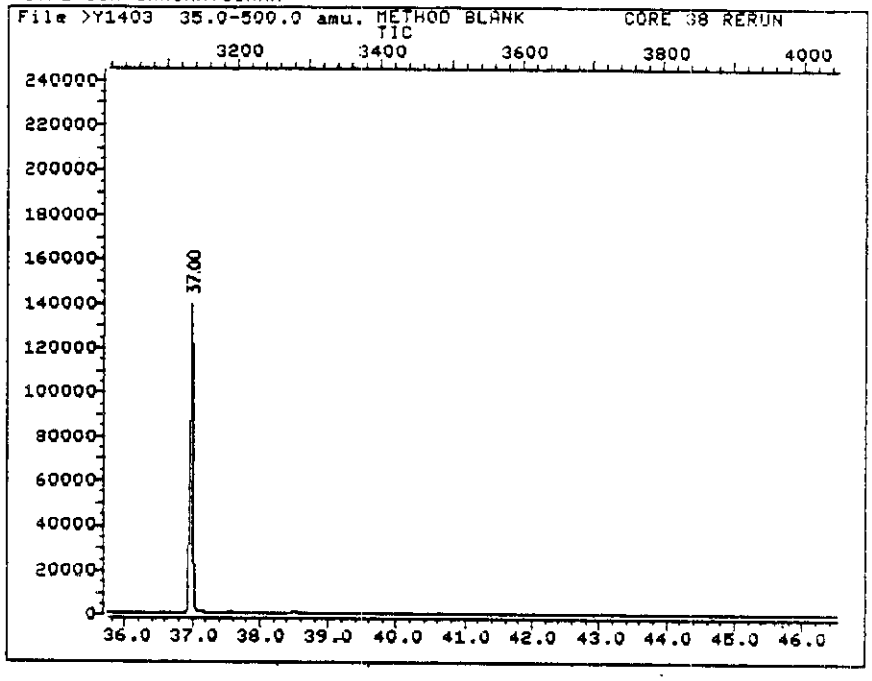
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 13:33
Injected at: 921214 12:45

Page 3 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1403::D2
Name: METHOD BLANK
Misc: CORE 38 RERUN

Quant Output File: ^Y1403::QF
Instrument ID: BNA2

BTL# 1

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 13:33
Injected at: 921214 12:45

Page 4 of 4

QUANT REPORT

Operator ID: 808
Output File: ^Y1403::DF
Data File: >Y1403::D2
Name: METHOD BLANK
Misc: CORE 38 RERUN

Quant Rev: 7
Quant Time: 921214 13:33
Injected at: 921214 12:45
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 1

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921214 11:39

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.68	711	52705	40.00	ng/uL
2)	2-Fluorophenol	6.97	260	176204	107.25	ng/uL
3)	Phenol-d5	10.74	621	214099	106.55	ng/uL
4)	Phenol	0.00	0	0	0.00	ng/uL
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL
14)	N-Nitroso-di-n-propylamine	0.00	879	0	0.00	ng/uL
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL
16)	*Naphthalene-d8	15.59	1085	182046	40.00	ng/uL
17)	Nitrobenzene-d5	13.44	879	83828	43.63	ng/uL
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL
19)	Isophorone	0.00	0	0	0.00	ng/uL
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL
22)	Benzoic acid	0.00	0	0	0.00	ng/uL
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL
25)	1,2,4-Trichlorobenzene	0.00	0	0	0.00	ng/uL
26)	Naphthalene	0.00	0	0	0.00	ng/uL
27)	4-Chloroaniline	0.00	0	0	0.00	ng/uL
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL
29)	4-Chloro-3-methylphenol	0.00	0	0	0.00	ng/uL
30)	2-Methylnaphthalene	0.00	0	0	0.00	ng/uL
31)	*Acenaphthene-d10	20.84	1588	88316	40.00	ng/uL
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL
36)	2-Fluorobiphenyl	18.93	1405	140047	46.32	ng/uL
37)	2-Nitroaniline	0.00	0	0	0.00	ng/uL
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL
40)	2,6-Dinitrotoluene	0.00	1588	0	0.00	ng/uL
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL
42)	Acenaphthene	0.00	0	0	0.00	ng/uL

43)	2,4-Dinitrophenol	0.00	0	0	0.00 ng/uL
44)	4-Nitrophenol	0.00	0	0	0.00 ng/uL
45)	Dibenzofuran	0.00	0	0	0.00 ng/uL
46)	2,4-Dinitrotoluene	0.00	0	0	0.00 ng/uL
47)	Diethylphthalate	0.00	0	0	0.00 ng/uL
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00 ng/uL
49)	Fluorene	0.00	0	0	0.00 ng/uL
50)	4-Nitroaniline	0.00	0	0	0.00 ng/uL
51)	*Phenanthrene-d10	25.23	2009	157371	40.00 ng/uL
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00 ng/uL
53)	N-Nitrosodiphenylamine	0.00	1814	0	0.00 ng/uL
54)	2,4,6-Tribromophenol	23.18	1813	64602	114.05 ng/uL
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00 ng/uL
56)	Hexachlorobenzene	0.00	0	0	0.00 ng/uL
57)	Pentachlorophenol	0.00	0	0	0.00 ng/uL
58)	Phenanthrene	0.00	0	0	0.00 ng/uL
59)	Anthracene	0.00	0	0	0.00 ng/uL
60)	Di-n-butylphthalate	0.00	0	0	0.00 ng/uL
61)	Fluoranthene	0.00	0	0	0.00 ng/uL
62)	*Chrysene-d12	33.08	2761	129174	40.00 ng/uL
63)	Pyrene	0.00	0	0	0.00 ng/uL
64)	Terphenyl-d14	30.12	2478	164327	49.66 ng/uL
65)	Butylbenzylphthalate	0.00	0	0	0.00 ng/uL
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00 ng/uL
67)	Benzo(a)anthracene	0.00	0	0	0.00 ng/uL
68)	Chrysene	0.00	0	0	0.00 ng/uL
69)	Bis(2-Ethylhexyl)phthalate	0.00	0	0	0.00 ng/uL
70)	*Perylene-d12	37.00	3136	142333	40.00 ng/uL
71)	Di-n-octylphthalate	0.00	0	0	0.00 ng/uL
72)	Benzo(b)fluoranthene	0.00	0	0	0.00 ng/uL
73)	Benzo(k)fluoranthene	0.00	0	0	0.00 ng/uL
74)	Benzo(a)pyrene	0.00	0	0	0.00 ng/uL
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00 ng/uL
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00 ng/uL
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00 ng/uL

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1403
CAL CHECK FILE = >Y1402
DATE AND TIME OF ANALYSIS = 12/14/92 12:45
MISCELLANEOUS = CORE 38 RERUN
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	52705	39721	19861	79442	OK
Naphthalene-d8	182046	137728	68864	275456	OK
Acenaphthene-d10	88316	68596	34298	137192	OK
Phenanthrene-d10	157371	122456	61228	244912	OK
Chrysene-d12	129174	99461	49730	198922	OK
Perylene-d12	142333	111551	55775	223102	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.68	11.68	11.18	12.18	OK
Naphthalene-d8	15.59	15.59	15.09	16.10	OK
Acenaphthene-d10	20.84	20.85	20.35	21.35	OK
Phenanthrene-d10	25.23	25.24	24.74	25.74	OK
Chrysene-d12	33.08	33.10	32.60	33.60	OK
Perylene-d12	37.00	37.00	36.50	37.50	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1403::D2
DATE AND TIME OF ANALYSIS = 12/14/92 12:45
SAMPLE = METHOD BLANK
MISCELLANEOUS = CORE 38 RERUN
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVERY
2-Fluorophenol	107.25	100.00	21-100	25-121	107.25
Phenol-d5	106.55	100.00	10-94	24-113	106.55
Nitrobenzene-d5	43.63	50.00	35-114	23-120	87.25
2-Fluorobiphenyl	46.32	50.00	43-116	30-115	92.65
2,4,6-tribromo-phenol	114.05	100.00	10-123	19-122	114.05
Terphenyl-d14	49.67	50.00	33-141	18-137	99.35

MS data file header from : >Y1403::D2

Sample: METHOD BLANK Operator: BOB SUPER GRP. 12/14/92 12:45
Misc : CORE 38 RERUN BTL# 1
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 1 Equip ID: BNA2
Method file: BNAME2 Tuning file: MTBNA2 No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	40.	300.	0.	0.	0.
Chromatographic times, min. :	4.0	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	8.0	0.0	0.0	.5	0.0

>Y1403 METHOD BLANK CORE 38 RERUN
35.01 500.0 CLP TIC
Upslope: .2000 Area Reject: 32503. Max Peaks: 2 Bunch: -1 Valley >100 %
Dnslope: 0.0000 Results File IY1403 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of tota
1	10.94	632	640	654	206981	692407	686014	100.00	65.1
2	12.13	736	754	770	127950	373640	366576	53.44	34.8

Sum of corrected areas: 1052590.

Summary of Unknowns PBM Library Search and Quantitation

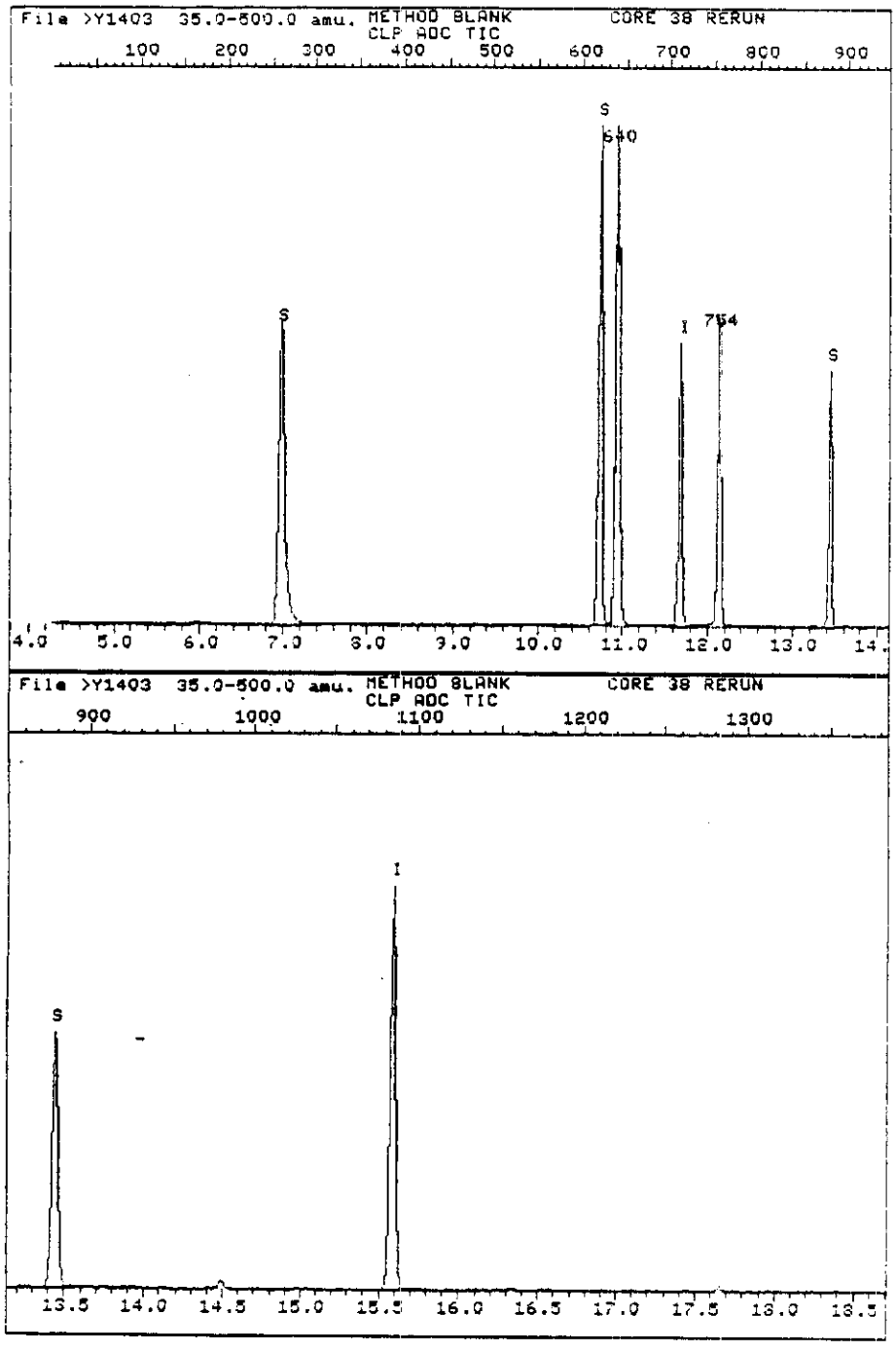
Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	325025.	11.68	4.27 - 13.64
2	40.0	379843.	15.59	13.64 - 18.21
3	40.0	400033.	20.84	18.21 - 23.03
4	40.0	413435.	25.23	23.03 - 29.15
5	40.0	391723.	33.08	29.15 - 35.04
6	40.0	420679.	37.00	35.04 - 46.52

Dilution Factor = 1.00 This sample was 1.00000 g or mL

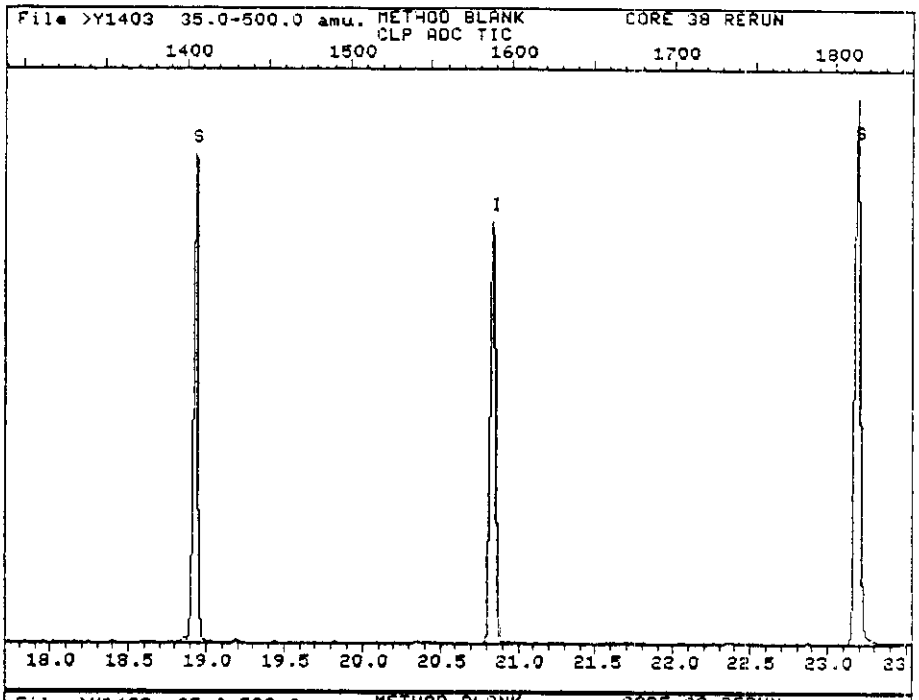
Correction Factor = 2002.00

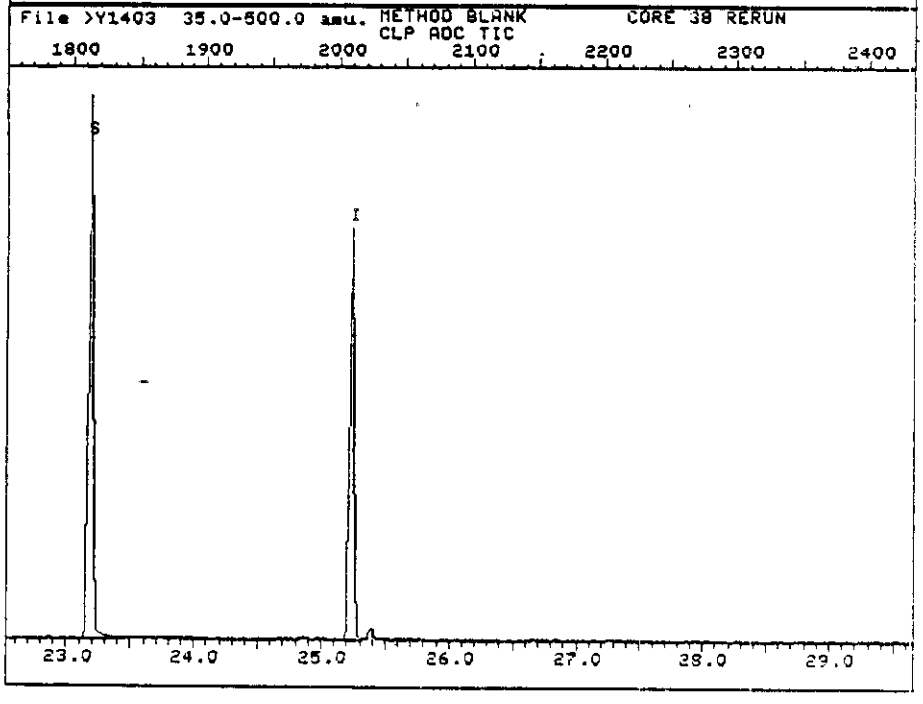
$$\text{Unknown Concentration} = \frac{\text{Conc Int Std} * \text{Area Unknown}}{\text{Area Int Std}} * \text{Correction Factor}$$

12:24 PM THU., 17 DEC., 1992

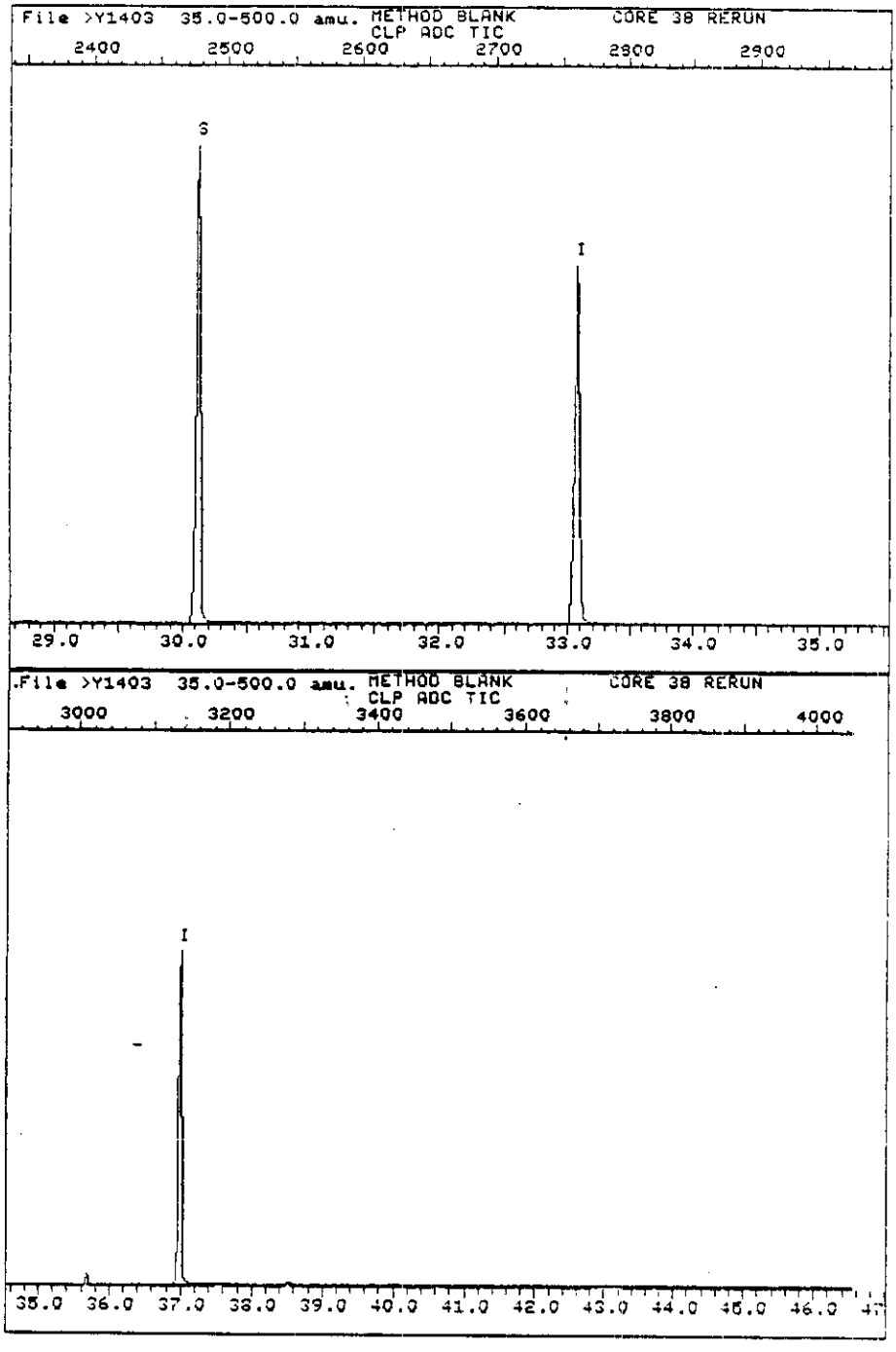


Instrument ID: BNA2 Analyzed on: 12/14/92 12:45

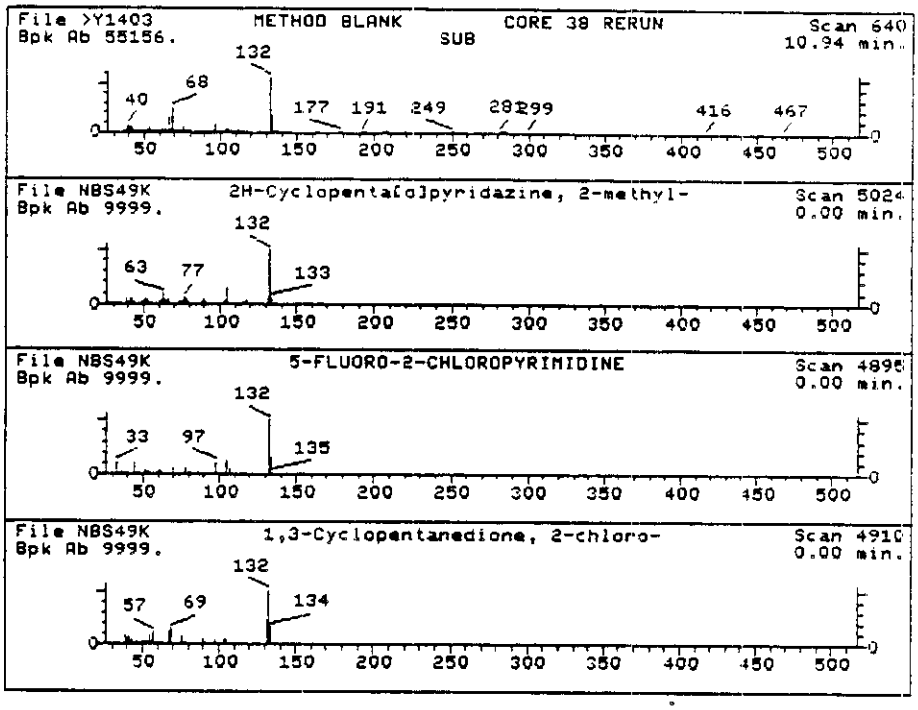




Instrument ID: BNA2 Analyzed on: 12/14/92 12:45



Instrument ID: BNA2 Analyzed on: 12/14/92 12:45



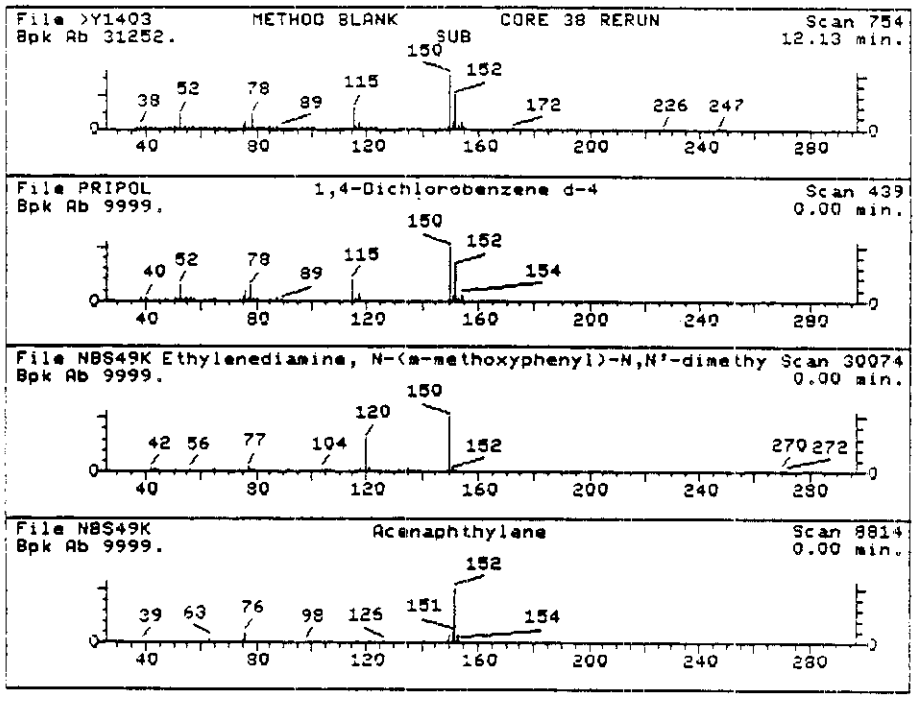
Instrument ID: BNA2 Analyzed on: 12/14/92 12:45
Result 1 in PBM results file: LY1403
Retention Time: 10.94 Area: 686014 Tentative Conc: 170000.00
The unknown area is 211.07% of the nearest internal standard

1.	2H-Cyclopenta[d]pyridazine, 2-methyl-	132	C8H8N2
2.	5-FLUORO-2-CHLOROPYRIMIDINE	132	C4H2ClFN2
3.	1,3-Cyclopentanedione, 2-chloro-	132	C5H5ClO2
4.	Benzeneethanamine, .alpha.-methyl-N-(phenylmethylene	223	C16H17N
5.	3H-1,2-Dithiol-3-one, 4-methyl-	132	C4H4OS2

Sample file: >Y1403 Spectrum #: 640
Search speed: 3 Tilting option: F No. of ion ranges searched: 23

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_	R_
1.	36*	22291856	15879	NBS49K	20	81	2	0	100	29	14	
2.	31*	62802420	15850	NBS49K	41	67	2	0	100	33	12	
3.	31*	14203191	15856	NBS49K	29	82	2	0	98	33	12	
4.	30*	2980021	16019	NBS49K	23	83	2	0	100	33	12	
5.	30*	3620108	15851	NBS49K	20	82	2	0	100	31	12	

this is 2-chlorophenol & that is a surrogate for 300 CLP do not use RWM 12-17-92



Instrument ID: BNA2 Analyzed on: 12/14/92 12:45
Result 2 in PBM results file: LY1403
Retention Time: 12.13 Area: 366576 Tentative Conc: 90000.00
The unknown area is 112.78% of the nearest internal standard

1. 1,4-Dichlorobenzene d-4	150	C6.D4.CL2
2. Ethylenediamine, N-(m-methoxyphenyl)-N,N'-dimethyl-N'-phenyl-	270	C17H22N2O
3. Acenaphthylene	152	C12H8
4. Condyfolan, 16-methyl-	282	C19H26N2
5. Ethanone, 1-(2-nitrophenyl)-	165	C8H7NO3
6. Imidazo[5,1-f][1,2,4]triazine-2,7-diamine	150	C5H6N6

Sample file: >Y1403 Spectrum #: 754
Search speed: 3 Tilting option: F No. of ion ranges searched: 3

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	[illegible]	R[illegible]
1.	97*	439	257	PRIPOL	95	12	0	0	75	7	63	-
2.	24*	32857399	19521	NBS49K	38	82	2	4	99	41	3	

~~PSD~~ no!
this is the extra surrogate - i.e. 1,2-dichlorobenzene that is in the 390 soil. LMY 12-17-92

do not use

QUANT REPORT

Operator ID: BOB
Output File: ^Y1404::OF
Data File: >Y1404::D2
Name: CORE 38 92-08307-E1R
Misc: 1.0188 G pH=10.25

Quant Rev: 7
Quant Time: 921214 14:31
Injected at: 921214 13:43
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 2

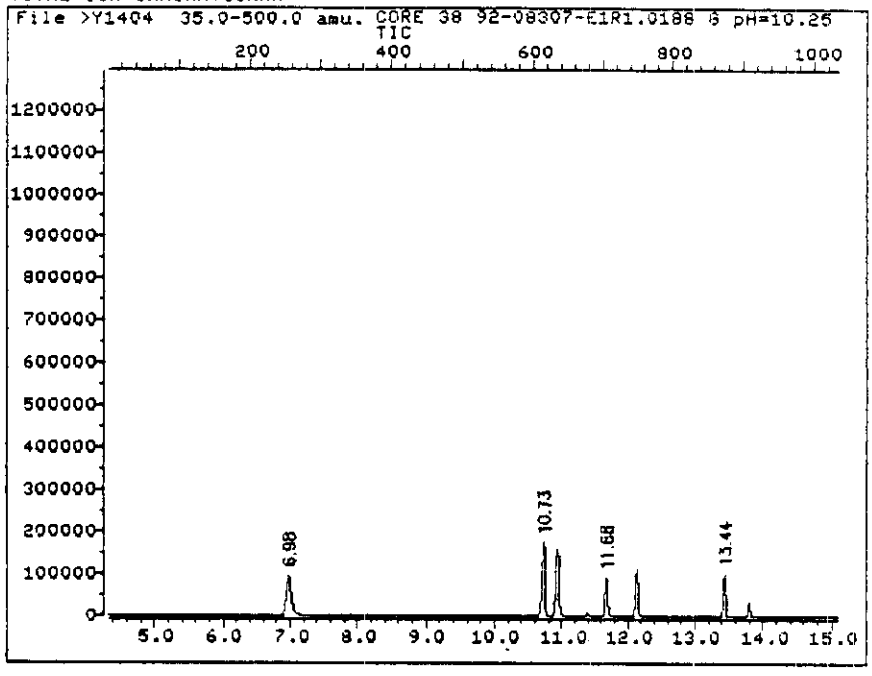
ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Time: 921214 11:39

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.68	705	42720	40.00	ng/uL
2)	2-Fluorophenol	6.98	255	140715	105.67	ng/uL
3)	Phenol-d5	10.73	615	172491	105.90	ng/uL
16)	*Naphthalene-d8	15.58	1079	146134	40.00	ng/uL
17)	Nitrobenzene-d5	13.44	874	76216	49.41	ng/uL
26)	Naphthalene	15.91	1110	1298	.342	ng/uL
31)	*Acenaphthene-d10	20.84	1581	72146	40.00	ng/uL
36)	2-Fluorobiphenyl	18.93	1399	129403	52.40	ng/uL
51)	*Phenanthrene-d10	25.23	2001	126810	40.00	ng/uL
54)	2,4,6-Tribromophenol	23.18	1805	47840	104.81	ng/uL
62)	*Chrysene-d12	33.07	2751	102473	40.00	ng/uL
64)	Terphenyl-d14	30.12	2469	146758	55.91	ng/uL
69)	Bis(2-Ethylhexyl)phthalate	33.53	2795	2245	.781	ng/uL
70)	*Perylene-d12	36.98	3125	115061	40.00	ng/uL

* Compound is ISTD

Preliminary data
[illegible] 12-17-92

TOTAL ION CHROMATOGRAM



Data File: >Y1404::D2
Name: CORE 38 92-08307-E1R
Misc: 1.0188 G pH=10.25

Quant Output File: ^Y1404::OF
Instrument ID: BNA2

BTL# 2

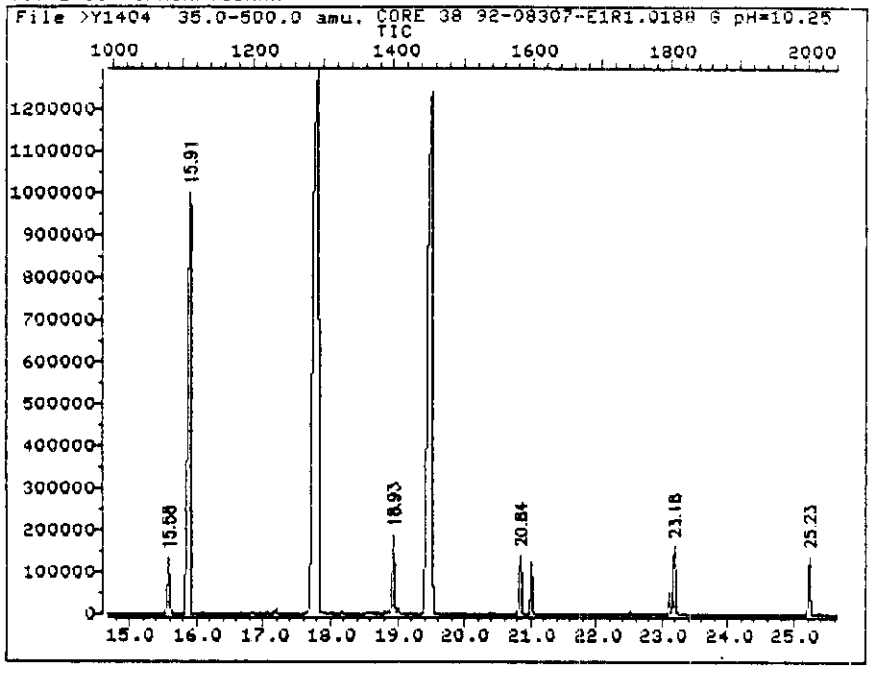
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 14:31
Injected at: 921214 13:43

Page 1 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1404::D2
Name: CORE 38 92-08307-E1R
Misc: 1.0188 G pH=10.25

Quant Output File: ^Y1404::QF
Instrument ID: BNA2
BTL# 2

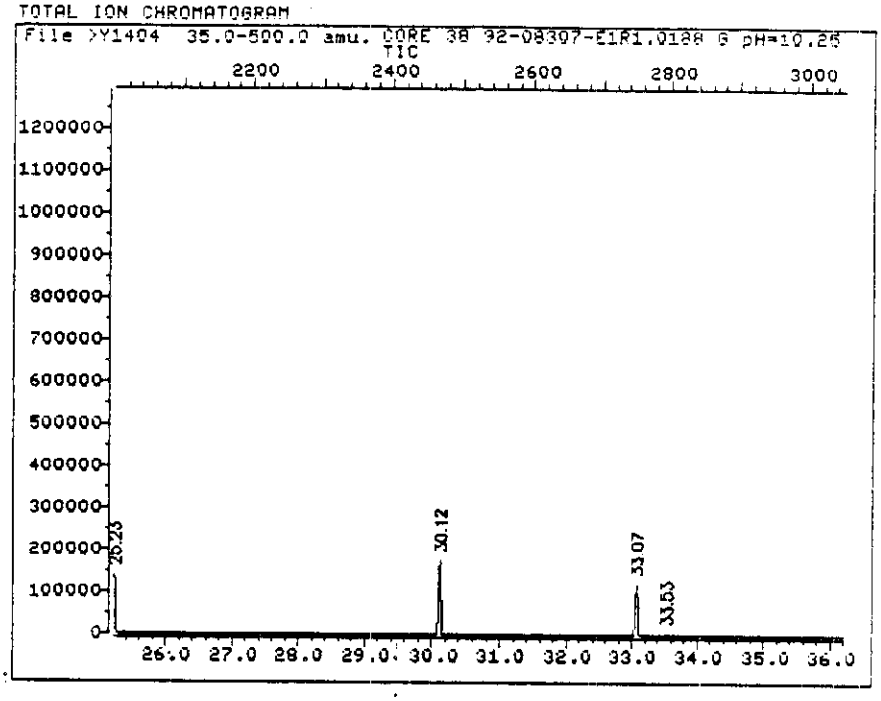
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 14:31
Injected at: 921214 13:43

Page 2 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1404::D2
Name: CORE 38 92-08307-E1R
Misc: 1.0188 G pH=10.25

Quant Output File: ^Y1404::QF
Instrument ID: 8NA2

BTL# 2

Id File: ID2BNA::QT
Title: 8NA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 14:31
Injected at: 921214 13:43

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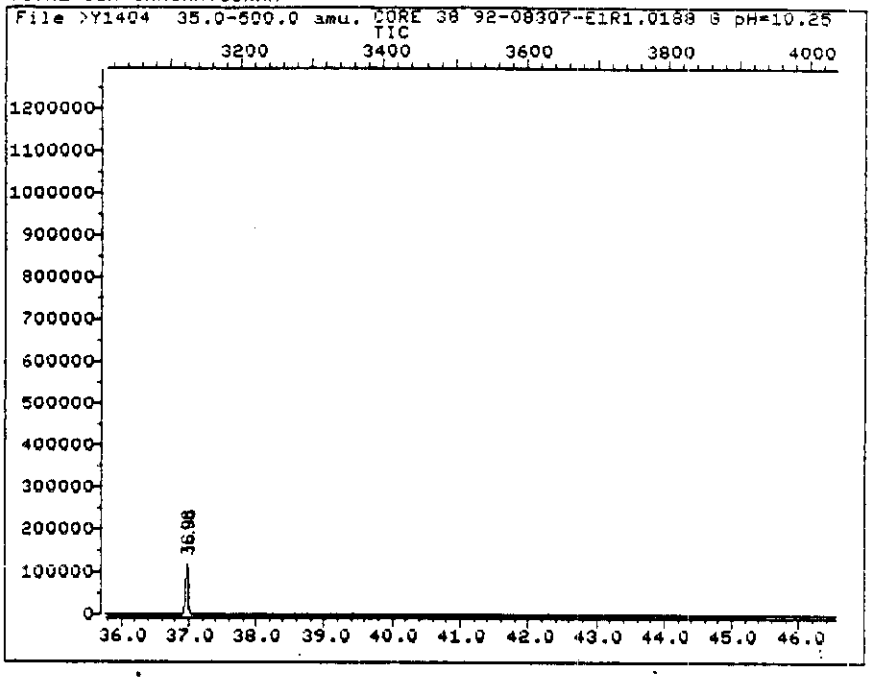
TOTAL ION CHROMATOGRAM



Data File: >Y1404::D2
Name: CORE 38 92-08307-E1R
Misc: 1.0188 G pH=10.25

Quant Output File: ^Y1404::QF
Instrument ID: BNA2

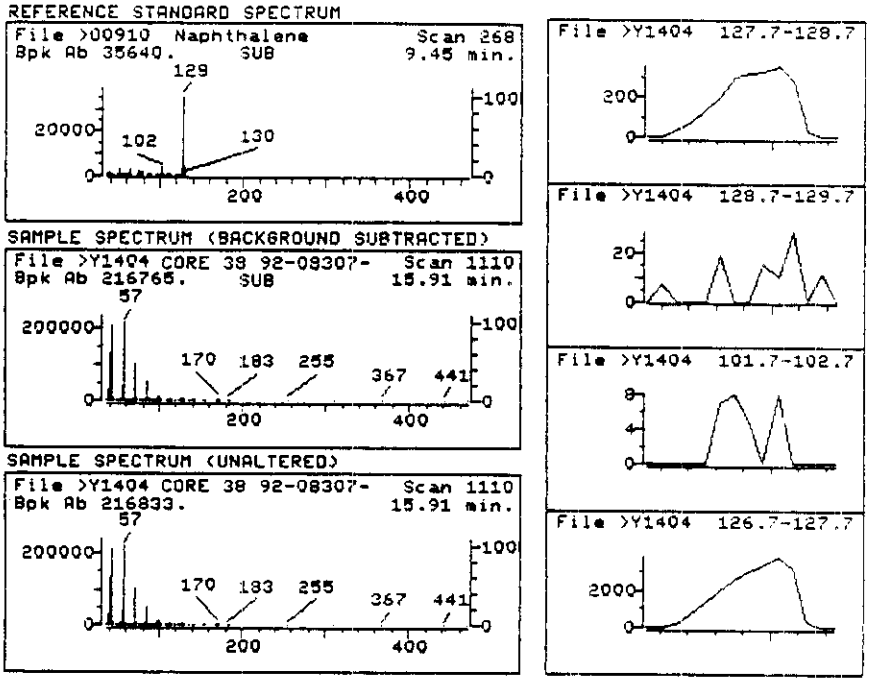
BTL# 2

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 14:31
Injected at: 921214 13:43

Page 4 of 4



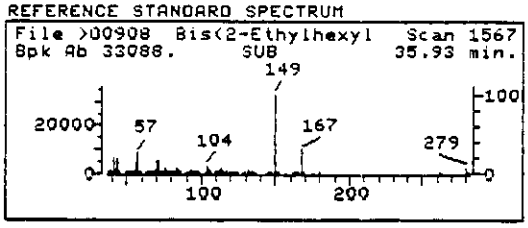
Data File: >Y1404::D2
Name: CORE 38 92-08307-E1R
Misc: 1.0188 G pH=10.25
Quant Time: 921214 14:31
Injected at: 921214 13:43
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1404::OF
Instrument ID: BNA2
BTL# 2
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

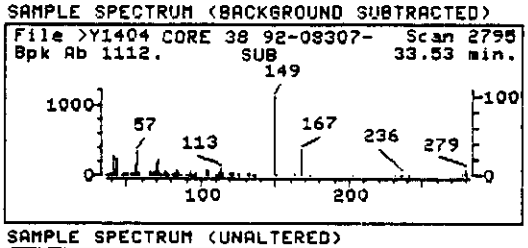
Compound No : 26
Compound Name : Naphthalene
Scan Number : 1110
Retention Time: 15.91 min.
Quant Ion : 128.0
Area : 1298
Concentration : .342 ng/uL
q-value : 78

No
~~Delete~~
OK Delete
12-12-92

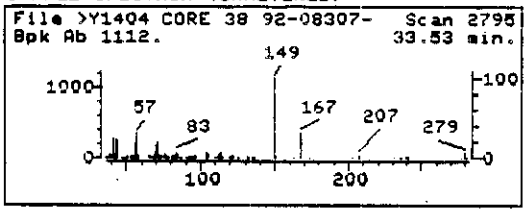
REFERENCE STANDARD SPECTRUM

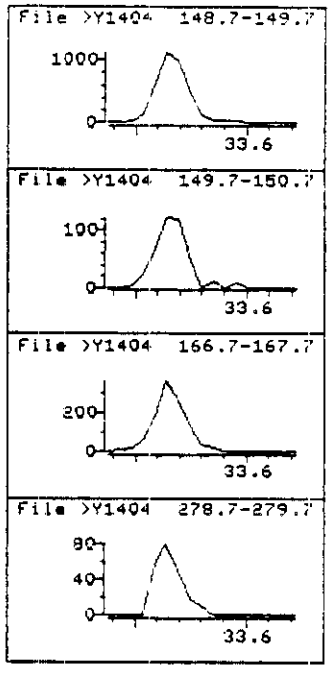


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





Data File: >Y1404::D2
Name: CORE 38 92-08307-E1R
Misc: 1.0188 G pH=10.25
Quant Time: 921214 14:31
Injected at: 921214 13:43
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1404::OF
Instrument ID: BNA2
BTL# 2
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 69
Compound Name : Bis(2-Ethylhexyl)phthalate
Scan Number : 2795
Retention Time: 33.53 min.
Quant Ion : 149.0
Area : 2245
Concentration : .781 ng/uL
q-value : 95

OK

QUANT REPORT

Operator ID: 808
Output File: ^Y1404::OF
Data File: >Y1404::D2
Name: CORE 38 92-08307-E1R
Misc: 1.0188 G pH=10.25

Quant Rev: 7
Quant Time: 921214 14:31
Injected at: 921214 13:43
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 2

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921214 11:39

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.68	705	42720	40.00	ng/uL
2)	2-Fluorophenol	6.98	255	140715	105.67	ng/uL
3)	Phenol-d5	10.73	615	172491	105.90	ng/uL
4)	Phenol	0.00	0	0	0.00	ng/uL
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL
14)	N-Nitroso-di-n-propylamine	0.00	874	0	0.00	ng/uL
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL
16)	*Naphthalene-d8	15.58	1079	146134	40.00	ng/uL
17)	Nitrobenzene-d5	13.44	874	76216	49.41	ng/uL
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL
19)	Isophorone	0.00	0	0	0.00	ng/uL
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL
22)	Benzoic acid	0.00	0	0	0.00	ng/uL
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL
25)	1,2,4-Trichlorobenzene	0.00	0	0	0.00	ng/uL
26)	~~Naphthalene~~	~~15.91~~	~~1110~~	~~1298~~	~~342~~	~~ng/uL~~
27)	4-Chloroaniline	0.00	1110	0	0.00	ng/uL
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL
29)	4-Chloro-3-methylphenol	0.00	0	0	0.00	ng/uL
30)	2-Methylnaphthalene	0.00	1288	0	0.00	ng/uL
31)	*Acenaphthene-d10	20.84	1581	72146	40.00	ng/uL
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL
36)	2-Fluorobiphenyl	18.93	1399	129403	52.40	ng/uL
37)	2-Nitroaniline	0.00	1452	0	0.00	ng/uL
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL
40)	2,6-Dinitrotoluene	0.00	1581	0	0.00	ng/uL
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL
42)	Acenaphthene	0.00	0	0	0.00	ng/uL

43)	2,4-Dinitrophenol	0.00	0	0	0.00 ng/uL
44)	4-Nitrophenol	0.00	0	0	0.00 ng/uL
45)	Dibenzofuran	0.00	0	0	0.00 ng/uL
46)	2,4-Dinitrotoluene	0.00	0	0	0.00 ng/uL
47)	Diethylphthalate	0.00	0	0	0.00 ng/uL
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00 ng/uL
49)	Fluorene	0.00	0	0	0.00 ng/uL
50)	4-Nitroaniline	0.00	0	0	0.00 ng/uL
51)	*Phenanthrene-d10	25.23	2001	126810	40.00 ng/uL
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00 ng/uL
53)	N-Nitrosodiphenylamine	0.00	1806	0	0.00 ng/uL
54)	2,4,6-Tribromophenol	23.18	1805	47840	104.81 ng/uL
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00 ng/uL
56)	Hexachlorobenzene	0.00	0	0	0.00 ng/uL
57)	Pentachlorophenol	0.00	0	0	0.00 ng/uL
58)	Phenanthrene	0.00	0	0	0.00 ng/uL
59)	Anthracene	0.00	0	0	0.00 ng/uL
60)	Di-n-butylphthalate	0.00	0	0	0.00 ng/uL
61)	Fluoranthene	0.00	0	0	0.00 ng/uL
62)	*Chrysene-d12	33.07	2751	102473	40.00 ng/uL
63)	Pyrene	0.00	0	0	0.00 ng/uL
64)	Terphenyl-d14	30.12	2469	146758	55.91 ng/uL
65)	Butylbenzylphthalate	0.00	0	0	0.00 ng/uL
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00 ng/uL
67)	Benzo(a)anthracene	0.00	0	0	0.00 ng/uL
68)	Chrysene	0.00	0	0	0.00 ng/uL
69)	Bis(2-Ethylhexyl)phthalate	33.53	2795	2245	.781 ng/uL
70)	*Perylene-d12	36.98	3125	115061	40.00 ng/uL
71)	Di-n-octylphthalate	0.00	0	0	0.00 ng/uL
72)	Benzo(b)fluoranthene	0.00	0	0	0.00 ng/uL
73)	Benzo(k)fluoranthene	0.00	0	0	0.00 ng/uL
74)	Benzo(a)pyrene	0.00	0	0	0.00 ng/uL
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00 ng/uL
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00 ng/uL
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00 ng/uL

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1404
CAL CHECK FILE = >Y1402
DATE AND TIME OF ANALYSIS = 12/14/92 13:43
MISCELLANEOUS = 1.0188 G pH=10.25
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	42720	39721	19861	79442	OK
Naphthalene-d8	146134	137728	68864	275456	OK
Acenaphthene-d10	72146	68596	34298	137192	OK
Phenanthrene-d10	126810	122456	61228	244912	OK
Chrysene-d12	102473	99461	49730	198922	OK
Perylene-d12	115061	111551	55775	223102	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.67	11.68	11.18	12.18	OK
Naphthalene-d8	15.58	15.59	15.09	16.10	OK
Acenaphthene-d10	20.84	20.85	20.35	21.35	OK
Phenanthrene-d10	25.23	25.24	24.74	25.74	OK
Chrysene-d12	33.07	33.10	32.60	33.60	OK
Perylene-d12	36.98	37.00	36.50	37.50	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1404::D2
DATE AND TIME OF ANALYSIS = 12/14/92 13:43
SAMPLE = CORE 38 92-08307-E1
MISCELLANEOUS = 1.0188 G pH=10.25
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVERY
2-Fluorophenol	105.67	100.00	21-100	25-121	105.67
Phenol-d5	105.90	100.00	10-94	24-113	105.90
Nitrobenzene-d5	49.41	50.00	35-114	23-120	98.83
2-Fluorobiphenyl	52.40	50.00	43-116	30-115	104.79
2,4,6-tribromo-phenol	104.81	100.00	10-123	19-122	104.81
Terphenyl-d14	55.91	50.00	33-141	18-137	11[illegible]

MS data file header from : >Y1404::D2

Sample: CORE 38 92-08307-E1R Operator: BOB SUPER GRP. 12/14/92 13:4
Misc : 1.0188 G pH=10.25 BTL# 2
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 2 Equip ID: BNA2
Method file: BNAME2 Tuning file: MTBNA2 No. of extra records: 0
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	40.	300.	0.	0.	0.
Chromatographic times, min. :	4.0	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	8.0	0.0	0.0	.5	0.0

>Y1404 CORE 38 92-08307-E1R1.0188 G pH=10.25
35.0| 500.0 CLP TIC
Upslope: .2000 Area Reject: 26182. Max Peaks: 9 Bunch: -1 Valley >100 %
Dnslope: 0.0000 Results File IY1404 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of tota
1	10.94	628	635	653	160809	549556	542396	7.17	3.0
2	12.14	729	749	765	113671	325095	317259	4.19	1.7
3	13.81	903	909	915	33095	75440	72776	.96	.4
4	15.91	1098	1110	1117	1000596	3296047	3287154	43.46	18.3
5	17.19	1228	1233	1241	11108	44133	29039	.38	.2
6	17.82	1277	1293	1298	1289334	7606042	7564235	100.00	42.0
7	19.51	1437	1454	1458	1240913	5933316	5902448	78.03	32.7
8	21.02	1592	1598	1604	127360	247747	243228	3.22	1.3
9	23.10	1792	1797	1799	48573	42665	40999	.54	.2

Sum of corrected areas: 17999536.

Summary of Unknowns PBM Library Search and Quantitation

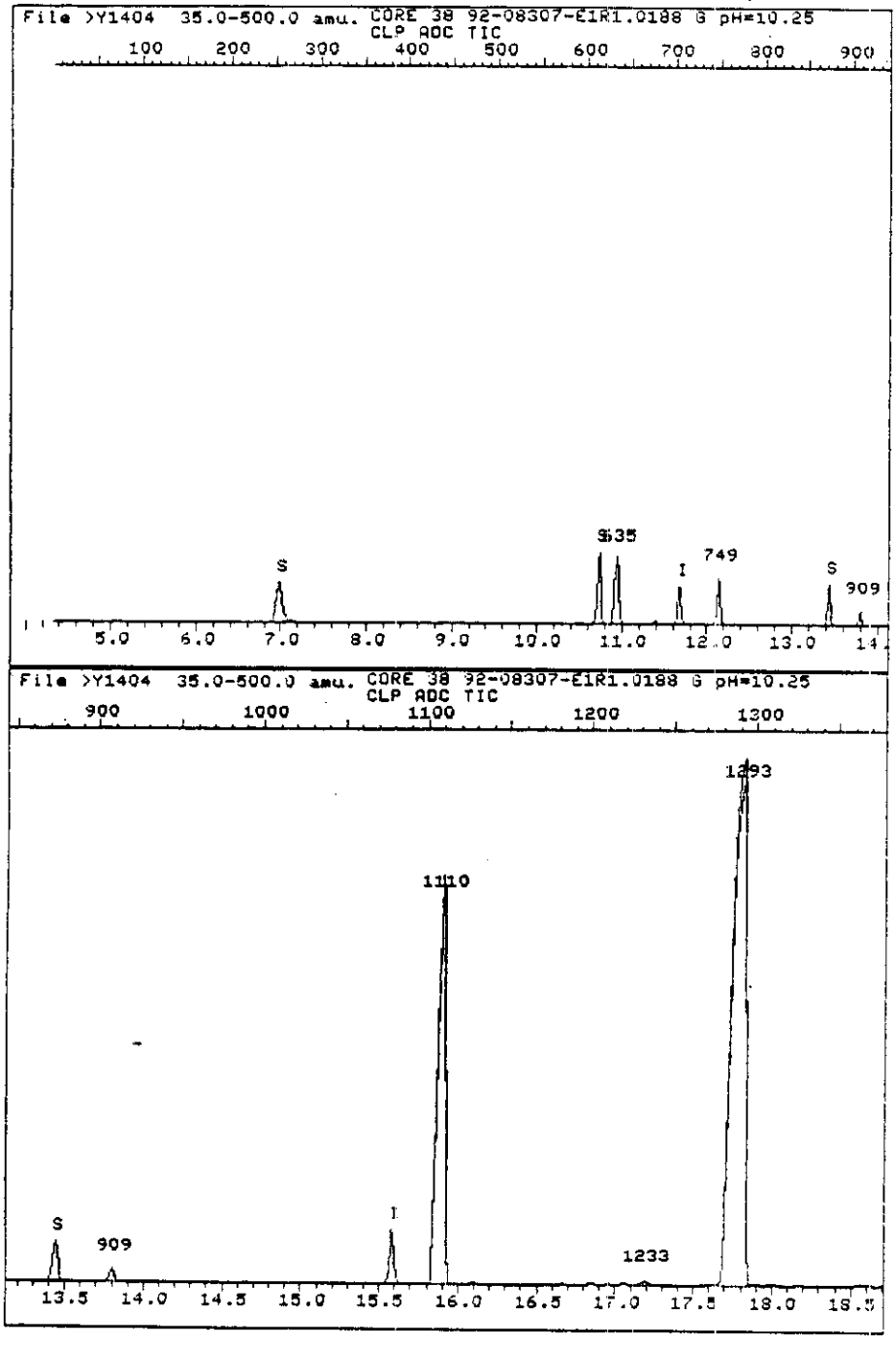
Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	261824.	11.68	4.33 - 13.63
2	40.0	310162.	15.58	13.63 - 18.21
3	40.0	329960.	20.84	18.21 - 23.04
4	40.0	334216.	25.23	23.04 - 29.15
5	40.0	315473.	33.07	29.15 - 35.02
6	40.0	337238.	36.98	35.02 - 46.54

Dilution Factor = 1.00 This sample was 1.01880 g or mL

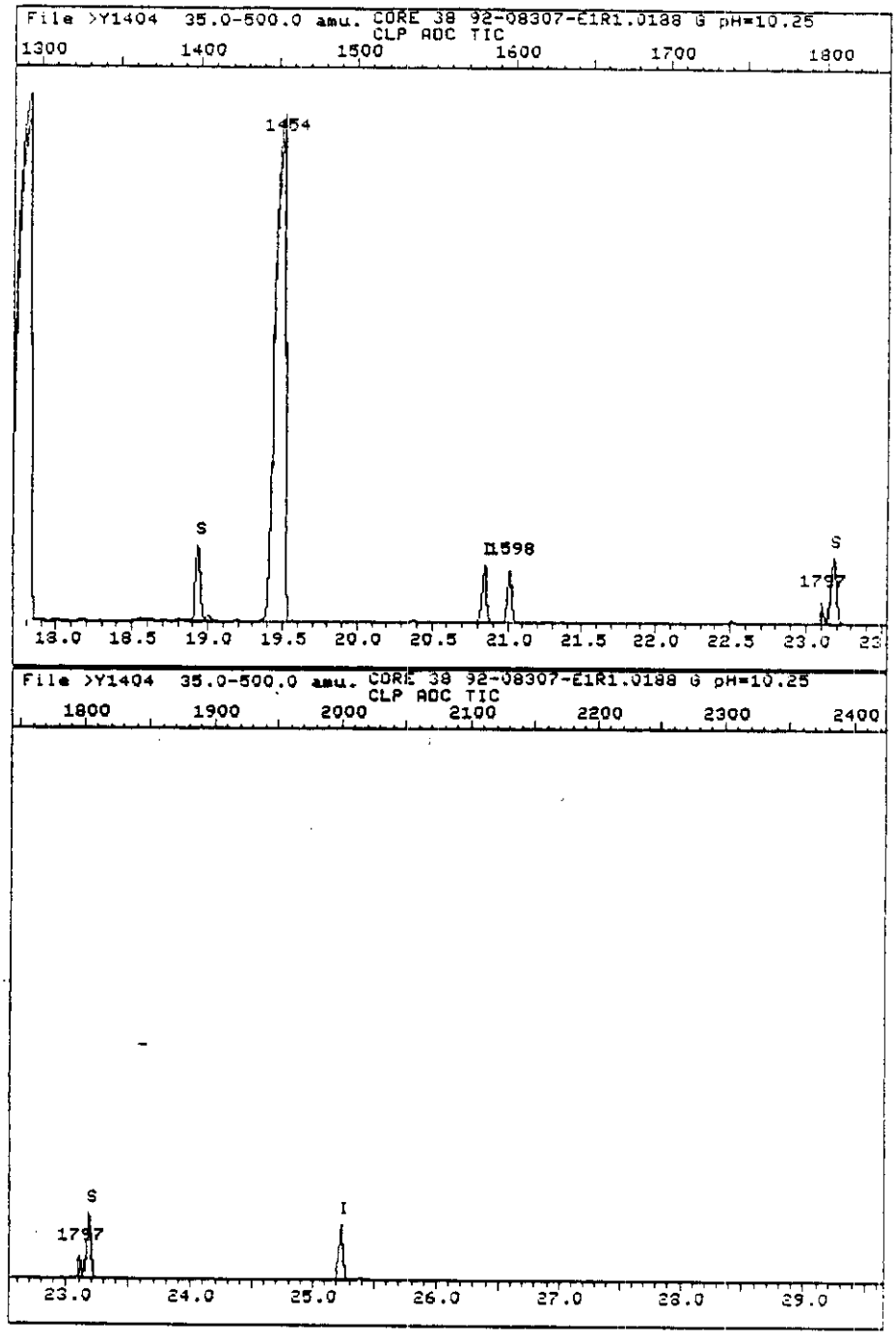
Correction Factor = 1965.06

$$\text{Unknown Concentration} = \frac{\text{Conc Int Std} * \text{Area Unknown}}{\text{Area Int Std}} * \text{Correction Factor}$$

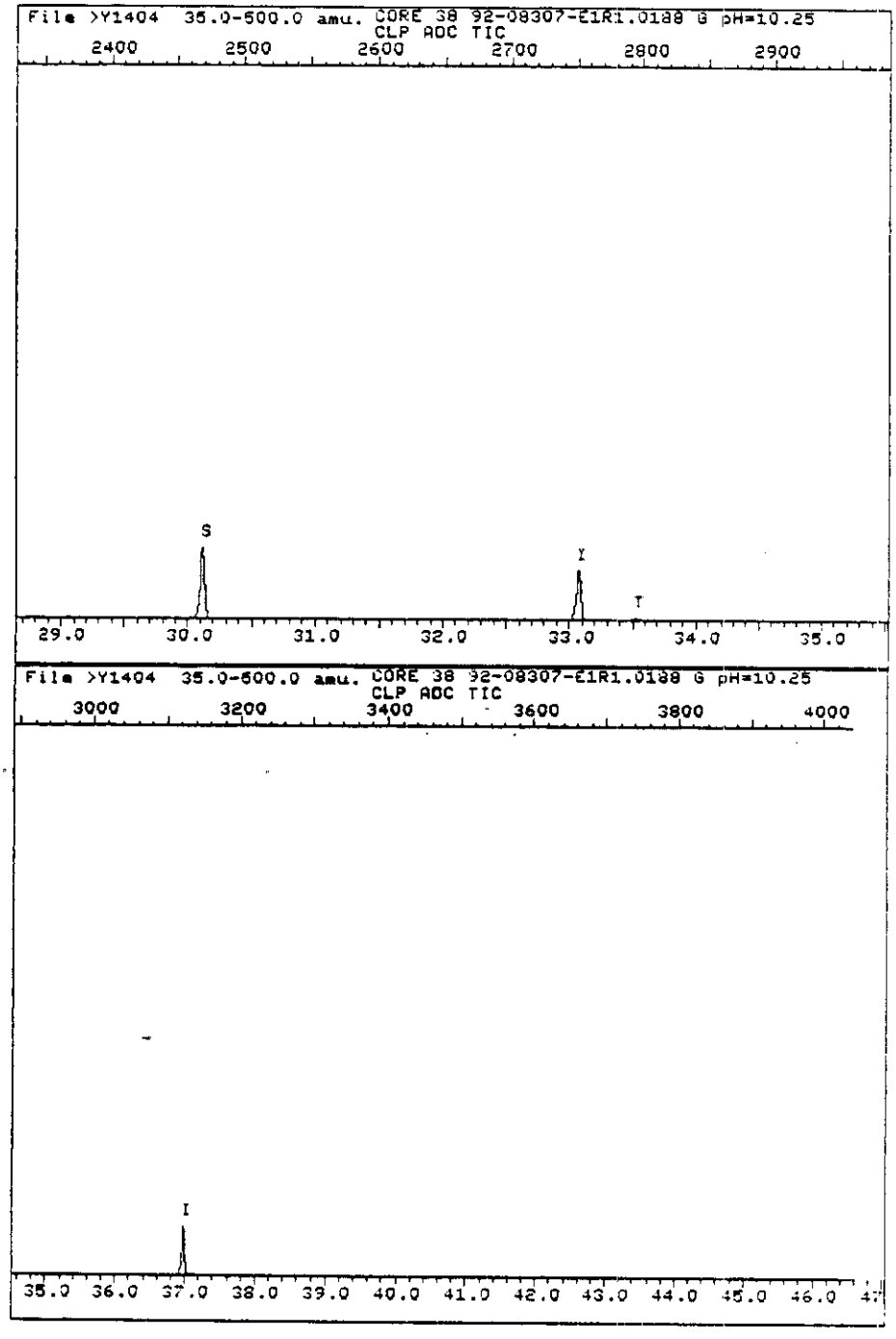
12:50 PM THU., 17 DEC., 1992



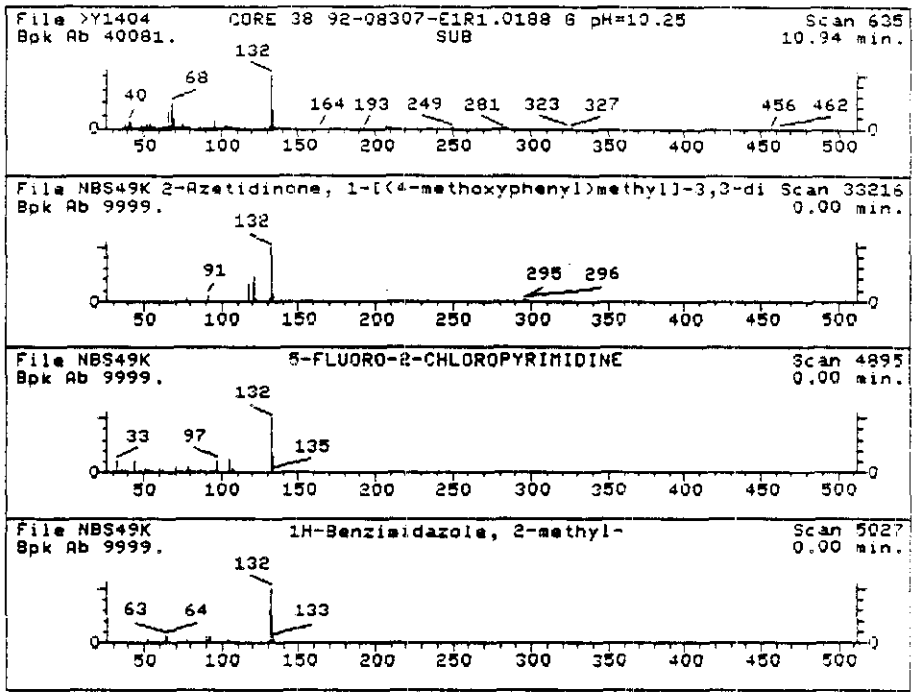
Instrument ID: BNA2 Analyzed on: 12/14/92 13:43



Instrument ID: BNA2 Analyzed on: 12/14/92 13:43



Instrument ID: BNA2 Analyzed on: 12/14/92 13:43



Instrument ID: 8NA2 Analyzed on: 12/14/92 13:43
Result 1 in PBM results file: LY1404
Retention Time: 10.94 Area: 542396 Tentative Conc: 160000.00
The unknown area is 207.16% of the nearest internal standard

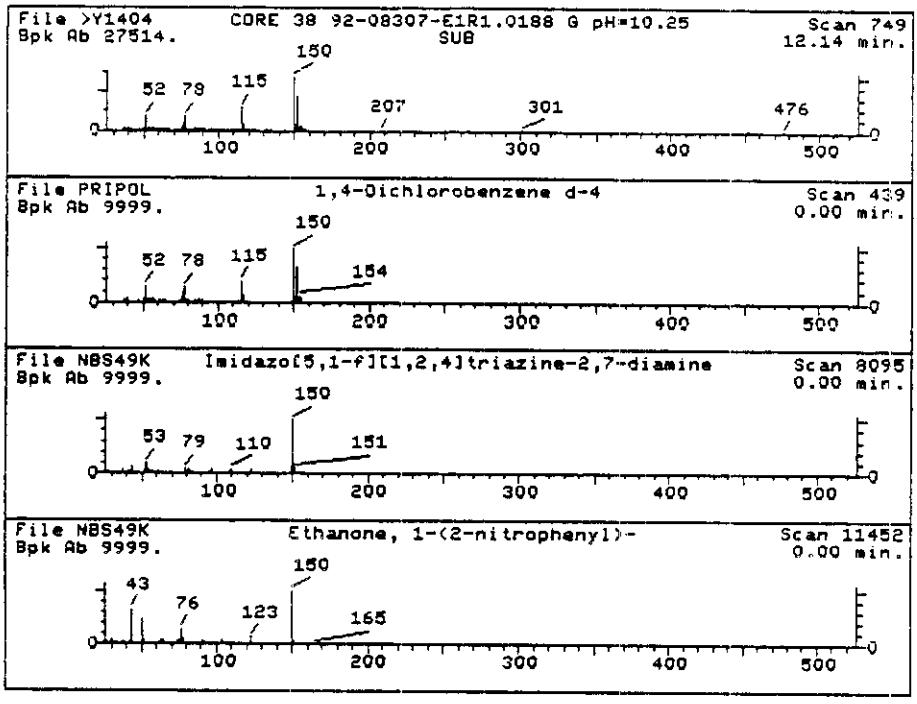
1.	2-Azetidinone, 1-[(4-methoxyphenyl)methyl]-3,3-dimethyl-4-phenyl-	295	C19H21NO2
2.	5-FLUORO-2-CHLOROPYRIMIDINE	132	C4H2ClFN2
3.	1H-Benzimidazole, 2-methyl-	132	C8H8N2
4.	Benzeneethanamine, .alpha.-methyl-N-(phenylmethylene	223	C16H17N
5.	3H-1,2-Dithiol-3-one, 4-methyl-	132	C4H4OS2
6.	1,3-Oxathiane, 4,6-dimethyl-, trans-	132	C6H12OS

Sample file: >Y1404 Spectrum #: 635
Search speed: 3 Tilting option: F No. of ion ranges searched: 22

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	34*	54833668	16048	NBS49K	34	45	2	0	83	33	12	
2.	31*	62802420	15850	NBS49K	41	67	2	0	100	33	12	
3.	31*	615156	15880	NBS49K	25	74	2	0	92	31	12	
4.	31*	2980021	16019	NBS49K	26	80	2	0	86	33	12	
5.	30*	3620108	15851	NBS49K	20	82	2	0	100	31	12	
6.	29*	22452262	15866	NBS49K	22	89	3	0	100	33	12	

2-chlorophenol-d4 surr. used in SOW 3/90

— do not use [illegible] 12/17/92



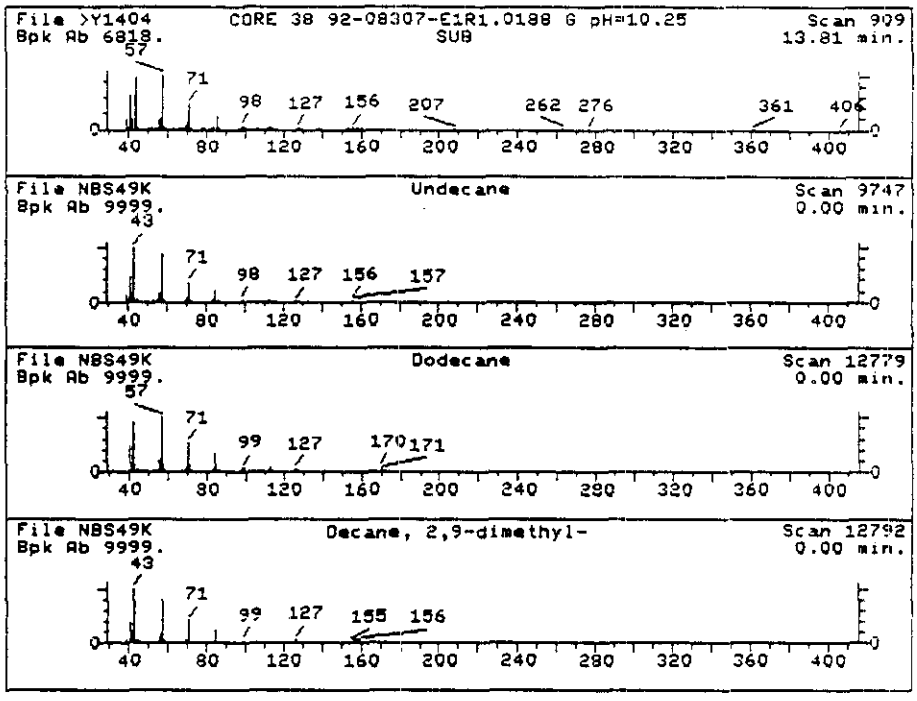
Instrument ID: BNA2 Analyzed on: 12/14/92 13:43
Result 2 in PBM results file: LY1404
Retention Time: 12.14 Area: 317259 Tentative Conc: 95000.00
The unknown area is 121.17% of the nearest internal standard

1. 1,4-Dichlorobenzene d-4	150	C6.D4.CL2
2. Imidazo[5,1-f][1,2,4]triazine-2,7-diamine	150	C5H6N6
3. Ethanone, 1-(2-nitrophenyl)-	165	C8H7NO3
4. Benzamide, N-methyl-4-nitro-N-(4-nitrophenyl)-	301	C14H11N3O5
5. Benzenebutanoic acid, 3-nitro-.gamma.-oxo-	223	C10H9NO5
6. Acenaphthylene	152	C12H8

Sample file: >Y1404 Spectrum #: 749
Search speed: 3 Tilting option: F No. of ion ranges searched: 24

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	95*	439	257	PRIPOL	95	12	0	0	76	21	53	
2.	44*	51292207	19314	NBS49K	31	59	2	0	100	21	17	
3.	41*	577593	19423	NBS49K	24	77	3	0	100	21	17	
4.	41	33675693	39328	NBS49K	37	31	2	0	91	21	17	

1,2-dichlorobenzene d4 was used in SOW 3/90 - do not use
12-17-92

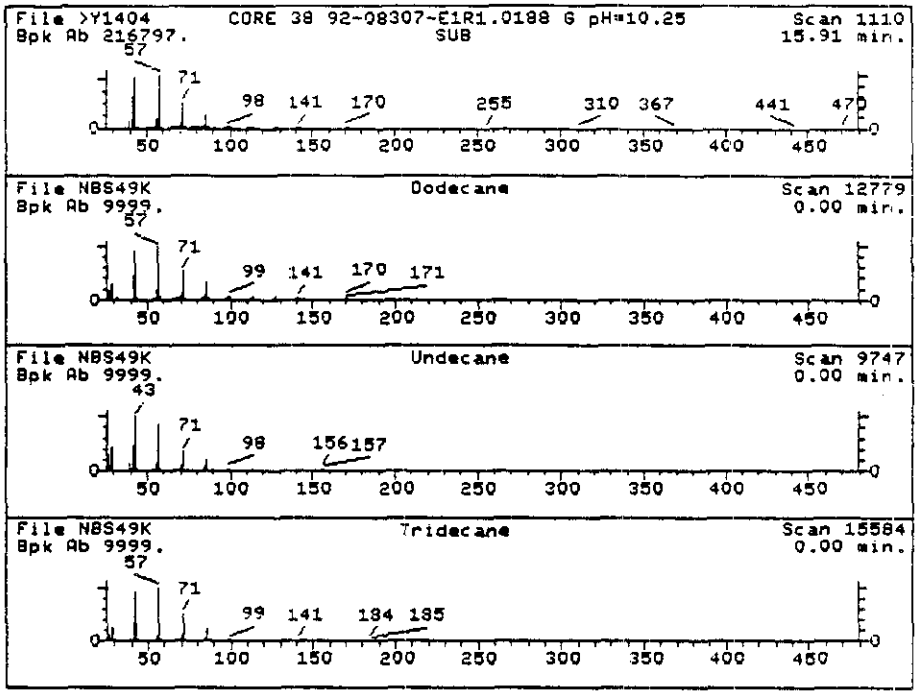


Instrument ID: BNA2 Analyzed on: 12/14/92 13:43
Result 3 in PBM results file: LY1404
Retention Time: 13.81 Area: 72776 Tentative Conc: 18000.00
The unknown area is 23.46% of the nearest internal standard

1. Undecane	156	C11H24
2. Dodecane	170	C12H26
3. Decane, 2,9-dimethyl-	170	C12H26
4. Hexacosane	366	C26H54
5. Undecane, 3,6-dimethyl-	184	C13H28
6. Tetradecane	198	C14H30

Sample file: >Y1404 Spectrum #: 909
Search speed: 3 Tilting option: F No. of ion ranges searched: 6

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	95*	1120214	6682	NBS49K	82	15	0	0	94	0	72	
2.	83	112403	6732	NBS49K	87	12	2	3	89	2	57	
3.	76	1002171	6738	NBS49K	60	32	2	0	93	10	45	
4.	70	630013	6903	NBS49K	60	82	2	0	79	10	42	
5.	70	17301289	4386	NBS49K	65	32	2	4	100	9	42	
6.	70	629594	6804	NBS49K	69	39	2	1	93	8	42	



Instrument ID: BNA2 Analyzed on: 12/14/92 13:43
Result 4 in PBM results file: LY1404
Retention Time: 15.91 Area: 3287154 Tentative Conc: 830000.00
The unknown area is 1059.8% of the nearest internal standard

1. Dodecane	170	C12H26
2. Undecane	156	C11H24
3. Tridecane	184	C13H28
4. Tetradecane	198	C14H30
5. Pentadecane	212	C15H32
6. Undecane, 2-methyl-	170	C12H26

Sample file: >Y1404 Spectrum #: 1110
Search speed: 3 Tilting option: F No. of ion ranges searched: 5

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	96*	112403	6732	NBS49K	99	0	0	4	87	1	72	
2.	87	1120214	6682	NBS49K	82	15	1	0	95	2	63	
3.	86	629505	6761	NBS49K	79	27	1	0	75	2	60	
4.	83	629594	6804	NBS49K	87	21	2	3	100	1	57	
5.	83	629629	6819	NBS49K	93	27	2	3	73	2	57	
6.	79*	7045718	6735	NBS49K	55	39	2	1	88	8	48	

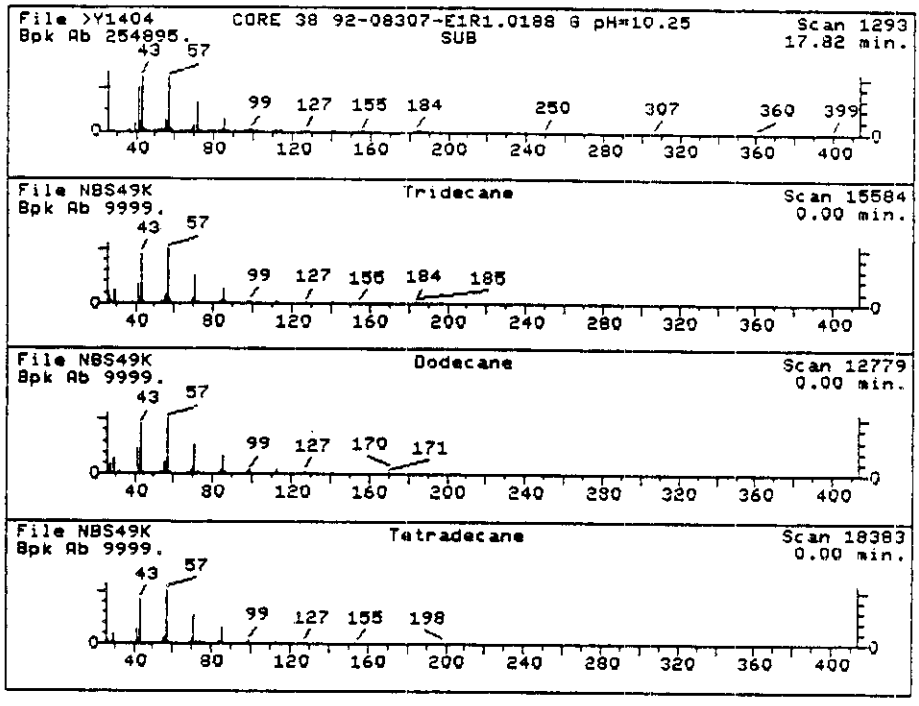
Instrument ID: BNA2 Analyzed on: 12/14/92 13:43

Retention Time: 17.19 Area: 29039 Tentative Conc: 7400.03

The unknown area is 9.36% of the nearest internal standard

This peak is less than 10% of the nearest internal standard.

No library search has been performed on this peak.

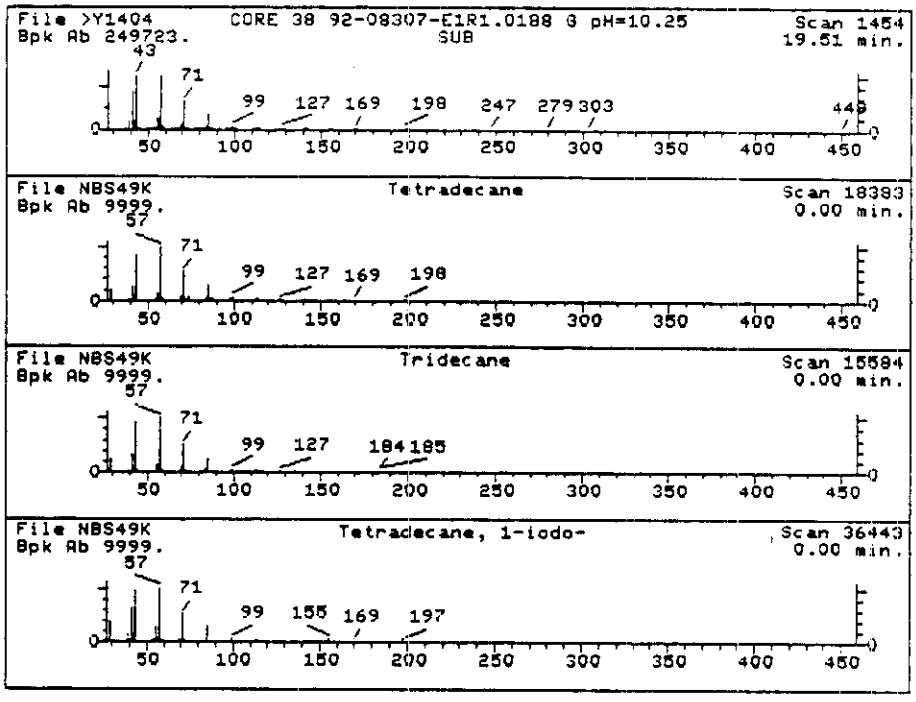


Instrument ID: BNA2 Analyzed on: 12/14/92 13:43
Result 5 in PBM results file: LY1404
Retention Time: 17.82 Area: 7564235 Tentative Conc:1900000.00
The unknown area is 2438.8% of the nearest internal standard .

1. Tridecane	184	C13H28
2. Dodecane	170	C12H26
3. Tetradecane	198	C14H30
4. Eicosane	282	C20H42
5. Dodecane, 2,7,10-trimethyl-	212	C15H32
6. Heptadecane, 2,6,10,14-tetramethyl-	296	C21H44

Sample file: >Y1404 Spectrum #: 1293
Search speed: 3 Tilting option: F No. of ion ranges searched: 6

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	95*	629505	6761	NBS49K	84	22	0	0	79	1	72	
2.	88	112403	6732	NBS49K	92	7	1	3	80	4	65	
3.	83	629594	6804	NBS49K	92	16	2	3	100	1	57	
4.	78	112958	6871	NBS49K	87	52	2	4	78	4	55	
5.	78	74645980	4422	NBS49K	72	37	2	4	86	2	55	
6.	78	18344371	6880	NBS49K	81	48	2	4	88	5	55	

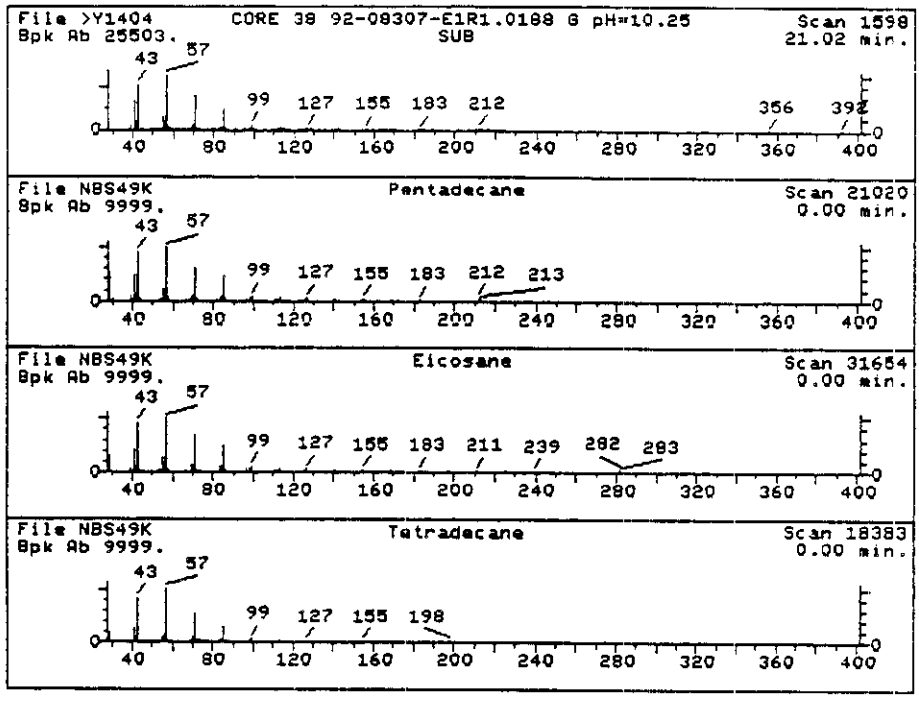


Instrument ID: BNA2 Analyzed on: 12/14/92 13:43
Result 6 in PBM results file: LY1404
Retention Time: 19.51 Area: 5902448 Tentative Conc:1400000.00
The unknown area is 1788.8% of the nearest internal standard

1. Tetradecane	198	C14H30
2. Tridecane	184	C13H28
3. Tetradecane, 1-iodo-	324	C14H29I
4. Pentadecane	212	C15H32
5. Octacosane	394	C28H58
6. Decane, 6-ethyl-2-methyl-	184	C13H28

Sample file: >Y1404 Spectrum #: 1454
Search speed: 3 Tilting option: F No. of ion ranges searched: 6

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	95*	629594	6804	NBS49K	103	5	1	1	95	1	72	
2.	89	629505	6761	NBS49K	91	15	1	0	79	4	66	
3.	83	19218941	6889	NBS49K	101	27	1	2	80	10	54	
4.	83	629629	6819	NBS49K	93	27	2	4	90	5	57	
5.	83	630024	6906	NBS49K	99	42	2	4	82	4	57	
6.	83	62108218	6767	NBS49K	68	31	2	0	99	4	57	

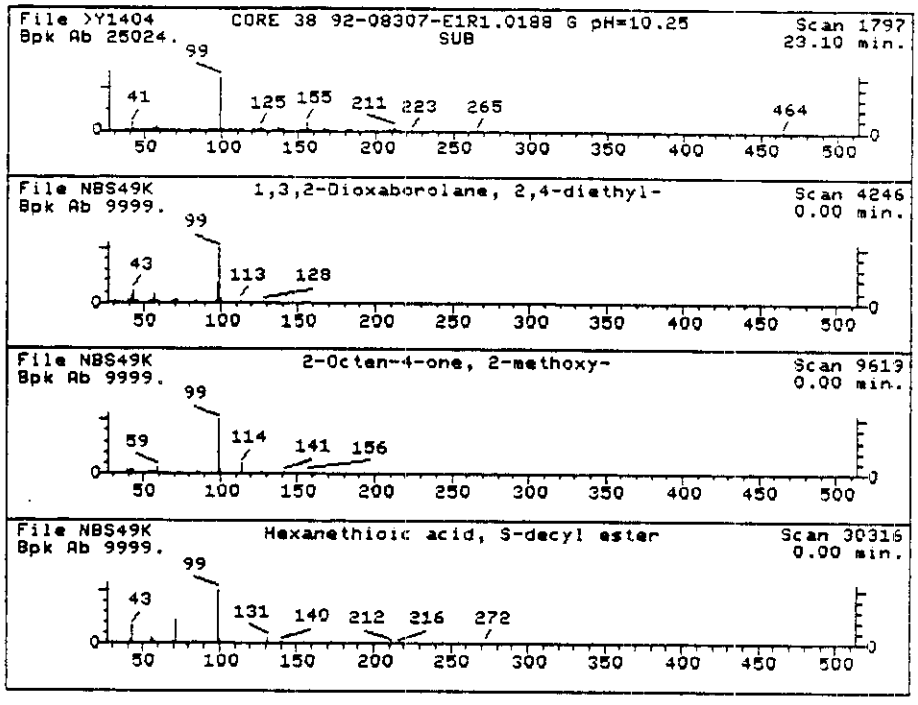


Instrument ID: BNA2 Analyzed on: 12/14/92 13:43
Result 7 in PBM results file: LY1404
Retention Time: 21.02 Area: 243228 Tentative Conc: 58000.00
The unknown area is 73.71% of the nearest internal standard

1. Pentadecane	212	C15H32
2. Eicosane	282	C20H42
3. Tetradecane	198	C14H30
4. Nonadecane	268	C19H40
5. Octacosane	394	C28H58
6. Pentatriacontane	492	C35H72

Sample file: >Y1404 Spectrum #: 1598
Search speed: 3 Tilting option: F No. of ion ranges searched: 7

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	93*	629629	6819	NBS49K	106	14	1	2	83	4	68	
2.	87	112958	6871	NBS49K	113	26	2	4	76	5	63	
3.	86	629594	6804	NBS49K	97	11	2	0	100	4	60	
4.	83	629925	6864	NBS49K	89	28	2	1	100	5	57	
5.	83	630024	6906	NBS49K	94	47	2	1	80	2	57	
6.	83	630079	6915	NBS49K	98	53	2	3	83	5	57	



Instrument ID: BNA2 Analyzed on: 12/14/92 13:43
Result 8 in PBM results file: LY1404
Retention Time: 23.10 Area: 40999 Tentative Conc: 9600.00
The unknown area is 12.27% of the nearest internal standard

1.	1,3,2-Dioxaborolane, 2,4-diethyl-	128	C6H13BO2
2.	2-Octen-4-one, 2-methoxy-	156	C9H16O2
3.	Hexanethioic acid, S-decyl ester	272	C16H32OS
4.	Phosphoric acid tributyl ester	266	C12H27O4P
5.	2,5-Furandione, 3-(1,1-dimethylpropyl)dihydro-	170	C9H14O3
6.	4,4'-Bi-1,3,2-dioxaborolane, 2,2'-diethyl-, (R*,S*)- (9CI)	198	C8H16B2O4

Sample file: >Y1404 Spectrum #: 1797
Search speed: 3 Tilting option: F No. of ion ranges searched: 22

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	48*	57633633	9687	NBS49K	40	50	2	0	69	21	17	
2.	45*	24985486	9783	NBS49K	33	53	2	0	100	21	17	
3.	43*	2432817	9936	NBS49K	34	84	2	0	100	21	17	
4.	43*	126738	9932	NBS49K	102	24	0	2	50	60	18	
5.	42	56666763	9813	NBS49K	38	45	2	0	100	21	17	
6.	42*	62337944	9871	NBS49K	44	61	2	3	100	21	17	

QUANT REPORT

Operator ID: 808
Output File: ^Y1405::OF
Data File: >Y1405::D2
Name: CORE 38 92-08307-E2R
Misc: 0.9537 G pH=10.25

Quant Rev: 7
Quant Time: 921214 15:29
Injected at: 921214 14:41
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 3

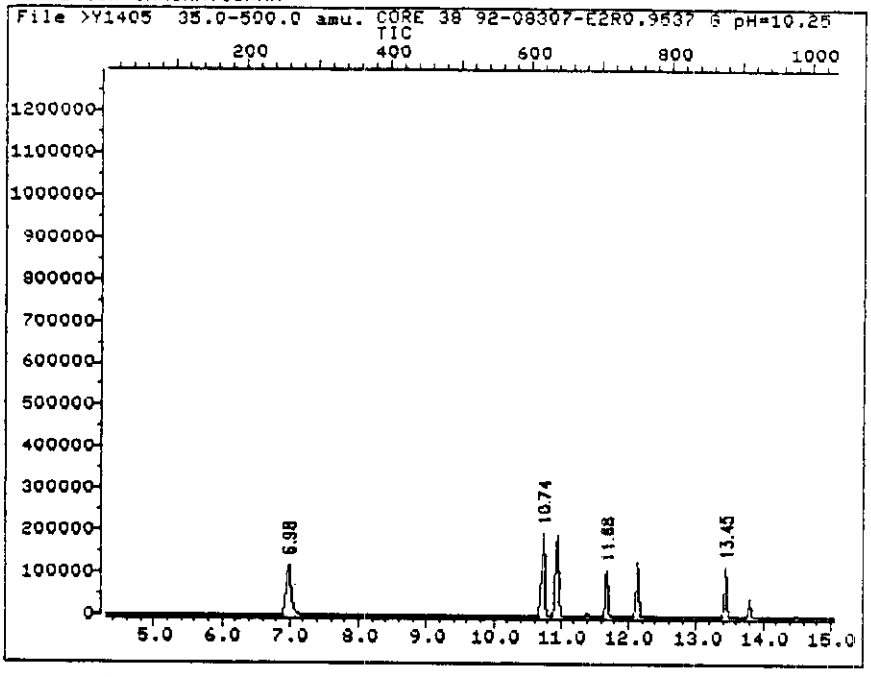
ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Time: 921214 11:39

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.68	710	50287	40.00	ng/uL
2)	2-Fluorophenol	6.98	260	166767	106.39	ng/uL
3)	Phenol-d5	10.74	620	207877	108.42	ng/uL
16)	*Naphthalene-d8	15.59	1084	171022	40.00	ng/uL
17)	Nitrobenzene-d5	13.45	879	90125	49.93	ng/uL
31)	*Acenaphthene-d10	20.85	1586	85880	40.00	ng/uL
36)	2-Fluorobiphenyl	18.94	1404	149461	50.84	ng/uL
51)	*Phenanthrene-d10	25.24	2006	151614	40.00	ng/uL
54)	2,4,6-Tribromophenol	23.19	1810	60592	111.03	ng/uL
62)	*Chrysene-d12	33.08	2756	125486	40.00	ng/uL
64)	Terphenyl-d14	30.12	2473	171371	53.32	ng/uL
69)	Bis(2-Ethylhexyl)phthalate	33.53	2799	3115	.885	ng/uL
70)	*Perylene-d12	36.99	3129	140463	40.00	ng/uL

* Compound is ISTD

Preliminary data
12-17-92

TOTAL ION CHROMATOGRAM



Data File: >Y1405::D2
Name: CORE 38 92-08307-E2R
Misc: 0.9537 G pH=10.25

Quant Output File: ^Y1405::QF
Instrument ID: BNA2

BTL# 3

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 15:29
Injected at: 921214 14:41

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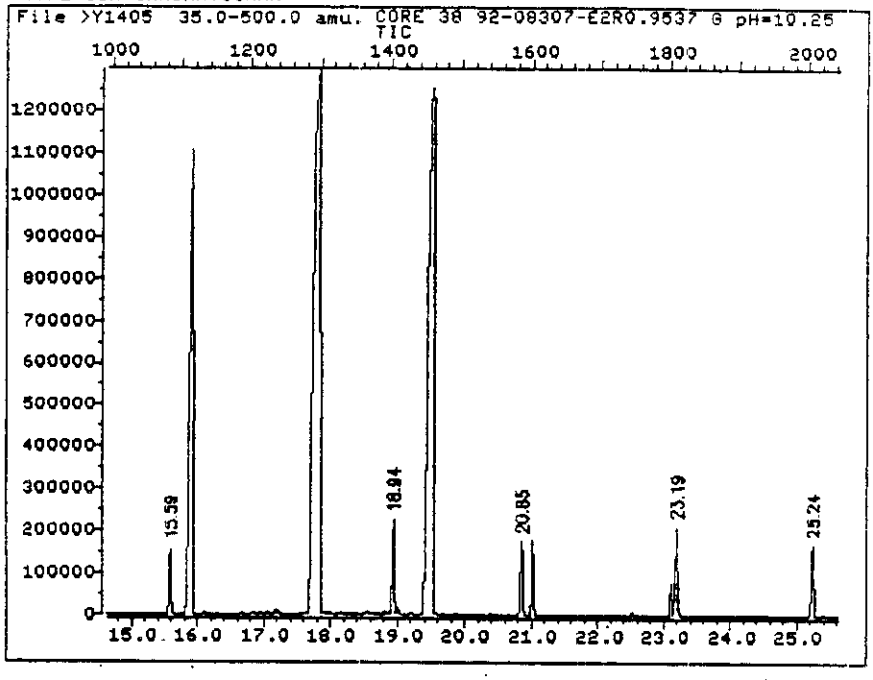
TOTAL ION CHROMATOGRAM



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Name: CORE 38 92-08307-E2R
Misc: 0.9537 G pH=10.25

Quant Output File: ^Y1405::QF
Instrument ID: BNA2

BTL# 3

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 15:29
Injected at: 921214 14:41

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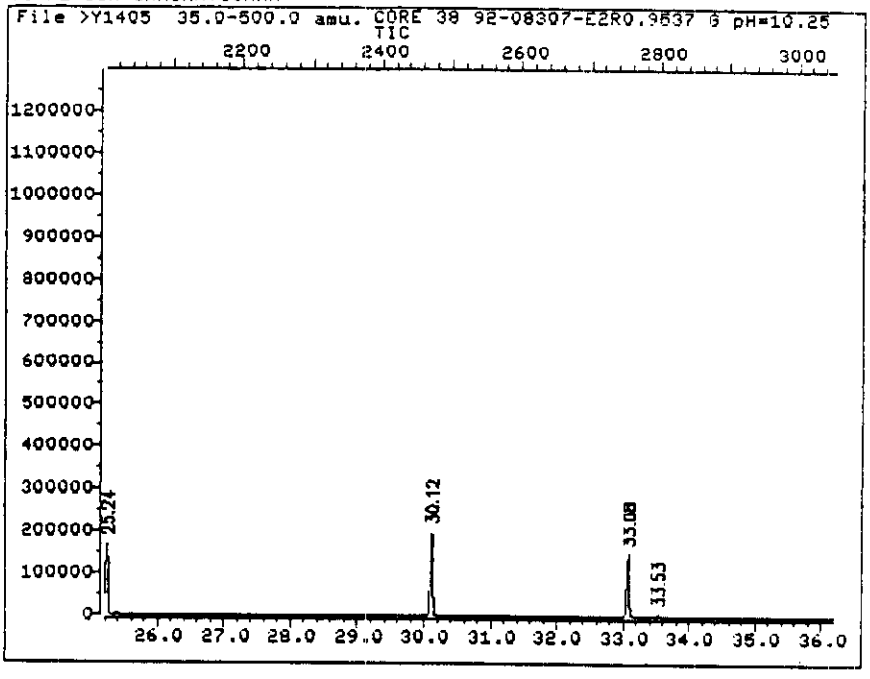
TOTAL ION CHROMATOGRAM



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Name: CORE 38 92-08307-E2R
Misc: 0.9537 G pH=10.25

Quant Output File: ^Y1405::DF
Instrument ID: BNA2
BTL# 3

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 15:29
Injected at: 921214 14:41

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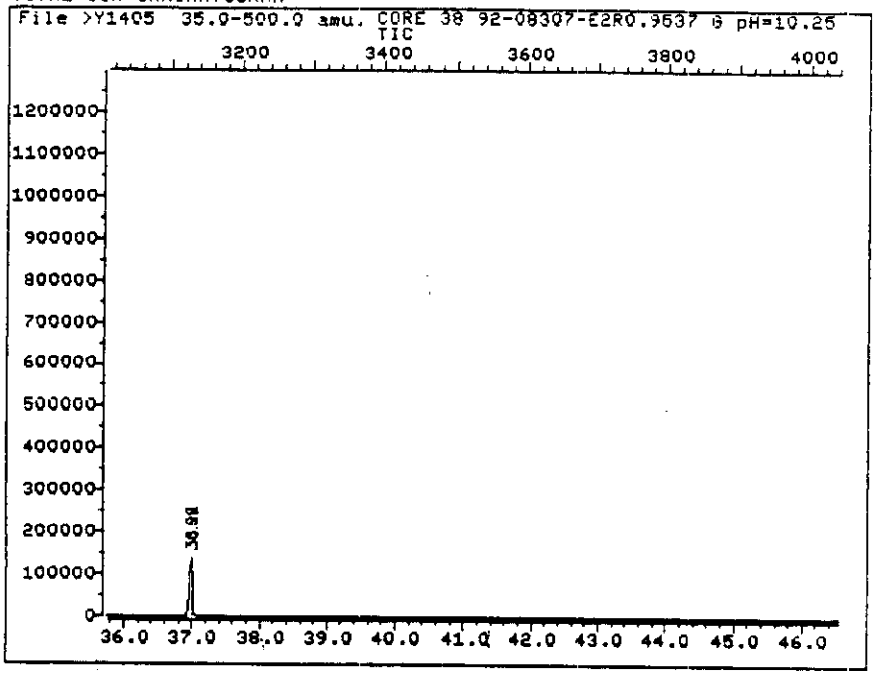
TOTAL ION CHROMATOGRAM



Data File: >Y1405::D2
Name: CORE 38 92-08307-E2R
Misc: 0.9537 G pH=10.25

Quant Output File: ^Y1405::QF
Instrument ID: 8NA2

BTL# 3

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: 808
Quant Time : 921214 15:29
Injected at: 921214 14:41

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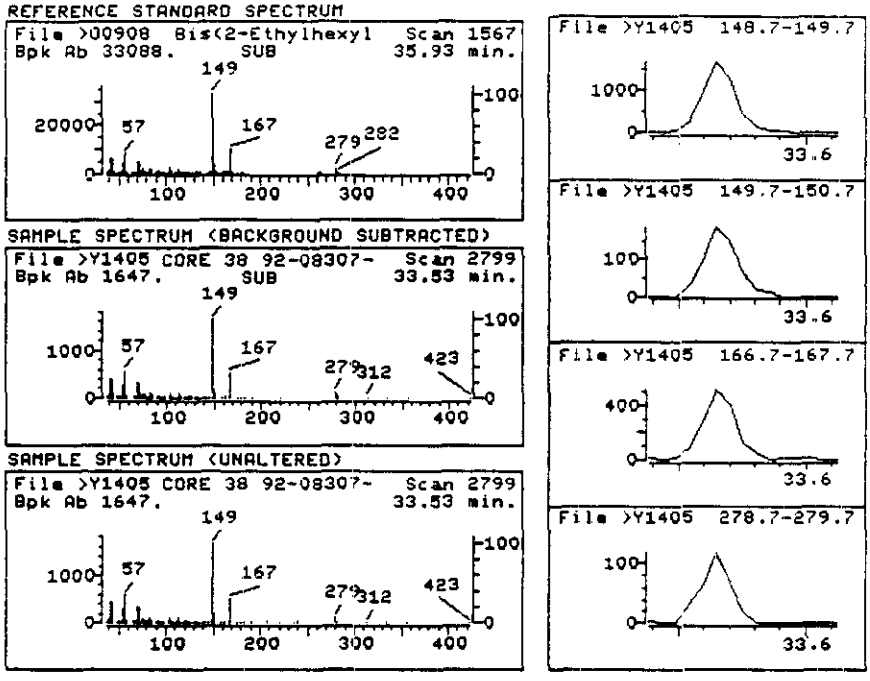


Data File: >Y1405::D2
Name: CORE 38 92-08307-E2R
Misc: 0.9537 G pH=10.25
Quant Time: 921214 15:29
Injected at: 921214 14:41
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1405::OF
Instrument ID: BNA2
BTL# 3
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 69
Compound Name : Bis(2-Ethylhexyl)phthalate
Scan Number : 2799
Retention Time: 33.53 min.
Quant Ion : 149.0
Area : 3115
Concentration : .885 ng/uL
q-value : 97

ok

QUANT REPORT

Operator ID: BOB
Output File: ^Y1405::OF
Data File: >Y1405::D2
Name: CORE 38 92-08307-E2R
Misc: 0.9537 G pH=10.25

Quant Rev: 7
Quant Time: 921214 15:29
Injected at: 921214 14:41
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 3

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921214 11:39

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.68	710	50287	40.00	ng/uL
2)	2-Fluorophenol	6.98	260	166767	106.39	ng/uL
3)	Phenol-d5	10.74	620	207877	108.42	ng/uL
4)	Phenol	0.00	0	0	0.00	ng/uL
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL
14)	N-Nitroso-di-n-propylamine	0.00	879	0	0.00	ng/uL
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL
16)	*Naphthalene-d8	15.59	1084	171022	40.00	ng/uL
17)	Nitrobenzene-d5	13.45	879	90125	49.93	ng/uL
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL
19)	Isophorone	0.00	0	0	0.00	ng/uL
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL
22)	Benzoic acid	0.00	0	0	0.00	ng/uL
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL
25)	1,2,4-Trichlorobenzene	0.00	0	0	0.00	ng/uL
26)	Naphthalene	0.00	1114	0	0.00	ng/uL
27)	4-Chloroaniline	0.00	1115	0	0.00	ng/uL
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL
29)	4-Chloro-3-methylphenol	0.00	0	0	0.00	ng/uL
30)	2-Methylnaphthalene	0.00	1292	0	0.00	ng/uL
31)	*Acenaphthene-d10	20.85	1586	85880	40.00	ng/uL
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL
36)	2-Fluorobiphenyl	18.94	1404	149461	50.84	ng/uL
37)	2-Nitroaniline	0.00	1459	0	0.00	ng/uL
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL
40)	2,6-Dinitrotoluene	0.00	1586	0	0.00	ng/uL
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL
42)	Acenaphthene	0.00	0	0	0.00	ng/uL

E03-271

43)	2,4-Dinitrophenol	0.00	0	0	0.00	ng/uL
44)	4-Nitrophenol	0.00	0	0	0.00	ng/uL
45)	Dibenzofuran	0.00	0	0	0.00	ng/uL
46)	2,4-Dinitrotoluene	0.00	0	0	0.00	ng/uL
47)	Diethylphthalate	0.00	0	0	0.00	ng/uL
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00	ng/uL
49)	Fluorene	0.00	0	0	0.00	ng/uL
50)	4-Nitroaniline	0.00	0	0	0.00	ng/uL
51)	*Phenanthrene-d10	25.24	2006	151614	40.00	ng/uL
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00	ng/uL
53)	N-Nitrosodiphenylamine	0.00	1810	0	0.00	ng/uL
54)	2,4,6-Tribromophenol	23.19	1810	60592	111.03	ng/uL
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00	ng/uL
56)	Hexachlorobenzene	0.00	0	0	0.00	ng/uL
57)	Pentachlorophenol	0.00	0	0	0.00	ng/uL
58)	Phenanthrene	0.00	0	0	0.00	ng/uL
59)	Anthracene	0.00	0	0	0.00	ng/uL
60)	Di-n-butylphthalate	0.00	0	0	0.00	ng/uL
61)	Fluoranthene	0.00	0	0	0.00	ng/uL
62)	*Chrysene-d12	33.08	2756	125486	40.00	ng/uL
63)	Pyrene	0.00	0	0	0.00	ng/uL
64)	Terphenyl-d14	30.12	2473	171371	53.32	ng/uL
65)	Butylbenzylphthalate	0.00	0	0	0.00	ng/uL
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00	ng/uL
67)	Benzo(a)anthracene	0.00	0	0	0.00	ng/uL
68)	Chrysene	0.00	0	0	0.00	ng/uL
69)	Bis(2-Ethylhexyl)phthalate	33.53	2799	3115	.885	ng/uL
70)	*Perylene-d12	36.99	3129	140463	40.00	ng/uL
71)	Di-n-octylphthalate	0.00	0	0	0.00	ng/uL
72)	Benzo(b)fluoranthene	0.00	0	0	0.00	ng/uL
73)	Benzo(k)fluoranthene	0.00	0	0	0.00	ng/uL
74)	Benzo(a)pyrene	0.00	0	0	0.00	ng/uL
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00	ng/uL
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00	ng/uL
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00	ng/uL

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1405
CAL CHECK FILE = >Y1402
DATE AND TIME OF ANALYSIS = 12/14/92 14:41
MISCELLANEOUS = 0.9537 G pH=10.25
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	50287	39721	19861	79442	OK
Naphthalene-d8	171022	137728	68864	275456	OK
Acenaphthene-d10	85880	68596	34298	137192	OK
Phenanthrene-d10	151614	122456	61228	244912	OK
Chrysene-d12	125486	99461	49730	198922	OK
Perylene-d12	140463	111551	55775	223102	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.68	11.68	11.18	12.18	OK
Naphthalene-d8	15.59	15.59	15.09	16.10	OK
Acenaphthene-d10	20.85	20.85	20.35	21.35	OK
Phenanthrene-d10	25.24	25.24	24.74	25.74	OK
Chrysene-d12	33.08	33.10	32.60	33.60	OK
Perylene-d12	36.99	37.00	36.50	37.50	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1405::D2
DATE AND TIME OF ANALYSIS = 12/14/92 14:41
SAMPLE = CORE 38 92-08307-E2
MISCELLANEOUS = 0.9537 G pH=10.25
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVER
2-Fluorophenol	106.39	100.00	21-100	25-121	106.3
Phenol-d5	108.42	100.00	10-94	24-113	108.4
Nitrobenzene-d5	49.93	50.00	35-114	23-120	99.8
2-Fluorobiphenyl	50.84	50.00	43-116	30-115	101.6
2,4,6-tribromo-phenol	111.03	100.00	10-123	19-122	111.0
Terphenyl-d14	53.32	50.00	33-141	18-137	106.6

MS data file header from : >Y1405::D2

Sample: CORE 38 92-08307-E2R Operator: BOB SUPER GRP. 12/14/92 14:4
Misc : 0.9537 G pH=10.25 BTL# 3
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 3 Equip ID: BNA2
Method file: BNAME2 Tuning file: MTBNA2 No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	40.	300.	0.	0.	0.
Chromatographic times, min. :	4.0	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	8.0	0.0	0.0	.5	0.0

>Y1405 CORE 38 92-08307-E2R0.9537 G pH=10.25
35.01 500.0 CLP TIC
Upslope: .2000 Area Reject: 30949. Max Peaks: 9 Bunch: -1 Valley >100 %
Dnslope: 0.0000 Results File IY1405 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% o tota
1	10.94	632	639	651	192281	672695	667892	7.57	3.
2	12.14	734	754	772	128556	369046	360063	4.08	1.
3	13.80	906	913	919	40638	88896	85564	.97	.
4	15.92	1103	1116	1125	1107579	3897552	3882903	44.03	18.
5	17.20	1232	1238	1247	12777	59656	37090	.42	.
6	17.84	1282	1299	1305	1289828	8878356	8818321	100.00	41.
7	19.52	1437	1459	1463	1252414	7171277	7133332	80.89	33.
8	21.02	1592	1602	1609	181816	324146	316390	3.59	1.
9	23.10	1796	1801	1803	43046	35734	33896	.38	

Sum of corrected areas: 21335452.

Summary of Unknowns PBM Library Search and Quantitation

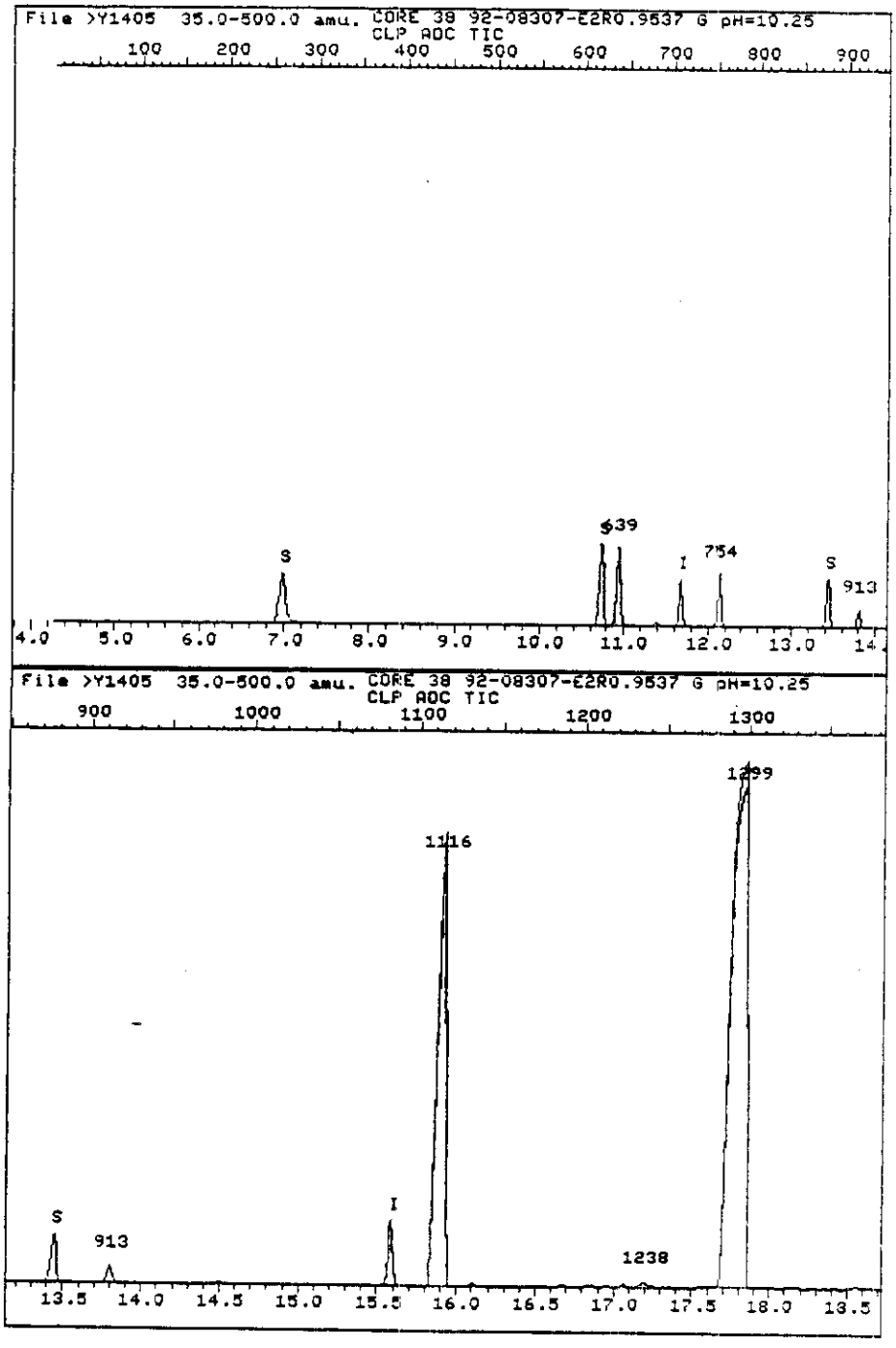
Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	309489.	11.68	4.28 - 13.63
2	40.0	365606.	15.59	13.63 - 18.22
3	40.0	395571.	20.85	18.22 - 23.04
4	40.0	402636.	25.24	23.04 - 29.16
5	40.0	384767.	33.08	29.16 - 35.03
6	40.0	410025.	36.99	35.03 - 46.53

Dilution Factor = 1.00 This sample was .953700 g or mL

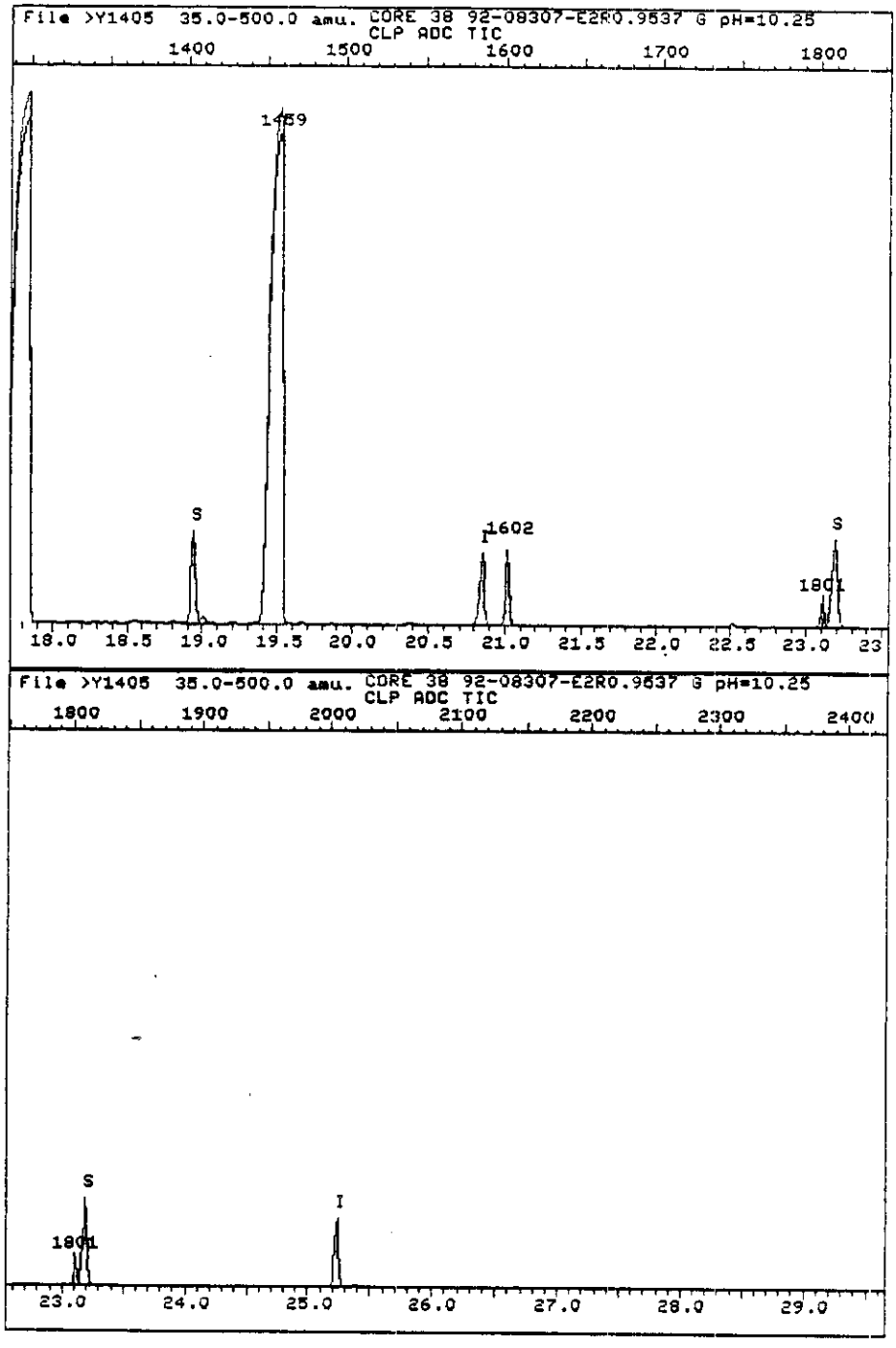
Correction Factor = 2099.19

$$\text{Unknown Concentration} = \left[\frac{\text{Conc Int Std} * \text{Area Unknown}}{\text{Area Int Std}}\right] * \text{Correction Factor}$$

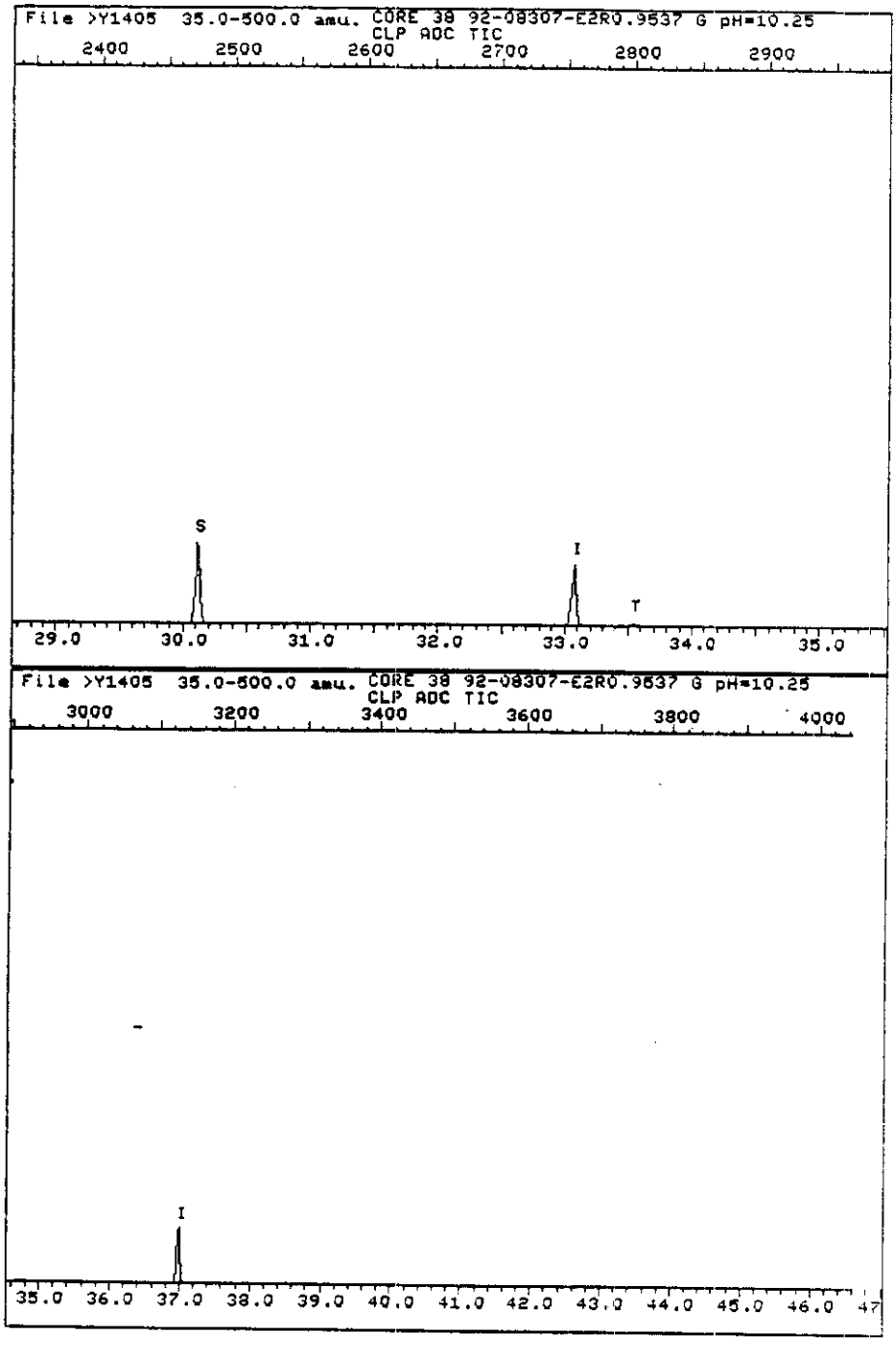
1:31 PM THU., 17 DEC., 1992



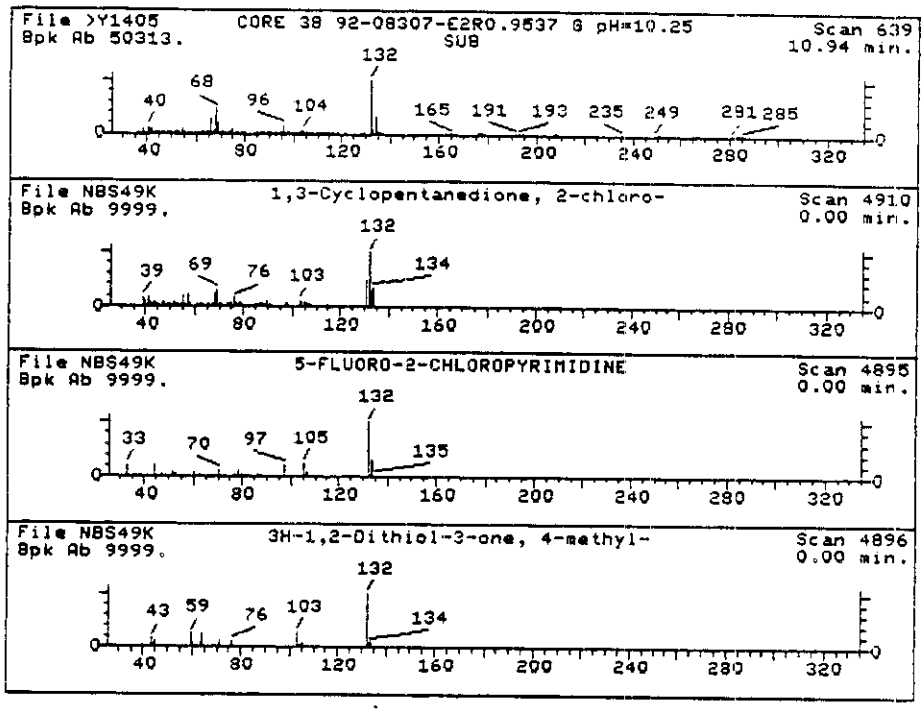
Instrument ID: BNA2 Analyzed on: 12/14/92 14:41



Instrument ID: BNA2 Analyzed on: 12/14/92 14:41



Instrument ID: BNA2 Analyzed on: 12/14/92 14:41



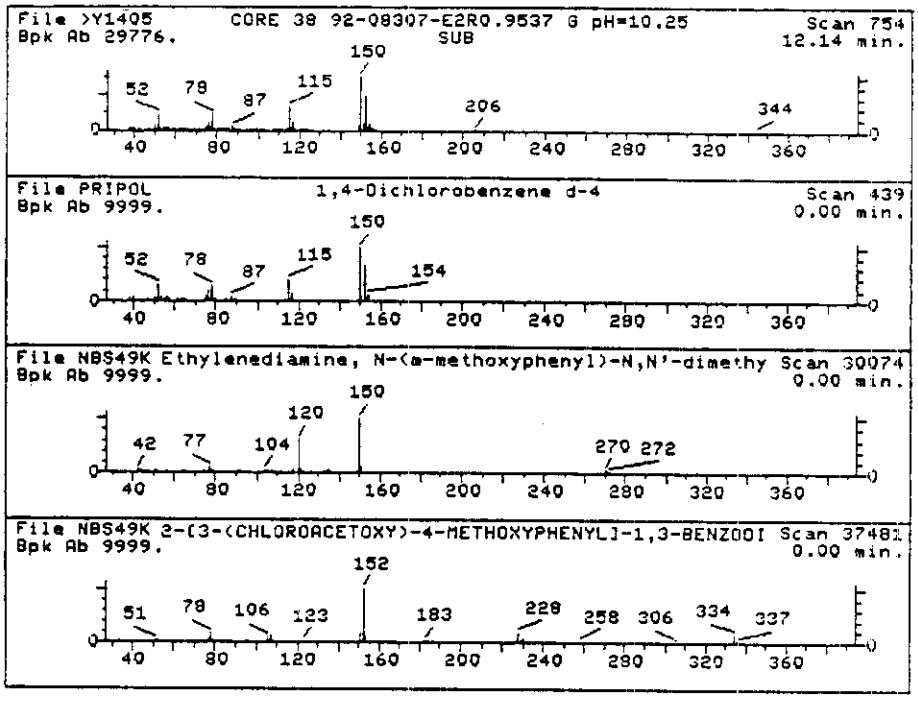
Instrument ID: BNA2 Analyzed on: 12/14/92 14:41
Result 1 in PBM results file: LY1405
Retention Time: 10.94 Area: .667892 Tentative Conc: 180000.00
The unknown area is 215.80% of the nearest internal standard

1.	1,3-Cyclopentanedione, 2-chloro-	132	C5H5ClO2
2.	5-FLUORO-2-CHLOROPYRIMIDINE	132	C4H2ClFN2
3.	3H-1,2-Dithiol-3-one, 4-methyl-	132	C4H4OS2
4.	Benzeneethanamine, .alpha.-methyl-N-(phenylmethylene	223	C16H17N

Sample file: >Y1405 Spectrum #: 639
Search speed: 3 Tilting option: F No. of ion ranges searched: 5

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	37*	14203191	15856	NBS49K	35	76	2	0	94	29	14	
2.	26*	62802420	15850	NBS49K	41	67	2	0	100	43	8	
3.	25*	3620108	15851	NBS49K	20	82	2	0	100	47	7	
4.	20*	2980021	16019	NBS49K	23	83	2	0	100	53	5	

2-chlorophenol-d4 used in 3/90 SOW - do not use. AM 12-17-92



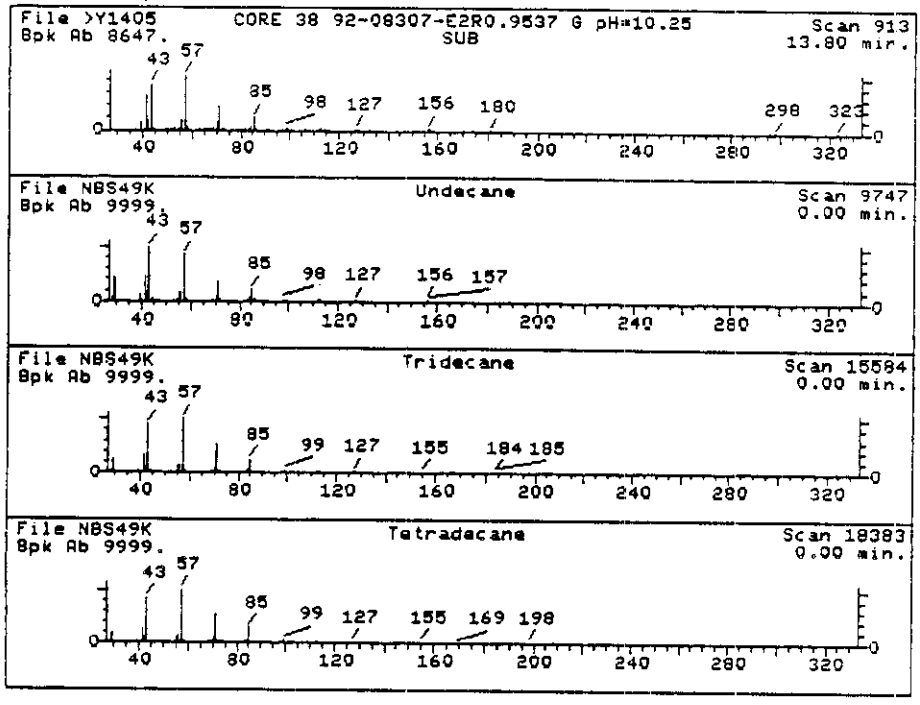
Instrument ID: BNA2 Analyzed on: 12/14/92 14:41
Result 2 in PBM results file: LY1405
Retention Time: 12.14 Area: 360063 Tentative Conc: 98000.00
The unknown area is 116.34% of the nearest internal standard

1. 1,4-Dichlorobenzene d-4	150	C6.D4.CL2
2. Ethylenediamine, N-(m-methoxyphenyl)-N,N'-dimethyl-N'-phenyl-	270	C17H22N2O
3. 2-[3-(CHLOROACETOXY)-4-METHOXYPHENYL]-1,3-BENZODIOXA	334	C17H15ClO5
4. Pyrimidine, 2,4-difluoro-5-chloro-	150	C4HClF2N2
5. Imidazo[5,1-f][1,2,4]triazine-2,7-diamine	150	C5H6N6
6. 6H-Purin-6-one, 1,7-dihydro-1-methyl-	150	C6H6N4O

Sample file: >Y1405 Spectrum #: 754
Search speed: 3 Tilting option: F No. of ion ranges searched: 10

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	97*	439	257	PRIPOL	95	12	0	0	81	7	6.8	
2.	25*	32857399	19521	NBS49K	43	77	2	4	100	48	.7	
3.	25*	66267398	41938	NBS49K	48	92	2	4	65	43	3	
4.	25*	25151079	19311	NBS49K	22	78	2	0	100	43	3	

1,2-dichlorobenzene-d4 used in 3/30 SOW - do not use - [illegible] 12/17/92

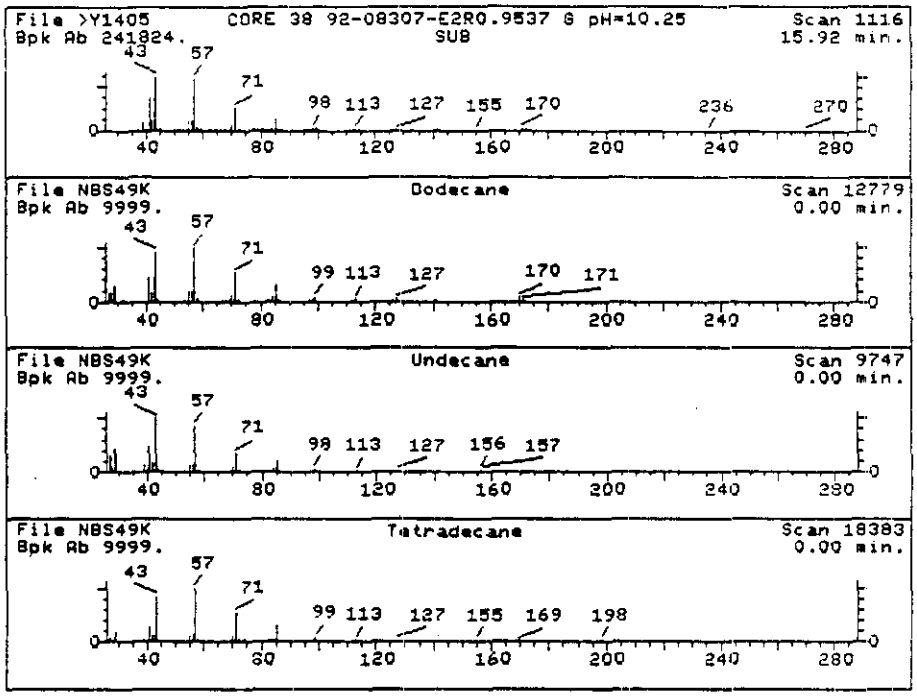


Instrument ID: BNA2 Analyzed on: 12/14/92 14:41
Result 3 in PBM results file: LY1405
Retention Time: 13.80 Area: 85564 Tentative Conc: 20000.00
The unknown area is 23.40% of the nearest internal standard

1. Undecane	156	C11H24
2. Tridecane	184	C13H28
3. Tetradecane	198	C14H30
4. Heptadecane, 2,6,10,14-tetramethyl-	296	C21H44
5. Dodecane	170	C12H26
6. Tetradecane, 1-iodo-	324	C14H29I

Sample file: >Y1405 Spectrum #: 913
Search speed: 3 Tilting option: F No. of ion ranges searched: 62

	Prob.	CAS #	CON #	ROOT	K	DK	#F_G	TILT	%	CON	C_I	R_I
1.	93*	1120214	6682	NBS49K	75	22	3	0	84	14	64	[illegible]
2.	83	629505	6761	NBS49K	70	36	2	0	89	5	57	[illegible]
3.	78	629594	6804	NBS49K	74	34	2	2	92	4	55	[illegible]
4.	78	18344371	6880	NBS49K	73	56	2	0	71	5	55	[illegible]
5.	76	112403	6732	NBS49K	87	12	2	3	79	8	45	[illegible]
6.	76	19218941	6889	NBS49K	90	38	2	0	70	10	45	[illegible]

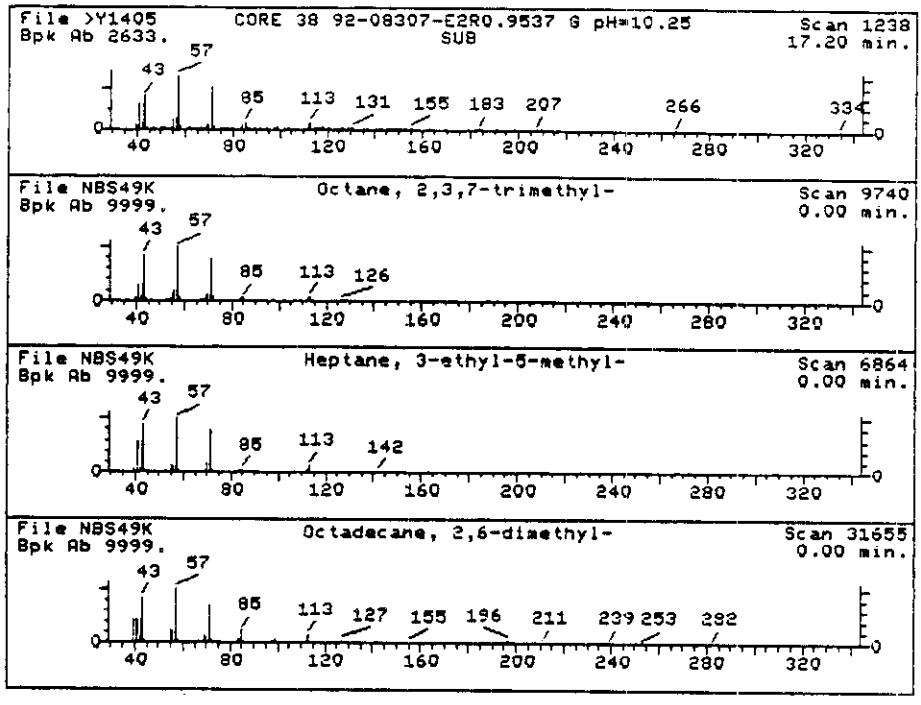


Instrument ID: BNA2 Analyzed on: 12/14/92 14:41
Result 4 in PBM results file: LY1405
Retention Time: 15.92 Area: 3882903 Tentative Conc: 890000.00
The unknown area is 1062.0% of the nearest internal standard

1. Dodecane	170	C12H26
2. Undecane	156	C11H24
3. Tetradecane	198	C14H30
4. Tridecane	184	C13H28
5. Pentadecane	212	C15H32
6. Undecane, 2-methyl-	170	C12H26

Sample file: >Y1405 Spectrum #: 1116
Search speed: 3 Tilting option: F No. of ion ranges searched: 5

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	96*	112403	6732	NBS49K	99	0	0	4	94	1	72	
2.	87	1120214	6682	NBS49K	82	15	1	0	92	2	63	
3.	83	629594	6804	NBS49K	92	16	2	3	98	1	57	
4.	83	629505	6761	NBS49K	87	19	2	3	98	4	57	
5.	83	629629	6819	NBS49K	87	33	2	4	79	5	57	
6.	79*	7045718	6735	NBS49K	55	39	2	1	93	7	48	



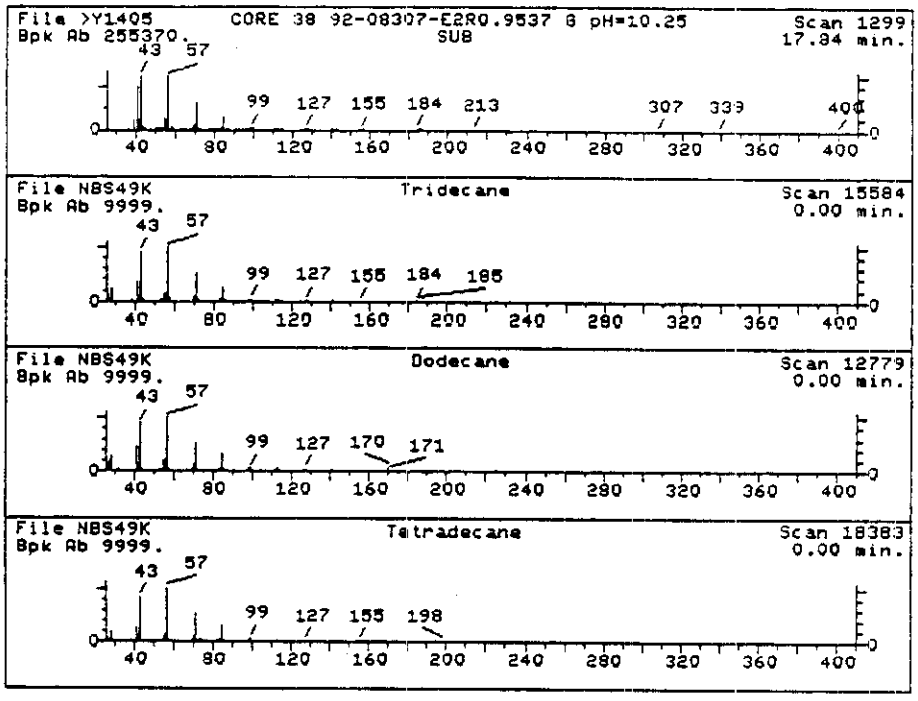
Instrument ID: BNA2 Analyzed on: 12/14/92 14:41
Result 5 in PBM results file: LY1405
Retention Time: 17.20 Area: 37090 Tentative Conc: 8500.00
The unknown area is 10.14% of the nearest internal standard

1. Octane, 2,3,7-trimethyl-	156	C11H24
2. Heptane, 3-ethyl-5-methyl-	142	C10H22
3. Octadecane, 2,6-dimethyl-	282	C20H42
4. Octane, 2,3,6-trimethyl-	156	C11H24
5. Nonane, 2,6-dimethyl-	156	C11H24
6. Octane, 3,6-dimethyl-	142	C10H22

Sample file: >Y1405 Spectrum #: 1238
Search speed: 3 Tilting option: F No. of ion ranges searched: 6c

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	78	62016346	4357	NBS49K	73	20	1	-3	74	5	55	
2.	64*	52896909	4332	NBS49K	56	38	1	0	71	21	28	
3.	60	75163972	12512	NBS49K	75	66	3	0	75	12	30	
4.	52	62016335	4356	NBS49K	45	47	2	0	81	17	20	
5.	52	17302282	4354	NBS49K	53	43	2	0	106	17	20	
6.	46	15869940	12333	NBS49K	49	40	2	0	100	23	17	

unk alkane

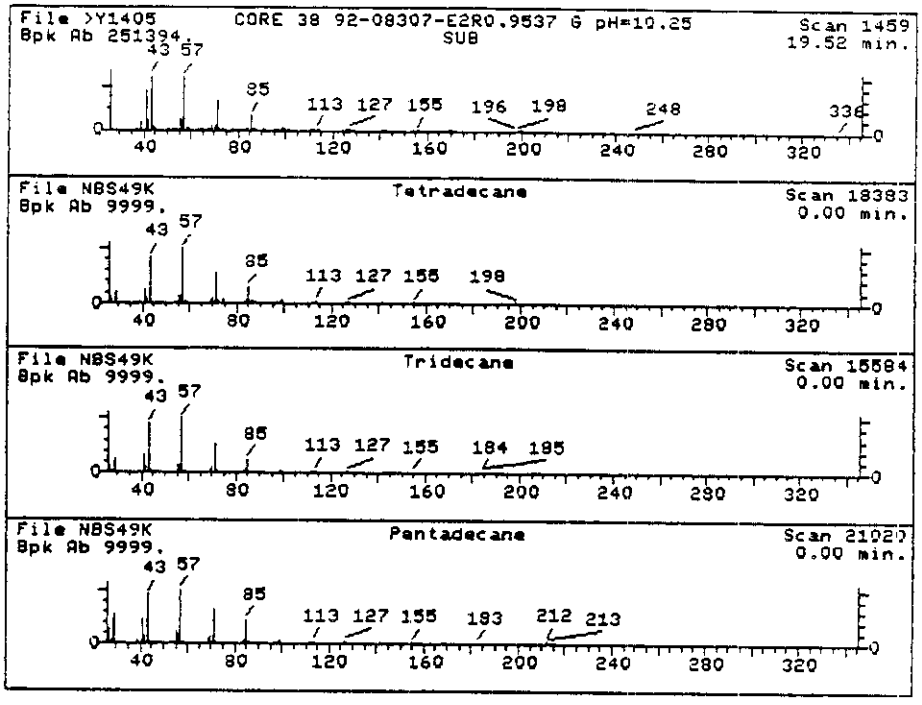


Instrument ID: BNA2 Analyzed on: 12/14/92 14:41
Result 6 in PBM results file: LY1405
Retention Time: 17.84 Area: 8818320 Tentative Conc:2000000.00
The unknown area is 2412.0% of the nearest internal standard

1. Tridecane	184	C13H28
2. Dodecane	170	C12H26
3. Tetradecane	198	C14H30
4. Decane, 6-ethyl-2-methyl-	184	C13H28
5. Eicosane	282	C20H42
6. Heptadecane, 2,6,10,14-tetramethyl-	296	C21H44

Sample file: >Y1405 Spectrum #: 1299
Search speed: 3 Tilting option: F No. of ion ranges searched: 6

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	95*	629505	6761	NBS49K	84	22	0	0	81	1	72	
2.	88	112403	6732	NBS49K	92	7	1	3	82	4	65	
3.	83	629594	6804	NBS49K	92	16	2	3	100	1	57	
4.	83	62108218	6767	NBS49K	68	31	2	0	98	5	57	
5.	78	112958	6871	NBS49K	87	52	2	4	77	4	55	
6.	78	18344371	6880	NBS49K	67	62	2	0	80	2	55	

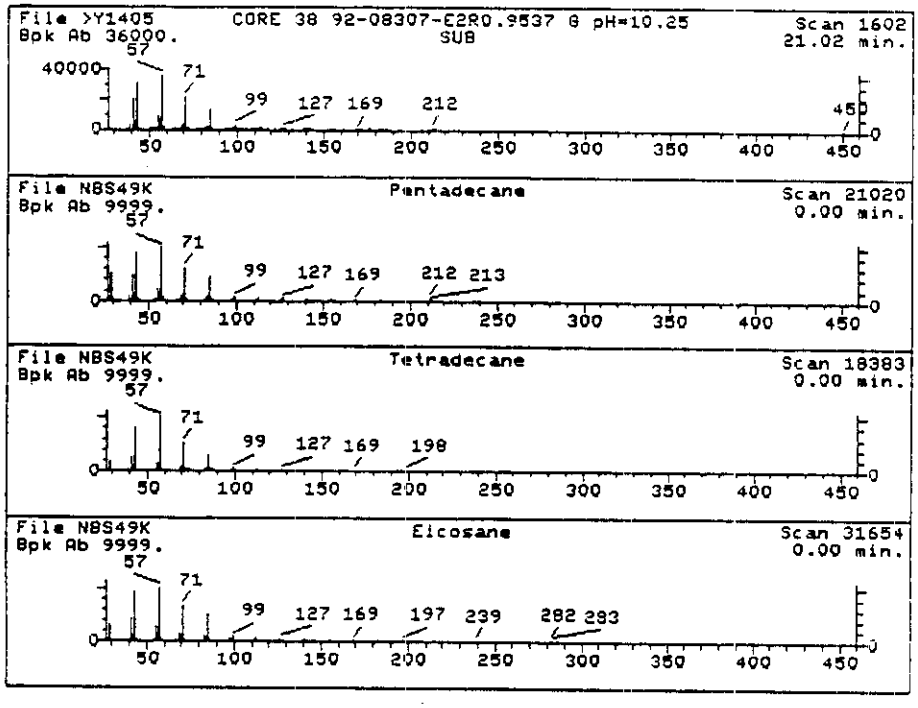


Instrument ID: BNA2 Analyzed on: 12/14/92 14:41
Result 7 in PBM results file: LY1405
Retention Time: 19.52 Area: 7133332 Tentative Conc:1500000.00
The unknown area is 1803.3% of the nearest internal standard

1. Tetradecane	198	C14H30
2. Tridecane	184	C13H28
3. Pentadecane	212	C15H32
4. Octacosane	394	C28H58
5. Eicosane	282	C20H42
6. Undecane	156	C11H24

Sample file: >Y1405 Spectrum #: 1459
Search speed: 3 Tilting option: F No. of ion ranges searched: 6

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_
1.	95*	629594	6804	NBS49K	103	5	1	1	95	1	72	
2.	89	629505	6761	NBS49K	91	15	1	0	84	4	66	
3.	83	629629	6819	NBS49K	93	27	2	3	85	4	57	
4.	83	630024	6906	NBS49K	99	42	2	4	83	4	57	
5.	83	112958	6871	NBS49K	94	45	2	4	85	5	57	
6.	83	1120214	6682	NBS49K	70	27	2	0	97	5	57	



Instrument ID: BNA2 Analyzed on: 12/14/92 14:41
Result 8 in PBM results file: LY1405
Retention Time: 21.02 Area: 316390 Tentative Conc: 67000.00
The unknown area is 79.98% of the nearest internal standard

1.	Pentadecane	212	C15H32
2.	Tetradecane	198	C14H30
3.	Eicosane	282	C20H42
4.	Nonadecane	268	C19H40
5.	Hexadecane	226	C16H34
6.	Tetradecane, 1-iodo-	324	C14H29I

Sample file: >Y1405 Spectrum #: 1602
Search speed: 3 Tilting option: F No. of ion ranges searched: 7

	Prob.	CAS #	CON #	ROOT	<	DK	#FLG	TILT	%	CON	C_I	R_
1.	94*	629629	6819	NBS49K	111	9	1	2	84	4	72	
2.	86	629594	6804	NBS49K	97	11	2	0	100	4	60	
3.	86	112958	6871	NBS49K	107	32	2	3	77	5	60	
4.	83	629929	6864	NBS49K	89	28	2	1	100	5	57	
5.	79	544763	6835	NBS49K	99	21	2	3	95	8	43	
6.	79	19218941	6889	NBS49K	83	45	1	0	75	10	43	

Instrument ID: BNA2 Analyzed on: 12/14/92 14:41

Retention Time: 23.10 Area: 33896 Tentative Conc: 7100.00

The unknown area is 8.42% of the nearest internal standard

This peak is less than 10% of the nearest internal standard.

No library search has been performed on this peak.

$$C = \frac{40 \times 33896 \times 2099.19}{402636} = 7100$$

12-18-92

QUANT REPORT Page 1

Operator ID: BOB
Output File: ^Y1406::OF
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25

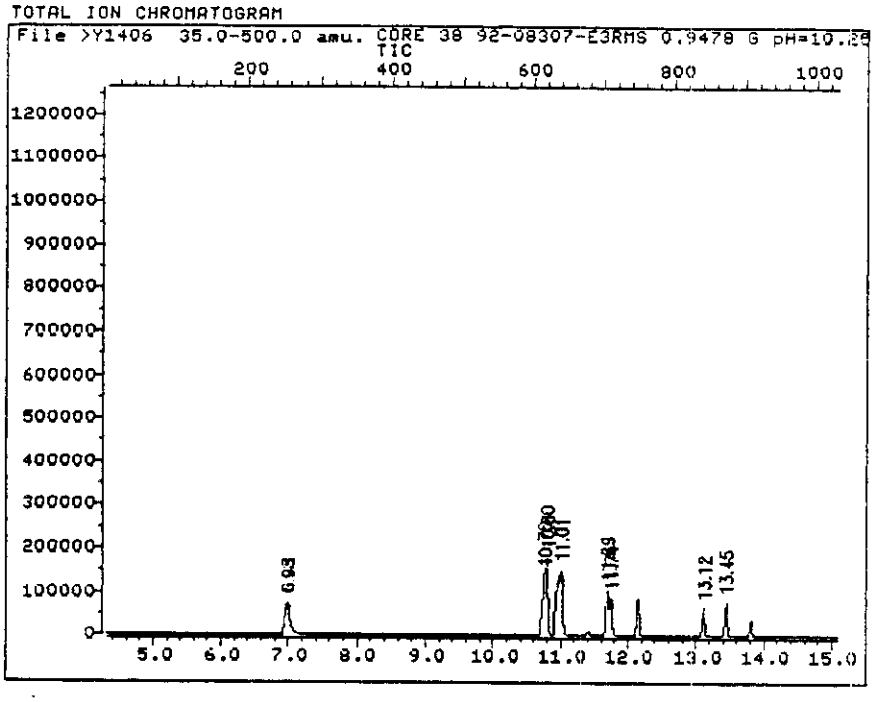
Quant Rev: 7
Quant Time: 921214 16:27
Injected at: 921214 15:39
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 4

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Time: 921214 11:39

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.69	706	48598	40.00	ng/uL
2)	2-Fluorophenol	6.98	256	105504	69.64	ng/uL
3)	Phenol-d5	10.76	617	131421	70.93	ng/uL
x4)	Phenol	10.80	621	141260	70.45	ng/uL
x6)	2-Chlorophenol	11.01	641	116118	69.66	ng/uL
7)	1,3-Dichlorobenzene	11.74	711	52890	29.14	ng/uL
x8)	1,4-Dichlorobenzene	11.74	711	52890	28.77	ng/uL
10)	1,2-Dichlorobenzene	11.74	711	52890	30.14	ng/uL
x14)	N-Nitroso-di-n-propylamine	13.12	843	32749	32.73	ng/uL
16)	*Naphthalene-d8	15.60	1080	170371	40.00	ng/uL
17)	Nitrobenzene-d5	13.45	874	57877	32.18	ng/uL
x25)	1,2,4-Trichlorobenzene	15.46	1067	44003	29.81	ng/uL
26)	Naphthalene	15.91	1110	1393	.315	ng/uL
x29)	4-Chloro-3-methylphenol	17.47	1259	96778	68.39	ng/uL
31)	*Acenaphthene-d10	20.86	1582	87421	40.00	ng/uL
36)	2-Fluorobiphenyl	18.94	1399	98450	32.90	ng/uL
x42)	Acenaphthene	20.96	1591	81058	31.04	ng/uL
x44)	4-Nitrophenol	21.43	1636	27787	54.29	ng/uL
x46)	2,4-Dinitrotoluene	21.53	1646	32113	27.47	ng/uL
51)	*Phenanthrene-d10	25.25	2001	149387	40.00	ng/uL
54)	2,4,6-Tribromophenol	23.20	1805	41524	77.22	ng/uL
x57)	Pentachlorophenol	24.72	1951	43882	71.00	ng/uL
62)	*Chrysene-d12	33.09	2750	121322	40.00	ng/uL
x63)	Pyrene	29.47	2405	136533	32.75	ng/uL
64)	Terphenyl-d14	30.12	2467	116863	37.61	ng/uL
69)	Bis(2-Ethylhexyl)phthalate	33.55	2794	22966	6.75	ng/uL
70)	*Perylene-d12	37.03	3123	138953	40.00	ng/uL
71)	Di-n-octylphthalate	35.39	2970	16720	2.69	ng/uL

* Compound is ISTD

Preliminary data
12/17/92



Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25

Quant Output File: ^Y1406::QF
Instrument ID: BNA2

BTL# 4

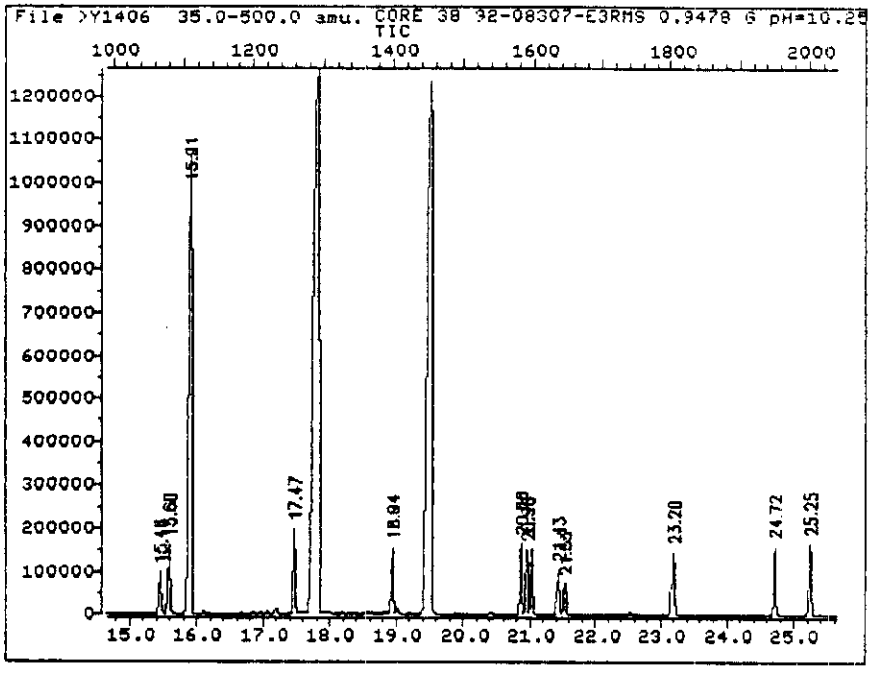
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 16:27
Injected at: 921214 15:39

Page 1 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25

Quant Output File: ^Y1406::OF
Instrument ID: BNA2

BTL# 4

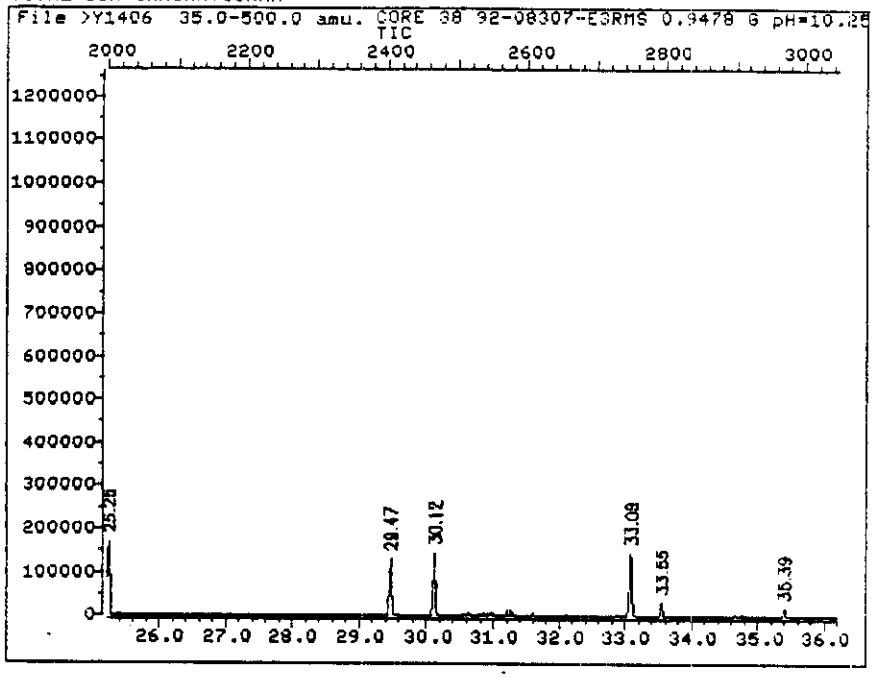
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 16:27
Injected at: 921214 15:39

Page 2 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25

Quant Output File: ^Y1406::QF
Instrument ID: BNA2

BTL# 4

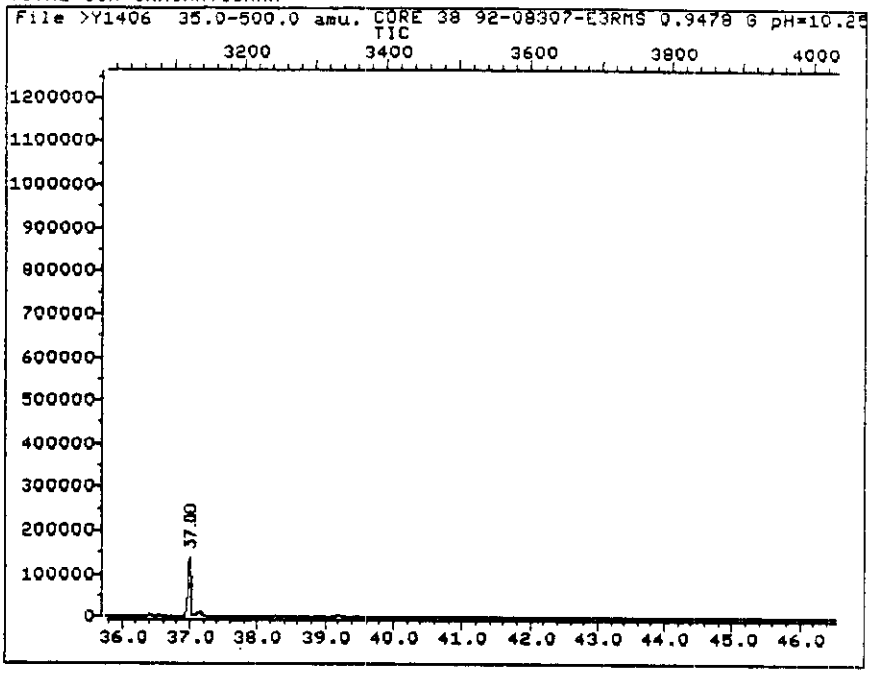
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: 808
Quant Time : 921214 16:27
Injected at: 921214 15:39

Page 3 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25

Quant Output File: ^Y1406::OF
Instrument ID: BNA2

BTL# 4

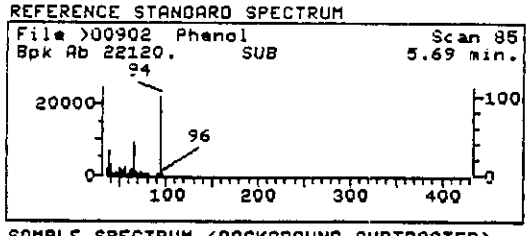
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

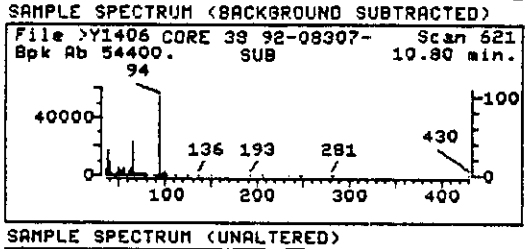
Operator ID: 808
Quant Time : 921214 16:27
Injected at: 921214 15:39

Page 4 of 4

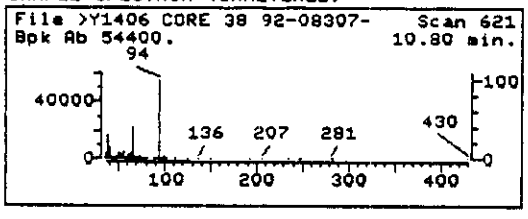
REFERENCE STANDARD SPECTRUM

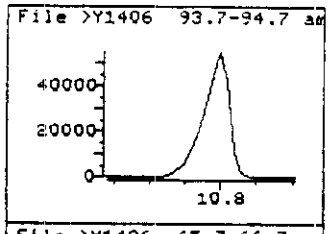


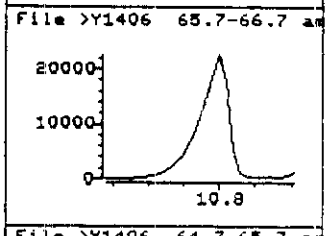
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

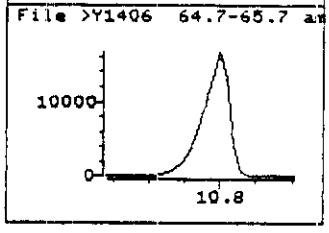


SAMPLE SPECTRUM (UNALTERED)







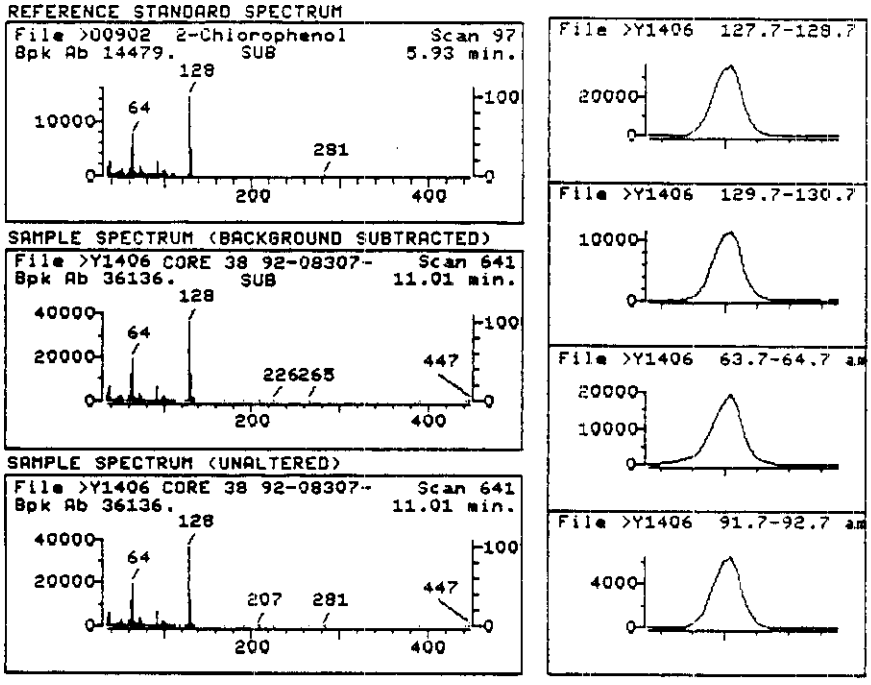


Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 4
Compound Name : Phenol
Scan Number : 621
Retention Time: 10.80 min.
- Quant Ion : 94.0
Area : 141260
Concentration : 70.45 ng/uL
q-value : 90

ok



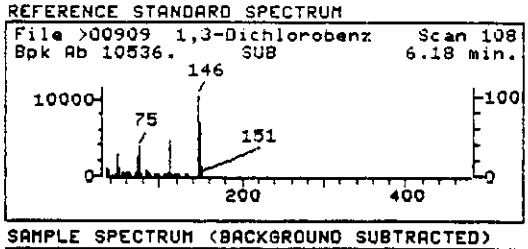
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

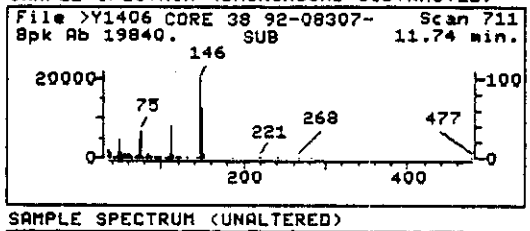
Compound No : 6
Compound Name : 2-Chlorophenol
Scan Number : 641
Retention Time: 11.01 min.
Quant Ion : 128.0
Area : 116118
Concentration : 69.66 ng/uL
q-value : 97

ok

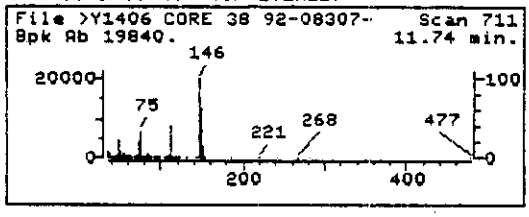
REFERENCE STANDARD SPECTRUM

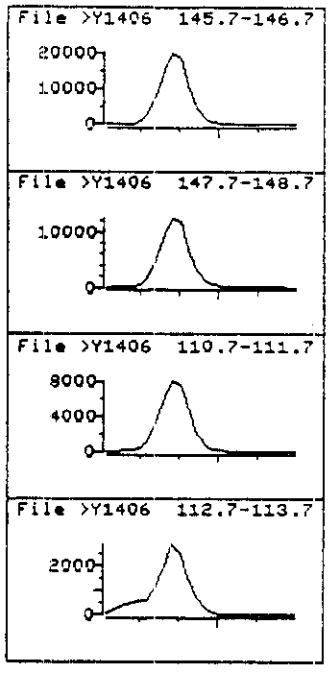


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





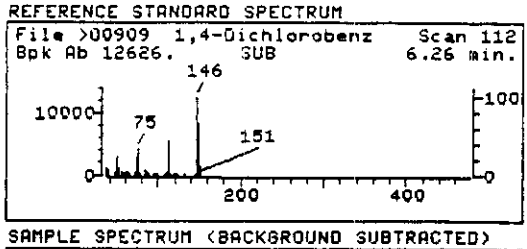
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

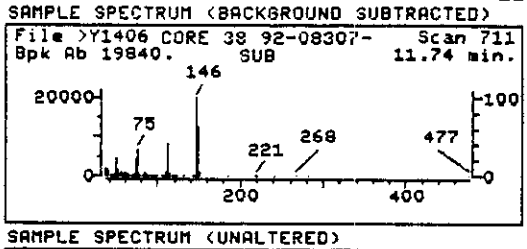
Compound No : 7
Compound Name : 1,3-Dichlorobenzene
Scan Number : 711
Retention Time: 11.74 min.
Quant Ion : 146.0
Area : 52890
Concentration : 29.14 ng/uL
q-value : 96

Subst

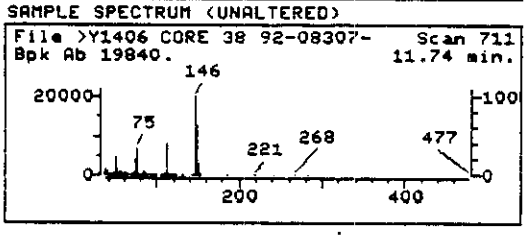
REFERENCE STANDARD SPECTRUM

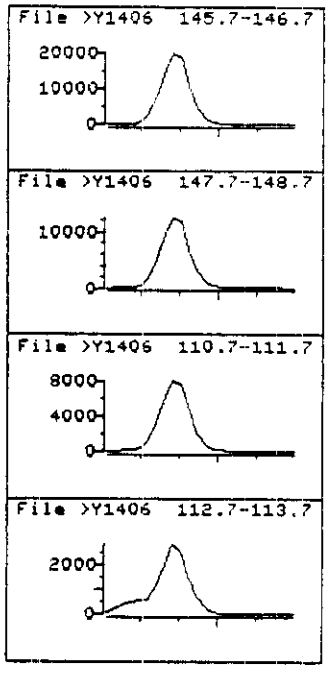


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





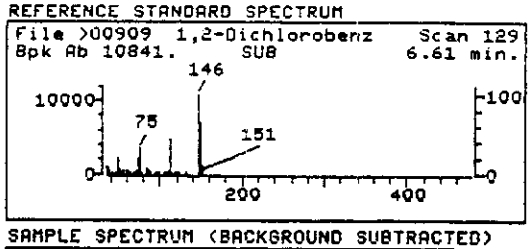
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

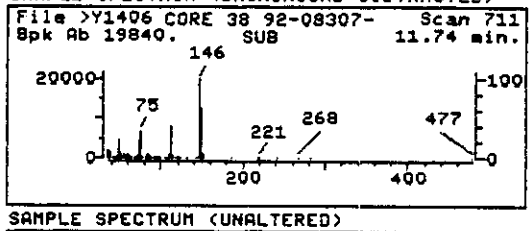
Compound No : 8
Compound Name : 1,4-Dichlorobenzene
Scan Number : 711
Retention Time: 11.74 min.
Quant Ion : 146.0
Area : 52890
Concentration : 28.77 ng/uL
q-value : 96

OK

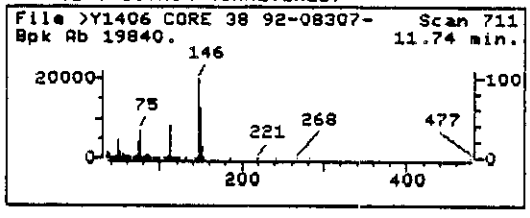
REFERENCE STANDARD SPECTRUM

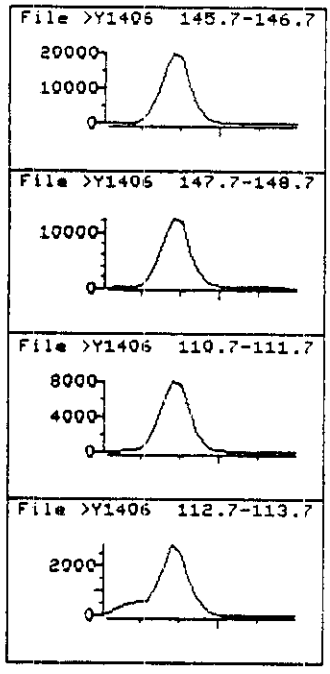


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



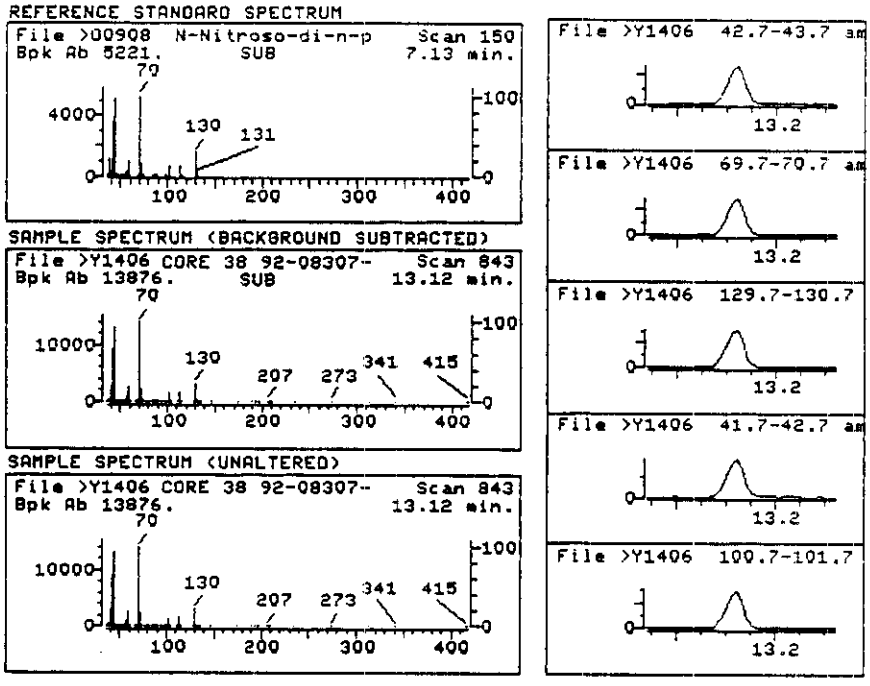


Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::QF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 10
Compound Name : 1,2-Dichlorobenzene
Scan Number : 711
Retention Time: 11.74 min.
Quant Ion : 146.0
Area : 52890
Concentration : 30.14 ng/uL
q-value : 93

Delete

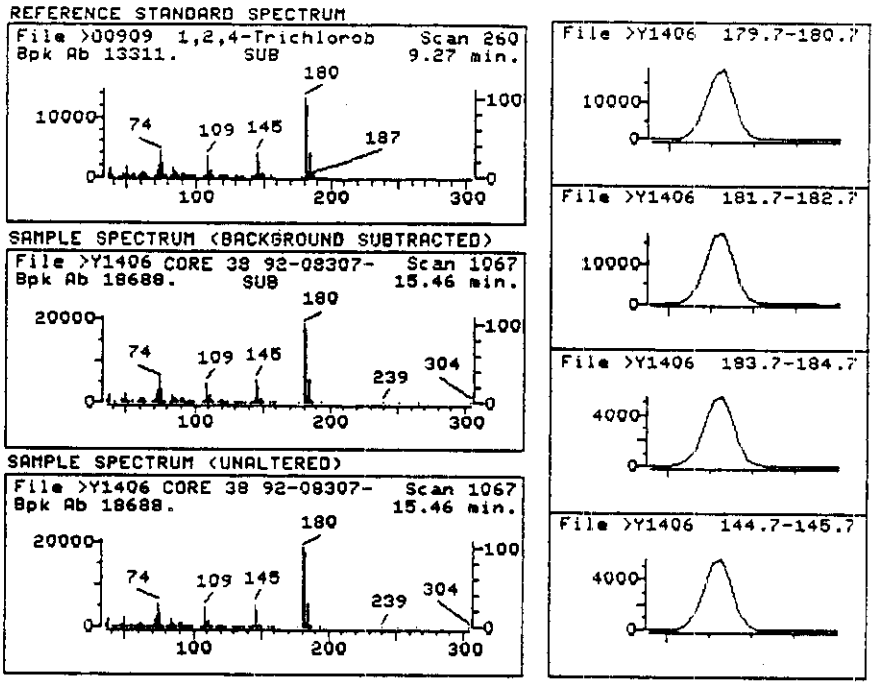


Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 14
Compound Name : N-Nitroso-di-n-propylamine
Scan Number : 843
Retention Time: 13.12 min.
Quant Ion : 70.0
Area : 32749
Concentration : 32.73 ng/uL
q-value : 94

ok

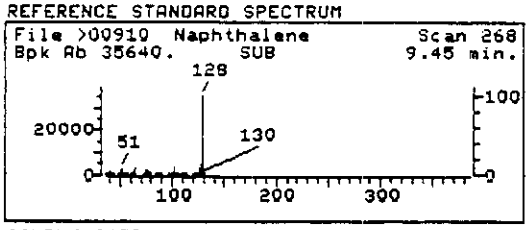


Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

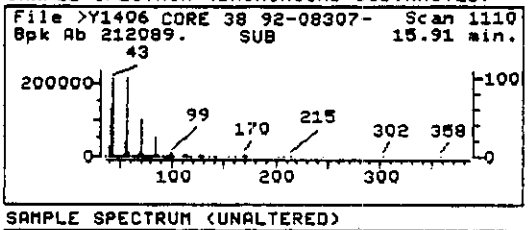
Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 25
Compound Name : 1,2,4-Trichlorobenzene
Scan Number : 1067
Retention Time: 15.46 min.
Quant Ion : 180.0
Area : 44003
Concentration : 29.81 ng/uL
q-value : 98

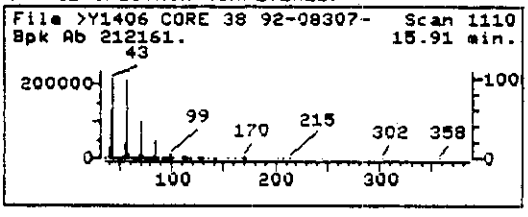
REFERENCE STANDARD SPECTRUM

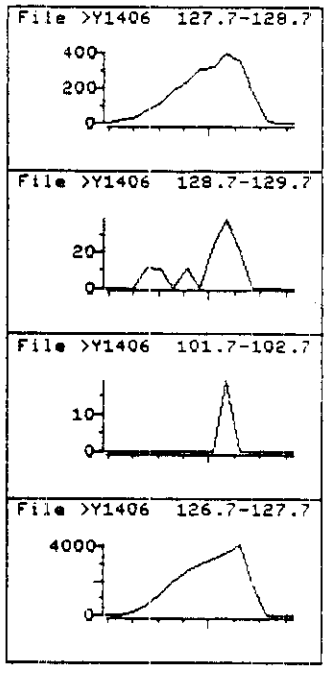


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





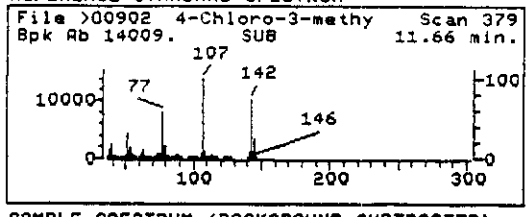
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

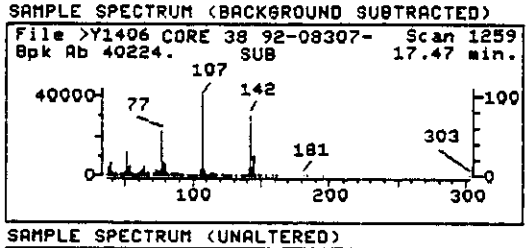
Compound No : 26
Compound Name : Naphthalene
Scan Number : 1110
Retention Time: 15.91 min.
Quant Ion : 128.0
Area : 1393
Concentration : .315 ng/uL
q-value : 90

delete

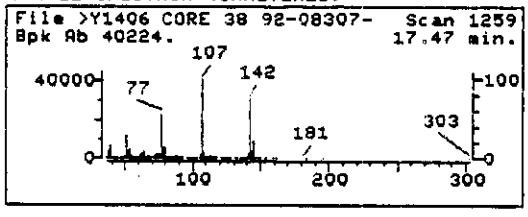
REFERENCE STANDARD SPECTRUM

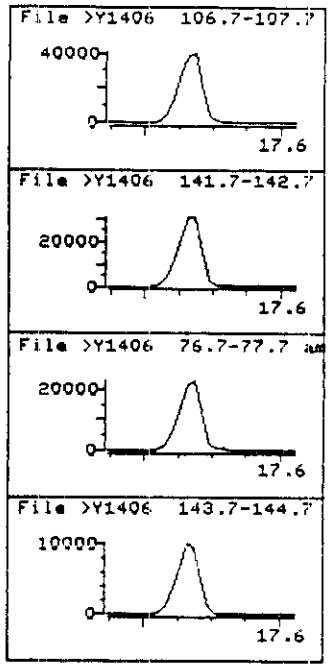


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



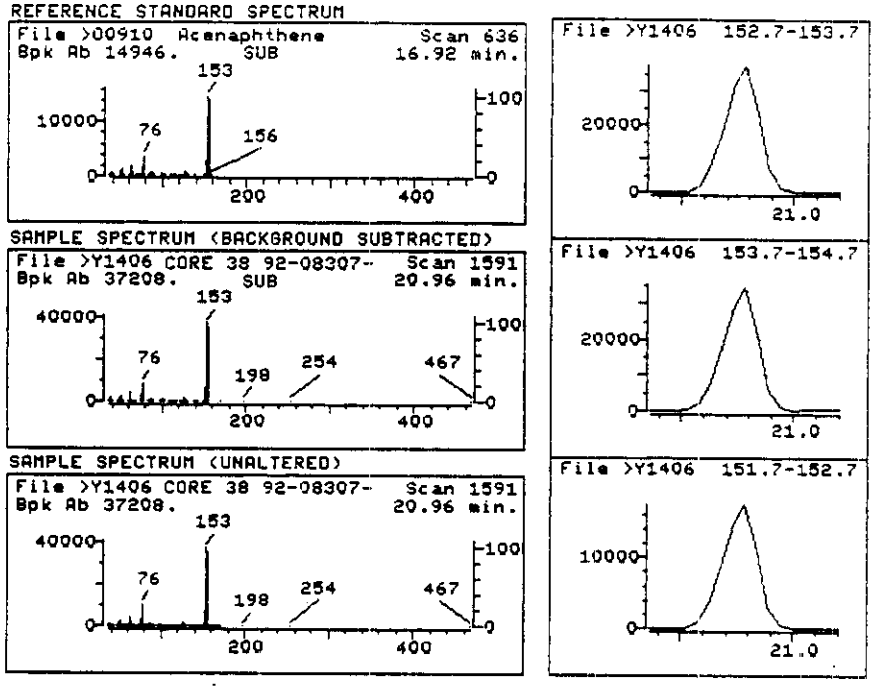


Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 29
Compound Name : 4-Chloro-3-methylphenol
Scan Number : 1259
Retention Time: 17.47 min.
Quant Ion : 107.0
Area : 96778
Concentration : 68.39 ng/uL
q-value : 97

b K



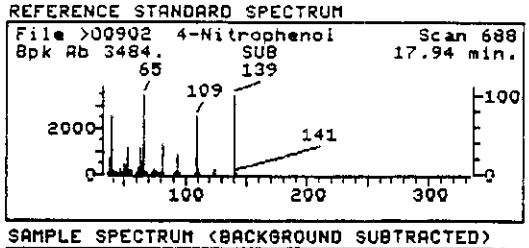
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

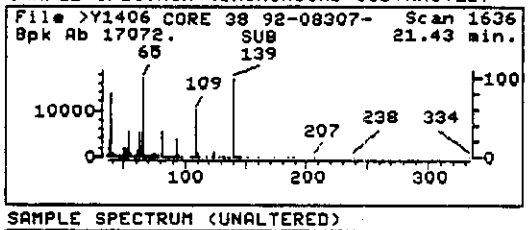
Compound No : 42
Compound Name : Acenaphthene
Scan Number : 1591
Retention Time: 20.96 min.
Quant Ion : 153.0
Area : 81058
Concentration : 31.04 ng/uL
q-value : 97

6C

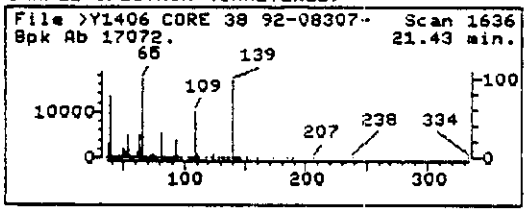
REFERENCE STANDARD SPECTRUM

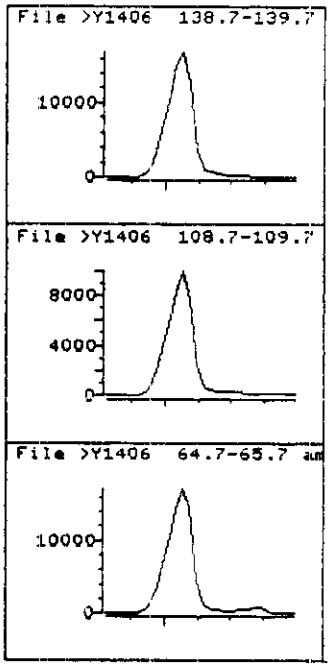


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





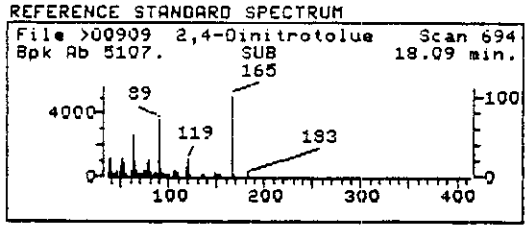
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::QF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

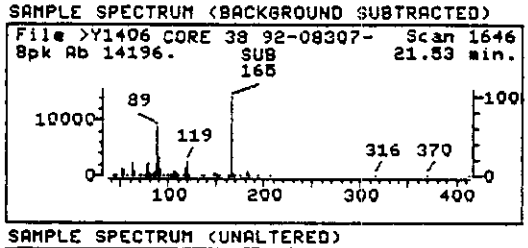
Compound No : 44
Compound Name : 4-Nitrophenol
Scan Number : 1636
Retention Time: 21.43 min.
Quant Ion : 109.0
Area : 27787
Concentration : 54.29 ng/uL
q-value : 99

6 K

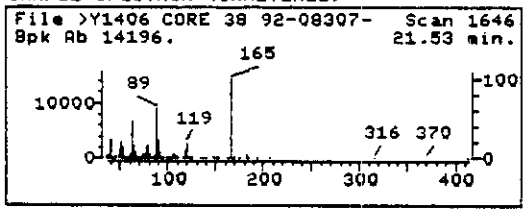
REFERENCE STANDARD SPECTRUM

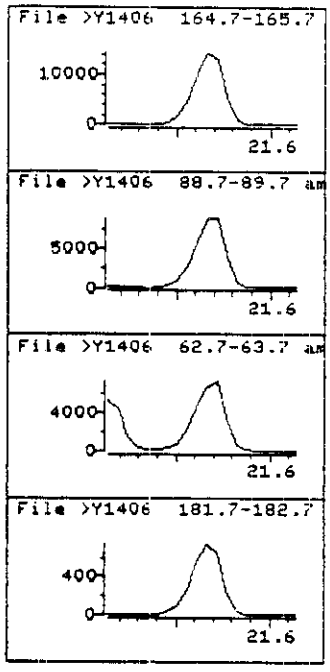


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





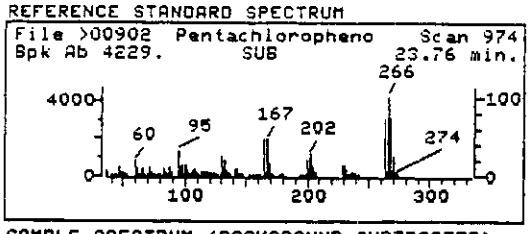
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::QF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

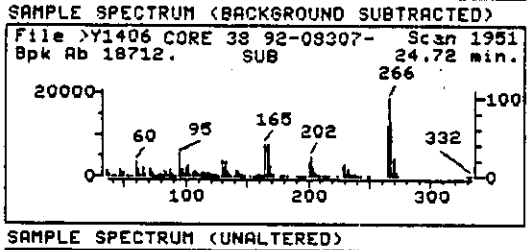
Compound No : 46
Compound Name : 2,4-Dinitrotoluene
Scan Number : 1646
Retention Time: 21.53 min.
Quant Ion : 165.0
Area : 32113
Concentration : 27.47 ng/uL
q-value : 90

OK

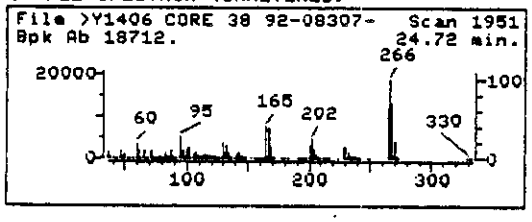
REFERENCE STANDARD SPECTRUM

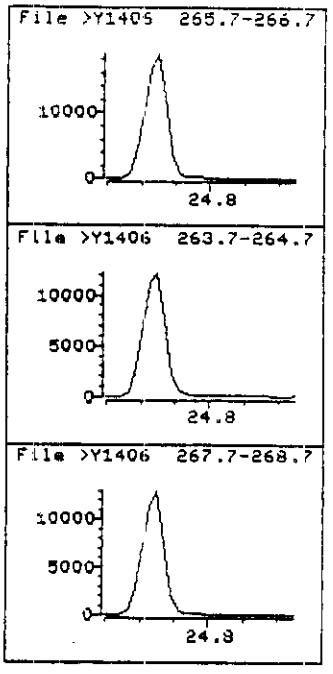


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



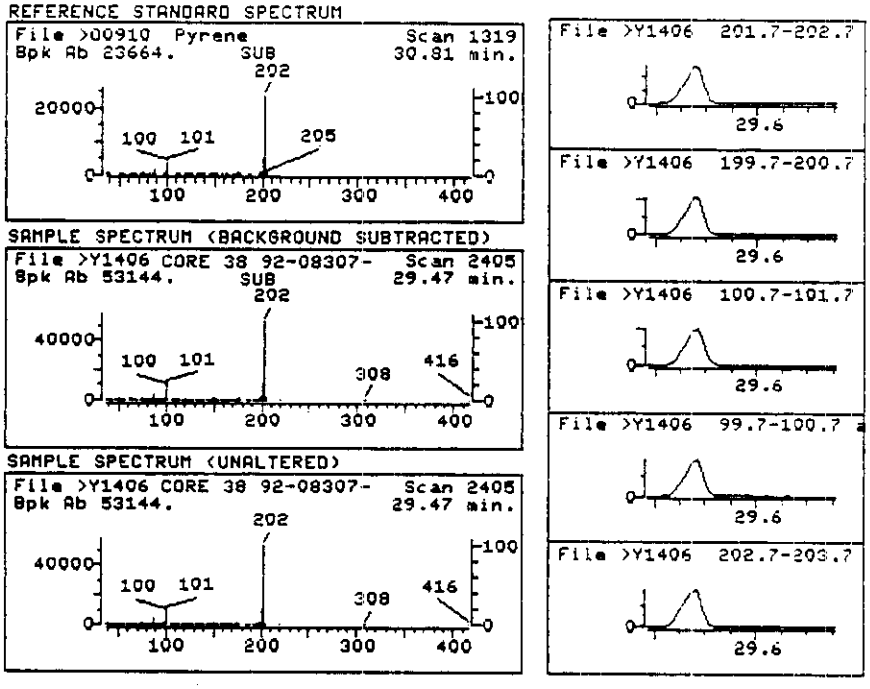


Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::QF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 57
Compound Name : Pentachlorophenol
Scan Number : 1951
Retention Time: 24.72 min.
Quant Ion : 266.0
Area : 43882
Concentration : 71.00 ng/uL
q-value : 97

OK



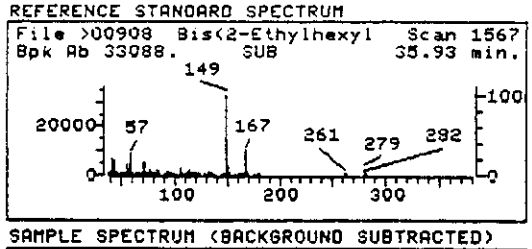
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

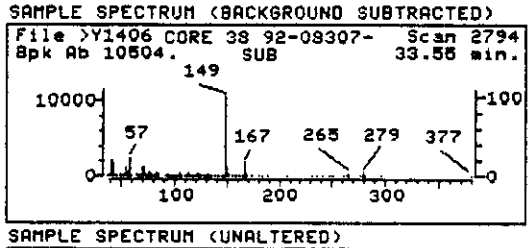
Compound No : 63
Compound Name : Pyrene
Scan Number : 2405
Retention Time: 29.47 min.
Quant Ion : 202.0
Area : 136533
Concentration : 32.75 ng/uL
q-value : 99

6L

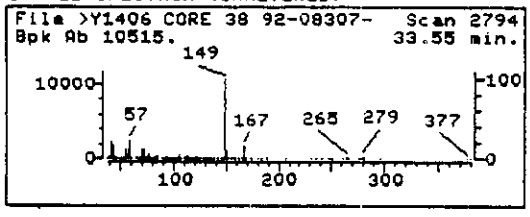
REFERENCE STANDARD SPECTRUM

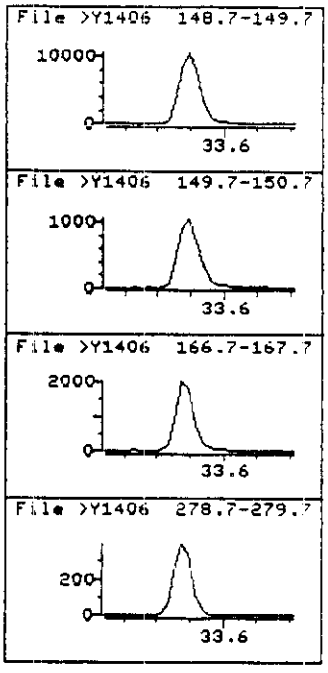


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





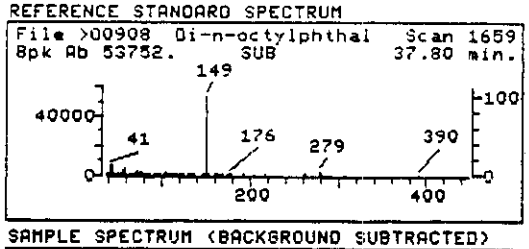
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::QF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

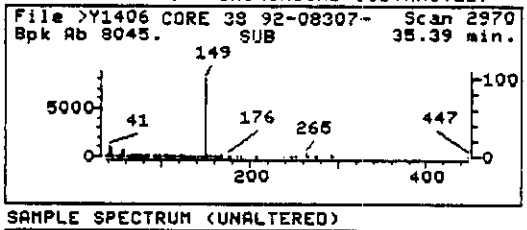
Compound No : 69
Compound Name : Bis(2-Ethylhexyl)phthalate
Scan Number : 2794
Retention Time: 33.55 min.
Quant Ion : 149.0
Area : 22966
Concentration : 6.75 ng/uL
q-value : 82

6C

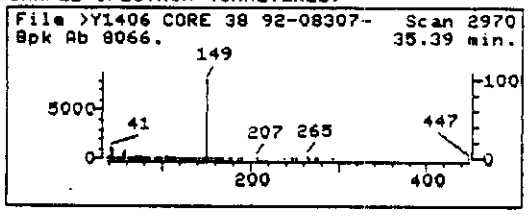
REFERENCE STANDARD SPECTRUM

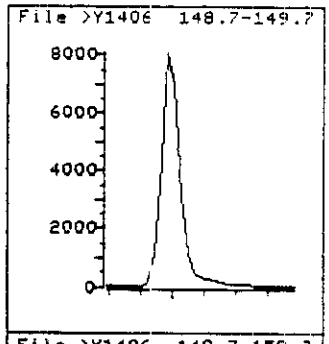


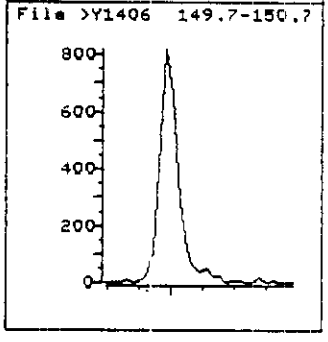
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25
Quant Time: 921214 16:27
Injected at: 921214 15:39
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1406::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 71
Compound Name : Di-n-octylphthalate
Scan Number : 2970
Retention Time: 35.39 min.
Quant Ion : 149.0
Area : 16720
Concentration : 2.69 ng/uL
q-value : 99

OK

QUANT REPORT

Operator ID: BOB
Output File: ^Y1406::OF
Data File: >Y1406::D2
Name: CORE 38 92-08307-E3R
Misc: MS 0.9478 G pH=10.25

Quant Rev: 7
Quant Time: 921214 16:27
Injected at: 921214 15:39
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 4

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921214 11:39

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.69	706	48598	40.00	ng/uL
2)	2-Fluorophenol	6.98	256	105504	69.64	ng/uL
3)	Phenol-d5	10.76	617	131421	70.93	ng/uL
4)	Phenol	10.80	621	141260	70.45	ng/uL
5)	bis(2-Chloroethyl)ether	0.00	641	0	0.00	ng/uL
6)	2-Chlorophenol	11.01	641	116118	69.66	ng/uL
7)	~~1,3-Dichlorobenzene~~	~~11.74~~	~~711~~	~~52890~~	~~29.14~~	~~ng/uL~~
8)	1,4-Dichlorobenzene	11.74	711	52890	28.77	ng/uL
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL
10)	~~1,2-Dichlorobenzene~~	~~11.74~~	~~711~~	~~52890~~	~~30.14~~	~~ng/uL~~
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL
14)	N-Nitroso-di-n-propylamine	13.12	843	32749	32.73	ng/uL
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL
16)	*Naphthalene-d8	15.60	1080	170371	40.00	ng/uL
17)	Nitrobenzene-d5	13.45	874	57877	32.18	ng/uL
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL
19)	Isophorone	0.00	0	0	0.00	ng/uL
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL
22)	Benzoic acid	0.00	0	0	0.00	ng/uL
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL
25)	1,2,4-Trichlorobenzene	15.46	1067	44003	29.81	ng/uL
26)	~~Naphthalene~~	~~15.91~~	~~1110~~	~~1393~~	~~.315~~	~~ng/uL~~
27)	4-Chloroaniline	0.00	1111	0	0.00	ng/uL
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL
29)	4-Chloro-3-methylphenol	17.47	1259	96778	68.39	ng/uL
30)	2-Methylnaphthalene	0.00	1259	0	0.00	ng/uL
31)	*Acenaphthene-d10	20.86	1582	87421	40.00	ng/uL
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL
36)	2-Fluorobiphenyl	18.94	1399	98450	32.90	ng/uL
37)	2-Nitroaniline	0.00	1454	0	0.00	ng/uL
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL
40)	2,6-Dinitrotoluene	0.00	1581	0	0.00	ng/uL
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL
42)	Acenaphthene	20.96	1591	81058	31.04	ng/uL

43)	2,4-Dinitrophenol	0.00	0	0	0.00 ng/uL
44)	4-Nitrophenol	21.43	1636	27787	54.29 ng/uL
45)	Dibenzofuran	0.00	0	0	0.00 ng/uL
46)	2,4-Dinitrotoluene	21.53	1646	32113	27.47 ng/uL
47)	Diethylphthalate	0.00	0	0	0.00 ng/uL
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00 ng/uL
49)	Fluorene	0.00	0	0	0.00 ng/uL
50)	4-Nitroaniline	0.00	0	0	0.00 ng/uL
51)	*Phenanthrene-d10	25.25	2001	149387	40.00 ng/uL
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00 ng/uL
53)	N-Nitrosodiphenylamine	0.00	1805	0	0.00 ng/uL
54)	2,4,6-Tribromophenol	23.20	1805	41524	77.22 ng/uL
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00 ng/uL
56)	Hexachlorobenzene	0.00	0	0	0.00 ng/uL
57)	Pentachlorophenol	24.72	1951	43882	71.00 ng/uL
58)	Phenanthrene	0.00	0	0	0.00 ng/uL
59)	Anthracene	0.00	0	0	0.00 ng/uL
60)	Di-n-butylphthalate	0.00	0	0	0.00 ng/uL
61)	Fluoranthene	0.00	0	0	0.00 ng/uL
62)	*Chrysene-d12	33.09	2750	121322	40.00 ng/uL
63)	Pyrene	29.47	2405	136533	32.75 ng/uL
64)	Terphenyl-d14	30.12	2467	116863	37.61 ng/uL
65)	Butylbenzylphthalate	0.00	2577	0	0.00 ng/uL
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00 ng/uL
67)	Benzo(a)anthracene	0.00	0	0	0.00 ng/uL
68)	Chrysene	0.00	0	0	0.00 ng/uL
69)	Bis(2-Ethylhexyl)phthalate	33.55	2794	22966	6.75 ng/uL
70)	*Perylene-d12	37.00	3123	138953	40.00 ng/uL
71)	Di-n-octylphthalate	35.39	2970	16720	2.69 ng/uL
72)	Benzo(b)fluoranthene	0.00	0	0	0.00 ng/uL
73)	Benzo(k)fluoranthene	0.00	0	0	0.00 ng/uL
74)	Benzo(a)pyrene	0.00	0	0	0.00 ng/uL
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00 ng/uL
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00 ng/uL
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00 ng/uL

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1406
CAL CHECK FILE = >Y1402
DATE AND TIME OF ANALYSIS = 12/14/92 15:39
MISCELLANEOUS = MS 0.9478 G pH=10.25
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	48598	39721	19861	79442	OK
Naphthalene-d8	170371	137728	68864	275456	OK
Acenaphthene-d10	87421	68596	34298	137192	OK
Phenanthrene-d10	149387	122456	61228	244912	OK
Chrysene-d12	121322	99461	49730	198922	OK
Perylene-d12	138953	111551	55775	223102	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.69	11.68	11.18	12.18	OK
Naphthalene-d8	15.60	15.59	15.09	16.10	OK
Acenaphthene-d10	20.86	20.85	20.35	21.35	OK
Phenanthrene-d10	25.25	25.24	24.74	25.74	OK
Chrysene-d12	33.09	33.10	32.60	33.60	OK
Perylene-d12	37.00	37.00	36.50	37.50	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1406::D2
DATE AND TIME OF ANALYSIS = 12/14/92 15:39
SAMPLE = CORE 38 92-08307-E3
MISCELLANEOUS = MS 0.9478 G pH=10.25
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVERY
2-Fluorophenol	69.64	100.00	21-100	25-121	69.64
Phenol-d5	70.93	100.00	10-94	24-113	70.93
Nitrobenzene-d5	32.18	50.00	35-114	23-120	64.37
2-Fluorobiphenyl	32.90	50.00	43-116	30-115	65.80
2,4,6-tribromo-phenol	77.22	100.00	10-123	19-122	77.22
Terphenyl-d14	37.61	50.00	33-141	18-137	75.21

QUANT REPORT

Operator ID: 808
Output File: ^Y1407::OF
Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25

Quant Rev: 7
Quant Time: 921214 17 24
Injected at: 921214 16.37
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 5

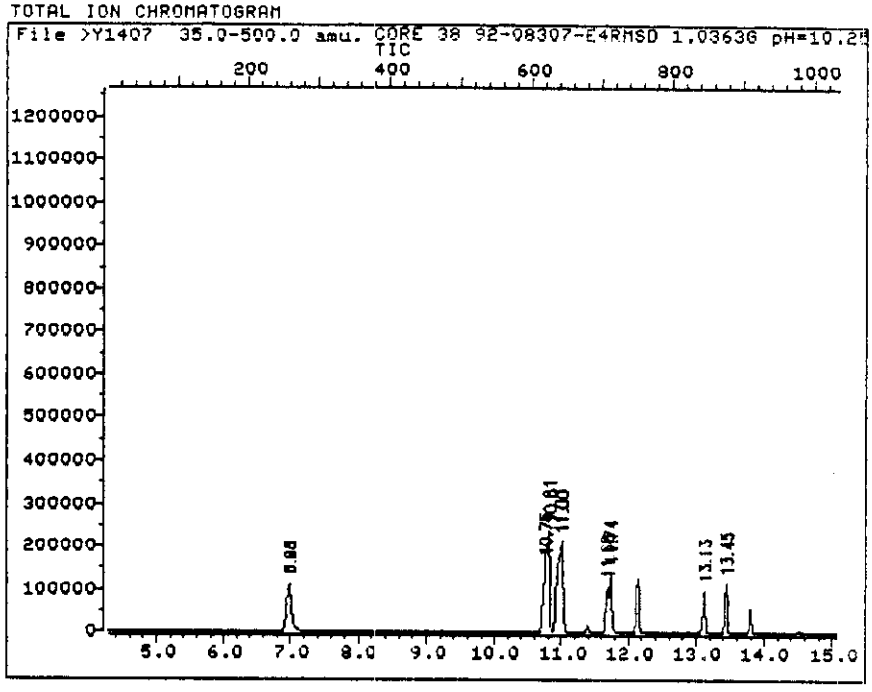
ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.68	709	48675	40.00	ng/uL
2)	2-Fluorophenol	6.98	259	155437	102.44	ng/uL
3)	Phenol-d5	10.75	620	191862	103.38	ng/uL
x 4)	Phenol	10.81	626	204812	101.98	ng/uL
x 6)	2-Chlorophenol	11.00	644	164405	98.48	ng/uL
7)	1,3-Dichlorobenzene	11.74	714	87164	47.96	ng/uL
x 8)	1,4-Dichlorobenzene	11.74	714	87164	47.33	ng/uL
10)	1,2-Dichlorobenzene	11.74	714	87164	49.60	ng/uL
x 14)	N-Nitroso-di-n-propylamine	13.13	847	56273	56.15	ng/uL
16)	*Naphthalene-d8	15.59	1082	169186	40.00	ng/uL
17)	Nitrobenzene-d5	13.45	878	92075	51.56	ng/uL
x 25)	1,2,4-Trichlorobenzene	15.45	1069	73455	50.11	ng/uL
x 29)	4-Chloro-3-methylphenol	17.47	1261	141624	100.78	ng/uL
31)	*Acenaphthene-d10	20.86	1583	87685	40.00	ng/ul
36)	2-Fluorobiphenyl	18.94	1401	150147	50.02	ng/uL
x 42)	Acenaphthene	20.95	1592	131980	50.39	ng/uL
x 44)	4-Nitrophenol	21.43	1638	43411	84.57	ng/uL
x 46)	2,4-Dinitrotoluene	21.54	1648	57697	49.21	ng/uL
51)	*Phenanthrene-d10	25.24	2001	150992	40.00	ng/uL
54)	2,4,6-Tribromophenol	23.19	1805	64151	118.03	ng/uL
x 57)	Pentachlorophenol	24.72	1951	68754	110.06	ng/uL
62)	*Chrysene-d12	33.08	2749	122206	40.00	ng/uL
x 63)	Pyrene	29.48	2406	227008	54.05	ng/uL
64)	Terphenyl-d14	30.12	2467	172451	55.09	ng/uL
69)	Bis(2-Ethylhexyl)phthalate	33.53	2792	5290	1.54	ng/uL
70)	*Perylene-d12	36.98	3121	140111	40.00	ng/uL

* Compound is ISTD

Preliminary data
12-17-92



Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25

Quant Output File: ^Y1407::QF
Instrument ID: BNA2

BTL# 5

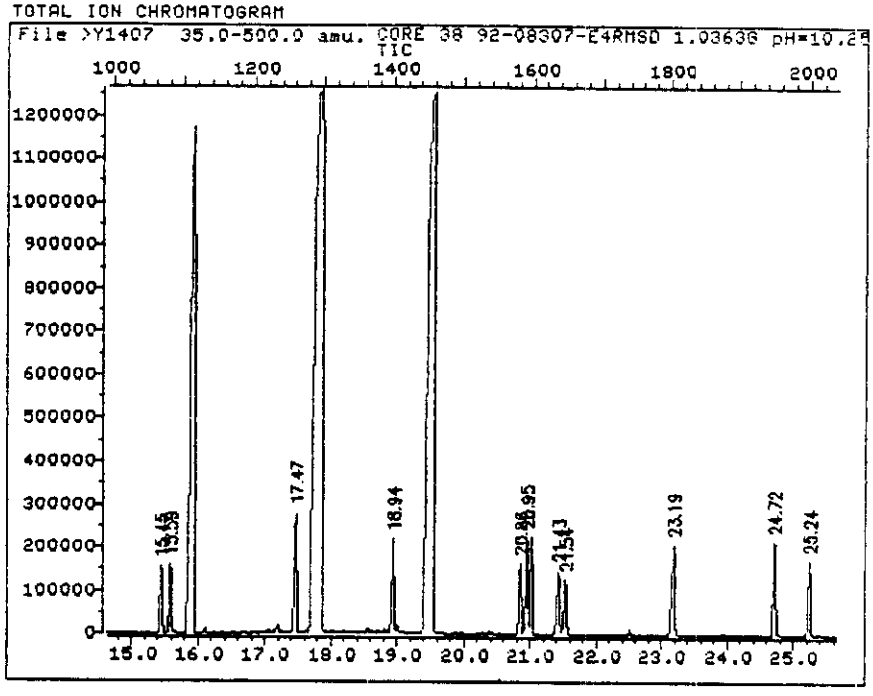
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 17:24
- Injected at: 921214 16:37

Page 1 of 4

TOTAL ION CHROMATOGRAM



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Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25

Quant Output File: ^Y1407::QF
Instrument ID: BNA2

BTL# 5

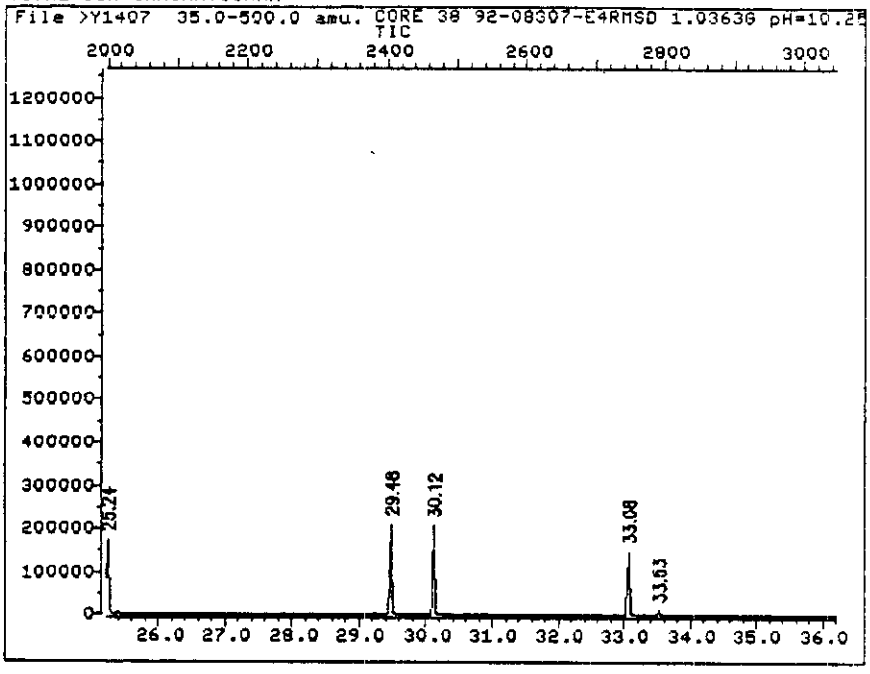
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 17:24
Injected at: 921214 16:37

Page 2 of 4

TOTAL ION CHROMATOGRAM



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Misc: MSD 1.03636 pH=10.25

Quant Output File: ^Y1407::OF
Instrument ID: BNA2

BTL# 5

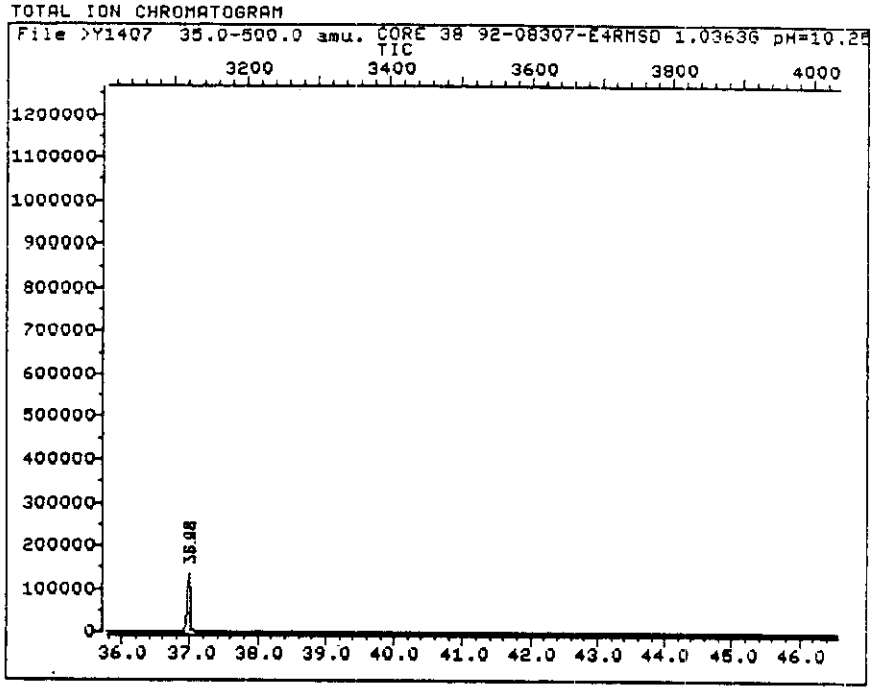
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

Operator ID: BOB
Quant Time : 921214 17:24
Injected at: 921214 16:37

Page 3 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25

Quant Output File: ^Y1407::QF
Instrument ID: BNA2
BTL# 5

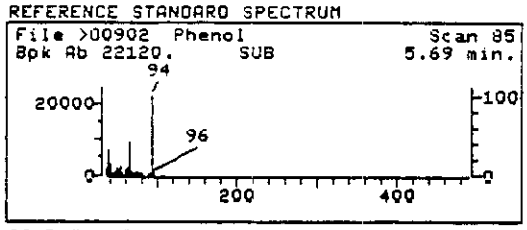
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921214 11:39

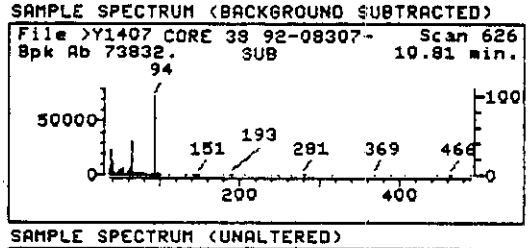
Operator ID: BOB
Quant Time : 921214 17:24
Injected at: 921214 16:37

Page 4 of 4

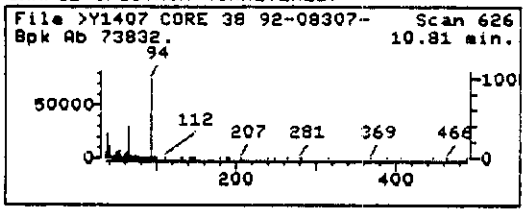
REFERENCE STANDARD SPECTRUM

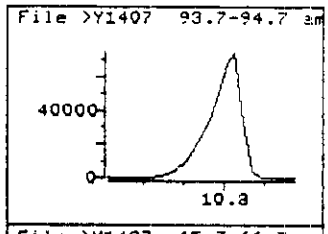


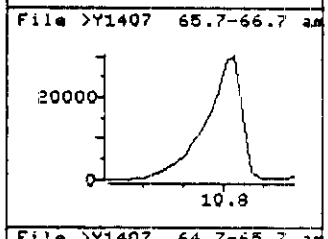
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

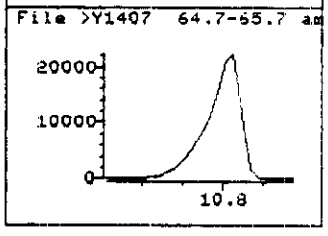


SAMPLE SPECTRUM (UNALTERED)









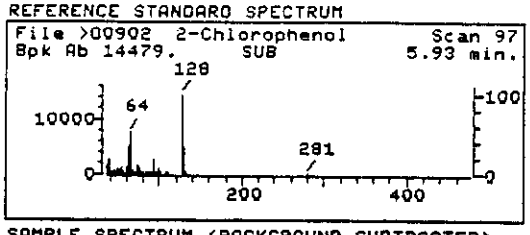
Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

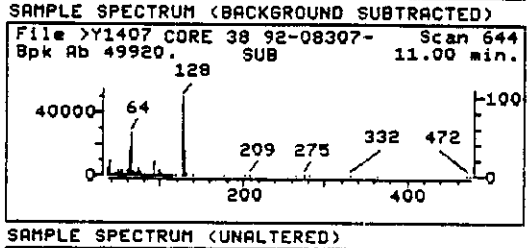
Compound No : 4
Compound Name : Phenol
Scan Number : 626
Retention Time: 10.81 min.
Quant Ion : 94.0
Area : 204812
Concentration : 101.98 ng/uL
q-value : 90

01

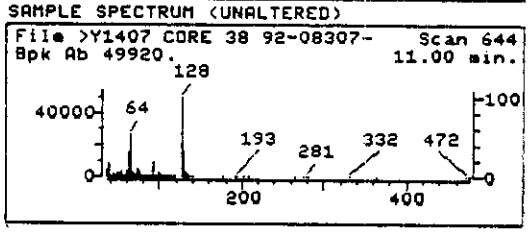
REFERENCE STANDARD SPECTRUM

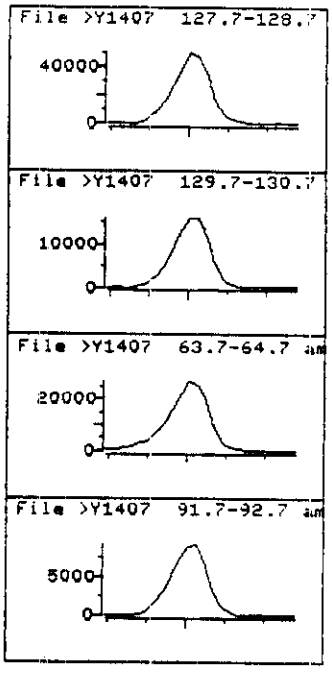


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





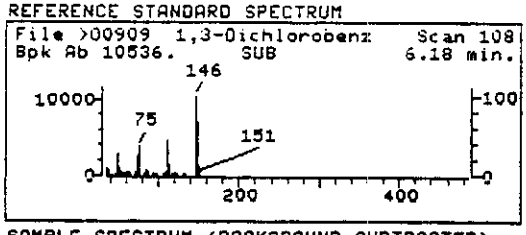
Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::OF
Instrument ID: 8NA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

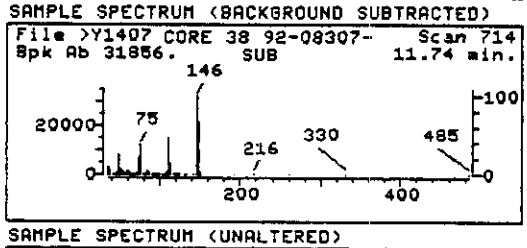
Compound No : 6
Compound Name : 2-Chlorophenol
Scan Number : 644
Retention Time: 11.00 min.
Quant Ion : 128.0
Area : 164405
Concentration : 98.48 ng/uL
q-value : 96

6

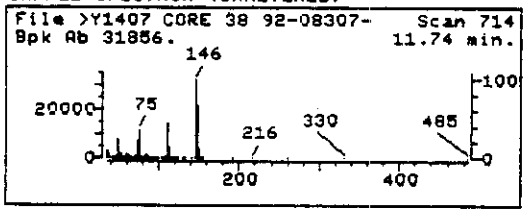
REFERENCE STANDARD SPECTRUM

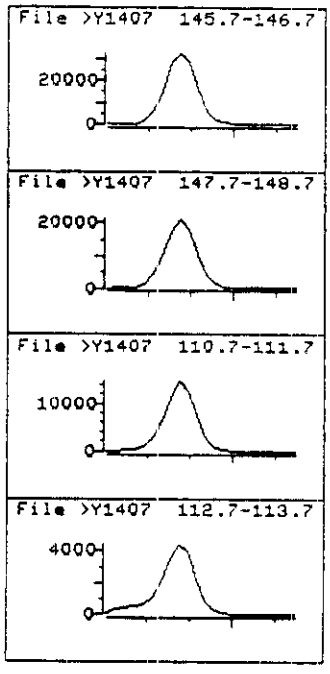


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



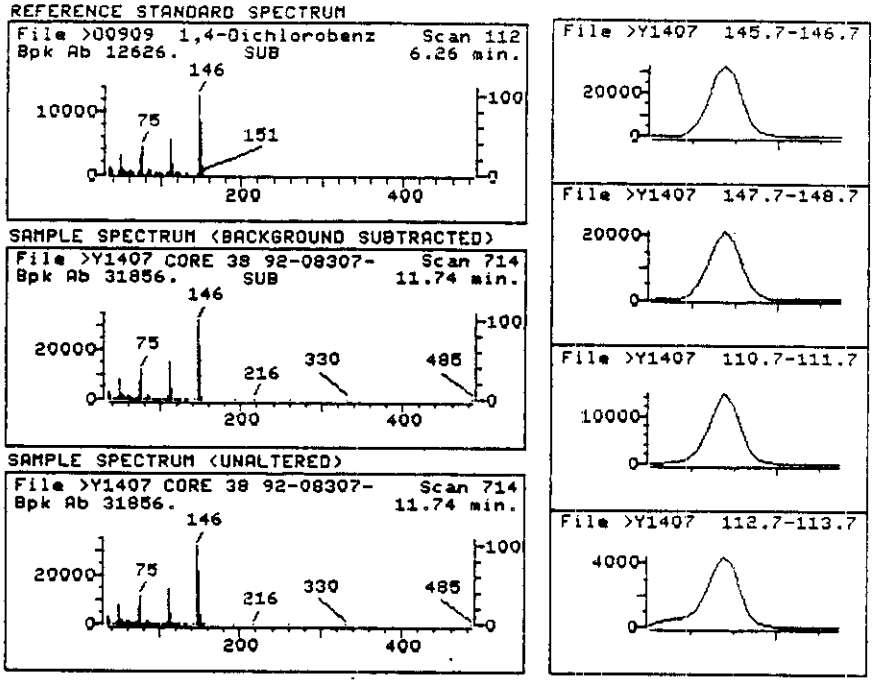


Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::OF
Instrument ID: 8NA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 7
Compound Name : 1,3-Dichlorobenzene
Scan Number : 714
Retention Time: 11.74 min.
Quant Ion : 146.0
Area : 87164
Concentration : 47.96 ng/uL
q-value : 97

debt

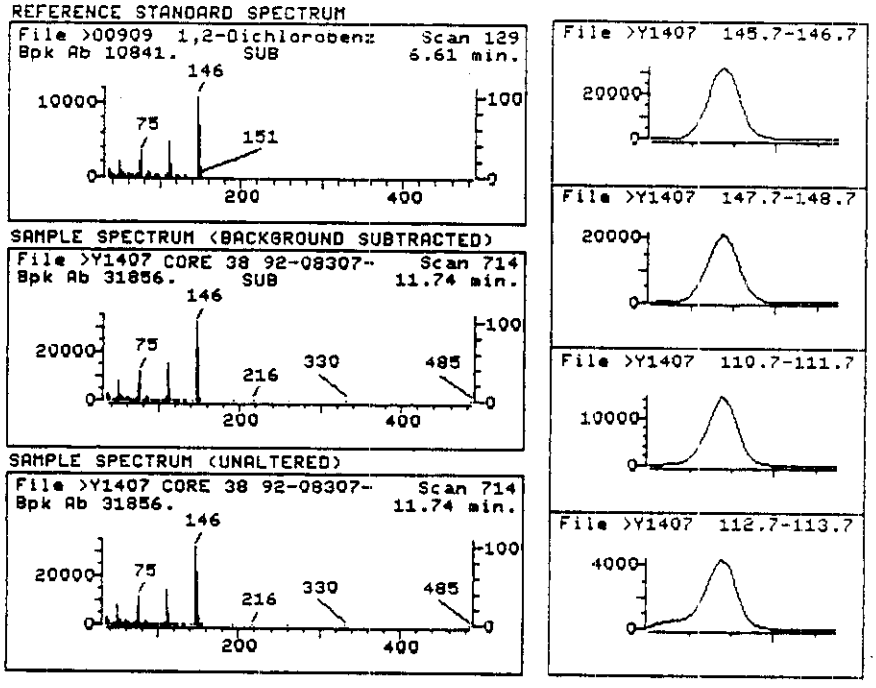


Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 8
Compound Name : 1,4-Dichlorobenzene
Scan Number : 714
Retention Time: 11.74 min.
Quant Ion : 146.0
Area : 87164
Concentration : 47.33 ng/uL
q-value : 96

ok



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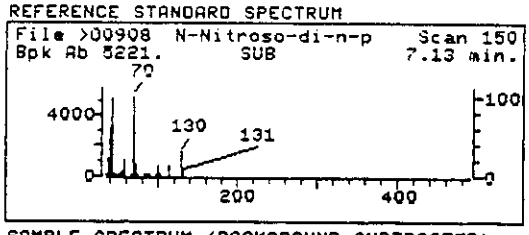
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::QF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

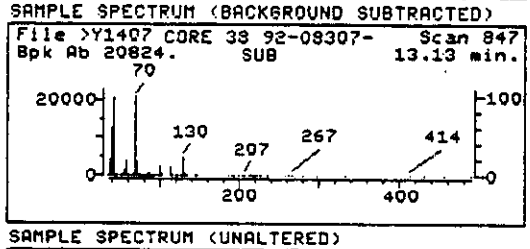
Compound No : 10
Compound Name : 1,2-Dichlorobenzene
Scan Number : 714
Retention Time: 11.74 min.
Quant Ion : 146.0
Area : 87164
Concentration : 49.60 ng/uL
q-value : 98

delete

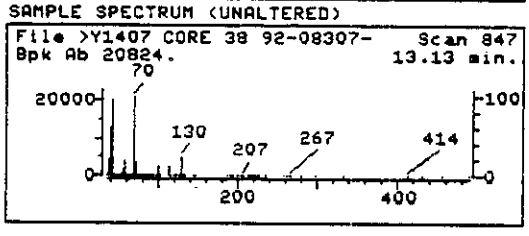
REFERENCE STANDARD SPECTRUM

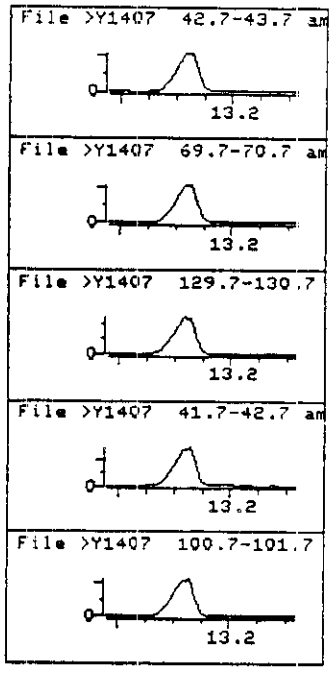


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





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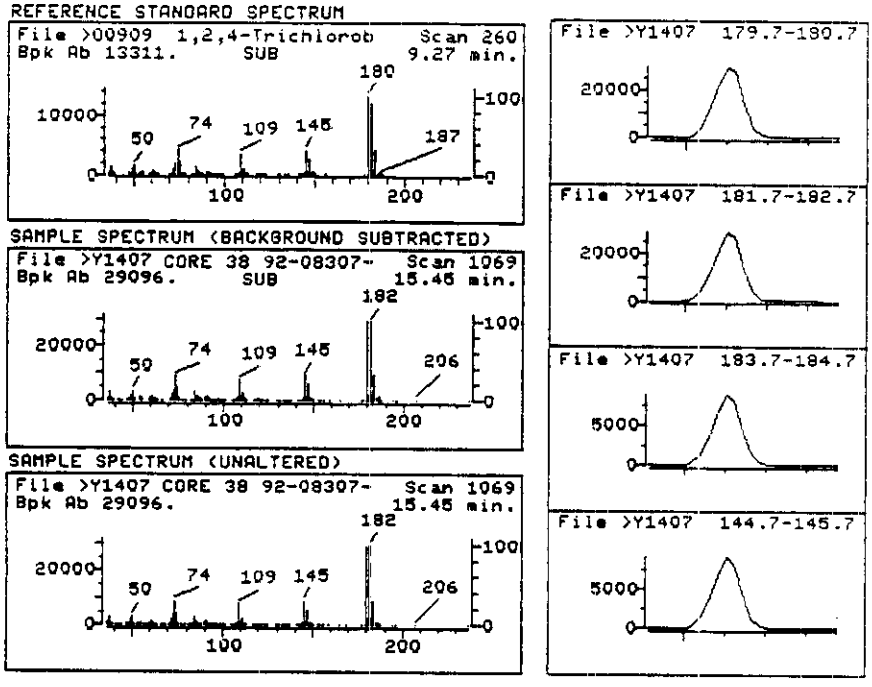
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::DF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 14
Compound Name : N-Nitroso-di-n-propylamine
Scan Number : 847
Retention Time: 13.13 min.
Quant Ion : 70.0
Area : 56273
Concentration : 56.15 ng/uL
q-value : 96

ok



Data File: >Y1407::D2
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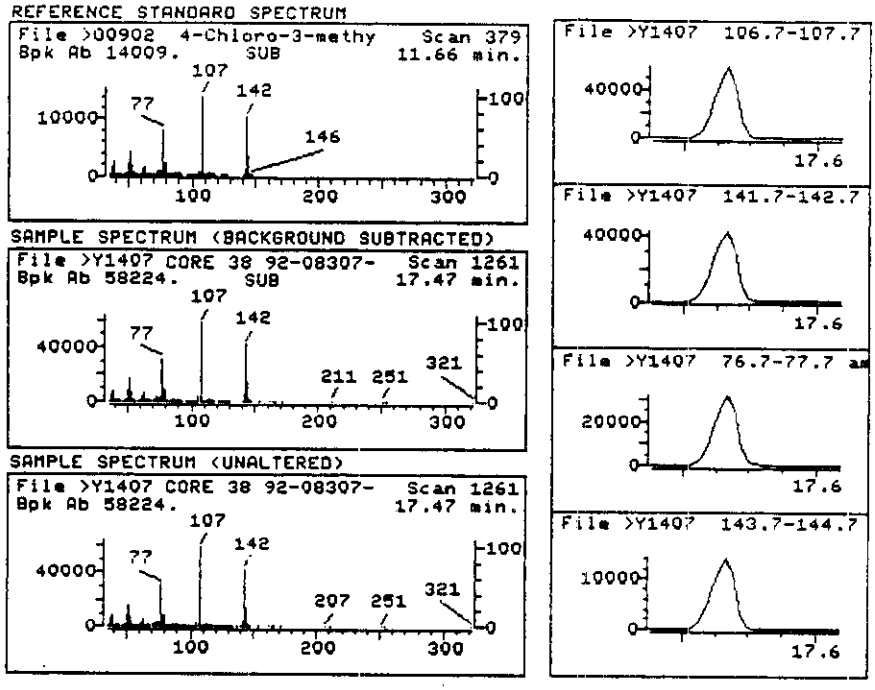
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::DF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 25
Compound Name : 1,2,4-Trichlorobenzene
Scan Number : 1069
Retention Time: 15.45 min.
Quant Ion : 180.0
Area : 73455
Concentration : 50.11 ng/uL
q-value : 95

OK

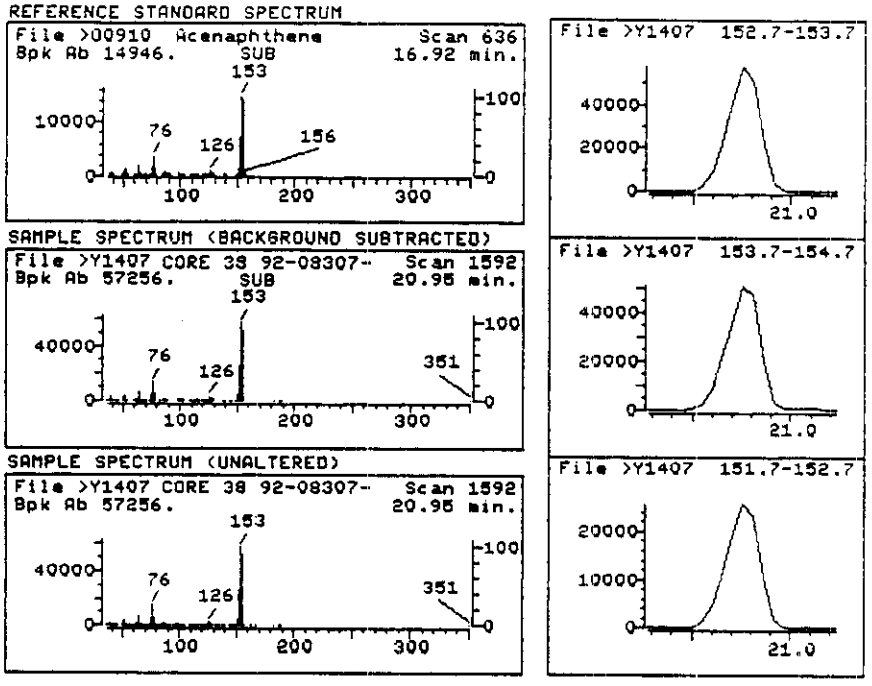


Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::QF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 29
Compound Name : 4-Chloro-3-methylphenol
Scan Number : 1261
Retention Time: 17.47 min.
Quant Ion : 107.0
Area : 141624
Concentration : 100.78 ng/uL
q-value : 96

OK

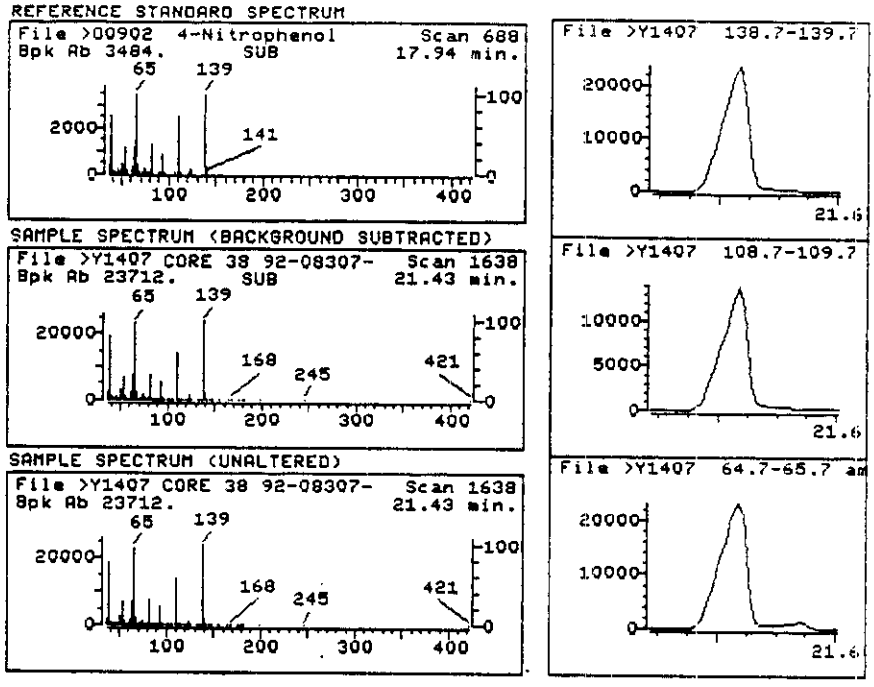


Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 42
Compound Name : Acenaphthene
Scan Number : 1592
Retention Time: 20.95 min.
Quant Ion : 153.0
Area : 131980
Concentration : 50.39 ng/uL
q-value : 98

DC



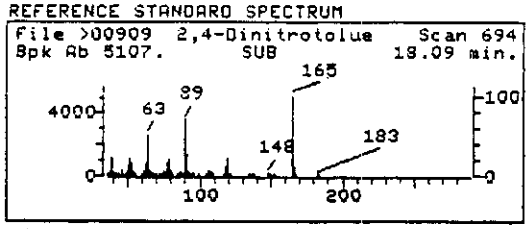
Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

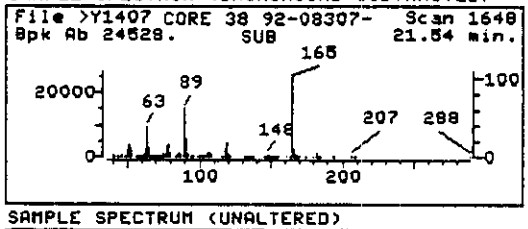
Compound No : 44
Compound Name : 4-Nitrophenol
Scan Number : 1638
Retention Time: 21.43 min.
Quant Ion : 109.0
Area : 43411
Concentration : 84.57 ng/uL
q-value : 98

OK

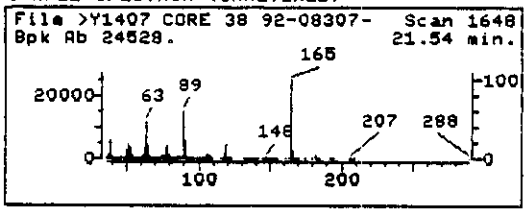
REFERENCE STANDARD SPECTRUM

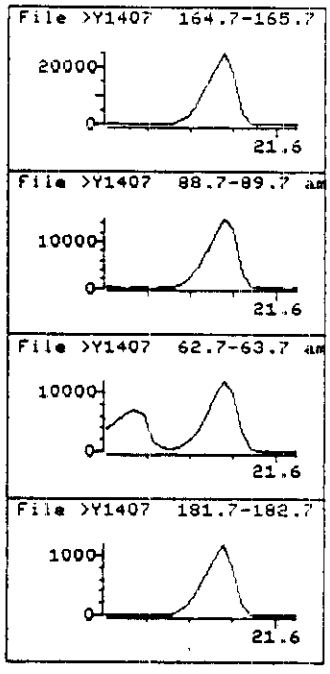


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



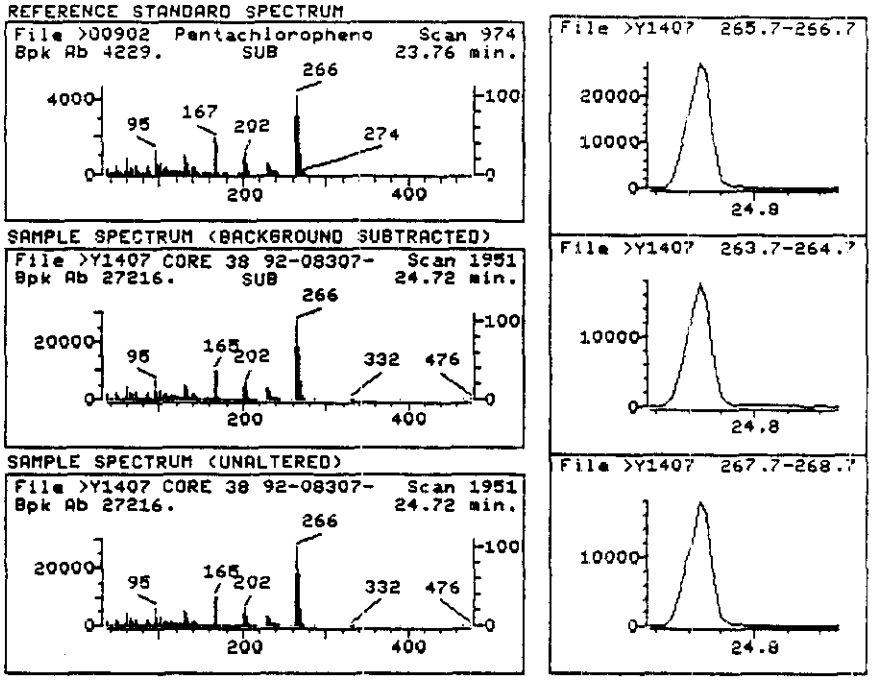


Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::DF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 46
Compound Name : 2,4-Dinitrotoluene
Scan Number : 1648
Retention Time: 21.54 min.
Quant Ion : 165.0
Area : 57697
Concentration : 49.21 ng/uL
q-value : 93

OK



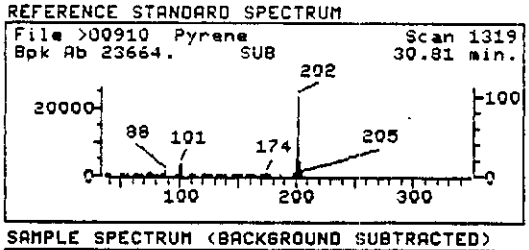
Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::OF
Instrument ID: 8NA2
BTL# 5
Quant ID File: ID28NA::QT
Last Calibration: 921105 16:40

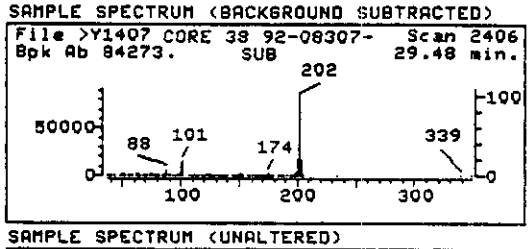
Compound No : 57
Compound Name : Pentachlorophenol
Scan Number : 1951
Retention Time: 24.72 min.
Quant Ion : 266.0
Area : 68754
Concentration : 110.06 ng/uL
q-value : 98

OK

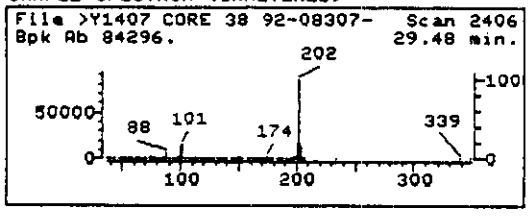
REFERENCE STANDARD SPECTRUM

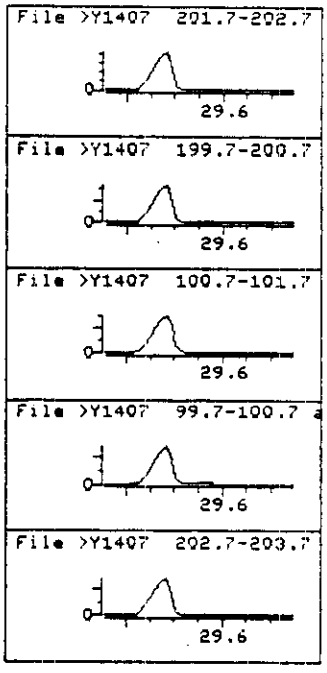


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



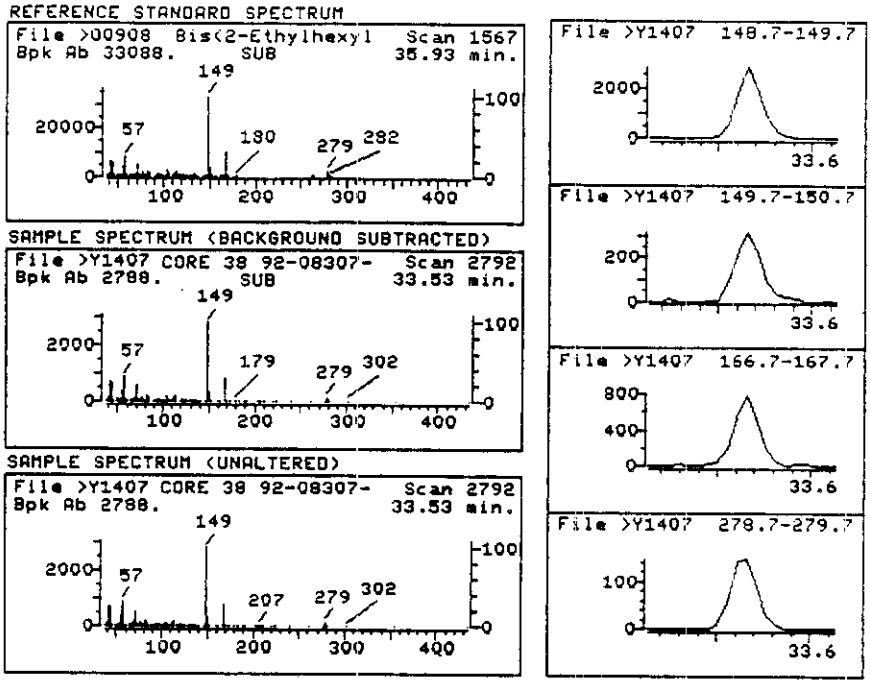


Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::DF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 63
Compound Name : Pyrene
Scan Number : 2406
Retention Time: 29.48 min.
Quant Ion : 202.0
Area : 227008
Concentration : 54.05 ng/uL
q-value : 99

OK



Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25
Quant Time: 921214 17:24
Injected at: 921214 16:37
Last Qcal Time: 921214 11:39

Quant Output File: ^Y1407::QF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 69
Compound Name : Bis(2-Ethylhexyl)phthalate
Scan Number : 2792
Retention Time: 33.53 min.
Quant Ion : 149.0
Area : 5290
Concentration : 1.54 ng/uL
q-value : 96

OK

QUANT REPORT

Operator ID: BOB
Output File: ^Y1407::OF
Data File: >Y1407::D2
Name: CORE 38 92-08307-E4R
Misc: MSD 1.0363G pH=10.25

Quant Rev: 7
Quant Time: 921214 17:24
Injected at: 921214 16:37
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 5

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921214 11:39

	Compound	R.T.	Scan#	Area	Conc	Units
1)	*1,4-Dichlorobenzene-d4	11.68	709	48675	40.00	ng/uL
2)	2-Fluorophenol	6.98	259	155437	102.44	ng/uL
3)	Phenol-d5	10.75	620	191862	103.38	ng/uL
4)	Phenol	10.81	626	204812	101.98	ng/uL
5)	bis(2-Chloroethyl)ether	0.00	644	0	0.00	ng/uL
6)	2-Chlorophenol	11.00	644	164405	98.48	ng/uL
7)	~~1,3-Dichlorobenzene~~	~~11.74~~	~~714~~	~~87164~~	~~47.96~~	~~ng/uL~~
8)	1,4-Dichlorobenzene	11.74	714	87164	47.33	ng/uL
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL
10)	~~1,2-Dichlorobenzene~~	~~11.74~~	~~714~~	~~87164~~	~~49.60~~	~~ng/uL~~
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL
14)	N-Nitroso-di-n-propylamine	13.13	847	56273	56.15	ng/uL
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL
16)	*Naphthalene-d8	15.59	1082	169186	40.00	ng/uL
17)	Nitrobenzene-d5	13.45	878	92079	51.56	ng/uL
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL
19)	Isophorone	0.00	0	0	0.00	ng/uL
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL
22)	Benzoic acid	0.00	0	0	0.00	ng/uL
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL
25)	1,2,4-Trichlorobenzene	15.45	1069	73455	50.11	ng/uL
26)	Naphthalene	0.00	1114	0	0.00	ng/uL
27)	4-Chloroaniline	0.00	1114	0	0.00	ng/uL
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL
29)	4-Chloro-3-methylphenol	17.47	1261	141624	100.78	ng/uL
30)	2-Methylnaphthalene	0.00	1261	0	0.00	ng/uL
31)	*Acenaphthene-d10	20.86	1583	87685	40.00	ng/uL
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL
36)	2-Fluorobiphenyl	18.94	1401	150147	50.02	ng/uL
37)	2-Nitroaniline	0.00	1458	0	0.00	ng/uL
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL
40)	2,6-Dinitrotoluene	0.00	1583	0	0.00	ng/uL
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL
42)	Acenaphthene	20.95	1592	131980	50.39	ng/uL

BOB 12-17-92
12-17-92

43)	2,4-Dinitrophenol	0.00	0	0	0.00 ng/uL
44)	4-Nitrophenol	21.43	1638	43411	84.57 ng/uL
45)	Dibenzofuran	0.00	0	0	0.00 ng/uL
46)	2,4-Dinitrotoluene	21.54	1648	57697	49.21 ng/uL
47)	Diethylphthalate	0.00	0	0	0.00 ng/uL
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00 ng/uL
49)	Fluorene	0.00	0	0	0.00 ng/uL
50)	4-Nitroaniline	0.00	0	0	0.00 ng/uL
51)	*Phenanthrene-d10	25.24	2001	150992	40.00 ng/uL
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00 ng/uL
53)	N-Nitrosodiphenylamine	0.00	1806	0	0.00 ng/uL
54)	2,4,6-Tribromophenol	23.19	1805	64151	118.03 ng/uL
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00 ng/uL
56)	Hexachlorobenzene	0.00	0	0	0.00 ng/uL
57)	Pentachlorophenol	24.72	1951	68754	110.06 ng/uL
58)	Phenanthrene	0.00	0	0	0.00 ng/uL
59)	Anthracene	0.00	0	0	0.00 ng/uL
60)	Di-n-butylphthalate	0.00	0	0	0.00 ng/uL
61)	Fluoranthene	0.00	0	0	0.00 ng/uL
62)	*Chrysene-d12	33.08	2749	122206	40.00 ng/uL
63)	Pyrene	29.48	2406	227008	54.05 ng/uL
64)	Terphenyl-d14	30.12	2467	172451	55.09 ng/uL
65)	Butylbenzylphthalate	0.00	0	0	0.00 ng/uL
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00 ng/uL
67)	Benzo(a)anthracene	0.00	0	0	0.00 ng/uL
68)	Chrysene	0.00	0.	0	0.00 ng/uL
69)	Bis(2-Ethylhexyl)phthalate	33.53	2792	5290	1.54 ng/uL
70)	*Perylene-d12	36.98	3121	140111	40.00 ng/uL
71)	Di-n-octylphthalate	0.00	0	0	0.00 ng/uL
72)	Benzo(b)fluoranthene	0.00	0	0	0.00 ng/uL
73)	Benzo(k)fluoranthene	0.00	0	0	0.00 ng/uL
74)	Benzo(a)pyrene	0.00	0	0	0.00 ng/uL
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00 ng/uL
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00 ng/uL
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00 ng/uL

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1407
CAL CHECK FILE = >Y1402
DATE AND TIME OF ANALYSIS = 12/14/92 16:37
MISCELLANEOUS = MSD 1.0363G pH=10.25
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	48675	39721	19861	79442	OK
Naphthalene-d8	169186	137728	68864	275456	OK
Acenaphthene-d10	87685	68596	34298	137192	OK
Phenanthrene-d10	150992	122456	61228	244912	OK
Chrysene-d12	122206	99461	49730	198922	OK
Perylene-d12	140111	111551	55775	223102	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.68	11.68	11.18	12.18	OK
Naphthalene-d8	15.59	15.59	15.09	16.10	OK
Acenaphthene-d10	20.86	20.85	20.35	21.35	OK
Phenanthrene-d10	25.24	25.24	24.74	25.74	OK
Chrysene-d12	33.08	33.10	32.60	33.60	OK
Perylene-d12	36.99	37.00	36.50	37.50	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1407::D2
DATE AND TIME OF ANALYSIS = 12/14/92 16:37
SAMPLE = CORE 38 92-08307-E4
MISCELLANEOUS = MSD 1.0363G pH=10.25
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVER
2-Fluorophenol	102.44	100.00	21-100	25-121	102.4
Phenol-d5	103.38	100.00	10-94	24-113	103.3
Nitrobenzene-d5	51.56	50.00	35-114	23-120	103.1
2-Fluorobiphenyl	50.02	50.00	43-116	30-115	100.0
2,4,6-tribromo-phenol	118.03	100.00	10-123	19-122	118.0
Terphenyl-d14	55.09	50.00	33-141	18-137	110.1

TANK C-110

Liquids/Tank Composite Sample Analysis Report Forms

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKY15

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLAN

Sample wt/vol: 1 (g/mL) G Lab File ID: >Y1503

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	10000.	U
111-44-4	bis(2-Chloroethyl)Ether	10000.	U
95-57-8	2-Chlorophenol	10000.	U
541-73-1	1,3-Dichlorobenzene	10000.	U
106-46-7	1,4-Dichlorobenzene	10000.	U
100-51-6	Benzyl_alcohol	10000.	U
95-50-1	1,2-Dichlorobenzene	10000.	U
95-48-7	2-Methylphenol	10000.	U
39638-32-9	bis(2-chloroisopropyl)ether	10000.	U
106-44-5	4-Methylphenol	10000.	U
621-64-7	N-Nitroso-Di-n-propylamine	10000.	U
67-72-1	Hexachloroethane	10000.	U
98-95-3	Nitrobenzene	10000.	U
78-59-1	Isophorone	10000.	U
88-75-5	2-Nitrophenol	10000.	U
105-67-9	2,4-Dimethylphenol	10000.	U
65-85-0	Benzoic_acid	50000.	U
111-91-1	bis(2-Chloroethoxy)methane	10000.	U
120-83-2	2,4-Dichlorophenol	10000.	U
120-82-1	1,2,4-Trichlorobenzene	10000.	U
91-20-3	Naphthalene	10000.	U
106-47-8	4-Chloroaniline	10000.	U
87-68-3	Hexachlorobutadiene	10000.	U
59-50-7	4-Chloro-3-methylphenol	10000.	U
91-57-6	2-Methylnaphthalene	10000.	U
77-47-4	Hexachlorocyclopentadiene	10000.	U
88-06-2	2,4,6-Trichlorophenol	10000.	U
95-95-4	2,4,5-Trichlorophenol	50000.	U
91-58-7	2-Chloronaphthalene	10000.	U
88-74-4	2-Nitroaniline	50000.	U
131-11-3	Dimethylphthalate	10000.	U
208-96-8	Acenaphthylene	10000.	U
606-20-2	2,6-Dinitrotoluene	10000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKY15

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLAN

Sample wt/vol: 1 (g/mL) G Lab File ID: >Y1503

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	50000.	U
83-32-9	Acenaphthene	10000.	U
51-28-5	2,4-Dinitrophenol	50000.	U
100-02-7	4-Nitrophenol	50000.	U
132-64-9	Dibenzofuran	10000.	U
121-14-2	2,4-Dinitrotoluene	10000.	U
84-66-2	Diethylphthalate	10000.	U
7005-72-3	4-Chlorophenyl-phenylether	10000.	U
86-73-7	Fluorene	10000.	U
100-01-6	4-Nitroaniline	50000.	U
534-52-1	4,6-Dinitro-2-methylphenol	50000.	U
86-30-6	N-Nitrosodiphenylamine (1)	10000.	U
101-55-3	4-Bromophenyl-phenylether	10000.	U
118-74-1	Hexachlorobenzene	10000.	U
87-86-5	Pentachlorophenol	50000.	U
85-01-8	Phenanthrene	10000.	U
120-12-7	Anthracene	10000.	U
84-74-2	Di-n-butylphthalate	10000.	U
206-44-0	Fluoranthene	10000.	U
129-00-0	Pyrene	10000.	U
85-68-7	Butylbenzylphthalate	10000.	U
91-94-1	3,3'-Dichlorobenzidine	20000.	U
56-55-3	Benzo(a)anthracene	10000.	U
218-01-9	Chrysene	10000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10000.	U
117-84-0	Di-n-octylphthalate	10000.	U
205-99-2	Benzo(b)fluoranthene	10000.	U
207-08-9	Benzo(k)fluoranthene	10000.	U
50-32-8	Benzo(a)pyrene	10000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000.	U
53-70-3	Dibenz(a,h)anthracene	10000.	U
191-24-2	Benzo(g,h,i)perylene	10000.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
SBLKY15

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLAN

Sample wt/vol: 1 (g/mL) G Lab File ID: >Y1503

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec..1 dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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29.				
30.				

FORM I SV-TIC 1/87 Rev.

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38DL

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-09437-E1

Sample wt/vol: 1.0811 (g/mL) G Lab File ID: >Y1504

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

GPC Cleanup: (Y/N) N pH: ~~7.08~~ 10.42 DLB 12-23-92 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	46000.	U
83-32-9	Acenaphthene	9200.	U
51-28-5	2,4-Dinitrophenol	46000.	U
100-02-7	4-Nitrophenol	46000.	U
132-64-9	Dibenzofuran	9200.	U
121-14-2	2,4-Dinitrotoluene	9200.	U
84-66-2	Diethylphthalate	9200.	U
7005-72-3	4-Chlorophenyl-phenylether	9200.	U
86-73-7	Fluorene	9200.	U
100-01-6	4-Nitroaniline	46000.	U
534-52-1	4,6-Dinitro-2-methylphenol	46000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9200.	U
101-55-3	4-Bromophenyl-phenylether	9200.	U
118-74-1	Hexachlorobenzene	9200.	U
87-86-5	Pentachlorophenol	46000.	U
85-01-8	Phenanthrene	9200.	U
120-12-7	Anthracene	9200.	U
84-74-2	Di-n-butylphthalate	9200.	U
206-44-0	Fluoranthene	9200.	U
129-00-0	Pyrene	9200.	U
85-68-7	Butylbenzylphthalate	9200.	U
91-94-1	3,3'-Dichlorobenzidine	18000.	U
56-55-3	Benzo(a)anthracene	9200.	U
218-01-9	Chrysene	9200.	U
117-81-7	bis(2-Ethylhexyl)phthalate	9200.	U
117-84-0	Di-n-octylphthalate	9200.	U
205-99-2	Benzo(b)fluoranthene	9200.	U
207-08-9	Benzo(k)fluoranthene	9200.	U
50-32-8	Benzo(a)pyrene	9200.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9200.	U
53-70-3	Dibenz(a,h)anthracene	9200.	U
191-24-2	Benzo(g,h,i)perylene	9200.	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 38DL

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-09437-E1

Sample wt/vol: 1.0811 (g/mL) G Lab File ID: >Y1504

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

GPC Cleanup: (Y/N) N pH: ~~7.08~~ 10.42 12-23-92 Dilution Factor: 1.00000

Number TICs found: 5 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	2-Nitrophenol-d4	14.43	45000.	J
2. 403190	2-FLUORO-4-NITROPHENOL	14.82	19000.	J
3.	2-Fluoronitrophenol	18.14	34000.	J
4.	2-Chloronitrophenol-d3	19.99	12000.	J
5.	4-Nitrophenol-d4	21.39	39000.	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38DL D

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-09437-E2

Sample wt/vol: 1.0714 (g/mL) G Lab File ID: >Y1505

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

GPC Cleanup: (Y/N) N pH: ~~7.08~~ 10.42 OLB 12-22-92 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	9300.	U
111-44-4	bis(2-Chloroethyl)Ether	9300.	U
95-57-8	2-Chlorophenol	9300.	U
541-73-1	1,3-Dichlorobenzene	9300.	U
106-46-7	1,4-Dichlorobenzene	9300.	U
100-51-6	Benzyl alcohol	9300.	U
95-50-1	1,2-Dichlorobenzene	9300.	U
95-48-7	2-Methylphenol	9300.	U
39638-32-9	bis(2-chloroisopropyl)ether	9300.	U
106-44-5	4-Methylphenol	9300.	U
621-64-7	N-Nitroso-Di-n-propylamine	9300.	U
67-72-1	Hexachloroethane	9300.	U
98-95-3	Nitrobenzene	9300.	U
78-59-1	Isophorone	9300.	U
88-75-5	2-Nitrophenol	9300.	U
105-67-9	2,4-Dimethylphenol	9300.	U
65-85-0	Benzoic acid	47000.	U
111-91-1	bis(2-Chloroethoxy)methane	9300.	U
120-83-2	2,4-Dichlorophenol	9300.	U
120-82-1	1,2,4-Trichlorobenzene	9300.	U
91-20-3	Naphthalene	9300.	U
106-47-8	4-Chloroaniline	9300.	U
87-68-3	Hexachlorobutadiene	9300.	U
59-50-7	4-Chloro-3-methylphenol	9300.	U
91-57-6	2-Methylnaphthalene	9300.	U
77-47-4	Hexachlorocyclopentadiene	9300.	U
88-06-2	2,4,6-Trichlorophenol	9300.	U
95-95-4	2,4,5-Trichlorophenol	47000.	U
91-58-7	2-Chloronaphthalene	9300.	U
88-74-4	2-Nitroaniline	47000.	U
131-11-3	Dimethylphthalate	9300.	U
208-96-8	Acenaphthylene	9300.	U
606-20-2	2,6-Dinitrotoluene	9300.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38DL D

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-09437-E2

Sample wt/vol: 1.0714 (g/mL) G Lab File ID: >Y1505

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

GPC Cleanup: (Y/N) N pH: ~~7.08~~ 10.42 DAB 12-23-92 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	47000.	U
83-32-9	Acenaphthene	9300.	U
51-28-5	2,4-Dinitrophenol	47000.	U
100-02-7	4-Nitrophenol	47000.	U
132-64-9	Dibenzofuran	9300.	U
121-14-2	2,4-Dinitrotoluene	9300.	U
84-66-2	Diethylphthalate	9300.	U
7005-72-3	4-Chlorophenyl-phenylether	9300.	U
86-73-7	Fluorene	9300.	U
100-01-6	4-Nitroaniline	47000.	U
534-52-1	4,6-Dinitro-2-methylphenol	47000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9300.	U
101-55-3	4-Bromophenyl-phenylether	9300.	U
118-74-1	Hexachlorobenzene	9300.	U
87-86-5	Pentachlorophenol	47000.	U
85-01-8	Phenanthrene	9300.	U
120-12-7	Anthracene	9300.	U
84-74-2	Di-n-butylphthalate	9300.	U
206-44-0	Fluoranthene	9300.	U
129-00-0	Pyrene	9300.	U
85-68-7	Butylbenzylphthalate	9300.	U
91-94-1	3,3'-Dichlorobenzidine	19000.	U
56-55-3	Benzo(a)anthracene	9300.	U
218-01-9	Chrysene	9300.	U
117-81-7	bis(2-Ethylhexyl)phthalate	9300.	U
117-84-0	Di-n-octylphthalate	9300.	U
205-99-2	Benzo(b)fluoranthene	9300.	U
207-08-9	Benzo(k)fluoranthene	9300.	U
50-32-8	Benzo(a)pyrene	9300.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9300.	U
53-70-3	Dibenz(a,h)anthracene	9300.	U
191-24-2	Benzo(g,h,i)perylene	9300.	U

(1) - Cannot be separated from Diphenylamine

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 38DL D

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-09437-E2

Sample wt/vol: 1.0714 (g/mL) G Lab File ID: >Y1505

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

GPC Cleanup: (Y/N) N pH: ~~7.08~~ 10.42 DLB 12-23-92 Dilution Factor: 1.00000

Number TICs found: 7 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	2-Nitrophenol-d4	14.42	43000.	J
2. 403190	2-FLUORO-4-NITROPHENOL	14.81	17000.	J
3. 629505	Tridecane	17.69	9500.	J
4.	2-Fluoronitrophenol	18.12	31000.	J
5. 629594	Tetradecane	19.40	11000.	J
6.	2-Chloronitrophenol-d3	19.97	11000.	J
7.	4-Nitrophenol-d4	21.37	37000.	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38DL M

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-09437-E3

Sample wt/vol: 1.0707 (g/mL) G Lab File ID: >Y1506

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

GPC Cleanup: (Y/N) N pH: ~~7.08~~ 10.42 DLB 12-23-92 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	130000.	
111-44-4	bis(2-Chloroethyl)Ether	9300.	U
95-57-8	2-Chlorophenol	140000.	
541-73-1	1,3-Dichlorobenzene	9300.	U
106-46-7	1,4-Dichlorobenzene	48000.	
100-51-6	Benzyl alcohol	9300.	U
95-50-1	1,2-Dichlorobenzene	9300.	U
95-48-7	2-Methylphenol	9300.	U
39638-32-9	bis(2-chloroisopropyl)ether	9300.	U
106-44-5	4-Methylphenol	9300.	U
621-64-7	N-Nitroso-Di-n-propylamine	65000.	
67-72-1	Hexachloroethane	9300.	U
98-95-3	Nitrobenzene	9300.	U
78-59-1	Isophorone	9300.	U
88-75-5	2-Nitrophenol	19000.	
105-67-9	2,4-Dimethylphenol	9300.	U
65-85-0	Benzoic acid	47000.	U
111-91-1	bis(2-Chloroethoxy)methane	9300.	U
120-83-2	2,4-Dichlorophenol	9300.	U
120-82-1	1,2,4-Trichlorobenzene	58000.	
91-20-3	Naphthalene	9300.	U
106-47-8	4-Chloroaniline	9300.	U
87-68-3	Hexachlorobutadiene	9300.	U
59-50-7	4-Chloro-3-methylphenol	97000.	
91-57-6	2-Methylnaphthalene	9300.	U
77-47-4	Hexachlorocyclopentadiene	9300.	U
88-06-2	2,4,6-Trichlorophenol	9300.	U
95-95-4	2,4,5-Trichlorophenol	47000.	U
91-58-7	2-Chloronaphthalene	9300.	U
88-74-4	2-Nitroaniline	47000.	U
131-11-3	Dimethylphthalate	9300.	U
208-96-8	Acenaphthylene	9300.	U
606-20-2	2,6-Dinitrotoluene	9300.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38DL M

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-09437-E3

Sample wt/vol: 1.0707 (g/mL) G Lab File ID: >Y1506

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

GPC Cleanup: (Y/N) N pH: ~~7.08~~ 10.42 OLB 12-23-92 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	47000.	U
83-32-9	Acenaphthene	75000.	
51-28-5	2,4-Dinitrophenol	47000.	U
100-02-7	4-Nitrophenol	150000.	
132-64-9	Dibenzofuran	9300.	U
121-14-2	2,4-Dinitrotoluene	79000.	
84-66-2	Diethylphthalate	9300.	U
7005-72-3	4-Chlorophenyl-phenylether	9300.	U
86-73-7	Fluorene	9300.	U
100-01-6	4-Nitroaniline	47000.	U
534-52-1	4,6-Dinitro-2-methylphenol	47000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9300.	U
101-55-3	4-Bromophenyl-phenylether	9300.	U
118-74-1	Hexachlorobenzene	9300.	U
87-86-5	Pentachlorophenol	190000.	
85-01-8	Phenanthrene	9300.	U
120-12-7	Anthracene	9300.	U
84-74-2	Di-n-butylphthalate	9300.	U
206-44-0	Fluoranthene	9300.	U
129-00-0	Pyrene	89000.	
85-68-7	Butylbenzylphthalate	9300.	U
91-94-1	3,3'-Dichlorobenzidine	19000.	U
56-55-3	Benzo(a)anthracene	9300.	U
218-01-9	Chrysene	9300.	U
117-81-7	bis(2-Ethylhexyl)phthalate	9300.	U
117-84-0	Di-n-octylphthalate	9300.	U
205-99-2	Benzo(b)fluoranthene	9300.	U
207-08-9	Benzo(k)fluoranthene	9300.	U
50-32-8	Benzo(a)pyrene	9300.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9300.	U
53-70-3	Dibenz(a,h)anthracene	9300.	U
191-24-2	Benzo(g,h,i)perylene	9300.	U

(1) - Cannot be separated from Diphenylamine

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0 -A

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38DL M

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-09437-E4

Sample wt/vol: 1.0816 (g/mL) G Lab File ID: >Y1507

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

GPC Cleanup: (Y/N) N pH: ~~7.08~~ 10.42 DLB 12-23-92 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	120000.	
111-44-4	bis(2-Chloroethyl)Ether	9200.	U
95-57-8	2-Chlorophenol	140000.	
541-73-1	1,3-Dichlorobenzene	9200.	U
106-46-7	1,4-Dichlorobenzene	54000.	
100-51-6	Benzyl alcohol	9200.	U
95-50-1	1,2-Dichlorobenzene	9200.	U
95-48-7	2-Methylphenol	9200.	U
39638-32-9	bis(2-chloroisopropyl)ether	9200.	U
106-44-5	4-Methylphenol	9200.	U
621-64-7	N-Nitroso-Di-n-propylamine	71000.	
67-72-1	Hexachloroethane	9200.	U
98-95-3	Nitrobenzene	9200.	U
78-59-1	Isophorone	9200.	U
88-75-5	2-Nitrophenol	22000.	
105-67-9	2,4-Dimethylphenol	9200.	U
65-85-0	Benzoic acid	46000.	U
111-91-1	bis(2-Chloroethoxy)methane	9200.	U
120-83-2	2,4-Dichlorophenol	9200.	U
120-82-1	1,2,4-Trichlorobenzene	63000.	
91-20-3	Naphthalene	9200.	U
106-47-8	4-Chloroaniline	9200.	U
87-68-3	Hexachlorobutadiene	9200.	U
59-50-7	4-Chloro-3-methylphenol	88000.	
91-57-6	2-Methylnaphthalene	9200.	U
77-47-4	Hexachlorocyclopentadiene	9200.	U
88-06-2	2,4,6-Trichlorophenol	9200.	U
95-95-4	2,4,5-Trichlorophenol	46000.	U
91-58-7	2-Chloronaphthalene	9200.	U
88-74-4	2-Nitroaniline	46000.	U
131-11-3	Dimethylphthalate	9200.	U
208-96-8	Acenaphthylene	9200.	U
606-20-2	2,6-Dinitrotoluene	9200.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 38DL M

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-09437-E4

Sample wt/vol: 1.0816 (g/mL) G Lab File ID: >Y1507

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/15/92

GPC Cleanup: (Y/N) N pH: ~~7.08~~ 10.42 OUB 12-23-92 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	46000.	U
83-32-9	Acenaphthene	77000.	
51-28-5	2,4-Dinitrophenol	46000.	U
100-02-7	4-Nitrophenol	170000.	
132-64-9	Dibenzofuran	9200.	U
121-14-2	2,4-Dinitrotoluene	79000.	
84-66-2	Diethylphthalate	9200.	U
7005-72-3	4-Chlorophenyl-phenylether	9200.	U
86-73-7	Fluorene	9200.	U
100-01-6	4-Nitroaniline	46000.	U
534-52-1	4,6-Dinitro-2-methylphenol	46000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9200.	U
101-55-3	4-Bromophenyl-phenylether	9200.	U
118-74-1	Hexachlorobenzene	9200.	U
87-86-5	Pentachlorophenol	180000.	
85-01-8	Phenanthrene	9200.	U
120-12-7	Anthracene	9200.	U
84-74-2	Di-n-butylphthalate	9200.	U
206-44-0	Fluoranthene	9200.	U
129-00-0	Pyrene	91000.	
85-68-7	Butylbenzylphthalate	9200.	U
91-94-1	3,3'-Dichlorobenzidine	18000.	U
56-55-3	Benzo(a)anthracene	9200.	U
218-01-9	Chrysene	9200.	U
117-81-7	bis(2-Ethylhexyl)phthalate	9200.	U
117-84-0	Di-n-octylphthalate	9200.	U
205-99-2	Benzo(b)fluoranthene	9200.	U
207-08-9	Benzo(k)fluoranthene	9200.	U
50-32-8	Benzo(a)pyrene	9200.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9200.	U
53-70-3	Dibenz(a,h)anthracene	9200.	U
191-24-2	Benzo(g,h,i)perylene	9200.	U

(1) - Cannot be separated from Diphenylamine

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: BATTELLE-PNL Contract: -------

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

Level: (low/med) MED

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	SBLKL15	67	65	94	88	94	95		0
02	CORE 38 DL	84	89	105	20	52	88		0
03	CORE 38 DL	64	74	82	23	55	90		0
04	CORE 38 DL	78	86	100	71	66	88		0
05	CORE 38 DL	92	97	119	70	66	92		0
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07									
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(23-120)
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)
S3 (TPH)	= Terphenyl-d14	(18-137)
S4 (PHL)	= Phenol-d5	(24-113)
S5 (2FP)	= 2-Fluorophenol	(25-121)
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)

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

3D
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix Spike - EPA Sample No.: CORE 38DL Level: (low/med) MED

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	187000.00	0.00	127000.00	68	26- 90
2-Chlorophenol	187000.00	0.00	141000.00	75	25-102
1,4-Dichlorobenzene	93400.00	0.00	47700.00	51	28-104
N-Nitroso-di-n-prop.(1)	93400.00	0.00	65500.00	70	41-126
1,2,4-Trichlorobenzene	93400.00	0.00	58200.00	62	38-107
4-Chloro-3-methylphenol	187000.00	0.00	97300.00	52	26-103
Acenaphthene	93400.00	0.00	75300.00	81	31-137
4-Nitrophenol	187000.00	0.00	153000.00	82	11-114
2,4-Dinitrotoluene	93400.00	0.00	79400.00	85	28- 89
Pentachlorophenol	187000.00	0.00	187000.00	100	17-109
Pyrene	93400.00	0.00	89300.00	96	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	185000.00	122000.00	66	3	35	26- 90
2-Chlorophenol	185000.00	136000.00	74	1	50	25-102
1,4-Dichlorobenzene	92500.00	54400.00	59	14	27	28-104
N-Nitroso-di-n-prop.(1)	92500.00	70500.00	76	8	38	41-126
1,2,4-Trichlorobenzene	92500.00	63400.00	69	11	23	38-107
4-Chloro-3-methylphenol	185000.00	87900.00	48	8	33	26-103
Acenaphthene	92500.00	76800.00	83	2	19	31-137
4-Nitrophenol	185000.00	171000.00	92	11	50	11-114
2,4-Dinitrotoluene	92500.00	79200.00	86	1	47	28- 89
Pentachlorophenol	185000.00	182000.00	98	2	47	17-109
Pyrene	92500.00	91200.00	99	3	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: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: _____

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: BATTELLE-PNL Contract: -------

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

Lab File ID: >Y1503 Lab Sample ID: METHOD BLAN

Date Extracted 11/11/92 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/15/92 Time Analyzed: 15:05

Matrix: (soil/water) WATER Level: (low/med) MED

Instrument ID: BNA2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	CORE 38DL	92-09437-E1	>Y1504	12/15/92
02	CORE 38DL D	92-09437-E2	>Y1505	12/15/92
03	CORE 38DL M	92-09437-E3	>Y1506	12/15/92
04	CORE 38DL M	92-09437-E4	>Y1507	12/15/92
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COMMENTS:

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/15/92 Time: 13:29

Lab File ID: >Y1502 Init. Calib. Date(s): 11/05/90 12/15/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Phenol	*	1.476	1.430	3.1	*
bis(2-Chloroethyl)ether		1.209	1.298	7.4	
2-Chlorophenol		1.288	1.303	1.1	
1,3-Dichlorobenzene		1.498	1.442	3.8	
1,4-Dichlorobenzene	*	1.502	1.433	4.6	*
Benzyl alcohol		.789	.766	3.0	
1,2-Dichlorobenzene		1.431	1.401	2.1	
2-Methylphenol		1.021	1.024	.2	
bis(2-chloroisopropyl)ether		1.172	1.217	3.8	
4-Methylphenol		1.068	1.103	3.3	
N-Nitroso-di-n-propylamine	#	.630	.740	17.5	#
Hexachloroethane		.570	.659	15.7	
Nitrobenzene		.353	.385	9.3	
Isophorone		.701	.724	3.3	
2-Nitrophenol	*	.236	.204	13.7	*
2,4-Dimethylphenol		.289	.279	3.5	
Benzoic acid		.243	.198	18.6	
bis(2-Chloroethoxy)methane		.430	~~0.000~~ 1443	~~100.0~~ 30	
2,4-Dichlorophenol	*	.345	.310	10.2	*
1,2,4-Trichlorobenzene		.386	.334	13.5	
Naphthalene		.992	.966	2.6	
4-Chloroaniline		.466	.429	8.0	
Hexachlorobutadiene	*	.217	.198	8.6	*
4-Chloro-3-methylphenol	*	.309	.312	1.1	*
2-Methylnaphthalene		.658	.620	5.8	
Hexachlorocyclopentadiene	#	.445	.365	17.9	#
2,4,6-Trichlorophenol	*	.483	.408	15.5	*
2,4,5-Trichlorophenol		.507	.449	11.4	
2-Chloronaphthalene		1.294	1.168	9.7	
2-Nitroaniline		.383	.425	11.0	
Dimethylphthalate		1.612	1.444	10.4	
Acenaphthylene		2.003	1.860	7.2	
2,6-Dinitrotoluene		.382	.342	10.5	
3-Nitroaniline		.422	.366	13.2	
Acenaphthene	*	1.188	1.121	5.7	*
2,4-Dinitrophenol	#	.300	.193	35.7	#
4-Nitrophenol	#	.230	.258	12.5	#

1-20-93

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/15/92 Time: 13:29

Lab File ID: >Y1502 Init. Calib. Date(s): 11/05/90 12/15/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Phenol	*	1.476	1.430	3.1	*
bis(2-Chloroethyl)ether		1.209	1.298	7.4	
2-Chlorophenol		1.288	1.303	1.1	
1,3-Dichlorobenzene		1.498	1.442	3.8	
1,4-Dichlorobenzene	*	1.502	1.433	4.6	*
Benzyl alcohol		.789	.766	3.0	
1,2-Dichlorobenzene		1.431	1.401	2.1	
2-Methylphenol		1.021	1.024	.2	
bis(2-chloroisopropyl)ether		1.172	1.217	3.8	
4-Methylphenol		1.068	1.103	3.3	
N-Nitroso-di-n-propylamine	#	.630	.740	17.5	#
Hexachloroethane		.570	.659	15.7	
Nitrobenzene		.353	.385	9.3	
Isophorone		.701	.724	3.3	
2-Nitrophenol	*	.236	.204	13.7	*
2,4-Dimethylphenol		.289	.279	3.5	
Benzoic acid		.243	.198	18.6	
bis(2-Chloroethoxy)methane		.430	.434	1.1	
2,4-Dichlorophenol	*	.345	.310	10.2	*
1,2,4-Trichlorobenzene		.386	.334	13.5	
Naphthalene		.992	.966	2.6	
4-Chloroaniline		.466	.429	8.0	
Hexachlorobutadiene	*	.217	.198	8.6	*
4-Chloro-3-methylphenol	*	.309	.312	1.1	*
2-Methylnaphthalene		.658	.620	5.8	
Hexachlorocyclopentadiene	#	.445	.365	17.9	#
2,4,6-Trichlorophenol	*	.483	.408	15.5	*
2,4,5-Trichlorophenol		.507	.449	11.4	
2-Chloronaphthalene		1.294	1.168	9.7	
2-Nitroaniline		.383	.425	11.0	
Dimethylphthalate		1.612	1.444	10.4	
Acenaphthylene		2.003	1.860	7.2	
2,6-Dinitrotoluene		.382	.342	10.5	
3-Nitroaniline		.422	.366	13.2	
Acenaphthene	*	1.188	1.121	5.7	*
2,4-Dinitrophenol	#	.300	.193	35.7	#
4-Nitrophenol	#	.230	.258	12.5	#

7C
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/15/92 Time: 13:29

Lab File ID: >Y1502 Init. Calib. Date(s): 11/05/90 12/15/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Dibenzofuran		1.773	1.625	8.3	
2,4-Dinitrotoluene		.575	.515	10.4	
Diethylphthalate		1.621	1.576	2.8	
4-Chlorophenyl-phenylether		.707	.630	10.9	
Fluorene		1.384	1.284	7.2	
4-Nitroaniline		.451	.385	14.7	
4,6-Dinitro-2-methylphenol		.200	.159	20.8	
N-Nitrosodiphenylamine (1)	*	.525	.489	6.9	*
4-Bromophenyl-phenylether		.229	.205	10.7	
Hexachlorobenzene		.272	.266	2.3	
Pentachlorophenol	*	.171	.158	7.9	*
Phenanthrene		1.044	.986	5.5	
Anthracene		1.058	1.001	5.4	
Di-n-butylphthalate		1.413	1.441	2.0	
Fluoranthene	*	1.115	1.041	6.6	*
Pyrene		1.539	1.354	12.0	
Butylbenzylphthalate		.818	.793	3.1	
3,3'-Dichlorobenzidine		.475	.309	34.8	
Benzo(a)anthracene		1.348	1.204	10.7	
Chrysene		1.331	1.178	11.5	
bis(2-Ethylhexyl)phthalate		1.134	1.111	2.0	
Di-n-octylphthalate	*	1.718	1.688	1.7	*
Benzo(b)fluoranthene		1.237	1.025	17.1	
Benzo(k)fluoranthene		1.122	1.067	4.9	
Benzo(a)pyrene	*	1.126	.979	13.1	*
Indeno(1,2,3-cd)pyrene		1.112	.957	14.0	
Dibenz(a,h)anthracene		.966	.937	2.9	
Benzo(g,h,i)perylene		1.092	1.008	7.7	
Nitrobenzene-d5		.345	.375	8.6	
2-Fluorobiphenyl		1.399	1.263	9.7	
Terphenyl-d14		1.115	1.003	10.1	
Phenol-d5		1.352	1.339	1.0	
2-Fluorophenol		1.197	1.109	7.3	
2,4,6-Tribromophenol		.128	.128	.1	

(1) Cannot be separated from Diphenylamine

8B
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: -----

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

Lab File ID (Standard): >Y1502 Date Analyzed: 12/15/92

Instrument ID: BNA2 Time Analyzed: 13:29

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	30617.	11.65	108829.	15.56	56263.	20.82
	UPPER LIMIT	61234.		217658.		112526.	
	LOWER LIMIT	15308.		54415.		28131.	
	EPA SAMPLE NO.						
01	SBLKY15	43978.	11.65	151771.	15.56	78786.	20.81
02	CORE 38DL	41428.	11.68	148774.	15.58	74769.	20.84
03	CORE 38DL DU	42920.	11.66	149714.	15.57	74646.	20.83
04	CORE 38DL MS	34871.	11.68	118512.	15.58	61613.	20.85
05	CORE 38DL MS	42832.	11.67	150017.	15.57	76347.	20.82
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IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

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

Column used to flag internal standard area values with an asterisk

FORM VIII SV-1 1/87 Rev.

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: -----

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

Lab File ID (Standard): >Y1502 Date Analyzed: 12/15/92

Instrument ID: BNA2 Time Analyzed: 13:29

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS3(PRY) AREA #	RT
	12 HOUR STD	101705.	25.21	79905.	33.07	92206.	36.97
	UPPER LIMIT	203410.		159810.		184412.	
	LOWER LIMIT	50853.		39953.		46103.	
	EPA SAMPLE NO.						
01	SBLKY15	139066.	25.21	108210.	33.06	117719.	36.97
02	CORE 38DL	133606.	25.24	96445.	33.08	114091.	37.00
03	CORE 38DL DU	131193.	25.22	108372.	33.06	116806.	36.97
04	CORE 38DL MS	105574.	25.24	83036.	33.07	92260.	36.99
05	CORE 38DL MS	133069.	25.22	102546.	33.06	115823.	36.98
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IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%
of internal stansard 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.

5B
SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: BATTELLE-PNL Contract: -------

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

Lab File ID: >Y1501 DFTPP Injection Date: 12/15/92

Instrument ID: BNA2 DFTPP Injection Time: 12:52

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	38.5
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	61.
70	Less than 2.0% of mass 69	0.0(0.0)1
127	40.0 - 60.0% of mass 198	44.9
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	7.3
275	10.0 - 30.0% of mass 198	19.9
365	Greater than 1.00% of mass 198	3.06
441	Present, but less than mass 443	11.3
442	Greater than 40.0% of mass 198	84.3
443	17.0 - 23.0% of mass 442	16.6(19.7)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
01	SSTD050	CONT CALIB	>Y1502	12/15/92	13:29
02	SBLKY15	METHOD BLANK	>Y1503	12/15/92	15:05
03	CORE 38DL	92-09437-E1	>Y1504	12/15/92	16:03
04	CORE 38DL D	92-09437-E2	>Y1505	12/15/92	17:01
05	CORE 38DL M	92-09437-E3	>Y1506	12/15/92	17:59
06	CORE 38DL M	92-09437-E4	>Y1507	12/15/92	18:57
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6B
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: BATTELLE-PNL Contract: -------

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

Instrument ID: BNA2 Calibration Date(s): 11/05/92 ----

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>X0408 RRF50 =>X0407
RRF80 =>X0409 RRF120=>X0410 RRF160=>X0411

COMPOUND		RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Phenol	*	1.464	1.414	1.479	1.545	1.475	1.476	3.2*
bis(2-Chloroethyl)ether		1.282	1.218	1.231	1.201	1.114	1.209	5.1
2-Chlorophenol		1.370	1.296	1.319	1.267	1.190	1.288	5.2
1,3-Dichlorobenzene		1.580	1.516	1.522	1.470	1.403	1.498	4.4
1,4-Dichlorobenzene	*	1.575	1.521	1.539	1.474	1.400	1.502	4.5*
Benzyl alcohol		.774	.782	.816	.806	.769	.789	2.6
1,2-Dichlorobenzene		1.523	1.456	1.486	1.415	1.273	1.431	6.8
2-Methylphenol		1.086	1.025	1.048	1.016	.932	1.021	5.6
bis(2-chloroisopropyl)ether		1.159	1.141	1.179	1.208	1.172	1.172	2.1
4-Methylphenol		1.149	1.084	1.104	1.051	.951	1.068	7.0
N-Nitroso-di-n-propylamine	#	.616	.636	.665	.637	.595	.630	4.2#
Hexachloroethane		.580	.592	.603	.561	.513	.570	6.2
Nitrobenzene		.355	.349	.365	.349	.346	.353	2.2
Isophorone		.714	.676	.717	.705	.691	.701	2.4
2-Nitrophenol	*	.227	.228	.244	.245	.239	.236	3.7*
2,4-Dimethylphenol		.299	.282	.295	.289	.281	.289	2.7
Benzoic acid		0.000	.228	.259	.245	.241	.243	5.2
bis(2-Chloroethoxy)methane		.448	.423	.438	.420	.420	.430	3.0
2,4-Dichlorophenol	*	.361	.336	.351	.340	.337	.345	3.1*
1,2,4-Trichlorobenzene		.410	.381	.399	.376	.364	.386	4.8
Naphthalene		1.051	.986	1.013	.970	.938	.992	4.3
4-Chloroaniline		.480	.461	.481	.462	.447	.466	3.1
Hexachlorobutadiene	*	.230	.215	.223	.210	.204	.217	4.8*
4-Chloro-3-methylphenol	*	.313	.307	.320	.306	.298	.309	2.6*
2-Methylnaphthalene		.711	.672	.676	.630	.600	.658	6.5
Hexachlorocyclopentadiene	#	.380	.429	.479	.474	.460	.445	9.2#
2,4,6-Trichlorophenol	*	.465	.474	.502	.489	.483	.483	3.0*
2,4,5-Trichlorophenol		0.000	.519	.536	.489	.483	.507	4.9
2-Chloronaphthalene		1.353	1.292	1.304	1.276	1.244	1.294	3.1
2-Nitroaniline		0.000	.360	.391	.391	.389	.383	4.0
Dimethylphthalate		1.612	1.564	1.640	1.642	1.602	1.612	2.0
Acenaphthylene		2.081	2.021	2.058	1.956	1.899	2.003	3.7
2,6-Dinitrotoluene		.342	.379	.410	.399	.382	.382	6.7
3-Nitroaniline		0.000	.406	.429	.430	.422	.422	2.6
Acenaphthene	*	1.217	1.180	1.216	1.174	1.155	1.188	2.3*
2,4-Dinitrophenol	#	0.000	.260	.304	.319	.316	.300	9.2#
4-Nitrophenol	#	0.000	.219	.243	.234	.223	.230	4.6#

FORM VI SV-1 1/87 Rev.

6C
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: BATTELLE-PNL Contract: -------

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

Instrument ID: BNA2 Calibration Date(s): 11/05/92 ----

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>X0408 RRF50 =>X0407
RRF80 =>X0409 RRF120=>X0410 RRF160=>X0411

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Dibenzofuran	1.805	1.770	1.834	1.749	1.707	1.773	2.8
2,4-Dinitrotoluene	.521	.559	.594	.603	.597	.575	6.0
Diethylphthalate	1.649	1.612	1.677	1.580	1.585	1.621	2.6
4-Chlorophenyl-phenylether	.726	.688	.720	.701	.700	.707	2.2
Fluorene	1.429	1.352	1.440	1.356	1.344	1.384	3.3
4-Nitroaniline	0.000	.429	.461	.465	.450	.451	3.5
4,6-Dinitro-2-methylphenol	0.000	.187	.207	.207	.201	.200	4.8
N-Nitrosodiphenylamine (1) *	.566	.519	.533	.513	.497	.525	4.9*
4-Bromophenyl-phenylether	.239	.228	.236	.227	.216	.229	3.9
Hexachlorobenzene	.283	.267	.277	.271	.262	.272	3.0
Pentachlorophenol *	0.000	.172	.169	.176	.167	.171	2.3*
Phenanthrene	1.120	1.057	1.062	1.004	.976	1.044	5.3
Anthracene	1.148	1.056	1.064	1.033	.989	1.058	5.5
Di-n-butylphthalate	1.455	1.425	1.449	1.401	1.335	1.413	3.4
Fluoranthene *	1.157	1.105	1.152	1.109	1.049	1.115	3.9*
Pyrene	1.493	1.469	1.531	1.661	1.539	1.539	4.8
Butylbenzylphthalate	.754	.797	.831	.879	.831	.818	5.7
3,3'-Dichlorobenzidine	.466	.442	.462	.516	.487	.475	6.0
Benzo(a)anthracene	1.311	1.296	1.338	1.450	1.345	1.348	4.5
Chrysene	1.303	1.286	1.318	1.410	1.338	1.331	3.6
bis(2-Ethylhexyl)phthalate	1.090	1.120	1.136	1.189	1.132	1.134	3.2
Di-n-octylphthalate *	1.697	1.751	1.814	1.682	1.649	1.718	3.8*
Benzo(b)fluoranthene	1.170	1.191	1.207	1.311	1.303	1.237	5.3
Benzo(k)fluoranthene	1.238	1.176	1.217	1.035	.944	1.122	11.3
Benzo(a)pyrene *	1.130	1.113	1.168	1.114	1.106	1.126	2.2*
Indeno(1,2,3-cd)pyrene	.947	1.003	1.088	1.272	1.253	1.112	13.1
Dibenz(a,h)anthracene	.905	.968	1.006	.977	.972	.966	3.8
Benzo(g,h,i)perylene	1.077	1.075	1.126	1.101	1.079	1.092	2.0
Nitrobenzene-d5	.330	.333	.364	.353	.346	.345	4.1
2-Fluorobiphenyl	1.451	1.374	1.422	1.385	1.364	1.399	2.6
Terphenyl-d14	1.100	1.058	1.119	1.185	1.112	1.115	4.1
Phenol-d5	1.365	1.325	1.404	1.374	1.291	1.352	3.3
2-Fluorophenol	1.193	1.190	1.226	1.209	1.165	1.197	1.9
2,4,6-Tribromophenol	.128	.124	.133	.129	.128	.128	2.6

(1) Cannot be separated from Diphenylamine

WEIGHT SHEET

PROJECT # TI-SST-165 WO # M90483 DATE 10-22-92

ANALYST M. Steele BALANCE M&TE# WB60304 CALIB. DATE 11-7-92

SAMPLE #	CUSTOMER ID	FINAL WEIGHT GRAMS	TARE WEIGHT GRAMS	SPL WEIGHT GRAMS
92-09437E1		25.74180	24.66070	1.0811
92-09437E2		25.81510	24.74324	1.0719
92-09437E3		25.68950	24.61880	1.0707
92-09437E4		25.81140	24.72983	1.0816

ORGANICS ANALYSIS BENCH SHEET

page 1 of 1

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	EXTRACTION PROCEDURES: PNL-ALO-122.1	TEST INSTRUCTIONS: TI-55F165	ANALYSIS PROCEDURES:
WORK PKG: M90483	EXTRACTION ANALYST: MJ		ANALYST:
MATRIX: Liquid	DATE: 12-14-92	C110 Core 38	DATE:

SAMPLE NUMBER	WEIGHT VOLUME	DIW	Surr	Spike(ul) BN+A		FINAL SOLVENT	FINAL VOLUME BN	FINAL VOLUME A
92-09437E1	1.0811	9	100ul each	1 —		CH_2Cl_2	1ml	1ml
E2	1.0719	9	BN+A	—				
E3	1.0707	9		100-100				
E4	1.0816	9		100-100				
SB1K349		10		—				
	DH to basic extract 3X ≈ 5ml CH_2Cl_2							
	DH to Acidic extract 3X ≈ 5ml CH_2Cl_2							
	The method blank is noted as SB2K415 on the report forms RMM 12/18/92							

SURROGATE NAME	VOLUME (ul)	ID NUMBER 5320	CONC. (ug/ml)	SPIKE NAME	VOLUME (ul)	ID NUMBER 5320	CONC. (ug/ml)
Base Neutral	100	34-29	1000	Base Neutral	100	36-16	1000
Acid	100	34-35	2000	Acid	100	34-31	2000

COMMENTS: E3 Cloudy when BN Spike added
E2 & E3 Acid almost dry on final KD

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL
PNL-ALO-122.1	12-14-92 MJ	[illegible]	12-14-92	700/16		

ORGANICS ANALYSIS BENCH SHEET

page 1 of 1

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	EXTRACTION PROCEDURES: PNL-ALO-122.1	TEST INSTRUCTIONS: TI-SST165	ANALYSIS PROCEDURES:
WORK PKG: M90483	EXTRACTION ANALYST: MJ-d		ANALYST:
MATRIX: liquid	DATE: 12-14-92	C110 Core 38	DATE:

SAMPLE NUMBER	WEIGHT VOLUME	DIW	Surr	Spiked(ul) BN A	CH_2Cl_2	FINAL SOLVENT	FINAL VOLUME B	FINAL VOLUME A
92-09987E1	1.0811	9	100ul each	—		CH_2Cl_2	1ml	1ml
E2	1.0719	9	BN+A	—				
E3	1.0707	9		100-100				
E4	1.0816	9		100-100				
SA1K349	0	10		—				

pH to basic extract 3X c 5ml CH_2Cl_2

pH to Acidic extract 3X c 5ml CH_2Cl_2

SURROGATE NAME	VOLUME (ul)	ID NUMBER 5320	CONC. (ug/ml)	SPIKE NAME	VOLUME (ul)	ID NUMBER 5320	CONC. (ug/ml)
Base Neutral	100	34-29	1000	Base Neutral	100	36-16	1000
Acid	100	34-35	2000	Acid	100	34-31	2000

COMMENTS: E3 Cloudy when BN Spike added
E2 & E3 Acid almost dry on final KD

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL
PNL-ALO-122.1	12-14-92 MJ-d	Spent	12-14-92	700/16		

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

CORE 38

Drainable Liquids Raw Data

E03-364

751

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SD-WM-DVR-[illegible]
Addendum 3
Rev. 0-A

Due to the large volume,
a copy of the data
supporting the Data
Validation Report and
the Sample Data Summary,

Pages E03-365 thru E03-479,

is available only from
Central Files.

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CORE 39

SEMI-VOLATILE ORGANIC ANALYSIS

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ORGANIC COMPOUND ANALYSIS REPORT

SEMIVOLATILE COMPOUNDS

SAMPLE ANALYSIS REPORTED

Analysis of SST Core 39 samples for semivolatile organic compounds by gas chromatography/mass spectrometry (GC/MS) is the subject of this report.

SAMPLE DESCRIPTION AND PREPARATION

Sample ID	ACL Lab Number
Core 39	92-08309
Core 39	92-08311

The samples were received at ambient temperature on 10/12/92, and were refrigerated after receipt. Extractions of both samples and spiked samples were performed.

- Extraction procedure: PNL-ALO-120
- Extraction location: Lab 306, 325 building
- Extraction type: Sonication, med level, soil
- Sample/Extract storage temperature: 4°C(+/-2°)

ANALYSIS METHOD

- GC/MS procedure: PNL-ALO-345.
- GC/MS instrumentation: HP-5890/5970 GC/MS (WB46867)
- GC/MS location: Lab 325, 325 building.

QUALITY CONTROL

The QC features in the analytical procedure were followed as described below. The following lists the attached CLP forms that relate to QC and summarizes the QC results.

Form	Information	Comments
2D	Surrogate Recovery	Phenol-d5 was out high on three samples, and nitrobenzene-d5 and 2-fluorobiphenyl were out high on one sample. Only one sample, 92-08311-

		E1, did not meet the QA criteria for surrogate recovery. See problems section.
3D	MS/MSD Recovery	Recoveries were high on 11 of 22 spikes in the MS/MSD samples. See problems section.
4B	Method Blank Summary	Met requirements.
5B	Tune/Mass Calibration	Met requirements.
6B,C	Initial Calibration	Met requirements.
7B,C	Daily Calibration	Met requirements.
8B,C	Internal Standards	Met requirements.

DATA

The data and calibration are archived on magnetic tape in the 325 building 325 laboratory. The following is the list of the pertinent files.

File Name	Sample Number	Sample Analyzed
>Y1101		Mass calibration and tune check
>Y1102		Continuing calibration
>Y1103		Method blank
>Y1104	92-08309-E1	Core 39
>Y1105	92-08309-E2	Core 39 duplicate
>Y1106	92-08309-E3	Core 39 MS
>Y1107	92-08309-E4	Core 39 MSD
>Y1108	92-08311-E1	Core 39
>Y1109	92-08311-E2	Core 39 duplicate

Laboratory data is maintained as follows:

Activity	Location
• GC/MS injection log	BNW-53728 pg. 40-41
• Extraction bench sheet:	filed with data in the ACL/ALO records center
• GC/MS data, sample report:	filed with data in the ACL/ALO records center

PROBLEMS

High recoveries of some surrogate and matrix compounds were observed in the analysis of Core 37. Since the samples from Cores 37, 38, 39, 40, and 41 were prepared under the same conditions, the same problems would be expected to occur for Core 39 samples. The three problems that were identified are: 1) a systematic error in extract volume; 2) a significant difference (≥17%) between acid surrogate standard concentrations used for the GC/MS calibration (vendor A standard) and the stock used for spike the addition (prepared from the vendor B standard), and 3) a solvent effect from methanol in the concentrated extract. The reason that the methanol concentration in the concentrated extract is high is unclear. There may be an increased amount of methanol in the unconcentrated extract because of the high ionic strength of the sample. The methanol content in the extract would increase during the concentration process because its vapor pressure is less than that of the methylene chloride extractant. This would lead to a higher concentration of the methanol in the concentrated extract and a resulting chromatographic solvent effect.

The extract volume measurement problem was corrected, and surrogate standards were purchased from a third supplier (vendor C). Analysis of the surrogate spike standards in methylene chloride solvent showed better agreement: the difference between vendors A and B acid surrogate concentrations was about 8% with vendor C results in between. This spread is within vendor acceptable limits. The larger spread of results in the first analysis resulted from the methanol solvent used for the sample spike stock solution. This was verified by analyzing the vendor A standard in a methylene chloride solvent and in methanol. The acid surrogate differences ranged from about 8 to 20%.

There was insufficient sample for re-extraction. However, the volumes of the concentrated extracts were corrected, and the samples analyzed. Since the Core 37 sample problems persisted after the re-analysis, the Core 39 samples were not re-analyzed. As for the Core 37 samples, high recoveries were obtained for both surrogate and matrix spike compounds with the acidic compounds showing more variance.

The only sample in the Cores 37, 38, 39, 40, and 41 series of samples in sufficient quantity for re-extraction and re-analysis was Core 38, 92-08307. An Interim Change Notice was written to change the procedure so that more concentrated spiking solutions could be used resulting in less methanol in the final extracts. The re-run of this sample after the modified extraction resulted in a significant improvement in surrogate and matrix spike recoveries.

RESULTS

CLP Target Compounds: As seen in the attached 1B,C Forms, the only target compounds found was bis(2-ethylhexyl)phthalate as follows:

Sample	µg/Kg
92-08309-E1	2100
92-08309-E2	1100
92-08311-E1	2200
92-08311-E2	1700

The problems noted above have no effect on analyte detection. The only effect would be high bias in results.

Tentatively Identified Compounds (TIC): The attached 1F Forms show results for the TIC's. Concentration estimates for the TIC's are made assuming that the response factor for each TIC is one. The peak area for each TIC is then compared to the area of the nearest internal standard (for which concentrations are known) to estimate the TIC concentrations. Identification of the TIC is made by a computer search of the NIST mass spectral library to attempt a match with the spectrum of each of the TIC's. The TIC's reported as "Unknown" did not have satisfactory matches with library spectra. The TIC concentration estimate and identification are reported only if the TIC peak area is 10% or greater than the nearest internal standard peak area.

The TIC's found were:

	Sample and Concentration, µg/Kg			
Compound	92-08309-E1	92-08309-E2	92-08311-E1	92-08311-E2
Decane	8700	*	8600	*
Undecane	20000	10000	20000	16000
Dodecane	820000	460000	780000	650000
Tridecane	1700000	1100000	1600000	1500000
Tetradecane	1300000	770000	1200000	1100000
Pentadecane	62000	33000	61000	50000
Tributylphosphate	12000	*	10000	*

* - Compounds present, but at abundances less than 10% of the abundance of the nearest internal standard.

The following defines the Q-flags in the Form 1's

"Q" Flag	Definition
U	Indicates the compound was analyzed for but not detected, the U-flagged concentration is the Contract Required Quantitation Limit.
J	Indicates an estimated value for target and tentatively identified compounds, spectra meet criteria but response is below Contract Required Quantitation Limit for the target compounds.

B	Indicates compound was found in the blank.
X	Indicates compound was manually deleted because all requirements were not met.
D	Indicates analysis was performed on a diluted sample.
E	Indicates that quantitation was outside of the calibration range.
A	Aldol condensation product.

ANALYST [signature] DATE 12-17-92 REVIEW [signature] DATE 12-17-92

CURRENT DATE: December 28, 1992

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - Semi-VOA

Data Package/Report - Core 39

ALO Numbers - 92-08309-E1 92-08309-E2 92-08309-E3 92-08309-E4 92-08311-E1 92-08311-E2

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

1/19/93
Date

CORE 39

Sample Analysis Report Forms

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKY11

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLAN

Sample wt/vol: 1 (g/mL) G Lab File ID: >Y1103

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	10000.	U
111-44-4	bis(2-Chloroethyl)Ether	10000.	U
95-57-8	2-Chlorophenol	10000.	U
541-73-1	1,3-Dichlorobenzene	10000.	U
106-46-7	1,4-Dichlorobenzene	10000.	U
100-51-6	Benzyl alcohol	10000.	U
95-50-1	1,2-Dichlorobenzene	10000.	U
95-48-7	2-Methylphenol	10000.	U
39638-32-9	bis(2-chloroisopropyl)ether	10000.	U
106-44-5	4-Methylphenol	10000.	U
621-64-7	N-Nitroso-Di-n-propylamine	10000.	U
67-72-1	Hexachloroethane	10000.	U
98-95-3	Nitrobenzene	10000.	U
78-59-1	Isophorone	10000.	U
88-75-5	2-Nitrophenol	10000.	U
105-67-9	2,4-Dimethylphenol	10000.	U
65-85-0	Benzoic acid	50000.	U
111-91-1	bis(2-Chloroethoxy)methane	10000.	U
120-83-2	2,4-Dichlorophenol	10000.	U
120-82-1	1,2,4-Trichlorobenzene	10000.	U
91-20-3	Naphthalene	10000.	U
106-47-8	4-Chloroaniline	10000.	U
87-68-3	Hexachlorobutadiene	10000.	U
59-50-7	4-Chloro-3-methylphenol	10000.	U
91-57-6	2-Methylnaphthalene	10000.	U
77-47-4	Hexachlorocyclopentadiene	10000.	U
88-06-2	2,4,6-Trichlorophenol	10000.	U
95-95-4	2,4,5-Trichlorophenol	50000.	U
91-58-7	2-Chloronaphthalene	10000.	U
88-74-4	2-Nitroaniline	50000.	U
131-11-3	Dimethylphthalate	10000.	U
208-96-8	Acenaphthylene	10000.	U
606-20-2	2,6-Dinitrotoluene	10000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKY11

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLAN

Sample wt/vol: 1 (g/mL) G Lab File ID: >Y1103

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	50000.	U
83-32-9	Acenaphthene	10000.	U
51-28-5	2,4-Dinitrophenol	50000.	U
100-02-7	4-Nitrophenol	50000.	U
132-64-9	Dibenzofuran	10000.	U
121-14-2	2,4-Dinitrotoluene	10000.	U
84-66-2	Diethylphthalate	10000.	U
7005-72-3	4-Chlorophenyl-phenylether	10000.	U
86-73-7	Fluorene	10000.	U
100-01-6	4-Nitroaniline	50000.	U
534-52-1	4,6-Dinitro-2-methylphenol	50000.	U
86-30-6	N-Nitrosodiphenylamine (1)	10000.	U
101-55-3	4-Bromophenyl-phenylether	10000.	U
118-74-1	Hexachlorobenzene	10000.	U
87-86-5	Pentachlorophenol	50000.	U
85-01-8	Phenanthrene	10000.	U
120-12-7	Anthracene	10000.	U
84-74-2	Di-n-butylphthalate	10000.	U
206-44-0	Fluoranthene	10000.	U
129-00-0	Pyrene	10000.	U
85-68-7	Butylbenzylphthalate	10000.	U
91-94-1	3,3'-Dichlorobenzidine	20000.	U
56-55-3	Benzo(a)anthracene	10000.	U
218-01-9	Chrysene	10000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	10000.	U
117-84-0	Di-n-octylphthalate	10000.	U
205-99-2	Benzo(b)fluoranthene	10000.	U
207-08-9	Benzo(k)fluoranthene	10000.	U
50-32-8	Benzo(a)pyrene	10000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000.	U
53-70-3	Dibenz(a,h)anthracene	10000.	U
191-24-2	Benzo(g,h,i)perylene	10000.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKY11

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLAN

Sample wt/vol: 1.0000 (g/mL) G Lab File ID: >Y1103

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

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

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
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23.					
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25.					
26.					
27.					
28.					
29.					
30.					

FORM I SV-TIC 1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08309-E1

Sample wt/vol: 0.9394 (g/mL) G Lab File ID: >Y1104

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.49 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	11000.	U
111-44-4	bis(2-Chloroethyl)Ether	11000.	U
95-57-8	2-Chlorophenol	11000.	U
541-73-1	1,3-Dichlorobenzene	11000.	U
106-46-7	1,4-Dichlorobenzene	11000.	U
100-51-6	Benzyl alcohol	11000.	U
95-50-1	1,2-Dichlorobenzene	11000.	U
95-48-7	2-Methylphenol	11000.	U
39638-32-9	bis(2-chloroisopropyl)ether	11000.	U
106-44-5	4-Methylphenol	11000.	U
621-64-7	N-Nitroso-Di-n-propylamine	11000.	U
67-72-1	Hexachloroethane	11000.	U
98-95-3	Nitrobenzene	11000.	U
78-59-1	Isophorone	11000.	U
88-75-5	2-Nitrophenol	11000.	U
105-67-9	2,4-Dimethylphenol	11000.	U
65-85-0	Benzoic acid	53000.	U
111-91-1	bis(2-Chloroethoxy)methane	11000.	U
120-83-2	2,4-Dichlorophenol	11000.	U
120-82-1	1,2,4-Trichlorobenzene	11000.	U
91-20-3	Naphthalene	11000.	U
106-47-8	4-Chloroaniline	11000.	U
87-68-3	Hexachlorobutadiene	11000.	U
59-50-7	4-Chloro-3-methylphenol	11000.	U
91-57-6	2-Methylnaphthalene	11000.	U
77-47-4	Hexachlorocyclopentadiene	11000.	U
88-06-2	2,4,6-Trichlorophenol	11000.	U
95-95-4	2,4,5-Trichlorophenol	53000.	U
91-58-7	2-Chloronaphthalene	11000.	U
88-74-4	2-Nitroaniline	53000.	U
131-11-3	Dimethylphthalate	11000.	U
208-96-8	Acenaphthylene	11000.	U
606-20-2	2,6-Dinitrotoluene	11000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08309-E1

Sample wt/vol: 0.9394 (g/mL) G Lab File ID: >Y1104

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.49 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	53000.	U
83-32-9	Acenaphthene	11000.	U
51-28-5	2,4-Dinitrophenol	53000.	U
100-02-7	4-Nitrophenol	53000.	U
132-64-9	Dibenzofuran	11000.	U
121-14-2	2,4-Dinitrotoluene	11000.	U
84-66-2	Diethylphthalate	11000.	U
7005-72-3	4-Chlorophenyl-phenylether	11000.	U
86-73-7	Fluorene	11000.	U
100-01-6	4-Nitroaniline	53000.	U
534-52-1	4,6-Dinitro-2-methylphenol	53000.	U
86-30-6	N-Nitrosodiphenylamine (1)	11000.	U
101-55-3	4-Bromophenyl-phenylether	11000.	U
118-74-1	Hexachlorobenzene	11000.	U
87-86-5	Pentachlorophenol	53000.	U
85-01-8	Phenanthrene	11000.	U
120-12-7	Anthracene	11000.	U
84-74-2	Di-n-butylphthalate	11000.	U
206-44-0	Fluoranthene	11000.	U
129-00-0	Pyrene	11000.	U
85-68-7	Butylbenzylphthalate	11000.	U
91-94-1	3,3'-Dichlorobenzidine	21000.	U
56-55-3	Benzo(a)anthracene	11000.	U
218-01-9	Chrysene	11000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	2100.	J
117-84-0	Di-n-octylphthalate	11000.	U
205-99-2	Benzo(b)fluoranthene	11000.	U
207-08-9	Benzo(k)fluoranthene	11000.	U
50-32-8	Benzo(a)pyrene	11000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	11000.	U
53-70-3	Dibenz(a,h)anthracene	11000.	U
191-24-2	Benzo(g,h,i)perylene	11000.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 39

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08309-E1

Sample wt/vol: 0.9394 (g/mL) G Lab File ID: >Y1104

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.49 Dilution Factor: 1.00000

Number TICs found: 7

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	11.44	8700.	J
2.	1120214	Undecane	13.85	20000.	J
3.	112403	Dodecane	15.96	820000.	J
4.	629505	Tridecane	17.88	1700000.	J
5.	629594	Tetradecane	19.57	1300000.	J
6.	629629	Pentadecane	21.06	62000.	J
7.	126738	Phosphoric acid tributyl est	23.16	12000.	J
8.					
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08309-E2

Sample wt/vol: 1.2502 (g/mL) G Lab File ID: >Y1105

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.49 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	8000.	U
111-44-4	bis(2-Chloroethyl)Ether	8000.	U
95-57-8	2-Chlorophenol	8000.	U
541-73-1	1,3-Dichlorobenzene	8000.	U
106-46-7	1,4-Dichlorobenzene	8000.	U
100-51-6	Benzyl_alcohol	8000.	U
95-50-1	1,2-Dichlorobenzene	8000.	U
95-48-7	2-Methylphenol	8000.	U
39638-32-9	bis(2-chloroisopropyl)ether	8000.	U
106-44-5	4-Methylphenol	8000.	U
621-64-7	N-Nitroso-Di-n-propylamine	8000.	U
67-72-1	Hexachloroethane	8000.	U
98-95-3	Nitrobenzene	8000.	U
78-59-1	Isophorone	8000.	U
88-75-5	2-Nitrophenol	8000.	U
105-67-9	2,4-Dimethylphenol	8000.	U
65-85-0	Benzoic_acid	40000.	U
111-91-1	bis(2-Chloroethoxy)methane	8000.	U
120-83-2	2,4-Dichlorophenol	8000.	U
120-82-1	1,2,4-Trichlorobenzene	8000.	U
91-20-3	Naphthalene	8000.	U
106-47-8	4-Chloroaniline	8000.	U
87-68-3	Hexachlorobutadiene	8000.	U
59-50-7	4-Chloro-3-methylphenol	8000.	U
91-57-6	2-Methylnaphthalene	8000.	U
77-47-4	Hexachlorocyclopentadiene	8000.	U
88-06-2	2,4,6-Trichlorophenol	8000.	U
95-95-4	2,4,5-Trichlorophenol	40000.	U
91-58-7	2-Chloronaphthalene	8000.	U
88-74-4	2-Nitroaniline	40000.	U
131-11-3	Dimethylphthalate	8000.	U
208-96-8	Acenaphthylene	8000.	U
606-20-2	2,6-Dinitrotoluene	8000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08309-E2

Sample wt/vol: 1.2502 (g/mL) G Lab File ID: >Y1105

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.49 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	40000.	U
83-32-9	Acenaphthene	8000.	U
51-28-5	2,4-Dinitrophenol	40000.	U
100-02-7	4-Nitrophenol	40000.	U
132-64-9	Dibenzofuran	8000.	U
121-14-2	2,4-Dinitrotoluene	8000.	U
84-66-2	Diethylphthalate	8000.	U
7005-72-3	4-Chlorophenyl-phenylether	8000.	U
86-73-7	Fluorene	8000.	U
100-01-6	4-Nitroaniline	40000.	U
534-52-1	4,6-Dinitro-2-methylphenol	40000.	U
86-30-6	N-Nitrosodiphenylamine (1)	8000.	U
101-55-3	4-Bromophenyl-phenylether	8000.	U
118-74-1	Hexachlorobenzene	8000.	U
87-86-5	Pentachlorophenol	40000.	U
85-01-8	Phenanthrene	8000.	U
120-12-7	Anthracene	8000.	U
84-74-2	Di-n-butylphthalate	8000.	U
206-44-0	Fluoranthene	8000.	U
129-00-0	Pyrene	8000.	U
85-68-7	Butylbenzylphthalate	8000.	U
91-94-1	3,3'-Dichlorobenzidine	16000.	U
56-55-3	Benzo(a)anthracene	8000.	U
218-01-9	Chrysene	8000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	1100.	J
117-84-0	Di-n-octylphthalate	8000.	U
205-99-2	Benzo(b)fluoranthene	8000.	U
207-08-9	Benzo(k)fluoranthene	8000.	U
50-32-8	Benzo(a)pyrene	8000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	8000.	U
53-70-3	Dibenz(a,h)anthracene	8000.	U
191-24-2	Benzo(g,h,i)perylene	8000.	U

(1) - Cannot be separated from Diphenylamine

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 39 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08309-E2

Sample wt/vol: 1.2502 (g/mL) G Lab File ID: >Y1105

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.49 Dilution Factor: 1.00000

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	1120214	Undecane	13.85	10000.	
2.	112403	Dodecane	15.94	460000.	
3.	629505	Tridecane	17.85	1100000.	
4.	629594	Tetradecane	19.54	770000.	
5.	629629	Pentadecane	21.06	33000.	
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39 MS

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08309-E3

Sample wt/vol: 1.0310 (g/mL) G Lab File ID: >Y1106

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.49 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	230000.	
111-44-4	bis(2-Chloroethyl)Ether	9700.	U
95-57-8	2-Chlorophenol	230000.	
541-73-1	1,3-Dichlorobenzene	9700.	U
106-46-7	1,4-Dichlorobenzene	100000.	
100-51-6	Benzyl_alcohol	9700.	U
95-50-1	1,2-Dichlorobenzene	9700.	U
95-48-7	2-Methylphenol	9700.	U
39638-32-9	bis(2-chloroisopropyl)ether	9700.	U
106-44-5	4-Methylphenol	9700.	U
621-64-7	N-Nitroso-Di-n-propylamine	130000.	
67-72-1	Hexachloroethane	9700.	U
98-95-3	Nitrobenzene	9700.	U
78-59-1	Isophorone	9700.	U
88-75-5	2-Nitrophenol	9700.	U
105-67-9	2,4-Dimethylphenol	9700.	U
65-85-0	Benzoic_acid	49000.	U
111-91-1	bis(2-Chloroethoxy)methane	9700.	U
120-83-2	2,4-Dichlorophenol	9700.	U
120-82-1	1,2,4-Trichlorobenzene	100000.	
91-20-3	Naphthalene	9700.	U
106-47-8	4-Chloroaniline	9700.	U
87-68-3	Hexachlorobutadiene	9700.	U
59-50-7	4-Chloro-3-methylphenol	220000.	
91-57-6	2-Methylnaphthalene	9700.	U
77-47-4	Hexachlorocyclopentadiene	9700.	U
88-06-2	2,4,6-Trichlorophenol	9700.	U
95-95-4	2,4,5-Trichlorophenol	49000.	U
91-58-7	2-Chloronaphthalene	9700.	U
88-74-4	2-Nitroaniline	49000.	U
131-11-3	Dimethylphthalate	9700.	U
208-96-8	Acenaphthylene	9700.	U
606-20-2	2,6-Dinitrotoluene	9700.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39 MS

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08309-E3

Sample wt/vol: 1.0310 (g/mL) G Lab File ID: >Y1106

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.49 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	49000.	U
83-32-9	Acenaphthene	110000.	
51-28-5	2,4-Dinitrophenol	49000.	U
100-02-7	4-Nitrophenol	130000.	
132-64-9	Dibenzofuran	9700.	U
121-14-2	2,4-Dinitrotoluene	100000.	
84-66-2	Diethylphthalate	9700.	U
7005-72-3	4-Chlorophenyl-phenylether	9700.	U
86-73-7	Fluorene	9700.	U
100-01-6	4-Nitroaniline	49000.	U
534-52-1	4,6-Dinitro-2-methylphenol	49000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9700.	U
101-55-3	4-Bromophenyl-phenylether	9700.	U
118-74-1	Hexachlorobenzene	9700.	U
87-86-5	Pentachlorophenol	180000.	
85-01-8	Phenanthrene	9700.	U
120-12-7	Anthracene	9700.	U
84-74-2	Di-n-butylphthalate	9700.	U
206-44-0	Fluoranthene	9700.	U
129-00-0	Pyrene	99000.	
85-68-7	Butylbenzylphthalate	9700.	U
91-94-1	3,3'-Dichlorobenzidine	19000.	U
56-55-3	Benzo(a)anthracene	9700.	U
218-01-9	Chrysene	9700.	U
117-81-7	bis(2-Ethylhexyl)phthalate	1700.	J
117-84-0	Di-n-octylphthalate	9700.	U
205-99-2	Benzo(b)fluoranthene	9700.	U
207-08-9	Benzo(k)fluoranthene	9700.	U
50-32-8	Benzo(a)pyrene	9700.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9700.	U
53-70-3	Dibenz(a,h)anthracene	9700.	U
191-24-2	Benzo(g,h,i)perylene	9700.	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39 MSD

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08309-E4

Sample wt/vol: 0.9580 (g/mL) G Lab File ID: >Y1107

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.49 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	240000.	
111-44-4	bis(2-Chloroethyl)Ether	10000.	U
95-57-8	2-Chlorophenol	240000.	
541-73-1	1,3-Dichlorobenzene	10000.	U
106-46-7	1,4-Dichlorobenzene	110000.	
100-51-6	Benzyl alcohol	10000.	U
95-50-1	1,2-Dichlorobenzene	10000.	U
95-48-7	2-Methylphenol	10000.	U
39638-32-9	bis(2-chloroisopropyl)ether	10000.	U
106-44-5	4-Methylphenol	10000.	U
621-64-7	N-Nitroso-Di-n-propylamine	130000.	
67-72-1	Hexachloroethane	10000.	U
98-95-3	Nitrobenzene	10000.	U
78-59-1	Isophorone	10000.	U
88-75-5	2-Nitrophenol	10000.	U
105-67-9	2,4-Dimethylphenol	10000.	U
65-85-0	Benzoic acid	52000.	U
111-91-1	bis(2-Chloroethoxy)methane	10000.	U
120-83-2	2,4-Dichlorophenol	10000.	U
120-82-1	1,2,4-Trichlorobenzene	100000.	
91-20-3	Naphthalene	10000.	U
106-47-8	4-Chloroaniline	10000.	U
87-68-3	Hexachlorobutadiene	10000.	U
59-50-7	4-Chloro-3-methylphenol	220000.	
91-57-6	2-Methylnaphthalene	10000.	U
77-47-4	Hexachlorocyclopentadiene	10000.	U
88-06-2	2,4,6-Trichlorophenol	10000.	U
95-95-4	2,4,5-Trichlorophenol	52000.	U
91-58-7	2-Chloronaphthalene	10000.	U
88-74-4	2-Nitroaniline	52000.	U
131-11-3	Dimethylphthalate	10000.	U
208-96-8	Acenaphthylene	10000.	U
606-20-2	2,6-Dinitrotoluene	10000.	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39 MSD

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08309-E4

Sample wt/vol: 0.9580 (g/mL) G Lab File ID: >Y1107

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.49 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	52000.	U
83-32-9	Acenaphthene	110000.	
51-28-5	2,4-Dinitrophenol	52000.	U
100-02-7	4-Nitrophenol	110000.	
132-64-9	Dibenzofuran	10000.	U
121-14-2	2,4-Dinitrotoluene	100000.	
84-66-2	Diethylphthalate	10000.	U
7005-72-3	4-Chlorophenyl-phenylether	10000.	U
86-73-7	Fluorene	10000.	U
100-01-6	4-Nitroaniline	52000.	U
534-52-1	4,6-Dinitro-2-methylphenol	52000.	U
86-30-6	N-Nitrosodiphenylamine (1)	10000.	U
101-55-3	4-Bromophenyl-phenylether	10000.	U
118-74-1	Hexachlorobenzene	10000.	U
87-86-5	Pentachlorophenol	180000.	
85-01-8	Phenanthrene	10000.	U
120-12-7	Anthracene	10000.	U
84-74-2	Di-n-butylphthalate	10000.	U
206-44-0	Fluoranthene	10000.	U
129-00-0	Pyrene	96000.	
85-68-7	Butylbenzylphthalate	10000.	U
91-94-1	3,3'-Dichlorobenzidine	21000.	U
56-55-3	Benzo(a)anthracene	10000.	U
218-01-9	Chrysene	10000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	1500.	J
117-84-0	Di-n-octylphthalate	10000.	U
205-99-2	Benzo(b)fluoranthene	10000.	U
207-08-9	Benzo(k)fluoranthene	10000.	U
50-32-8	Benzo(a)pyrene	10000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000.	U
53-70-3	Dibenz(a,h)anthracene	10000.	U
191-24-2	Benzo(g,h,i)perylene	10000.	U

(1) - Cannot be separated from Diphenylamine

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08311-E1

Sample wt/vol: 1.0031 (g/mL) G Lab File ID: >Y1108

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.57 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	10000.	U
111-44-4	bis(2-Chloroethyl)Ether	10000.	U
95-57-8	2-Chlorophenol	10000.	U
541-73-1	1,3-Dichlorobenzene	10000.	U
106-46-7	1,4-Dichlorobenzene	10000.	U
100-51-6	Benzyl alcohol	10000.	U
95-50-1	1,2-Dichlorobenzene	10000.	U
95-48-7	2-Methylphenol	10000.	U
39638-32-9	bis(2-chloroisopropyl)ether	10000.	U
106-44-5	4-Methylphenol	10000.	U
621-64-7	N-Nitroso-Di-n-propylamine	10000.	U
67-72-1	Hexachloroethane	10000.	U
98-95-3	Nitrobenzene	10000.	U
78-59-1	Isophorone	10000.	U
88-75-5	2-Nitrophenol	10000.	U
105-67-9	2,4-Dimethylphenol	10000.	U
65-85-0	Benzoic acid	50000.	U
111-91-1	bis(2-Chloroethoxy)methane	10000.	U
120-83-2	2,4-Dichlorophenol	10000.	U
120-82-1	1,2,4-Trichlorobenzene	10000.	U
91-20-3	Naphthalene	10000.	U
106-47-8	4-Chloroaniline	10000.	U
87-68-3	Hexachlorobutadiene	10000.	U
59-50-7	4-Chloro-3-methylphenol	10000.	U
91-57-6	2-Methylnaphthalene	10000.	U
77-47-4	Hexachlorocyclopentadiene	10000.	U
88-06-2	2,4,6-Trichlorophenol	10000.	U
95-95-4	2,4,5-Trichlorophenol	50000.	U
91-58-7	2-Chloronaphthalene	10000.	U
88-74-4	2-Nitroaniline	50000.	U
131-11-3	Dimethylphthalate	10000.	U
208-96-8	Acenaphthylene	10000.	U
606-20-2	2,6-Dinitrotoluene	10000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08311-E1

Sample wt/vol: 1.0031 (g/mL) G Lab File ID: >Y1108

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.57 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	50000.	U
83-32-9	Acenaphthene	10000.	U
51-28-5	2,4-Dinitrophenol	50000.	U
100-02-7	4-Nitrophenol	50000.	U
132-64-9	Dibenzofuran	10000.	U
121-14-2	2,4-Dinitrotoluene	10000.	U
84-66-2	Diethylphthalate	10000.	U
7005-72-3	4-Chlorophenyl-phenylether	10000.	U
86-73-7	Fluorene	10000.	U
100-01-6	4-Nitroaniline	50000.	U
534-52-1	4,6-Dinitro-2-methylphenol	50000.	U
86-30-6	N-Nitrosodiphenylamine (1)	10000.	U
101-55-3	4-Bromophenyl-phenylether	10000.	U
118-74-1	Hexachlorobenzene	10000.	U
87-86-5	Pentachlorophenol	50000.	U
85-01-8	Phenanthrene	10000.	U
120-12-7	Anthracene	10000.	U
84-74-2	Di-n-butylphthalate	10000.	U
206-44-0	Fluoranthene	10000.	U
129-00-0	Pyrene	10000.	U
85-68-7	Butylbenzylphthalate	10000.	U
91-94-1	3,3'-Dichlorobenzidine	20000.	U
56-55-3	Benzo(a)anthracene	10000.	U
218-01-9	Chrysene	10000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	2200.	J
117-84-0	Di-n-octylphthalate	10000.	U
205-99-2	Benzo(b)fluoranthene	10000.	U
207-08-9	Benzo(k)fluoranthene	10000.	U
50-32-8	Benzo(a)pyrene	10000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	10000.	U
53-70-3	Dibenz(a,h)anthracene	10000.	U
191-24-2	Benzo(g,h,i)perylene	10000.	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 39

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08311-E1

Sample wt/vol: 1.0031 (g/mL) G Lab File ID: >Y1108

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.57 Dilution Factor: 1.00000

Number TICs found: 7

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	11.44	8600.	J
2.	1120214	Undecane	13.84	20000.	J
3.	112403	Dodecane	15.95	780000.	J
4.	629505	Tridecane	17.85	1600000.	J
5.	629594	Tetradecane	19.55	1200000.	J
6.	629629	Pentadecane	21.06	61000.	J
7.	126738	Phosphoric acid tributyl est	23.16	10000.	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08311-E2

Sample wt/vol: 1.0500 (g/mL) G Lab File ID: >Y1109

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.57 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
108-95-2	Phenol	9500.	U
111-44-4	bis(2-Chloroethyl)Ether	9500.	U
95-57-8	2-Chlorophenol	9500.	U
541-73-1	1,3-Dichlorobenzene	9500.	U
106-46-7	1,4-Dichlorobenzene	9500.	U
100-51-6	Benzyl alcohol	9500.	U
95-50-1	1,2-Dichlorobenzene	9500.	U
95-48-7	2-Methylphenol	9500.	U
39638-32-9	bis(2-chloroisopropyl)ether	9500.	U
106-44-5	4-Methylphenol	9500.	U
621-64-7	N-Nitroso-Di-n-propylamine	9500.	U
67-72-1	Hexachloroethane	9500.	U
98-95-3	Nitrobenzene	9500.	U
78-59-1	Isophorone	9500.	U
88-75-5	2-Nitrophenol	9500.	U
105-67-9	2,4-Dimethylphenol	9500.	U
65-85-0	Benzoic acid	48000.	U
111-91-1	bis(2-Chloroethoxy)methane	9500.	U
120-83-2	2,4-Dichlorophenol	9500.	U
120-82-1	1,2,4-Trichlorobenzene	9500.	U
91-20-3	Naphthalene	9500.	U
106-47-8	4-Chloroaniline	9500.	U
87-68-3	Hexachlorobutadiene	9500.	U
59-50-7	4-Chloro-3-methylphenol	9500.	U
91-57-6	2-Methylnaphthalene	9500.	U
77-47-4	Hexachlorocyclopentadiene	9500.	U
88-06-2	2,4,6-Trichlorophenol	9500.	U
95-95-4	2,4,5-Trichlorophenol	48000.	U
91-58-7	2-Chloronaphthalene	9500.	U
88-74-4	2-Nitroaniline	48000.	U
131-11-3	Dimethylphthalate	9500.	U
208-96-8	Acenaphthylene	9500.	U
606-20-2	2,6-Dinitrotoluene	9500.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

CORE 39 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08311-E2

Sample wt/vol: 1.0500 (g/mL) G Lab File ID: >Y1109

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.57 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
99-09-2	3-Nitroaniline	48000.	U
83-32-9	Acenaphthene	9500.	U
51-28-5	2,4-Dinitrophenol	48000.	U
100-02-7	4-Nitrophenol	48000.	U
132-64-9	Dibenzofuran	9500.	U
121-14-2	2,4-Dinitrotoluene	9500.	U
84-66-2	Diethylphthalate	9500.	U
7005-72-3	4-Chlorophenyl-phenylether	9500.	U
86-73-7	Fluorene	9500.	U
100-01-6	4-Nitroaniline	48000.	U
534-52-1	4,6-Dinitro-2-methylphenol	48000.	U
86-30-6	N-Nitrosodiphenylamine (1)	9500.	U
101-55-3	4-Bromophenyl-phenylether	9500.	U
118-74-1	Hexachlorobenzene	9500.	U
87-86-5	Pentachlorophenol	48000.	U
85-01-8	Phenanthrene	9500.	U
120-12-7	Anthracene	9500.	U
84-74-2	Di-n-butylphthalate	9500.	U
206-44-0	Fluoranthene	9500.	U
129-00-0	Pyrene	9500.	U
85-68-7	Butylbenzylphthalate	9500.	U
91-94-1	3,3'-Dichlorobenzidine	19000.	U
56-55-3	Benzo(a)anthracene	9500.	U
218-01-9	Chrysene	9500.	U
117-81-7	bis(2-Ethylhexyl)phthalate	1700.	J
117-84-0	Di-n-octylphthalate	9500.	U
205-99-2	Benzo(b)fluoranthene	9500.	U
207-08-9	Benzo(k)fluoranthene	9500.	U
50-32-8	Benzo(a)pyrene	9500.	U
193-39-5	Indeno(1,2,3-cd)pyrene	9500.	U
53-70-3	Dibenz(a,h)anthracene	9500.	U
191-24-2	Benzo(g,h,i)perylene	9500.	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CORE 39 DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) SOIL Lab Sample ID: 92-08311-E2

Sample wt/vol: 1.0500 (g/mL) G Lab File ID: >Y1109

Level: (low/med) MED Date Received: 10/12/92

% Moisture: not dec.-- dec. -- Date Extracted: 11/11/92

Extraction: (Sepf/Cont/Sonc) SONC Date Analyzed: 12/11/92

GPC Cleanup: (Y/N) N pH: 10.57 Dilution Factor: 1.00000

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	1120214	Undecane	13.84	16000.	J
2.	112403	Dodecane	15.95	650000.	J
3.	629505	Tridecane	17.84	1500000.	J
4.	629594	Tetradecane	19.54	1100000.	J
5.	629629	Pentadecane	21.06	50000.	J
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2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: BATTELLE-PNL Contract: -------

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

Level: (low/med) MED

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	SBLKY11	106	110	104	107	108	98		0
02	CORE 39	114	114	110	115 *	115	117		1
03	CORE 39 DU	103	105	105	108	108	107		0
04	CORE 39 MS	117	109	109	118 *	119	113		1
05	CORE 39 MS	110	101	96	110	113	108		0
06	CORE 39	121 *	117 *	111	116 *	119	108		3
07	CORE 39 DU	111	109	107	111	115	103		0
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		QC LIMITS
S1 (NBZ)	= Nitrobenzene-d5	(23-120)
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)
S3 (TPH)	= Terphenyl-d14	(18-137)
S4 (PHL)	= Phenol-d5	(24-113)
S5 (2FP)	= 2-Fluorophenol	(25-121)
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)

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

FORM II SV-2 1/87 Rev.

FORM III SV-2 1/87 Rev.

3D
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:BATTELLE-PNL Contract:-------

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

Matrix Spike - EPA Sample No.: CORE 39 Level:(low/med) MED

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	194000.00	0.00	230000.00	119 *	26- 90
2-Chlorophenol	194000.00	0.00	230000.00	119 *	25-102
1,4-Dichlorobenzene	97000.00	0.00	104000.00	107 *	28-104
N-Nitroso-di-n-prop.(1)	97000.00	0.00	128000.00	132 *	41-126
1,2,4-Trichlorobenzene	97000.00	0.00	103000.00	106	38-107
4-Chloro-3-methylphenol	194000.00	0.00	218000.00	112 *	26-103
Acenaphthene	97000.00	0.00	106000.00	109	31-137
4-Nitrophenol	194000.00	0.00	131000.00	68	11-114
2,4-Dinitrotoluene	97000.00	0.00	102000.00	105 *	28- 89
Pentachlorophenol	194000.00	0.00	176000.00	91	17-109
Pyrene	97000.00	0.00	98800.00	102	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	209000.00	244000.00	117 *	2	35	26- 90
2-Chlorophenol	209000.00	237000.00	113 *	5	50	25-102
1,4-Dichlorobenzene	104000.00	105000.00	101	6	27	28-104
N-Nitroso-di-n-prop.(1)	104000.00	133000.00	128 *	3	38	41-126
1,2,4-Trichlorobenzene	104000.00	104000.00	100	6	23	38-107
4-Chloro-3-methylphenol	209000.00	223000.00	107 *	5	33	26-103
Acenaphthene	104000.00	105000.00	101	8	19	31-137
4-Nitrophenol	209000.00	107000.00	51	28	50	11-114
2,4-Dinitrotoluene	104000.00	102000.00	98 *	7	47	28- 89
Pentachlorophenol	209000.00	183000.00	88	3	47	17-109
Pyrene	104000.00	96300.00	93	9	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: 0 out of 11 outside limits
Spike Recovery: 11 out of 22 outside limits

COMMENTS: _____

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: BATTELLE-PNL Contract: -------

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

Lab File ID: >Y1103 Lab Sample ID: METHOD BLAN

Date Extracted 11/11/92 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 12/11/92 Time Analyzed: 13:00

Matrix: (soil/water) SOIL Level: (low/med) MED

Instrument ID: BNA2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	CORE 39	92-08309-E1	>Y1104	12/11/92
02	CORE 39 DUP	92-08309-E2	>Y1105	12/11/92
03	CORE 39 MS	92-08309-E3	>Y1106	12/11/92
04	CORE 39 MSD	92-08309-E4	>Y1107	12/11/92
05	CORE 39	92-08311-E1	>Y1108	12/11/92
06	CORE 39 DUP	92-08311-E2	>Y1109	12/11/92
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COMMENTS:

5B
SEMIVOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: BATTELLE-PNL Contract: -------

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

Lab File ID: >Y1101 DFTPP Injection Date: 12/11/92

Instrument ID: BNA2 DFTPP Injection Time: 11:00

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	42.7
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	54.
70	Less than 2.0% of mass 69	0.0(0.0)1
127	40.0 - 60.0% of mass 198	41.9
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	7.6
275	10.0 - 30.0% of mass 198	23.2
365	Greater than 1.00% of mass 198	2.70
441	Present, but less than mass 443	13.7
442	Greater than 40.0% of mass 198	95.4
443	17.0 - 23.0% of mass 442	17.8(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
01	SSTD050	CONT CALIB	>Y1102	12/11/92	11:34
02	SBLKY11	METHOD BLANK	>Y1103	12/11/92	13:00
03	CORE 39	92-08309-E1	>Y1104	12/11/92	13:57
04	CORE 39 DUP	92-08309-E2	>Y1105	12/11/92	14:55
05	CORE 39 MS	92-08309-E3	>Y1106	12/11/92	15:53
06	CORE 39 MSD	92-08309-E4	>Y1107	12/11/92	16:50
07	CORE 39	92-08311-E1	>Y1108	12/11/92	17:48
08	CORE 39 DUP	92-08311-E2	>Y1109	12/11/92	18:45
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6B
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name:BATTELLE-PNL Contract:-------

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

Instrument ID: BNA2 Calibration Date(s):11/05/92 ----

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>X0408 RRF50 =>X0407
RRF80 =>X0409 RRF120=>X0410 RRF160=>X0411

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Phenol *	1.464	1.414	1.479	1.545	1.475	1.476	3.2*
bis(2-Chloroethyl)ether	1.282	1.218	1.231	1.201	1.114	1.209	5.1
2-Chlorophenol	1.370	1.296	1.319	1.267	1.190	1.288	5.2
1,3-Dichlorobenzene	1.580	1.516	1.522	1.470	1.403	1.498	4.4
1,4-Dichlorobenzene *	1.575	1.521	1.539	1.474	1.400	1.502	4.5*
Benzyl alcohol	.774	.782	.816	.806	.769	.789	2.6
1,2-Dichlorobenzene	1.523	1.456	1.486	1.415	1.273	1.431	6.8
2-Methylphenol	1.086	1.025	1.048	1.016	.932	1.021	5.6
bis(2-chloroisopropyl)ether	1.159	1.141	1.179	1.208	1.172	1.172	2.1
4-Methylphenol	1.149	1.084	1.104	1.051	.951	1.068	7.0
N-Nitroso-di-n-propylamine #	.616	.636	.665	.637	.595	.630	4.2#
Hexachloroethane	.580	.592	.603	.561	.513	.570	6.2
Nitrobenzene	.355	.349	.365	.349	.346	.353	2.2
Isophorone	.714	.676	.717	.705	.691	.701	2.4
2-Nitrophenol *	.227	.228	.244	.245	.239	.236	3.7*
2,4-Dimethylphenol	.299	.282	.295	.289	.281	.289	2.7
Benzoic acid	0.000	.228	.259	.245	.241	.243	5.2
bis(2-Chloroethoxy)methane	.448	.423	.438	.420	.420	.430	3.0
2,4-Dichlorophenol *	.361	.336	.351	.340	.337	.345	3.1*
1,2,4-Trichlorobenzene	.410	.381	.399	.376	.364	.386	4.8
Naphthalene	1.051	.986	1.013	.970	.938	.992	4.3
4-Chloroaniline	.480	.461	.481	.462	.447	.466	3.1
Hexachlorobutadiene *	.230	.215	.223	.210	.204	.217	4.8*
4-Chloro-3-methylphenol *	.313	.307	.320	.306	.298	.309	2.6*
2-Methylnaphthalene	.711	.672	.676	.630	.600	.658	6.5
Hexachlorocyclopentadiene #	.380	.429	.479	.474	.460	.445	9.2#
2,4,6-Trichlorophenol *	.465	.474	.502	.489	.483	.483	3.0*
2,4,5-Trichlorophenol	0.000	.519	.536	.489	.483	.507	4.9
2-Chloronaphthalene	1.353	1.292	1.304	1.276	1.244	1.294	3.1
2-Nitroaniline	0.000	.360	.391	.391	.389	.383	4.0
Dimethylphthalate	1.612	1.564	1.640	1.642	1.602	1.612	2.0
Acenaphthylene	2.081	2.021	2.058	1.956	1.899	2.003	3.7
2,6-Dinitrotoluene	.342	.379	.410	.399	.382	.382	6.7
3-Nitroaniline	0.000	.406	.429	.430	.422	.422	2.6
Acenaphthene *	1.217	1.180	1.216	1.174	1.155	1.188	2.3*
2,4-Dinitrophenol #	0.000	.260	.304	.319	.316	.300	9.2#
4-Nitrophenol #	0.000	.219	.243	.234	.223	.230	4.6#

6C
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name:BATTELLE-PNL Contract:-------

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

Instrument ID: BNA2 Calibration Date(s):11/05/92 ----

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>X0408 RRF50 =>X0407
RRF80 =>X0409 RRF120=>X0410 RRF160=>X0411

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Dibenzofuran	1.805	1.770	1.834	1.749	1.707	1.773	2.3
2,4-Dinitrotoluene	.521	.559	.594	.603	.597	.575	6.0
Diethylphthalate	1.649	1.612	1.677	1.580	1.585	1.621	2.6
4-Chlorophenyl-phenylether	.726	.688	.720	.701	.700	.707	2.2
Fluorene	1.429	1.352	1.440	1.356	1.344	1.384	3.3
4-Nitroaniline	0.000	.429	.461	.465	.450	.451	3.5
4,6-Dinitro-2-methylphenol	0.000	.187	.207	.207	.201	.200	4.8
N-Nitrosodiphenylamine (1) *	.566	.519	.533	.513	.497	.525	4.9*
4-Bromophenyl-phenylether	.239	.228	.236	.227	.216	.229	3.9
Hexachlorobenzene	.283	.267	.277	.271	.262	.272	3.0
Pentachlorophenol *	0.000	.172	.169	.176	.167	.171	2.3*
Phenanthrene	1.120	1.057	1.062	1.004	.976	1.044	5.3
Anthracene	1.148	1.056	1.064	1.033	.989	1.058	5.5
Di-n-butylphthalate	1.455	1.425	1.449	1.401	1.335	1.413	3.4
Fluoranthene *	1.157	1.105	1.152	1.109	1.049	1.115	3.9*
Pyrene	1.493	1.469	1.531	1.661	1.539	1.539	4.8
Butylbenzylphthalate	.754	.797	.831	.879	.831	.818	5.7
3,3'-Dichlorobenzidine	.466	.442	.462	.516	.487	.475	6.0
Benzo(a)anthracene	1.311	1.296	1.338	1.450	1.345	1.348	4.5
Chrysene	1.303	1.286	1.318	1.410	1.338	1.331	3.6
bis(2-Ethylhexyl)phthalate	1.090	1.120	1.136	1.189	1.132	1.134	3.2
Di-n-octylphthalate *	1.697	1.751	1.814	1.682	1.649	1.718	3.8*
Benzo(b)fluoranthene	1.170	1.191	1.207	1.311	1.303	1.237	5.1
Benzo(k)fluoranthene	1.238	1.176	1.217	1.035	.944	1.122	11.1
Benzo(a)pyrene *	1.130	1.113	1.168	1.114	1.106	1.126	2.3*
Indeno(1,2,3-cd)pyrene	.947	1.003	1.088	1.272	1.253	1.112	13.1
Dibenz(a,h)anthracene	.905	.968	1.006	.977	.972	.966	3.6
Benzo(g,h,i)perylene	1.077	1.075	1.126	1.101	1.079	1.092	2.0
Nitrobenzene-d5	.330	.333	.364	.353	.346	.345	4.1
2-Fluorobiphenyl	1.451	1.374	1.422	1.385	1.364	1.399	2.6
Terphenyl-d14	1.100	1.058	1.119	1.185	1.112	1.115	4.1
Phenol-d5	1.365	1.325	1.404	1.374	1.291	1.352	3.3
2-Fluorophenol	1.193	1.190	1.226	1.209	1.165	1.197	1.9
2,4,6-Tribromophenol	.128	.124	.133	.129	.128	.128	2.6

(1) Cannot be separated from Diphenylamine

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/11/92 Time: 11:34

Lab File ID: >Y1102 Init. Calib. Date(s): 11/05/90 12/11/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Phenol	*	1.476	1.622	9.9	*
bis(2-Chloroethyl)ether		1.209	1.482	22.6	
2-Chlorophenol		1.288	1.353	5.1	
1,3-Dichlorobenzene		1.498	1.500	.1	
1,4-Dichlorobenzene	*	1.502	1.531	1.9	*
Benzyl alcohol		.789	.834	5.7	
1,2-Dichlorobenzene		1.431	1.455	1.7	
2-Methylphenol		1.021	1.099	7.6	
bis(2-chloroisopropyl)ether		1.172	1.593	36.0	
4-Methylphenol		1.068	1.174	9.9	
N-Nitroso-di-n-propylamine	#	.630	.820	30.2	#
Hexachloroethane		.570	.643	12.9	
Nitrobenzene		.353	.424	20.3	
Isophorone		.701	.796	13.7	
2-Nitrophenol	*	.236	.220	6.8	*
2,4-Dimethylphenol		.289	.292	1.0	
Benzoic acid		.243	.174	28.5	
bis(2-Chloroethoxy)methane		.430	.489	13.8	
2,4-Dichlorophenol	*	.345	.318	7.7	*
1,2,4-Trichlorobenzene		.386	.358	7.3	
Naphthalene		.992	1.011	2.0	
4-Chloroaniline		.466	.462	.8	
Hexachlorobutadiene	*	.217	.207	4.4	*
4-Chloro-3-methylphenol	*	.309	.324	4.8	*
2-Methylnaphthalene		.658	.652	.9	
Hexachlorocyclopentadiene	#	.445	.425	4.3	#
2,4,6-Trichlorophenol	*	.483	.429	11.0	*
2,4,5-Trichlorophenol		.507	.481	5.0	
2-Chloronaphthalene		1.294	1.249	3.4	
2-Nitroaniline		.383	.464	21.3	
Dimethylphthalate		1.612	1.499	7.0	
Acenaphthylene		2.003	1.966	1.8	
2,6-Dinitrotoluene		.382	.365	4.5	
3-Nitroaniline		.422	.384	9.0	
Acenaphthene	*	1.188	1.175	1.2	*
2,4-Dinitrophenol	#	.300	.174	42.0	#
4-Nitrophenol	#	.230	.223	2.7	#

7C
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/11/92 Time: 11:34

Lab File ID: >Y1102 Init. Calib. Date(s): 11/05/90 12/11/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Dibenzofuran		1.773	1.703	3.9	
2,4-Dinitrotoluene		.575	.530	7.8	
Diethylphthalate		1.521	1.576	2.8	
4-Chlorophenyl-phenylether		.707	.659	6.8	
Fluorene		1.384	1.311	5.3	
4-Nitroaniline		.451	.399	11.7	
4,6-Dinitro-2-methylphenol		.200	.117	41.4	
N-Nitrosodiphenylamine (1)	*	.525	.499	5.1	*
4-Bromophenyl-phenylether		.229	.234	2.2	
Hexachlorobenzene		.272	.303	11.5	
Pentachlorophenol	*	.171	.160	6.6	*
Phenanthrene		1.044	1.044	.0	
Anthracene		1.058	1.058	.0	
Di-n-butylphthalate		1.413	1.427	1.0	
Fluoranthene	*	1.115	1.093	1.9	*
Pyrene		1.539	1.403	8.8	
Butylbenzylphthalate		.818	.743	9.2	
3,3'-Dichlorobenzidine		.475	.344	27.5	
Benzo(a)anthracene		1.348	1.203	10.7	
Chrysene		1.331	1.231	7.5	
bis(2-Ethylhexyl)phthalate		1.134	1.061	6.4	
Di-n-octylphthalate	*	1.718	1.601	6.8	*
Benzo(b)fluoranthene		1.237	1.090	11.8	
Benzo(k)fluoranthene		1.122	1.145	2.0	
Benzo(a)pyrene	*	1.126	1.032	8.4	*
Indeno(1,2,3-cd)pyrene		1.112	1.053	5.3	
Dibenz(a,h)anthracene		.966	1.011	4.7	
Benzo(g,h,i)perylene		1.092	1.114	2.1	
Nitrobenzene-d5		.345	.407	17.9	
2-Fluorobiphenyl		1.399	1.330	5.0	
Terphenyl-d14		1.115	1.035	7.1	
Phenol-d5		1.352	1.663	23.0	
2-Fluorophenol		1.197	1.366	14.2	
2,4,6-Tribromophenol		.128	.176	36.9	

(1) Cannot be separated from Diphenylamine

8B
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name:BATTELLE-PNL Contract:-----

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

Lab File ID (Standard): >Y1102 Date Analyzed:12/11/92

Instrument ID: BNA2 Time Analyzed: 11:34

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	35181.	11.73	121257.	15.64	62320.	20.89
	UPPER LIMIT	70362.		242514.		124640.	
	LOWER LIMIT	17591.		60629.		31160.	
	EPA SAMPLE NO.						
01	SBLKY11	36638.	11.73	126704.	15.64	62920.	20.88
02	CORE 39	44386.	11.73	157926.	15.64	79324.	20.90
03	CORE 39 DUP	42493.	11.73	151881.	15.64	76952.	20.89
04	CORE 39 MS	38336.	11.75	140772.	15.65	73919.	20.90
05	CORE 39 MSD	38814.	11.75	143500.	15.64	76881.	20.90
06	CORE 39	43098.	11.73	149659.	15.64	76510.	20.89
07	CORE 39 DUP	40081.	11.73	143165.	15.63	75435.	20.89
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

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

Column used to flag internal standard area values with an asterisk

FORM VIII SV-1 1/87 Rev.

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: -----

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

Lab File ID (Standard): >Y1102 Date Analyzed: 12/11/92

Instrument ID: BNA2 Time Analyzed: 11:34

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS3(PRY) AREA #	RT
	12 HOUR STD	110649.	25.29	89739.	33.14	104732.	37.05
	UPPER LIMIT	221298.		179478.		209464.	
	LOWER LIMIT	55325.		44870.		52366.	
	EPA SAMPLE NO.						
01	SBLKY11	112851.	25.29	96373.	33.12	112510.	37.04
02	CORE 39	141654.	25.28	127307.	33.14	142531.	37.05
03	CORE 39 DUP	140806.	25.28	120828.	33.13	144732.	37.05
04	CORE 39 MS	134775.	25.29	119579.	33.13	139908.	37.05
05	CORE 39 MSD	140443.	25.29	128582.	33.13	147765.	37.05
06	CORE 39	143138.	25.28	126542.	33.13	149072.	37.04
07	CORE 39 DUP	134917.	25.28	119040.	33.13	139661.	37.04
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%
of internal stansard 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.

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WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

CORE 39

Sample Analysis Raw Data

E03-517

904

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Due to the large volume,
a copy of the data
supporting the Data
Validation Report and
the Sample Data Summary,

Pages E03-518 thru E03-714,

is available only from
Central Files.

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ORGANICS ANALYSIS BENCH SHEET

Battelle Memorial Institute Pacific Northwest Laboratories	EXTRACTION METHOD	DATE	EXTRACTION ANALYST	ANALYSIS METHOD	ANALYST
JOB NAME: SST-TT166, 164, 16	P04-21-20	11-4-92	MJL		
MATRIX: Sludge					

SAMPLE NUMBER	WEIGHT VOLUME	H2SO4 1:10	Spike	CH2Cl2		FINAL SOLVENT	FINAL VOLUME
92-8303 E1	.9446	148		8 ml		CH2Cl2	1ml
E2	1.008	158		8 ml			
E3	1.0276	161	X	7.8ml			
E4	1.0855	170	X	7.8ml			
928305 E1	.9736	155		8 ml			
" E2	1.0730	171					
928307 E1	1.0098	88					
E2	.9517	83					
E3	1.0694	94	X	7.8ml			
E4	.9880	86	X	7.8ml			
92-8309 E1	.9394	119		8 ml			
E2	1.2502	158		8 ml			
E3	1.0340	130	X	7.8ml			
E4	.9580	121	X	7.8ml			
92-8311 E1	1.0031	140		8 ml			
E2	1.0500	148					
Blank 6	0	0					

Blank sonicated prior to all samples
All samples should come to room temp
involved multiple layer/floc/solids when H2SO4 added

SURROGATE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)	SPIKE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)
Bromobenzene	1000	5-2501-35-18	100	Acid	100	5-2501-22-32	2000
Acid	1000	5-2501-38-17	200	Bromobenzene	100	5-2501-22-33	1000

COMMENTS: all very wet used 3g Sodium Sulfate
all mixed well 8307 & 8309 very foaming after initial
setting before CH_2Cl_2 - 8307 E4 - 11 fell had a
small amount of a floating phase (droplets
on the CH_2Cl_2 - All samples very hard
on fall from 8307 out 8307-E2 bottle [illegible]

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL
DNL-A10-120	11-11-92	Spent		700 #16		

the samples were refrigerated overnight at the 5ml level in vac. vessel with ground glass stoppers.

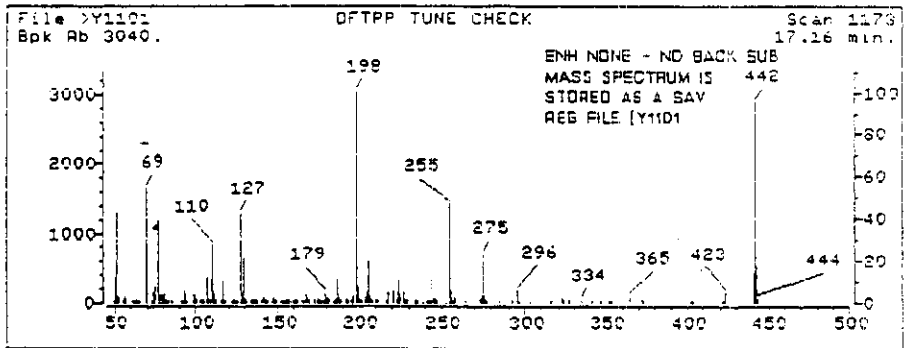
A quick rinse of the stopper into the existing aliquot resulted in a cloudy appearance which disappeared with heating.

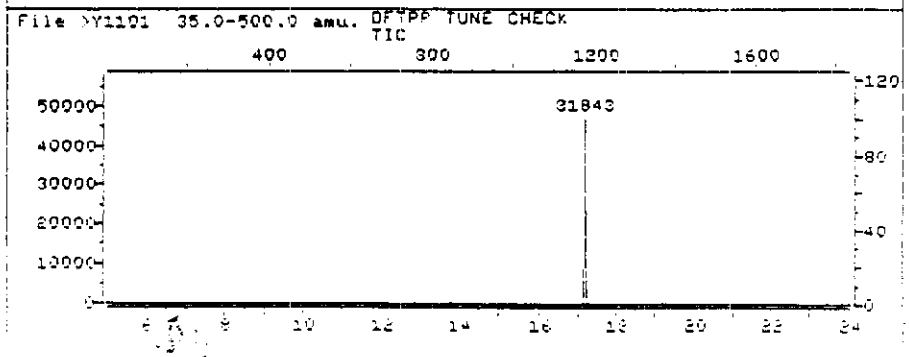
GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphosphine (DFTPP

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriate Peak	Status
51	30-60% of mass 198	42.73	42.73	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	54.24	54.24	Ok
70	Less than 2% of mass 69	0.00	0.00	Ok
127	40-60% of mass 198	41.94	41.94	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	7.63	7.63	Ok
275	10-30% of mass 198	23.19	23.19	Ok
365	Greater than 1% of mass 198	2.70	2.70	Ok
441	0-100% of mass 443	13.68	76.75	Ok
442	Greater than 40% of mass 198	95.43	95.43	Ok
443	17-23% of mass 442	17.83	18.68	Ok

Injection Date: 12/11/92
Injection Time: 11:00
Data File: >Y1101
Scan: 1173

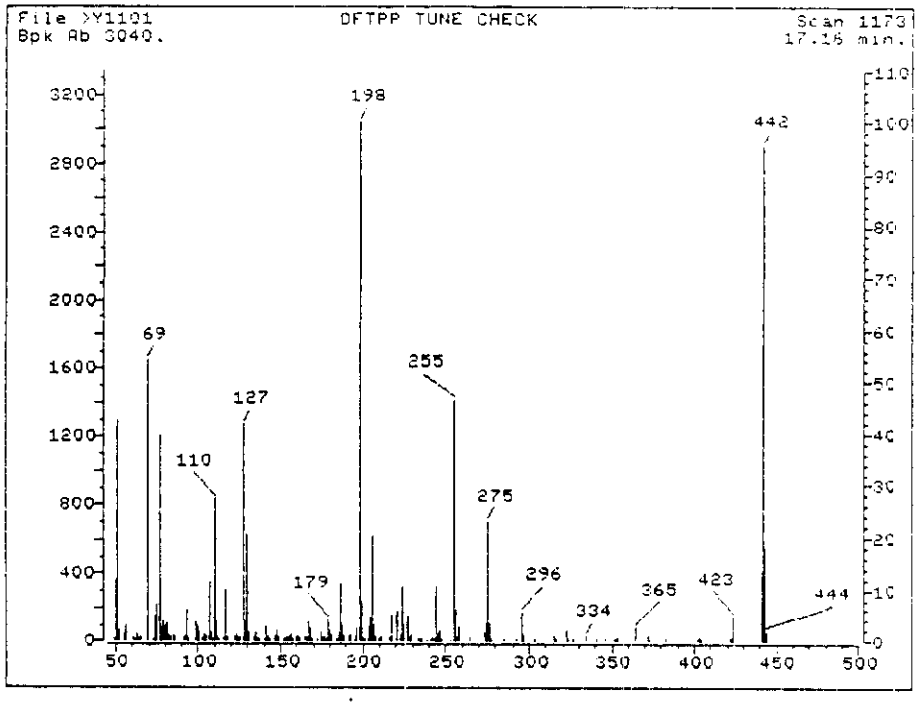




E03-520

907

Instrument ID: BNA2 Analyzed on: 12/11/92 11:00



Instrument ID: BNA2 Analyzed on: 12/11/92 11:00

>Y1101 DFTPP TUNE CHECK
1173 NRM

File: >Y1101 Scan #: 1173 Retn. time: 17.16

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
38.10	.724	104.05	1.316	156.05	1.579	204.05	2.697	274.95	23 .91
39.10	4.079	105.05	.987	157.15	.428	204.95	4.507	275.95	3.487
49.00	.395	107.05	11.743	157.85	.461	206.05	20.296	276.95	1.678
50.10	11.941	108.05	1.875	160.05	.658	207.05	3.092	277.95	[illegible]
51.10	42.730	108.95	.559	161.05	1.118	208.05	.724	285.05	[illegible]
52.00	2.007	110.05	27.368	162.05	.395	209.95	.296	292.90	.592
55.00	.395	111.05	3.750	164.95	.757	210.95	.822	296.00	5.625
56.00	1.579	112.05	.526	166.15	.658	215.95	.691	297.00	1.053
57.00	3.224	116.05	.724	166.95	3.947	217.05	5.132	303.00	.526
61.10	.658	117.05	9.934	168.05	2.401	217.95	.757	315.00	.954
62.20	.592	118.05	.855	169.05	.329	220.95	5.921	316.00	.526
63.00	1.579	122.05	.954	172.15	.395	223.05	1.579	323.00	2.204
64.10	.362	123.05	1.579	174.05	.921	224.05	10.526	324.10	.461
65.10	.757	124.05	.691	175.05	1.875	225.05	3.026	327.10	.461
69.00	54.243	124.95	.822	176.05	.658	227.05	4.868	334.1[illegible]	[illegible]
73.00	.592	127.05	41.941	176.95	.691	228.15	.691	334.90	.296
74.10	4.704	128.05	3.849	178.05	.296	228.95	.954	341.00	.263
75.00	7.072	129.05	20.757	178.95	4.079	233.95	.461	345.80	.562
77.10	39.507	130.05	1.612	180.05	2.171	234.95	.296	352.10	.559
78.10	2.829	130.95	.395	181.05	1.118	235.85	.296	353.00	.461
79.00	3.783	134.05	.691	183.95	.296	238.95	.197	354.10	.658
80.00	2.928	135.05	1.645	184.95	1.612	241.05	.526	364.90	2.697
81.00	3.586	136.05	.559	186.05	11.086	241.95	.724	372.00	1.184
82.00	.954	136.95	.559	187.05	3.257	243.15	.526	373.10	.395
83.00	.625	139.75	.230	187.95	.461	244.05	10.395	383.10	.461
85.10	.987	140.25	.263	189.05	.789	244.95	1.349	402.10	.461
86.00	.921	140.95	2.697	191.25	.263	245.95	2.105	403.00	.691
91.00	.822	142.05	.921	192.05	1.086	247.05	.395	404.00	.296
92.10	.954	142.95	.592	193.05	1.020	252.85	.197	421.00	.658
93.00	6.020	147.05	1.184	195.25	.230	254.95	46.414	422.00	.592
94.10	.493	148.05	2.270	196.05	2.796	256.05	6.020	423.00	4.704
98.05	3.849	149.05	.921	197.95	100.000	256.95	.724	424.00	1.349
99.05	3.224	152.05	.263	198.95	7.632	257.95	2.697	441.00	13.684
99.95	.461	153.05	.888	199.95	.461	264.95	.822	442.00	95.428
101.05	1.678	154.05	.691	201.35	.428	272.95	1.678	443.00	17.829
103.05	.691	154.95	1.151	203.05	.559	273.95	3.454	444.10	1.375

Instrument ID: BNA2 Analyzed on: 12/11/92 11:00

QUANT REPORT Page 1

Operator ID: BOB
Output File: >Y1102::OF
Data File: >Y1102::D2
Name: CONTINUING CALIB
Misc:

Quant Rev: 7 Quant Time: 921211 12:21
Injected at: 921211 11:34
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 1

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40 Last Qcal Time: 921208 13:13

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	712	35181	40.00	ng/uL	97
2)	2-Fluorophenol	7.05	264	120159	97.95	ng/uL	94
3)	Phenol-d5	10.80	623	146301	96.64	ng/uL	96
4)	Phenol	10.84	627	71340	49.34	ng/uL	89
5)	bis(2-Chloroethyl)ether	11.06	648	65181	50.66	ng/uL	97
6)	2-Chlorophenol	11.04	646	59523	48.63	ng/uL	98
7)	1,3-Dichlorobenzene	11.52	692	65952	50.28	ng/uL	98
8)	1,4-Dichlorobenzene	11.78	717	67324	49.49	ng/uL	98
9)	Benzyl alcohol	12.30	766	36698	48.93	ng/uL	97
10)	1,2-Dichlorobenzene	12.23	760	63983	50.08	ng/uL	98
11)	2-Methylphenol	12.72	806	48325	48.15	ng/uL	97
12)	bis(2-Chloroisopropyl)ether	12.79	813	70061	58.90	ng/uL	93
13)	4-Methylphenol	13.22	854	51607	47.95	ng/uL	97
14)	N-Nitroso-di-n-propylamine	13.18	850	36074	52.57	ng/uL	96
15)	Hexachloroethane	13.27	859	28280	49.15	ng/uL	97
16)	*Naphthalene-d8	15.64	1086	121257	40.00	ng/uL	96
17)	Nitrobenzene-d5	13.50	881	61727	50.64	ng/uL	93
18)	Nitrobenzene	13.55	886	64336	50.84	ng/uL	97
19)	Isophorone	14.36	963	120694	49.94	ng/uL	98
20)	2-Nitrophenol	14.52	979	33420	50.67	ng/uL	92
21)	2,4-Dimethylphenol	14.82	1007	44279	47.39	ng/uL	98
22)	Benzoic acid	15.33	1056	26597	44.88	ng/uL	93
23)	bis(2-Chloroethoxy)methane	15.12	1036	74147	50.04	ng/uL	95
24)	2,4-Dichlorophenol	15.28	1051	48259	50.56	ng/uL	97
25)	1,2,4-Trichlorobenzene	15.50	1072	54215	52.46	ng/uL	96
26)	Naphthalene	15.71	1092	153258	47.79	ng/uL	97
27)	4-Chloroaniline	15.95	1115	70091	49.11	ng/uL	96
28)	Hexachlorobutadiene	16.16	1135	31396	58.69	ng/uL	97
29)	4-Chloro-3-methylphenol	17.50	1264	49045	50.14	ng/uL	95
30)	2-Methylnaphthalene	17.81	1293	98790	49.55	ng/uL	94
31)	*Acenaphthene-d10	20.89	1588	62320	40.00	ng/uL	97
32)	Hexachlorocyclopentadiene	18.30	1340	33136	58.36	ng/uL	98
33)	2,4,6-Trichlorophenol	18.70	1378	33458	49.09	ng/uL	90
34)	2,4,5-Trichlorophenol	18.77	1385	37489	51.00	ng/uL	89
35)	2-Chloronaphthalene	19.24	1430	97329	47.98	ng/uL	96
36)	2-Fluorobiphenyl	18.98	1405	103598	48.44	ng/uL	97
37)	2-Nitroaniline	19.62	1466	36160	51.39	ng/uL	95
38)	Dimethylphthalate	20.29	1530	116748	47.86	ng/uL	97
39)	Acenaphthylene	20.45	1546	153145	47.64	ng/uL	99
40)	2,6-Dinitrotoluene	20.41	1542	28443	49.51	ng/uL	89

QUANT REPORT Page 2

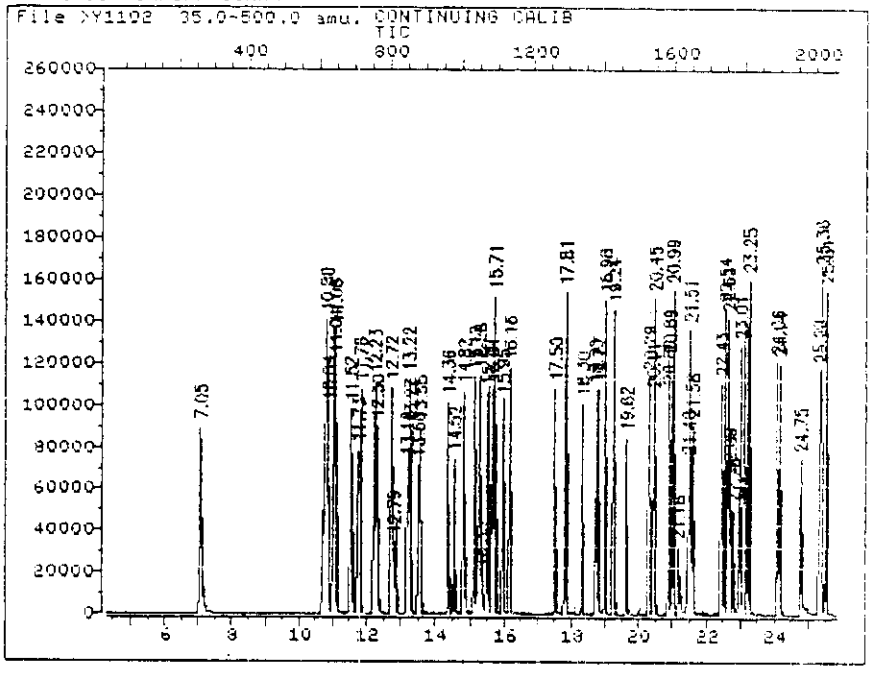
Operator ID: BOB Quant Rev: 7 Quant Time: 921211 12:21
Output File: ^Y1102::DF Injected at: 921211 11:34
Data File: >Y1102::D2 Dilution Factor: 1.00000
Name: CONTINUING CALIB Instrument ID: BNA2
Misc: BTL# 1

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40 Last Qcal Time: 921208 13:13

	Compound	R.T.	Scan#	Area	Conc	Units	q
41)	3-Nitroaniline	20.86	1585	29884	46.11	ng/uL	96
42)	Acenaphthene	20.99	1597	91511	48.90	ng/uL	99
43)	2,4-Dinitrophenol	21.18	1615	13541	44.19	ng/uL	94
44)	4-Nitrophenol	21.46	1642	17405	48.91	ng/uL	96
45)	Dibenzofuran	21.51	1647	132684	48.06	ng/uL	88
46)	2,4-Dinitrotoluene	21.58	1654	41297	49.52	ng/uL	96
47)	Diethylphthalate	22.43	1735	122766	48.35	ng/uL	94
48)	4-Chlorophenyl-phenylether	22.63	1754	51336	50.59	ng/uL	89
49)	Fluorene	22.54	1745	102103	47.91	ng/uL	99
50)	4-Nitroaniline	22.69	1760	31055	44.84	ng/uL	96
51)	*Phenanthrene-d10	25.29	2008	110649	40.00	ng/uL	99
52)	4,6-Dinitro-2-methylphenol	22.78	1768	16232	35.49	ng/uL	91
53)	N-Nitrosodiphenylamine	23.01	1790	68984	46.99	ng/uL	98
54)	2,4,6-Tribromophenol	23.25	1813	48622	133.19	ng/uL	98
55)	4-Bromophenyl-phenylether	24.06	1891	32391	57.27	ng/uL	98
56)	Hexachlorobenzene	24.14	1898	41950	61.23	ng/uL	92
57)	Pentachlorophenol	24.75	1957	22093	52.83	ng/uL	94
58)	Phenanthrene	25.36	2015	144409	48.00	ng/uL	96
59)	Anthracene	25.51	2029	146358	47.86	ng/uL	98
60)	Di-n-butylphthalate	27.34	2204	197415	45.73	ng/uL	97
61)	Fluoranthene	28.88	2351	151147	49.86	ng/uL	96
62)	*Chrysene-d12	33.14	2759	89739	40.00	ng/uL	87
63)	Pyrene	29.52	2413	157403	47.69	ng/uL	97
64)	Terphenyl-d14	30.16	2474	116140	48.80	ng/uL	93
65)	Butylbenzylphthalate	31.77	2628	83370	41.74	ng/uL	96
66)	3,3'-Dichlorobenzidine	33.15	2760	38614	47.96	ng/uL	99
67)	Benzo(a)anthracene	33.11	2756	134960	46.48	ng/uL	98
68)	Chrysene	33.23	2767	138110	48.02	ng/uL	97
69)	Bis(2-Ethylhexyl)phthalate	33.59	2802	118997	43.02	ng/uL	97
70)	*Perylene-d12	37.05	3132	104732	40.00	ng/uL	95
71)	Di-n-octylphthalate	35.44	2978	209644	41.00	ng/uL	98
72)	Benzo(b)fluoranthene	36.09	3040	142737	45.38	ng/uL	96
73)	Benzo(k)fluoranthene	36.16	3047	149859	49.44	ng/uL	91
74)	Benzo(a)pyrene	36.89	3117	135108	45.53	ng/uL	94
75)	Indeno(1,2,3-cd)pyrene	40.30	3442	135958	48.37	ng/uL	91
76)	Dibenz(a,h)anthracene	40.43	3454	132317	51.21	ng/uL	99
77)	Benzo(g,h,i)perylene	41.26	3533	145849	50.97	ng/uL	94

* Compound is ISTD

TOTAL ION CHROMATOGRAM



Data File: >Y1102::D2
Name: CONTINUING CALIB
Misc:

Quant Output File: >Y1102::QF
Instrument ID: BNA2

BTL# 1

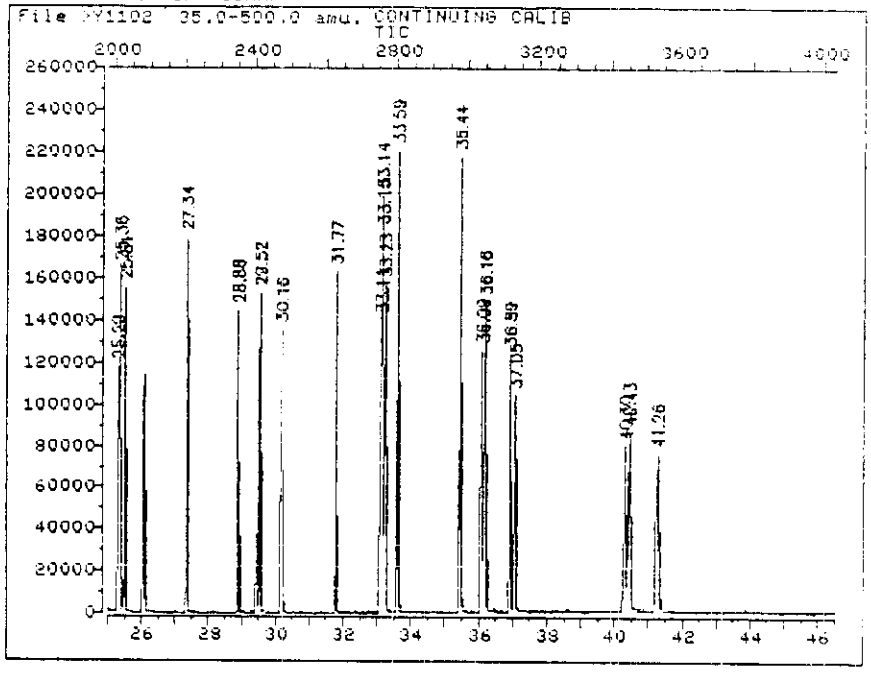
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921208 13:13

Operator ID: BOB
Quant Time : 921211 12:21
Injected at: 921211 11:34

Page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >Y1102::D2
Name: CONTINUING CALIB
Misc:

Quant Output File: ^Y1102::QF
Instrument ID: BNA2

BTL# 1

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921208 13:13

Operator ID: BOB
Quant Time : 921211 12:21
Injected at: 921211 11:34

Page 2 of 2

[CCC AND SPCC DAILY CALIBRATION CHECK OPERATOR REPORT BNA'S]

DATA FILE NAME = SY1102::D2
DATE AND TIME OF ANALYSIS = 12/11/92 11:34
SAMPLE = CONTINUING CALIB
MISCELLANEOUS =
METHOD = BNAMEI
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

CCC COMPOUND	DAILY CAL RF	5-POINT AVE RF	%D
Pentachlorophenol	.1597	.1710	6.59
1,4-Dichlorobenzene	1.5309	1.5019	1.93
2-Nitrophenol	.2205	.2365	6.77
2,4-Dichlorophenol	.3184	.3449	8.33
Hexachlorobutadiene	.2071	.2167	4.41
4-Chloro-3-methylphenol	.3236	.3087	4.82
2,4,6-Trichlorophenol	.4295	.4826	11.00
Acenaphthene	1.1747	1.1884	1.15
N-Nitrosodiphenylamine	.4988	.5294	5.07
Fluoranthene	1.0928	1.1145	1.95
Di-n-octylphthalate	1.6014	1.7184	6.81
Benzo(a)pyrene	1.0320	1.1261	8.36
Phenol	1.6222	1.4755	9.94

SPCC COMPOUND	DAILY RF
N-Nitroso-di-n-propylamine	.8203
Hexachlorocyclopentadiene	.4254
2,4-Dinitrophenol	.1738
4-Nitrophenol	.2234

DAILY CALIBRATION FOR BNA'S PASSED ALL CCC AND SPCC CRITERIA

THE RF AND RT VALUES WILL AUTOMATICALLY BE UPDATED IN YOUR IDFILE

E03-527

[RRT AND RF DAILY CALIBRATION GC/MS OPERATOR REPORT BNA'S PAGE 1]

DATA FILE NAME = >Y1102::D2
DATE AND TIME OF ANALYSIS = 12/11/92 11:34
SAMPLE = CONTINUING CALIB
MISCELLANEOUS =
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

Compound Name	Retention Times: RRT FOUND	RRT IN THE IDFILE	RT DIFF-ERENCE	Response factors: RF FOUND	AVE. RF FROM 5-POINT	RATIO RF FOUND TO RF IN IDFILE
bis(2-Chloroethyl)ether	.94295	.94407	-.0668	1.4822	1.2091	1.0132
1,3-Dichlorobenzene	.98217	.98312	-.0671	1.4997	1.4982	1.0056
Benzyl alcohol	1.0481	1.0488	-.0676	.83450	.7895	.97850
1,2-Dichlorobenzene	1.0428	1.0435	-.0676	1.4549	1.4305	1.0015
2-Methylphenol	1.0838	1.0843	-.0678	1.0989	1.0213	.96299
bis(2-Chloroisopropyl)ether	1.0900	1.0896	-.0575	1.5932	1.1718	1.1780
4-Methylphenol	1.1265	1.1269	-.0682	1.1735	1.0677	.95503
Hexachloroethane	1.1310	1.1314	-.0681	.64307	.5698	.98296
Nitrobenzene	.86629	.86736	-.0685	.42446	.3527	1.0167
Isophorone	.91770	.91798	-.0591	.79629	.7006	.99973
2-Nitrophenol	.92840	.92931	-.0698	.22049	.2365	1.0134
2,4-Dimethylphenol	.94712	.94797	-.0699	.29213	.2892	.94780
Benzoic acid	.97991	.98198	-.0910	.17548	.2433	.89759
bis(2-Chloroethoxy)methane	.96651	.96662	-.0595	.48919	.4299	1.0309
2,4-Dichlorophenol	.97655	.97730	-.0701	.31839	.3449	1.0111
Naphthalene	1.0040	1.0040	-.0597	1.0111	.9915	.95588
4-Chloroaniline	1.0194	1.0200	-.0703	.46243	.4661	.98215
Hexachlorobutadiene	1.0328	1.0327	-.0601	.20714	.2167	1.1738
2-Methylnaphthalene	1.1383	1.1379	-.0615	.65177	.6578	.99100
Hexachlorocyclopentadiene	.87583	.87610	-.0622	.42537	.4445	1.1572
2,4,6-Trichlorophenol	.89486	.89458	-.0517	.42950	.4826	.98186
2,4,5-Trichlorophenol	.89838	.89859	-.0622	.48125	.5067	1.0199
2-Chloronaphthalene	.92095	.92110	-.0625	1.2494	1.2938	.95950
2-Nitroaniline	.93895	.93907	-.0629	.46418	.3826	1.0273
Dimethylphthalate	.97096	.97102	-.0638	1.4987	1.6121	.95724
Acenaphthylene	.97899	.97903	-.0639	1.9659	2.0029	.95288
2,6-Dinitrotoluene	.97698	.97702	-.0639	.36512	.3824	.99027
3-Nitroaniline	.99849	.99849	-.0643	.38362	.4217	.92212
2,4-Dinitrophenol	1.0135	1.0135	-.0645	.17383	.2998	.83572
Dibenzofuran	1.0296	1.0295	-.0648	1.7033	1.7731	.96110
Diethylphthalate	1.0736	1.0729	-.0553	1.5759	1.6207	.96702
4-Chlorophenyl-phenylether	1.0831	1.0825	-.0555	.65900	.7070	[illegible]
Fluorene	1.0786	1.0780	-.0554	1.3107	1.3340	.95313
4-Nitroaniline	1.0862	1.0860	-.0660	.39865	.4515	.83671
4,6-Dinitro-2-methylphenol	.90063	.90119	-.0601	.11776	.2002	[illegible]
N-Nitrosodiphenylamine	.90975	.90988	-.0578	.49876	[illegible]	[illegible]
4-Bromophenyl-phenylether	.95165	.95161	-.0566	.23419	[illegible]	[illegible]
Hexachlorobenzene	.95447	.95453	-.0567	.39770	[illegible]	[illegible]
Phenanthrene	1.0029	1.0029	[illegible]	1.0441	[illegible]	[illegible]
Anthracene	1.0087	1.0091	[illegible]	[illegible]	[illegible]	[illegible]

[RRT AND RF DAILY CALIBRATION GC/MS OPERATOR REPORT BNA'S PAGE 2]

DATA FILE NAME = >Y1102::D2
DATE AND TIME OF ANALYSIS = 12/11/92 11:34
SAMPLE = CONTINUING CALIB
MISCELLANEOUS =
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

Compound Name	Retention Times: RRT FOUND	RRT IN THE IDFILE	RT DIFF-ERENCE	Response factors: RF FOUND	AVE. RF FROM 5-POINT	RATIO RF FOUND TO RF IN IDFILE
Di-n-butylphthalate	1.0811	1.0809	-.0591	1.4273	1.4132	.91452
Fluoranthene	1.1418	1.1420	-.0712	1.0928	1.1145	.99711
Butylbenzylphthalate	.95864	.95841	-.0627	.74322	.8182	.83482
3,3'-Dichlorobenzidine	1.0003	1.0000	-.0627	.34423	.4745	.95923
Benzo(a)anthracene	.99904	.99872	-.0627	1.2031	1.3480	.92956
Chrysene	1.0026	1.0022	-.0628	1.2312	1.3309	.96031
Bis(2-Ethylhexyl)phthalate	1.0136	1.0130	-.0527	1.0608	1.1337	.86037
Di-n-octylphthalate	.95638	.95588	-.0532	1.6014	1.7184	.81998
Benzo(b)fluoranthene	.97392	.97367	-.0637	1.0903	1.2365	.90757
Benzo(k)fluoranthene	.97591	.97595	-.0743	1.1447	1.1223	.98889
Benzo(a)pyrene	.99573	.99573	-.0746	1.0320	1.1261	.91059
Indeno(1,2,3-cd)pyrene	1.0877	1.0883	-.1045	1.0385	1.1125	.967[illegible]
Dibenz(a,h)anthracene	1.0911	1.0920	-.1150	1.0107	.9656	1.02[illegible]
Benzo(g,h,i)perylene	1.1135	1.1147	-.1249	1.1141	1.0915	1.019[illegible]
Phenol	.92421	.92541	-.0666	1.6222	1.4755	.98673
2-Chlorophenol	.94116	.94318	-.0773	1.3535	1.2883	.97262
1,4-Dichlorobenzene	1.0045	1.0053	-.0673	1.5309	1.5019	.98974
N-Nitroso-di-n-propylamine	1.1230	1.1233	-.0682	.82031	.6299	1.0514
1,2,4-Trichlorobenzene	.99062	.99132	-.0702	.35769	.3859	1.0491
4-Chloro-3-methylphenol	1.1189	1.1179	-.0507	.32358	.3087	1.0029
Acenaphthene	1.0045	1.0045	-.0645	1.1747	1.1884	.97798
4-Nitrophenol	1.0271	1.0270	-.0647	.22343	.2297	.97813
2,4-Dinitrotoluene	1.0331	1.0325	-.0543	.53013	.5748	.99045
Pentachlorophenol	.97884	.97889	-.0577	.15973	.1710	1.0565
Pyrene	.89084	.89071	-.0611	1.4032	1.5386	.95384
2-Fluorophenol	.60132	.60568	-.0856	1.3662	1.1965	.97951
Phenol-d5	.92064	.92185	-.0666	1.6634	1.3519	.96640
Nitrobenzene-d5	.86295	.86336	-.0579	.40725	.3453	1.0127
2-Fluorobiphenyl	.90842	.90861	-.0624	1.3299	1.3992	.96880
2,4,6-Tribromophenol	.91930	.91941	-.0559	.17577	.1284	1.3719
Terphenyl-d14	.91008	.90993	-.0618	1.0354	1.1149	.97591

QUANT REPORT

Operator ID: BOB
Output File: ^Y1102::QF
Data File: ^1102::D2

Quant Rev: 7 Quant Time: 921211 12:[illegible]
Injected at: 921211 11:[illegible]
Dilution Factor: 1.00000

Name: CONTINUING CALIB Instrument ID: BNA2
Vial: ETL# 1

ID File: 102BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921109 16:40 Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	712	35181	40.00	ng/uL	97
2)	2-Fluorophenol	7.05	264	120159	100.00	ng/uL	94
3)	Phenol-d5	10.80	623	146301	100.00	ng/uL	96
4)	Phenol	10.84	627	71340	50.00	ng/uL	89
5)	bis(2-Chloroethyl)ether	11.06	648	65181	50.00	ng/uL	97
6)	2-Chlorophenol	11.04	646	59523	50.00	ng/uL	98
7)	1,3-Dichlorobenzene	11.52	692	65952	50.00	ng/uL	98
8)	1,4-Dichlorobenzene	11.78	717	67324	50.00	ng/uL	98
9)	Benzyl alcohol	12.30	766	36698	50.00	ng/uL	97
10)	1,2-Dichlorobenzene	12.23	760	63983	50.00	ng/uL	98
11)	2-Methylphenol	12.72	806	48325	50.00	ng/uL	97
12)	bis(2-Chloroisopropyl)ether	12.79	813	70061	50.00	ng/uL	93
13)	4-Methylphenol	13.22	854	51607	50.00	ng/uL	97
14)	N-Nitroso-di-n-propylamine	13.18	850	36073	50.00	ng/uL	96
15)	Hexachloroethane	13.27	859	28280	50.00	ng/uL	97
16)	*Naphthalene-d8	15.64	1086	121257	40.00	ng/uL	96
17)	Nitrobenzene-d5	13.50	881	61727	50.00	ng/uL	93
18)	Nitrobenzene	13.55	886	64336	50.00	ng/uL	97
19)	Isophorone	14.36	963	120694	50.00	ng/uL	98
20)	2-Nitrophenol	14.52	979	33420	50.00	ng/uL	92
21)	2,4-Dimethylphenol	14.82	1007	44279	50.00	ng/uL	98
22)	Benzoic acid	15.33	1056	26370	49.57	ng/uL	93
23)	bis(2-Chloroethoxy)methane	15.12	1036	74147	50.00	ng/uL	95
24)	2,4-Dichlorophenol	15.28	1051	48259	50.00	ng/uL	97
25)	1,2,4-Trichlorobenzene	15.50	1072	54215	50.00	ng/uL	96
26)	Naphthalene	15.71	1092	153258	50.00	ng/uL	97
27)	4-Chloroaniline	15.95	1115	70091	50.00	ng/uL	96
28)	Hexachlorobutadiene	16.16	1135	31396	50.00	ng/uL	97
29)	4-Chloro-3-methylphenol	17.50	1264	49045	50.00	ng/uL	95
30)	2-Methylnaphthalene	17.81	1293	98790	50.00	ng/uL	94
31)	*Acenaphthene-d10	20.89	1588	62320	40.00	ng/uL	97
32)	Hexachlorocyclopentadiene	18.30	1340	33136	50.00	ng/uL	98
33)	2,4,6-Trichlorophenol	18.70	1378	33458	50.00	ng/uL	90
34)	2,4,5-Trichlorophenol	18.77	1385	37489	50.00	ng/uL	89
35)	2-Chloronaphthalene	19.24	1430	97329	50.00	ng/uL	96
36)	2-Fluorobiphenyl	18.98	1405	103598	50.00	ng/uL	97
37)	2-Nitroaniline	19.62	1466	36160	50.00	ng/uL	95
38)	Dimethylphthalate	20.29	1530	116748	50.00	ng/uL	97
39)	Acenaphthylene	20.45	1546	153145	50.00	ng/uL	99
40)	2,6-Dinitrotoluene	20.41	1542	28443	50.00	ng/uL	89
41)	3-Nitroaniline	20.86	1585	29884	50.00	ng/uL	96
42)	Acenaphthene	20.99	1597	91511	50.00	ng/uL	99
43)	2,4-Dinitrophenol	21.18	1615	13541	50.00	ng/uL	94
44)	4-Nitrophenol	21.46	1642	17405	50.00	ng/uL	96
45)	Dibenzofuran	21.51	1647	132684	50.00	ng/uL	88
46)	2,4-Dinitrotoluene	21.58	1654	41297	50.00	ng/uL	96
47)	Diethylphthalate	22.43	1735	122766	50.00	ng/uL	94
48)	4-Chlorophenyl-phenylether	22.63	1754	51336	50.00	ng/uL	89
49)	Fluorene	22.54	1745	102103	50.00	ng/uL	99

50)	4-Nitroaniline	22.6[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
51)	*Phenanthrene-d10	29.29	2008	110649	40.00	ng/uL	99
52	4,6-Dinitro-2-methylphenol	22.78	1768	15272	50.00	ng/uL	91
53)	N-Nitrosodiphenylamine	23.01	1790	68984	50.00	ng/uL	99
54)	2,4,6-Tribromophenol	23.25	1813	48622	100.00	ng/uL	98
55)	4-Bromophenyl-phenylether	24.06	1891	32391	50.00	ng/uL	98
56)	Hexachlorobenzene	24.14	1898	41950	50.00	ng/uL	92
57)	Pentachlorophenol	24.75	1957	22093	50.00	ng/uL	94
58)	Phenanthrene	25.36	2015	144409	50.00	ng/uL	96
59)	Anthracene	25.51	2029	146358	50.00	ng/uL	98
60)	Di-n-butylphthalate	27.34	2204	197415	50.00	ng/uL	97
61)	Fluoranthene	28.88	2351	151147	50.00	ng/uL	96
62)	*Chrysene-d12	33.14	2759	89739	40.00	ng/uL	87
63)	Pyrene	29.52	2413	157403	50.00	ng/uL	97
64)	Terphenyl-d14	30.16	2474	116140	50.00	ng/uL	93
65)	Butylbenzylphthalate	31.77	2628	83370	50.00	ng/uL	96
66)	3,3'-Dichlorobenzidine	33.15	2760	38614	50.00	ng/uL	99
67)	Benzo(a)anthracene	33.11	2756	134960	50.00	ng/uL	98
68)	Chrysene	33.23	2767	138110	50.00	ng/uL	97
69)	Bis(2-Ethylhexyl)phthalate	33.59	2802	118997	50.00	ng/uL	97
70)	*Perylene-d12	37.05	3132	104732	40.00	ng/uL	95
71)	Di-n-octylphthalate	35.44	2978	209644	50.00	ng/uL	99
72)	Benzo(b)fluoranthene	36.09	3040	142737	50.00	ng/uL	96
73)	Benzo(k)fluoranthene	36.16	3047	149859	50.00	ng/uL	91
74)	Benzo(a)pyrene	36.89	3117	135108	50.00	ng/uL	94
75)	Indeno(1,2,3-cd)pyrene	40.30	3442	137918	50.72	ng/uL	90
76)	Dibenz(a,h)anthracene	40.43	3454	132317	50.00	ng/uL	99
77)	Benzo(g,h,i)perylene	41.26	3533	145849	50.00	ng/uL	94

* Compound is ISTD

QUANT REPORT Page 1

Operator ID: BOB
Output File: ^Y1103::OF
Data File: >Y1103::D2
Name: METHOD BLANK C-39
Misc:

Quant Rev: 7 Quant Time: 921211 13:48
Injected at: 921211 13:00
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 1

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40 Last Qcal Time: 921211 11:34

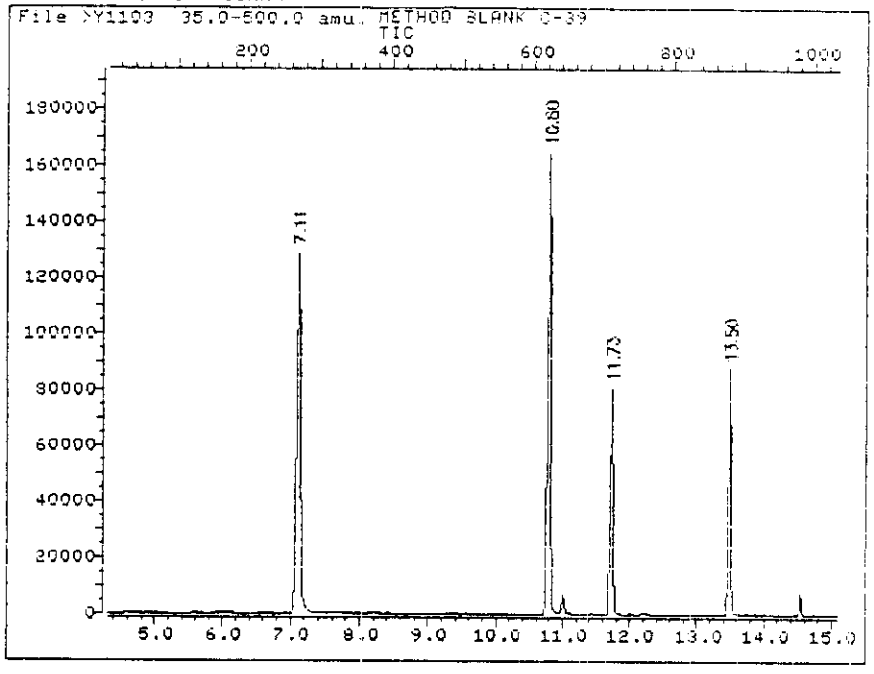
	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	712	36638	40.00	ng/uL	98
2)	2-Fluorophenol	7.11	269	135722	108.46	ng/uL	91
3)	Phenol-d5	10.80	623	163668	107.42	ng/uL	97
16)	*Naphthalene-d8	15.64	1086	126704	40.00	ng/uL	94
17)	Nitrobenzene-d5	13.50	881	68578	53.16	ng/uL	94
31)	*Acenaphthene-d10	20.88	1589	62920	40.00	ng/uL	96
36)	2-Fluorobiphenyl	18.97	1406	114832	54.89	ng/uL	97
51)	*Phenanthrene-d10	25.29	2011	112851	40.00	ng/uL	99
54)	2,4,6-Tribromophenol	23.23	1814	48452	97.71	ng/uL	98
62)	*Chrysene-d12	33.12	2762	96373	40.00	ng/uL	89
64)	Terphenyl-d14	30.17	2479	129755	52.02	ng/uL	91

Preliminary data — [illegible] 12-17-92

71	*Perylene-d12	37.0-	3137	112510	[illegible] ng [illegible]	[illegible]

* Compound is ISTD

TOTAL ION CHROMATOGRAM



Data File: >Y1103::D2
Name: METHOD BLANK C-39
Misc:

Quant Output File: ^Y1103::QF
Instrument ID: BNA2
BTL# 1

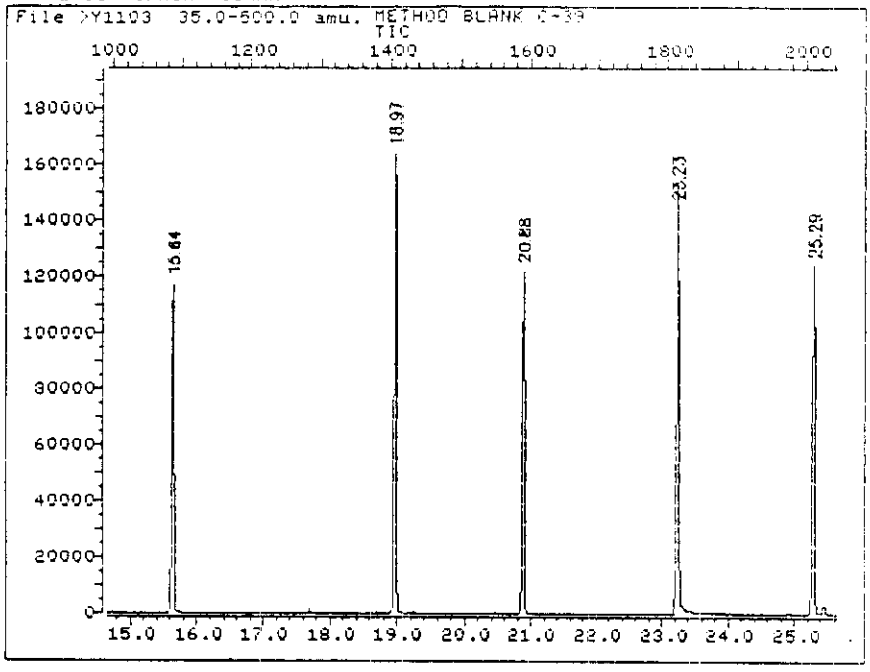
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 13:48
Injected at: 921211 13:00

Page 1 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1103::D2
Name: METHOD BLANK C-39
Misc:

Quant Output File: ^Y1103::DF
Instrument ID: BNA2
BTL# 1

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: 808
Quant Time : 921211 13:48
Injected at: 921211 13:00

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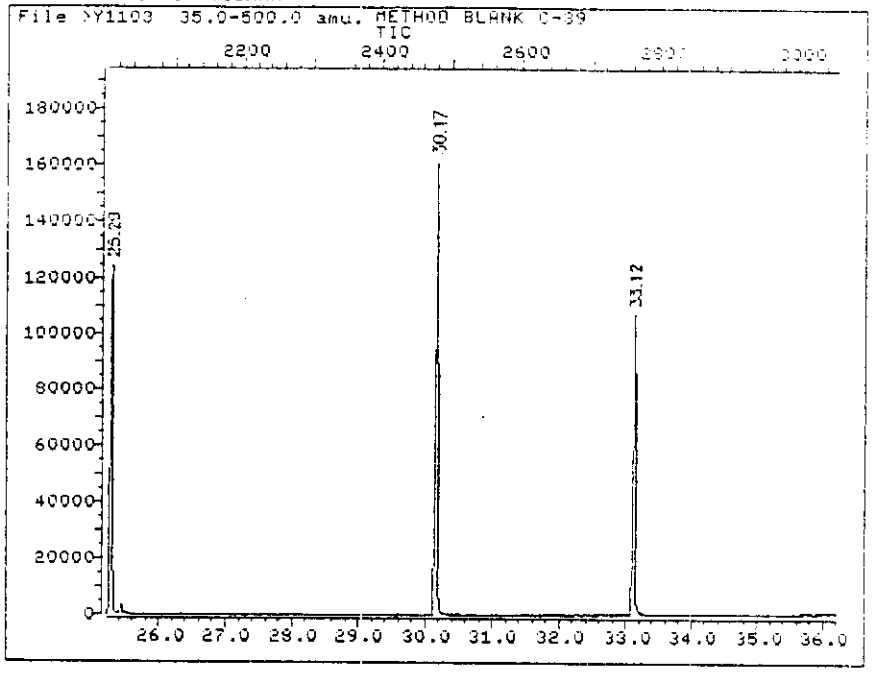
TOTAL ION CHROMATOGRAM



Data File: >Y1103::D2
Name: METHOD BLANK C-39
Misc:

Quant Output File: ^Y1103::DF
Instrument ID: BNA2

BTL# 1

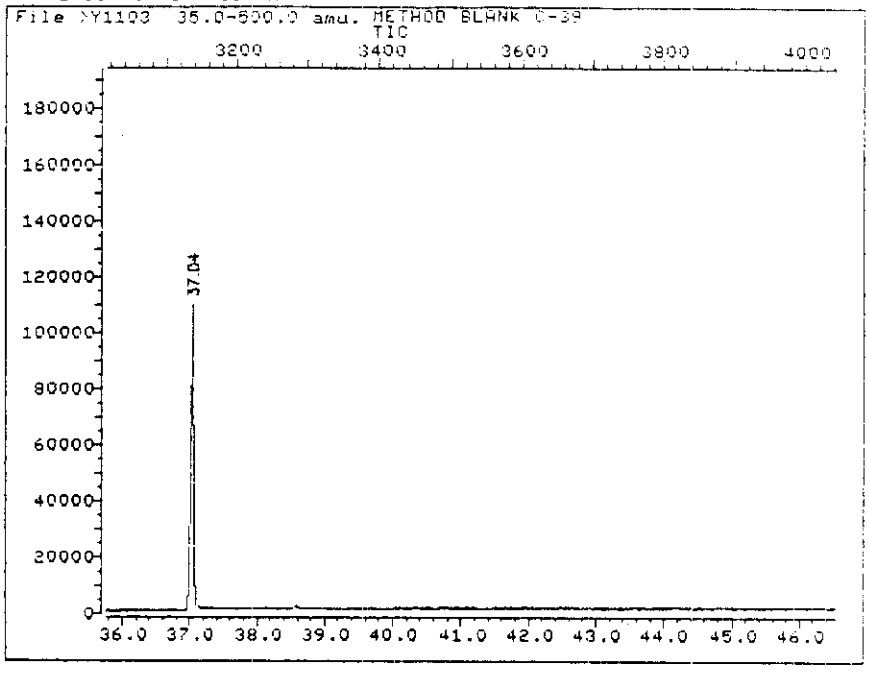
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 13:48
Injected at: 921211 13:00

Page 3 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1103::D2
Name: METHOD BLANK C-39
Misc:

Quant Output File: ^Y1103::QF
Instrument ID: BNA2
BTL# 1

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 13:48
Injected at: 921211 13:00

Page 4 of 4

QUANT REPORT

Operator ID: BOB
Output File: ^Y1103::OF
Data File: >Y1103::D2
Name: METHOD BLANK C-39
Misc:

Quant Rev: 7
Quant Time: 921211 13:46
Injected at: 921211 13:00
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 1

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	712	36638	40.00	ng/uL	98
2)	2-Fluorophenol	7.11	269	135722	108.46	ng/uL	91
3)	Phenol-d5	10.80	623	163668	107.42	ng/uL	97
4)	Phenol	0.00	0	0	0.00	ng/uL	
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL	
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL	
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	0.00	881	0	0.00	ng/uL	
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.64	1086	126704	40.00	ng/uL	94
17)	Nitrobenzene-d5	13.50	881	68578	53.16	ng/uL	94
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL	
19)	Isophorone	0.00	0	0	0.00	ng/uL	
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL	
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL	
22)	Benzoic acid	0.00	0	0	0.00	ng/uL	
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL	
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL	
25)	1,2,4-Trichlorobenzene	0.00	0	0	0.00	ng/uL	
26)	Naphthalene	0.00	0	0	0.00	ng/uL	
27)	4-Chloroaniline	0.00	0	0	0.00	ng/uL	
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL	
29)	4-Chloro-3-methylphenol	0.00	0	0	0.00	ng/uL	
30)	2-Methylnaphthalene	0.00	0	0	0.00	ng/uL	
31)	*Acenaphthene-d10	20.88	1589	62920	40.00	ng/uL	96
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL	
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL	
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL	
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL	
36)	2-Fluorobiphenyl	18.97	1406	114832	54.89	ng/uL	97
37)	2-Nitroaniline	0.00	0	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1589	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	0.00	0	0	0.00	ng/uL	

43)	2,4-Dinitrophenol	0.00	0	0	0.00	ng/uL	
44)	4-Nitrophenol	0.00	0	0	0.00	ng/uL	
45)	Dibenzofuran	0.00	0	0	0.00	ng/uL	
46)	2,4-Dinitrotoluene	0.00	0	0	0.00	ng/uL	
47)	Diethylphthalate	0.00	0	0	0.00	ng/uL	
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00	ng/uL	
49)	Fluorene	0.00	0	0	0.00	ng/uL	
50)	4-Nitroaniline	0.00	0	0	0.00	ng/uL	
51)	*Phenanthrene-d10	25.29	2011	112851	40.00	ng/uL	99
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00	ng/uL	
53)	N-Nitrosodiphenylamine	0.00	1814	0	0.00	ng/uL	
54)	2,4,6-Tribromophenol	23.23	1814	48452	97.71	ng/uL	98
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00	ng/uL	
56)	Hexachlorobenzene	0.00	0	0	0.00	ng/uL	
57)	Pentachlorophenol	0.00	0	0	0.00	ng/uL	
58)	Phenanthrene	0.00	0	0	0.00	ng/uL	
59)	Anthracene	0.00	0	0	0.00	ng/uL	
60)	Di-n-butylphthalate	0.00	0	0	0.00	ng/uL	
61)	Fluoranthene	0.00	0	0	0.00	ng/uL	
62)	*Chrysene-d12	33.12	2762	96373	40.00	ng/uL	89
63)	Pyrene	0.00	0	0	0.00	ng/uL	
64)	Terphenyl-d14	30.17	2479	129755	52.02	ng/uL	91
65)	Butylbenzylphthalate	0.00	0	0	0.00	ng/uL	
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00	ng/uL	
67)	Benzo(a)anthracene	0.00	0	0	0.00	ng/uL	
68)	Chrysene	0.00	0	0	0.00	ng/uL	
69)	Bis(2-Ethylhexyl)phthalate	0.00	0	0	0.00	ng/uL	
70)	*Perylene-d12	37.04	3137	112510	40.00	ng/uL	95
71)	Di-n-octylphthalate	0.00	0	0	0.00	ng/uL	
72)	Benzo(b)fluoranthene	0.00	0	0	0.00	ng/uL	
73)	Benzo(k)fluoranthene	0.00	0	0	0.00	ng/uL	
74)	Benzo(a)pyrene	0.00	0	0	0.00	ng/uL	
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00	ng/uL	
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00	ng/uL	
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00	ng/uL	

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1103
CAL. CHECK FILE = >Y1102
DATE AND TIME OF ANALYSIS = 12/11/92 13:00
MISCELLANEOUS =
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER SRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	36638	35181	17591	70362	OK
Naphthalene-d8	126704	121257	60629	242514	OK
Acenaphthene-d10	62920	62320	31160	124640	OK
Phenanthrene-d10	112851	110649	55325	221298	OK
Chrysene-d12	96373	89739	44870	179478	OK
Perylene-d12	112510	104732	52366	209464	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.73	11.73	11.23	12.23	OK
Naphthalene-d8	15.64	15.64	15.14	16.14	OK
Acenaphthene-d10	20.88	20.89	20.39	21.39	OK
Phenanthrene-d10	25.29	25.29	24.79	25.79	OK
Chrysene-d12	33.12	33.14	32.64	33.64	OK
Perylene-d12	37.04	37.05	36.55	37.55	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1103::D2
DATE AND TIME OF ANALYSIS = 12/11/92 13:00
SAMPLE = METHOD BLANK C-39
MISCELLANEOUS =
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVERY
2-Fluorophenol	108.46	100.00	21-100	25-121	108.46
Phenol-d5	107.42	100.00	10-94	24-113	107.42
Nitrobenzene-d5	53.16	50.00	35-114	23-120	106.32
2-Fluorobiphenyl	54.89	50.00	43-116	30-115	109.79
2,4,6-tribromo-phenol	97.71	100.00	10-123	19-122	97.71
Terphenyl-d14	52.02	50.00	33-141	18-137	104.03

MS data file header from : >Y1103::D2

Sample: METHOD BLANK C-39 Operator: BOB SUPER GRP. 12/11/92 13:03
Misc : ETL# 1
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 1 Equip ID: BNA2
Method file: BNAME2 Tuning file: MTBNA2 No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	40.	300.	0.	0.	0.
Chromatographic times, min. :	4.0	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	8.0	0.0	0.0	.9	0.0

No peaks found.

Summary of Unknowns PBM Library Search and Quantitation

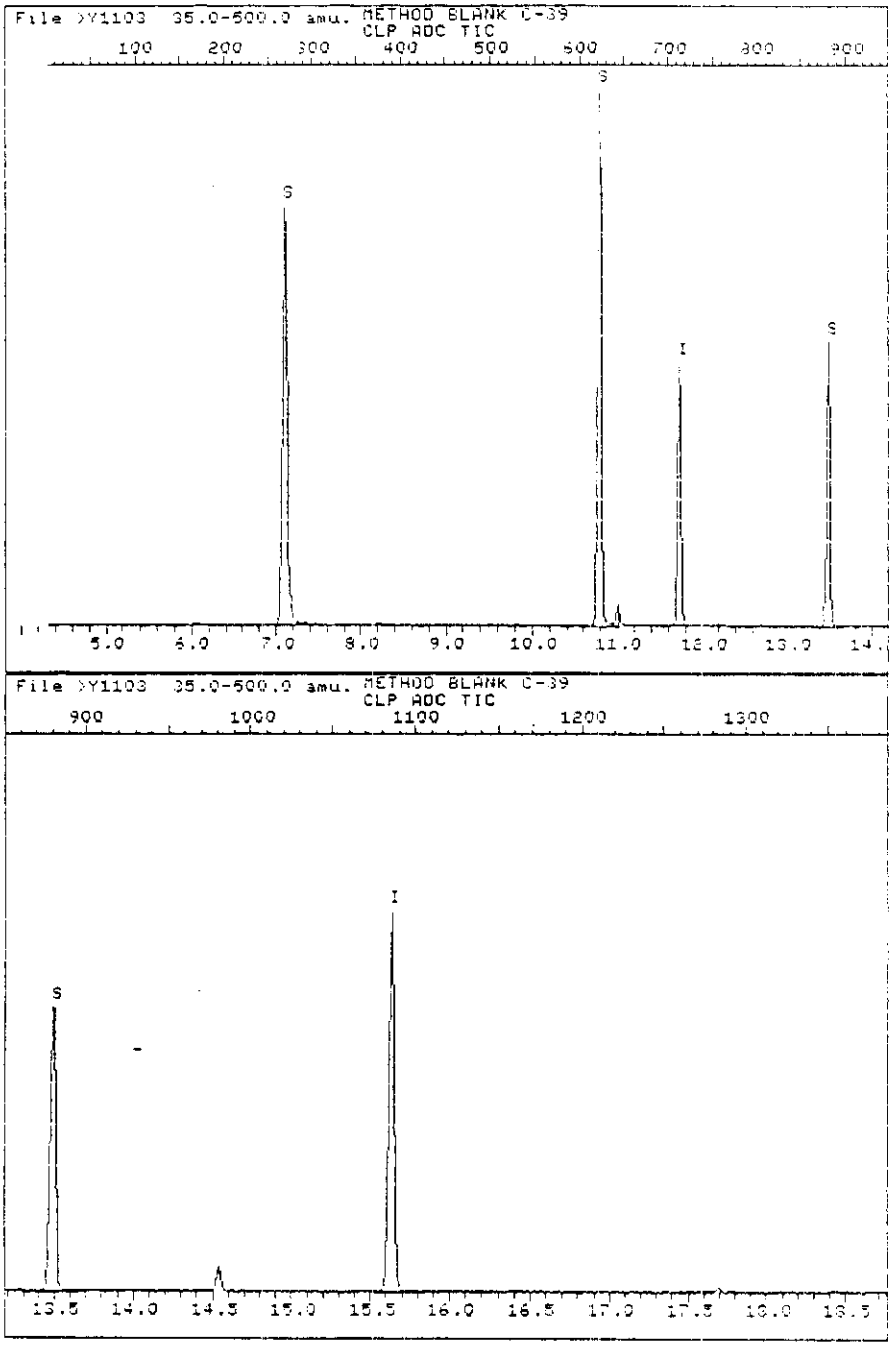
Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	225321.	11.73	4.31 - 13.68
2	40.0	265660.	15.64	13.68 - 18.26
3	40.0	281799.	20.88	18.26 - 23.08
4	40.0	293151.	25.29	23.08 - 29.20
5	40.0	285343.	33.12	29.20 - 35.08
6	40.0	310748.	37.04	35.08 - 46.83

Dilution Factor = 1.00 This sample was 1.00000 g or mL

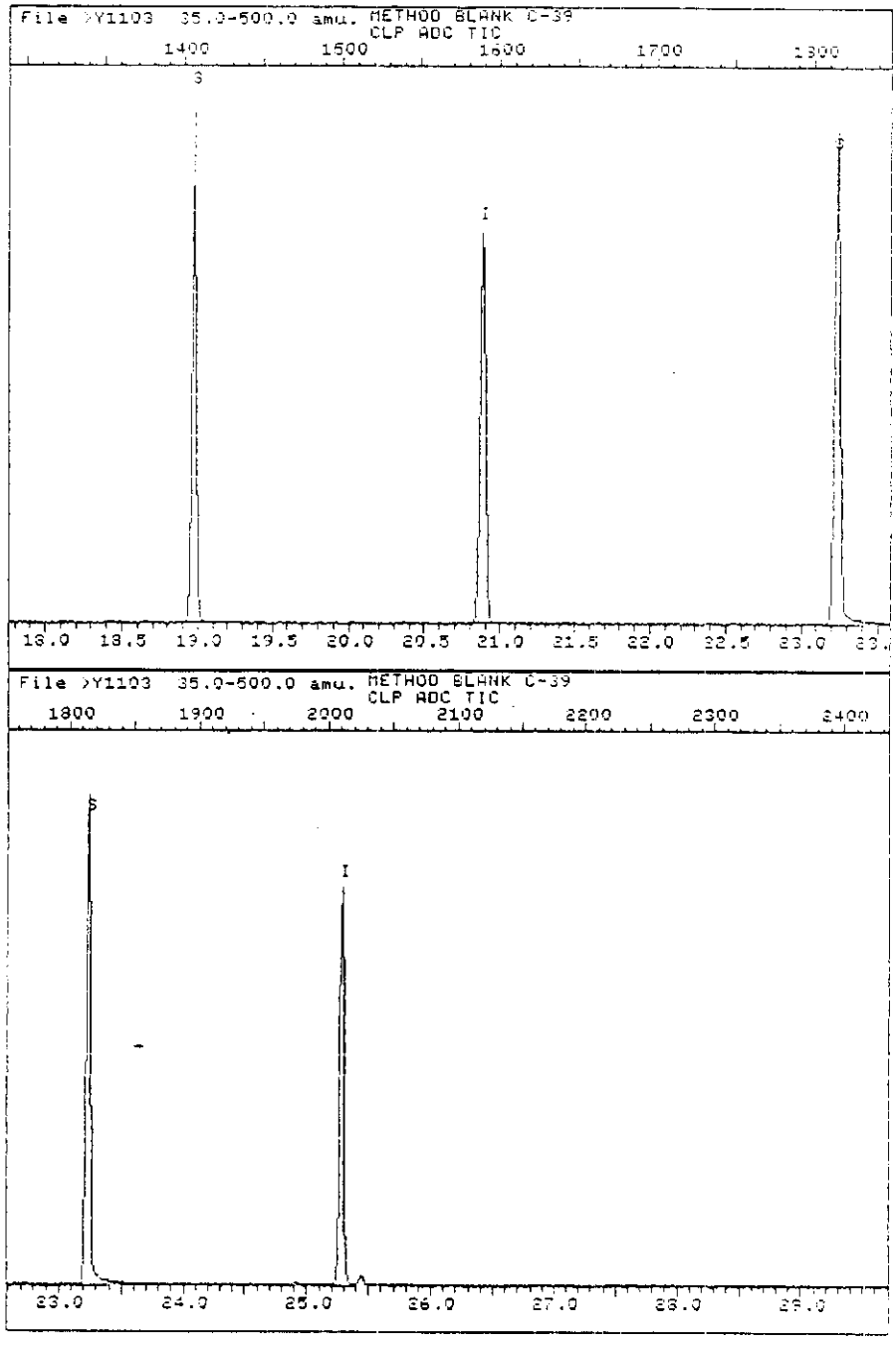
Correction Factor = 2002.00

$$\text{Unknown Concentration} = \frac{\text{Conc Int Std} * \text{Area Unknown}}{\text{Area Int Std}} * \text{Correction Factor}$$

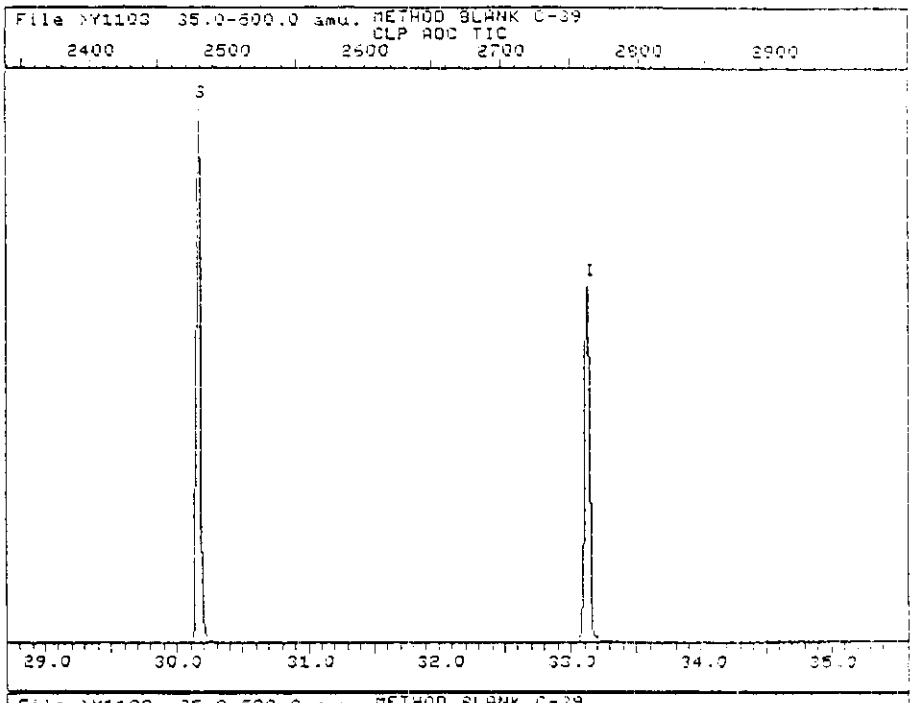
8:12 AM WED., 16 DEC., 1992

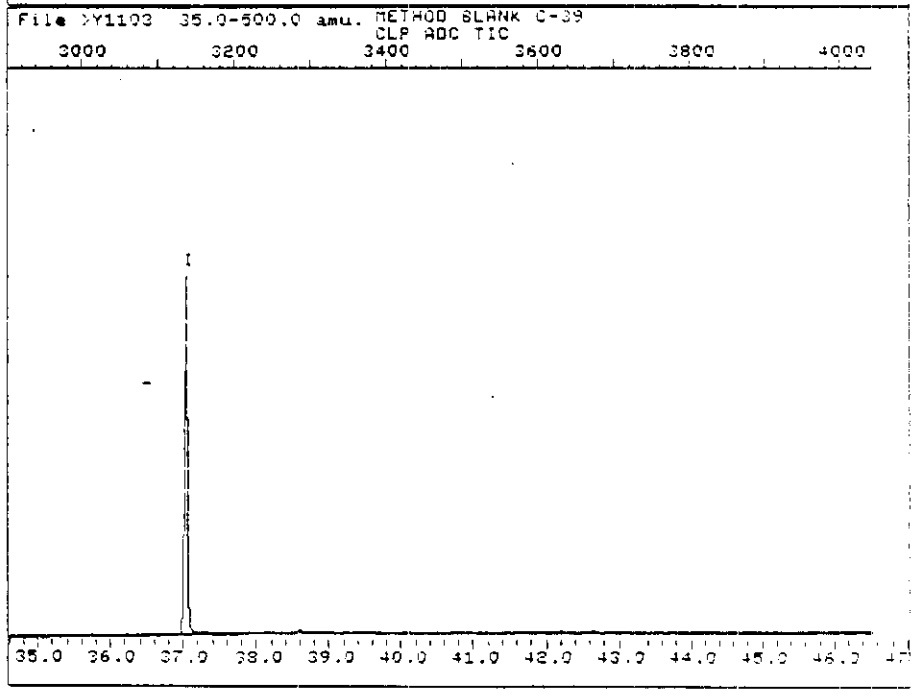


Instrument ID: BNA2 Analyzed on: 12 11 92 17:00



Instrument ID: BNA2 Analyzed on: 12 11/92 13:00





Instrument ID: BNA2 Analyzed on: 12 11 92 17:00

THERE WERE NO UNKNOWNS

QUANT REPORT Page 1

Operator ID: BOB
Output File: ^Y1104::QF
Data File: >Y1104::D2
Name: CORE 39 92-08309-E1
Misc: 0.9394 G pH=10.49

Quant Rev: 7
Quant Time: 921211 14:45
Injected at: 921211 13:57
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 2

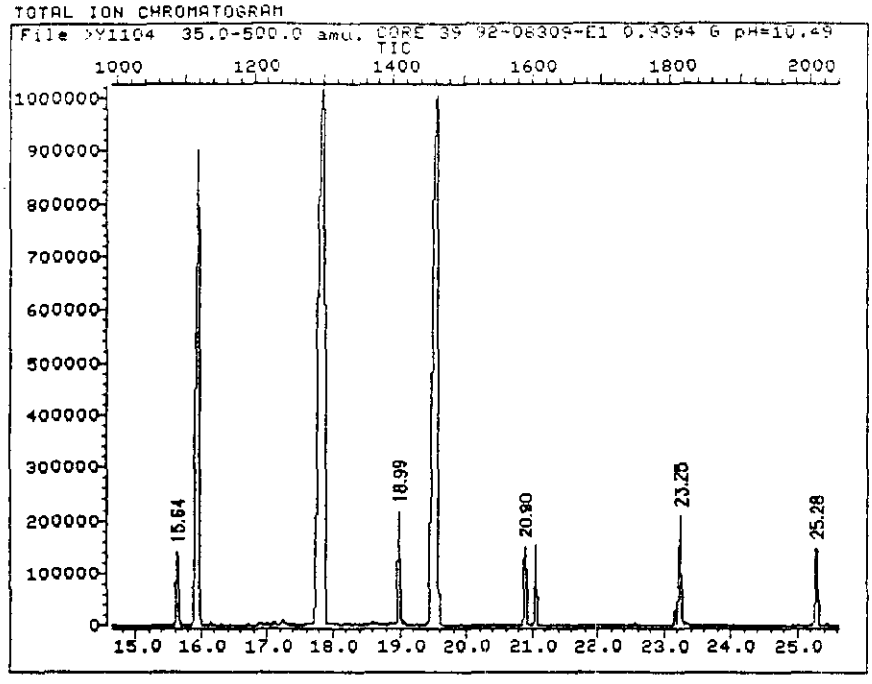
ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Time: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	713	44386	40.00	ng/uL	94
2)	2-Fluorophenol	7.13	272	173660	114.55	ng/uL	92
3)	Phenol-d5	10.81	625	212264	115.00	ng/uL	95
16)	*Naphthalene-d8	15.64	1087	157926	40.00	ng/uL	95
17)	Nitrobenzene-d5	13.49	882	91549	56.94	ng/uL	95
31)	*Acenaphthene-d10	20.90	1589	79324	40.00	ng/uL	96
36)	2-Fluorobiphenyl	18.99	1407	150020	56.88	ng/uL	98
51)	*Phenanthrene-d10	25.28	2009	141654	40.00	ng/uL	98
54)	2,4,6-Tribromophenol	23.25	1814	72941	117.18	ng/uL	98
62)	*Chrysene-d12	33.14	2761	127307	40.00	ng/uL	88
64)	Terphenyl-d14	30.18	2478	181436	55.06	ng/uL	91
69)	Bis(2-Ethylhexyl)phthalate	33.58	2803	3326	.985	ng/uL	94
70)	*Perylene-d12	37.05	3134	142531	40.00	ng/uL	97

* Compound is ISTD

Preliminary data 12/17/92

TOTAL ION CHROMATOGRAM



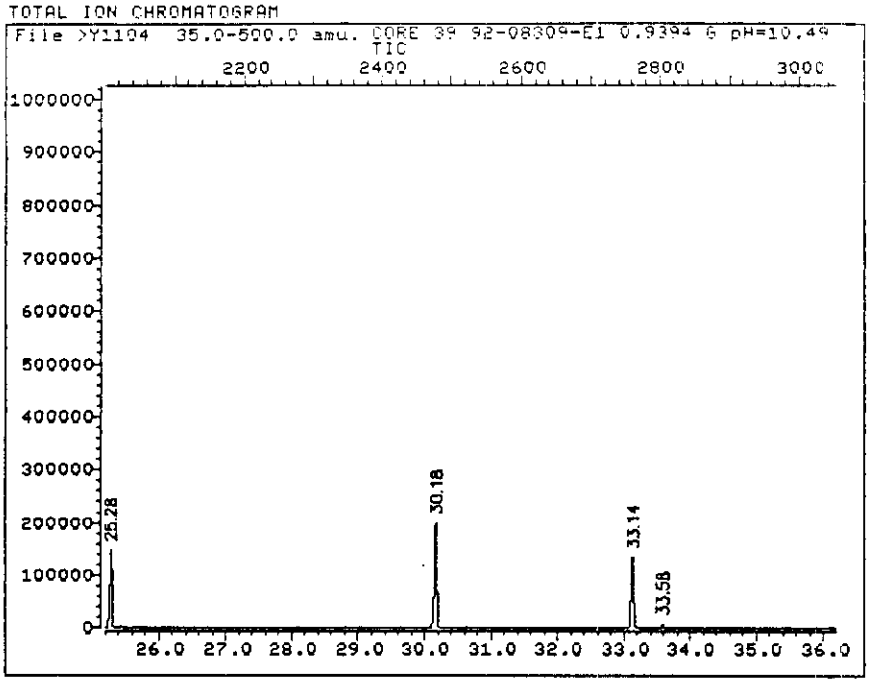
Data File: >Y1104::D2 Quant Output File: ^Y1104::OF
Name: CORE 39 92-08309-E1 Instrument ID: BNA2
Misc: 0.9394 G pH=10.49 BTL# 2

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40 Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 14:45
Injected at: 921211 13:57

Page 2 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1104::D2
Name: CORE 39 92-08309-E1
Misc: 0.9394 G pH=10.49

Quant Output File: ^Y1104::OF
Instrument ID: BNA2
BTL# 2

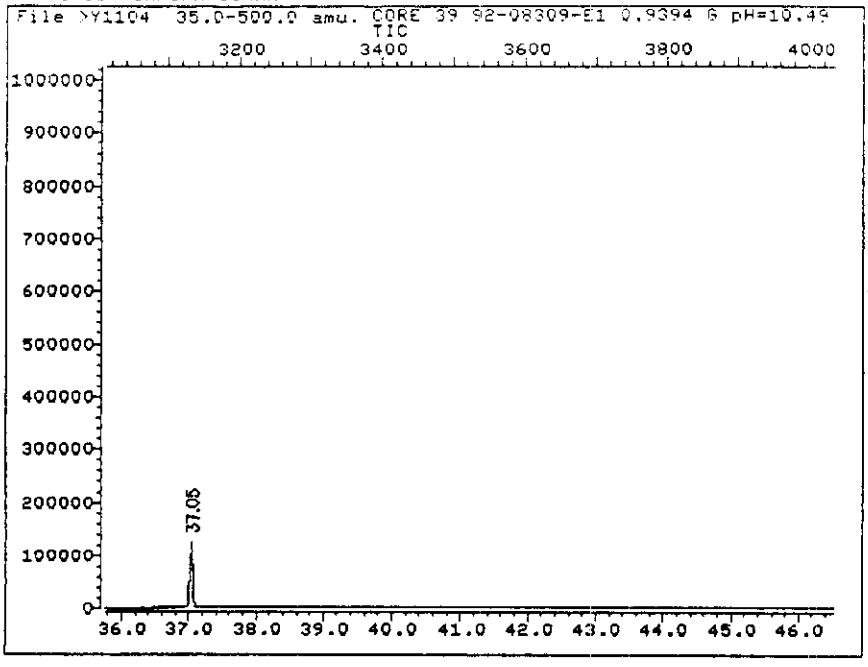
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 14:45
Injected at: 921211 13:57

Page 3 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1104::D2
Name: CORE 39 92-08309-E1
Misc: 0.9394 G pH=10.49

Quant Output File: ^Y1104::OF
Instrument ID: BNA2
BTL# 2

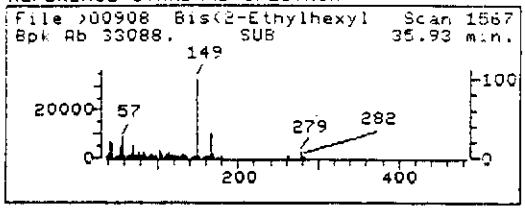
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

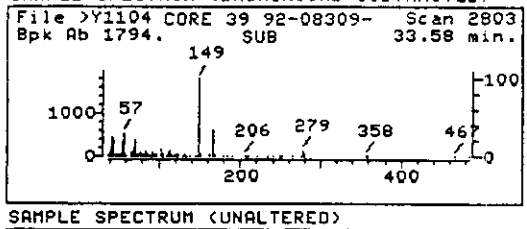
Operator ID: BOB
Quant Time : 921211 14:45
Injected at: 921211 13:57

Page 4 of 4

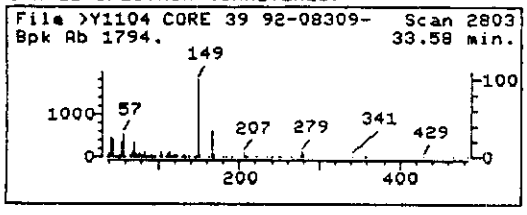
REFERENCE STANDARD SPECTRUM

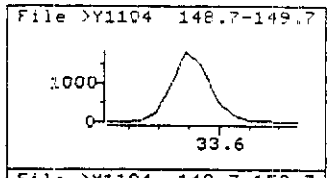


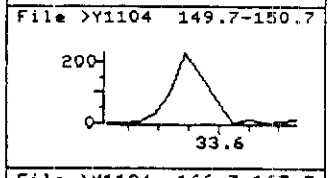
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

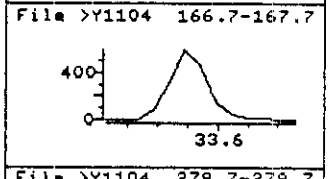


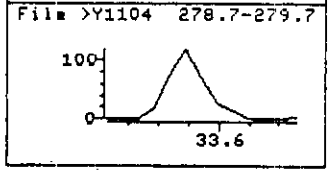
SAMPLE SPECTRUM (UNALTERED)











Data File: >Y1104::D2
Name: CORE 39 92-08309-E1
Misc: 0.9394 G pH=10.49
Quant Time: 921211 14:45
Injected at: 921211 13:57
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1104::OF
Instrument ID: BNA2
ETL# 2
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 69
Compound Name : Bis(2-Ethylhexyl)phthalate
Scan Number : 2803
Retention Time: 33.58 min.
Quant Ion : 149.0
Area : 3326
Concentration : .985 ng/uL
q-value : 94

QUANT REPORT

Operator ID: BOB
Output File: ^Y1104::OF
Data File: >Y1104::D2
Name: CORE 39 92-08309-E1
Misc: 0.9394 G pH=10.49

Quant Rev: 7
Quant Time: 921211 14:45
Injected at: 921211 13:57
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 2

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	713	44386	40.00	ng/uL	94
2)	2-Fluorophenol	7.13	272	173660	114.55	ng/uL	92
3)	Phenol-d5	10.81	625	212264	115.00	ng/uL	95
4)	Phenol	0.00	0	0	0.00	ng/uL	
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL	
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL	
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	0.00	883	0	0.00	ng/uL	
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.64	1087	157926	40.00	ng/uL	95
17)	Nitrobenzene-d5	13.49	882	91549	56.94	ng/uL	95
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL	
19)	Isophorone	0.00	0	0	0.00	ng/uL	
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL	
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL	
22)	Benzoic acid	0.00	0	0	0.00	ng/uL	
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL	
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL	
25)	1,2,4-Trichlorobenzene	0.00	0	0	0.00	ng/uL	
26)	Naphthalene	0.00	1117	0	0.00	ng/uL	
27)	4-Chloroaniline	0.00	1118	0	0.00	ng/uL	
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL	
29)	4-Chloro-3-methylphenol	0.00	0	0	0.00	ng/uL	
30)	2-Methylnaphthalene	0.00	1295	0	0.00	ng/uL	
31)	*Acenaphthene-d10	20.90	1589	79324	40.00	ng/uL	96
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL	
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL	
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL	
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL	
36)	2-Fluorobiphenyl	18.99	1407	150020	56.88	ng/uL	98
37)	2-Nitroaniline	0.00	1461	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1589	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	0.00	0	0	0.00	ng/uL	

43)	2,4-Dinitrophenol	0.00	0	0	0.00	ng/uL	
44)	4-Nitrophenol	0.00	0	0	0.00	ng/uL	
45)	Dibenzofuran	0.00	0	0	0.00	ng/uL	
46)	2,4-Dinitrotoluene	0.00	0	0	0.00	ng/uL	
47)	Diethylphthalate	0.00	0	0	0.00	ng/uL	
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00	ng/uL	
49)	Fluorene	0.00	0	0	0.00	ng/uL	
50)	4-Nitroaniline	0.00	0	0	0.00	ng/uL	
51)	*Phenanthrene-d10	25.28	2009	141654	40.00	ng/uL	98
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00	ng/uL	
53)	N-Nitrosodiphenylamine	0.00	1814	0	0.00	ng/uL	
54)	2,4,6-Tribromophenol	23.25	1814	72941	117.13	ng/uL	98
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00	ng/uL	
56)	Hexachlorobenzene	0.00	0	0	0.00	ng/uL	
57)	Pentachlorophenol	0.00	0	0	0.00	ng/uL	
58)	Phenanthrene	0.00	0	0	0.00	ng/uL	
59)	Anthracene	0.00	0	0	0.00	ng/uL	
60)	Di-n-butylphthalate	0.00	0	0	0.00	ng/uL	
61)	Fluoranthene	0.00	0	0	0.00	ng/uL	
62)	*Chrysene-d12	33.14	2761	127307	40.00	ng/uL	88
63)	Pyrene	0.00	0	0	0.00	ng/uL	
64)	Terphenyl-d14	30.18	2478	181436	55.06	ng/uL	91
65)	Butylbenzylphthalate	0.00	0	0	0.00	ng/uL	
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00	ng/uL	
67)	Benzo(a)anthracene	0.00	0	0	0.00	ng/uL	
68)	Chrysene	0.00	0	0	0.00	ng/uL	
69)	Bis(2-Ethylhexyl)phthalate	33.58	2803	3326	.985	ng/uL	94
70)	*Perylene-d12	37.05	3134	142531	40.00	ng/uL	97
71)	Di-n-octylphthalate	0.00	0	0	0.00	ng/uL	
72)	Benzo(b)fluoranthene	0.00	0	0	0.00	ng/uL	
73)	Benzo(k)fluoranthene	0.00	0	0	0.00	ng/uL	
74)	Benzo(a)pyrene	0.00	0	0	0.00	ng/uL	
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00	ng/uL	
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00	ng/uL	
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00	ng/uL	

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1104
CAL CHECK FILE = >Y1102
DATE AND TIME OF ANALYSIS = 12/11/92 13:57
MISCELLANEOUS = 0.9394 G pH=10.49
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	44386	35181	17591	70362	OK
Naphthalene-d8	157926	121257	60629	242514	OK
Acenaphthene-d10	79324	62320	31160	124640	OK
Phenanthrene-d10	141654	110649	55325	221298	OK
Chrysene-d12	127307	89739	44870	179478	OK
Perylene-d12	142531	104732	52366	209464	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.73	11.73	11.23	12.23	OK
Naphthalene-d8	15.64	15.64	15.14	16.14	OK
Acenaphthene-d10	20.90	20.89	20.39	21.39	OK
Phenanthrene-d10	25.28	25.29	24.79	25.79	OK
Chrysene-d12	33.14	33.14	32.64	33.64	OK
Perylene-d12	37.05	37.05	36.55	37.55	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1104::D2
DATE AND TIME OF ANALYSIS = 12/11/92 13:57
SAMPLE = CORE 39 92-08309-E1
MISCELLANEOUS = 0.9394 G pH=10.49
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVERY
2-Fluorophenol	114.55	100.00	21-100	25-121	114.55
Phenol-d5	115.00	100.00	10-94	24-113	115.00
Nitrobenzene-d5	56.94	50.00	35-114	23-120	113.88
2-Fluorobiphenyl	56.88	50.00	43-116	30-115	113.77
2,4,6-tribromo-phenol	117.18	100.00	10-123	19-122	117.18
Terphenyl-d14	55.06	50.00	33-141	18-137	110.12

MS data file header from : >Y1104::D2

Sample: CORE 39 92-08309-E1 Operator: BOB SUPER GRP. 12/11/92 13:57
Misc : 0.9394 G pH=10.49 BTL# 2
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 2 Equip ID: BNA2
Method file: BNAME2 Tuning file: MTBNA2 No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	40.	300.	0.	0.	0.
Chromatographic times, min. :	4.0	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	8.0	0.0	0.0	.5	0.0

>Y1104 CORE 39 92-08309-E1 0.9394 G pH=10.49
35.01 500.0 CLP TIC
Upslope: .2000 Area Reject: 27810. Max Peaks: 7 Bunch: -1 Valley >100 %
Dnslope: 0.0000 Results File IY1104 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	11.44	677	685	693	9675	33265	28513	.42	.180
2	13.85	910	916	922	36541	82921	79189	1.16	.499
3	15.96	1103	1118	1125	901053	3223438	3213469	46.96	20.242
4	17.24	1234	1240	1249	10128	47735	28932	.42	.182
5	17.88	1279	1301	1306	1018850	6892066	6843370	100.00	43.107
6	19.57	1444	1462	1473	1000002	5461444	5423597	79.25	34.164
7	21.06	1600	1605	1612	150656	262126	258139	3.77	1.626

Sum of corrected areas: 15875212.

Summary of Unknowns PBM Library Search and Quantitation

Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	278097.	11.73	4.30 - 13.68
2	40.0	333705.	15.64	13.68 - 18.27
3	40.0	355774.	20.90	18.27 - 23.09
4	40.0	366750.	25.28	23.09 - 29.21
5	40.0	366764.	33.14	29.21 - 35.09
6	40.0	398212.	37.05	35.09 - 46.53

Dilution Factor = 1.00 This sample was .939400 g or mL

Correction Factor = 2131.15

$$\text{Unknown Concentration} = \frac{\text{Conc Int Std} * \text{Area Unknown}}{\text{Area Int Std}} * \text{Correction Factor}$$

8:26 AM WED., 16 DEC., 1992

RT 23.16

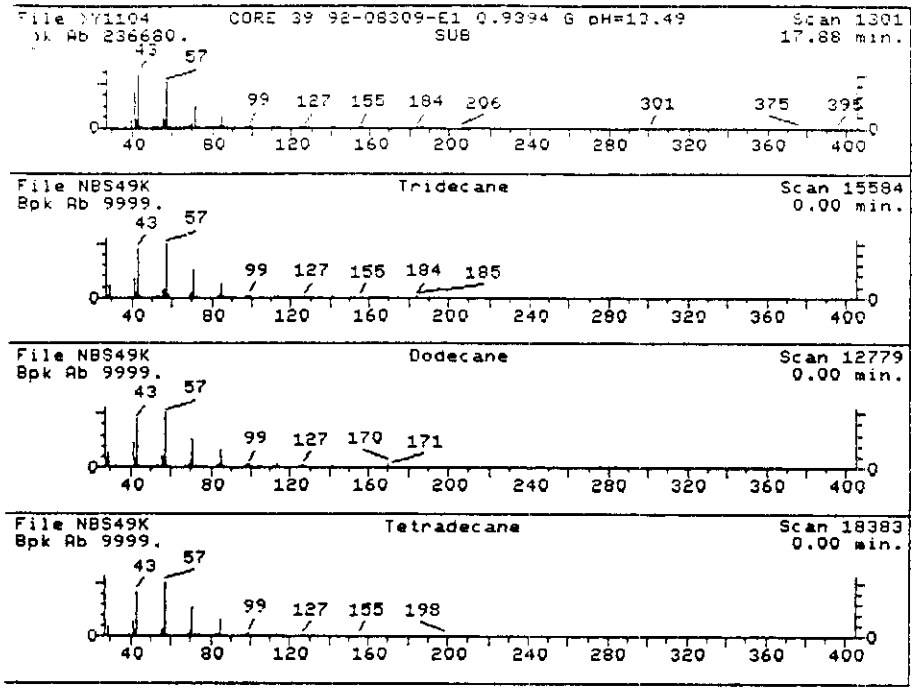
$$\frac{40 \times 52594}{366750} \times 2131.15 = 12{,}200$$

```
FMGR : int

 >Y1104          CORE 39 92-08309-E1 0.9394 G pH=10.49
   35.0| 500.0 TIC
 Upslope:  .2000 Area Reject: 5.00 %   Max Peaks:  3  Bunch:  1 Valley >100 %
 Dnslope: 0.0000 Results File VDIR76   Sorted by Time/Area      INT

 Peak   R.T.  first   max   last   peak    raw     corr.   corr.   % of
   #    min.   scan  scan  scan  height   area     area   % max.  total
 ---  ------  -----  ----- -----  ------  -------  -------  -------  -------
   1   23.16T 1801   1806  1808   29329   54168    52594    9.86    5.520
   2   23.25S 1808   1814  1833  208752  545815   533519*  100.00  55.991
   3   25.28 2002    2009  2014  146680  369794   366750   68.74   38.489

                          Sum of corrected areas:     952863.
FMGR : dr,1
  working...
  draw complete...
FMGR : lp
FMGR : es,0r
 reg type  # pts  scan#    range: amu\r.t.      base   file     ion range
 --- ----  -----  -----   ----------------    -------  -----   --------------
  X   MS      95   1806    38.10-   392.70   14864.0 >Y1104
FMGR : dr,2
  working...
  draw complete...
FMGR : gr
```

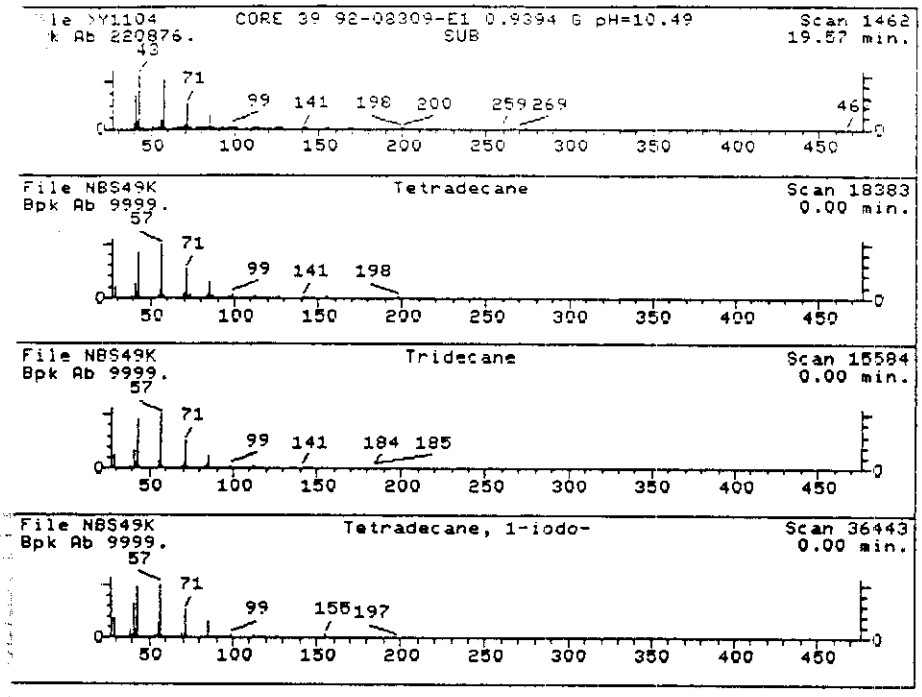


Instrument ID: BNA2 Analyzed on: 12/11/92 13:57
Result 4 in PBM results file: LY1104
Retention Time: 17.88 Area: 6843370 Tentative Conc:1700000.00
The unknown area is 2050.7% of the nearest internal standard

1. Tridecane	184	C13H28
2. Dodecane	170	C12H26
3. Tetradecane	198	C14H30
4. Tetradecane, 1-iodo-	324	C14H29I
5. Tritetracontane	604	C43H88
6. Eicosane	282	C20H42

Sample file: >Y1104 Spectrum #: 1301
Search speed: 3 Tilting option: F No. of ion ranges searched: 60

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	95*	629505	6761	NBS49K	77	29	0	0	67	1	72	93
2.	87	112403	6732	NBS49K	87	12	1	4	81	4	63	45
3.	86	629594	6804	NBS49K	97	11	2	3	99	1	60	32
4.	83	19218941	6889	NBS49K	100	28	1	3	71	10	54	50
5.	78	7098217	6916	NBS49K	75	99	2	4	80	4	55	12
6.	78	112958	6871	NBS49K	86	53	2	4	70	4	55	17

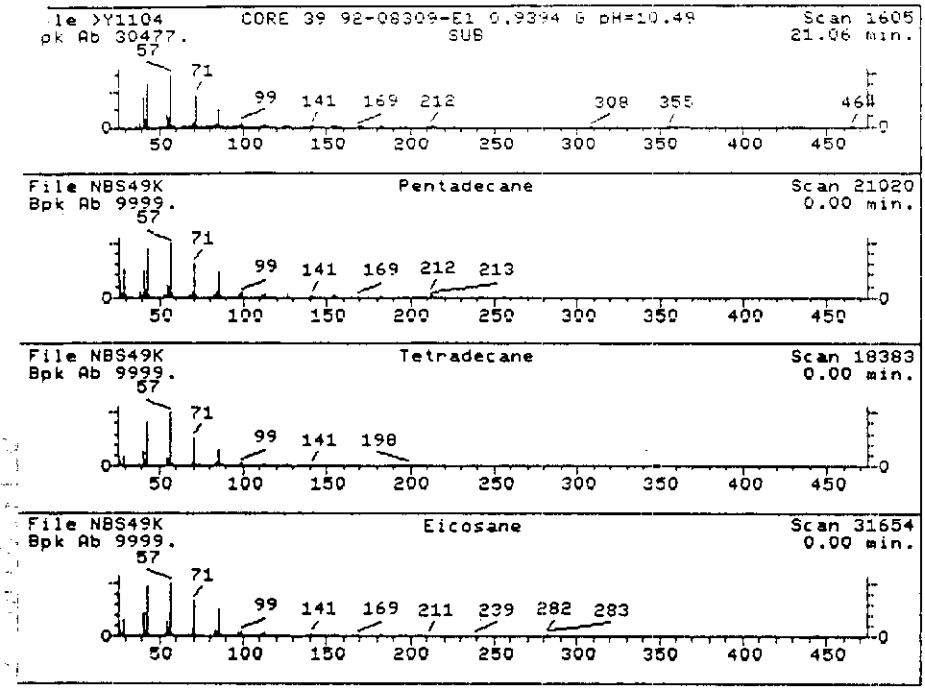


Instrument ID: BNA2 Analyzed on: 12/11/92 13:57
Result 5 in PBM results file: LY1104
Retention Time: 19.57 Area: 5423597 Tentative Conc:1300000.00
The unknown area is 1524.5% of the nearest internal standard

1. Tetradecane	198	C14H30
2. Tridecane	184	C13H28
3. Tetradecane, 1-iodo-	324	C14H29I
4. Dodecane, 2,5-dimethyl-	198	C14H30
5. Pentadecane	212	C15H32
6. Eicosane	282	C20H42

Sample file: >Y1104 Spectrum #: 1462
Search speed: 3 Tilting option: F No. of ion ranges searched: 64

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	93*	629594	6804	NBS49K	97	11	1	2	96	1	68	89
2.	89	629505	6761	NBS49K	91	15	1	0	77	3	66	60
3.	88	19218941	6889	NBS49K	100	28	1	1	71	4	65	50
4.	86*	56292650	14883	NBS49K	55	54	2	0	92	4	60	32
5.	83	629629	6819	NBS49K	87	33	2	3	80	4	57	23
6.	83	112958	6871	NBS49K	94	45	2	4	80	4	57	22

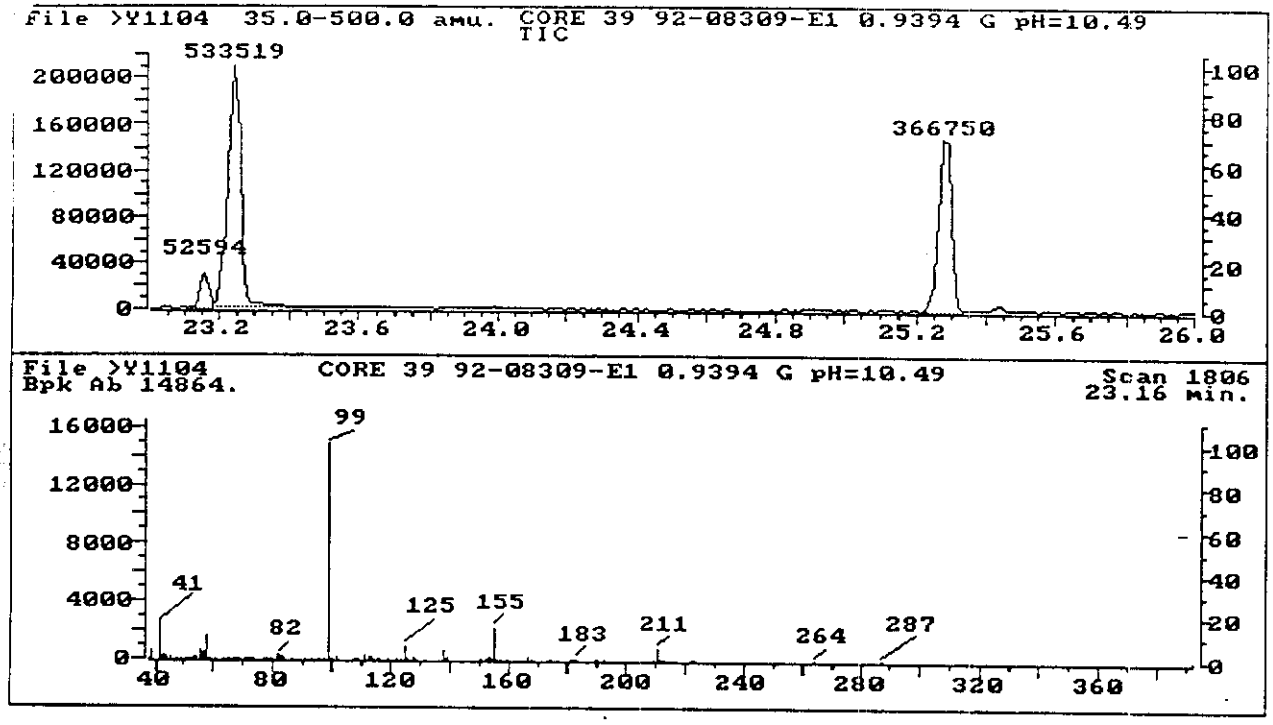


Instrument ID: BNA2 Analyzed on: 12/11/92 13:57
Result 6 in PBM results file: LY1104
Retention Time: 21.06 Area: 258139 Tentative Conc: 62000.00
The unknown area is 72.56% of the nearest internal standard

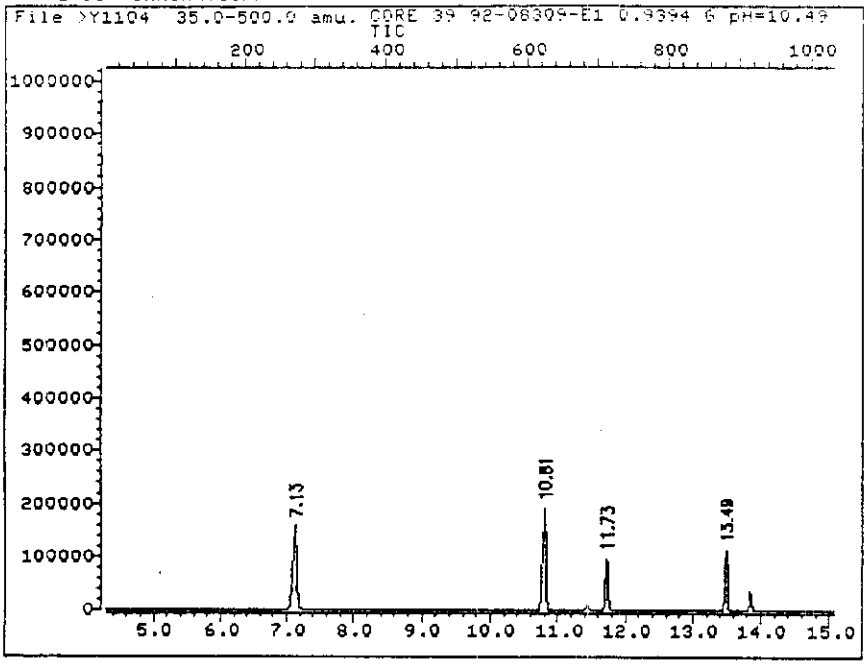
1.	Pentadecane	212	C15H32
2.	Tetradecane	198	C14H30
3.	Eicosane	282	C20H42
4.	Octacosane	394	C28H58
5.	Nonadecane	268	C19H40
6.	Pentatriacontane	492	C35H72

Sample file: >Y1104 Spectrum #: 1605
Search speed: 3 Tilting option: F No. of ion ranges searched: 71

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	94*	629629	6819	NBS49K	111	9	1	2	83	4	72	92
2.	86	629594	6804	NBS49K	97	11	2	0	100	4	60	39
3.	86	112958	6871	NBS49K	106	33	2	4	75	5	60	35
4.	83	630024	6906	NBS49K	99	42	2	1	80	2	57	26
5.	83	629925	6864	NBS49K	83	34	2	1	100	5	57	22
6.	83	630079	6915	NBS49K	98	53	2	3	83	4	57	25


File >Y1104 35.0-500.0 amu. CORE 39 92-08309-E1 0.9394 G pH=10.49
TIC
533519
366750
52594
200000
160000
120000
80000
40000
0
23.2
23.6
24.0
24.4
24.8
25.2
25.6
26.0
100
80
60
40
20
0
File >Y1104
Bpk Ab 14864.
CORE 39 92-08309-E1 0.9394 G pH=10.49
Scan 1806
23.16 min.
16000
12000
8000
4000
0
99
41
82
125
155
183
211
264
287
40
80
120
160
200
240
280
320
360

TOTAL ION CHROMATOGRAM



Data File: >Y1104::D2
Name: CORE 39 92-08309-E1
Misc: 0.9394 G pH=10.49

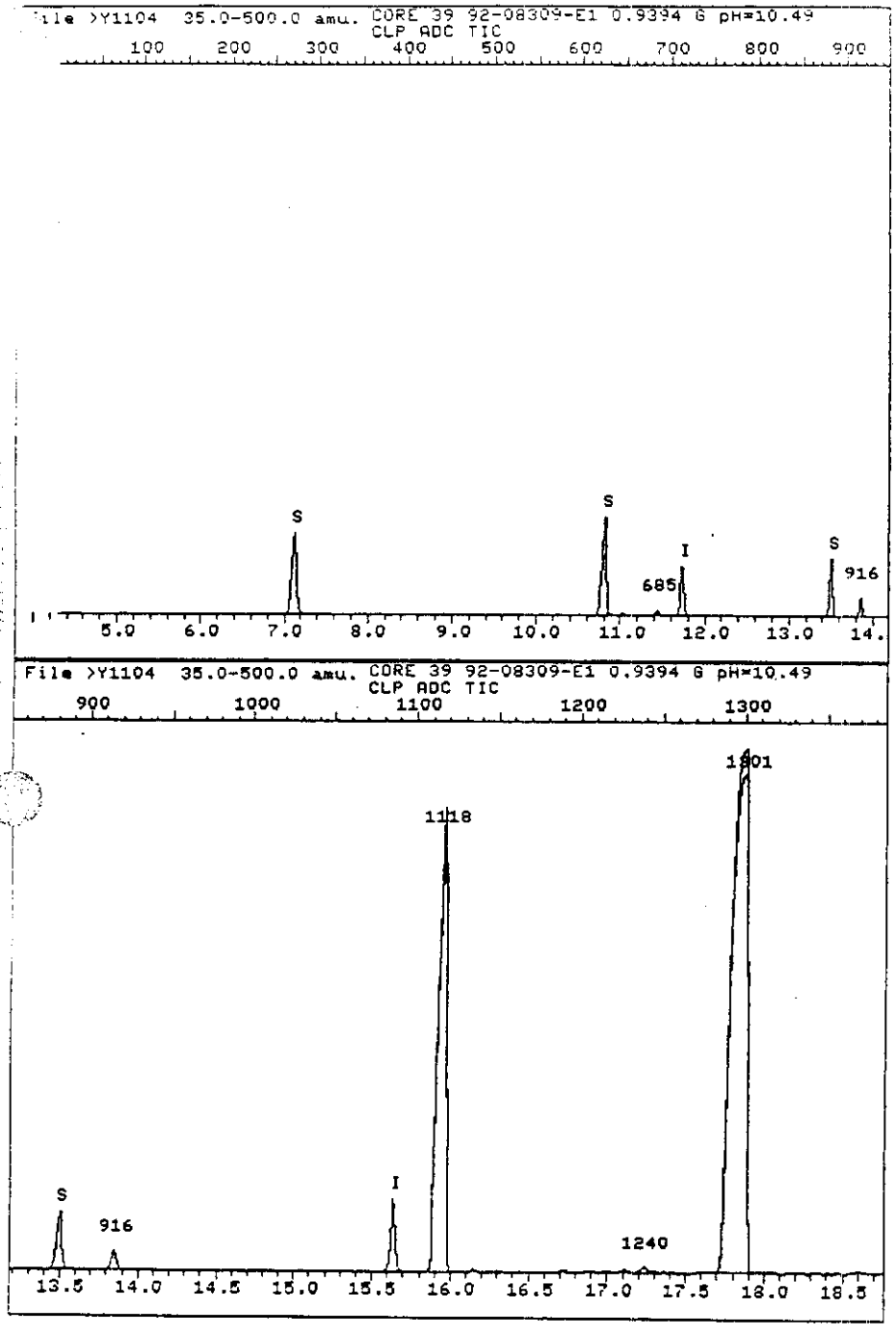
Quant Output File: ^Y1104::OF
Instrument ID: BNA2
BTL# 2

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

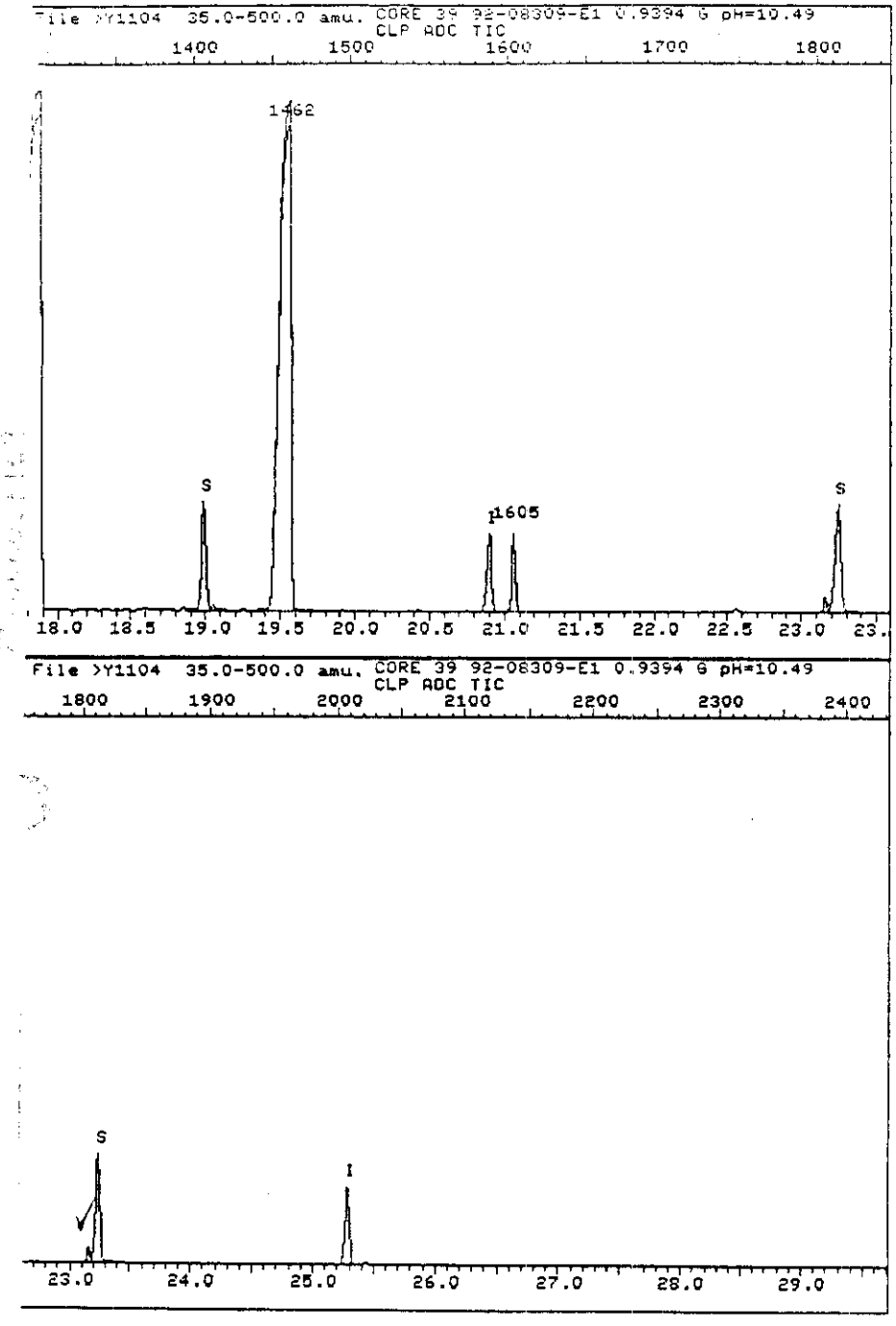
Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 14:45
Injected at: 921211 13:57

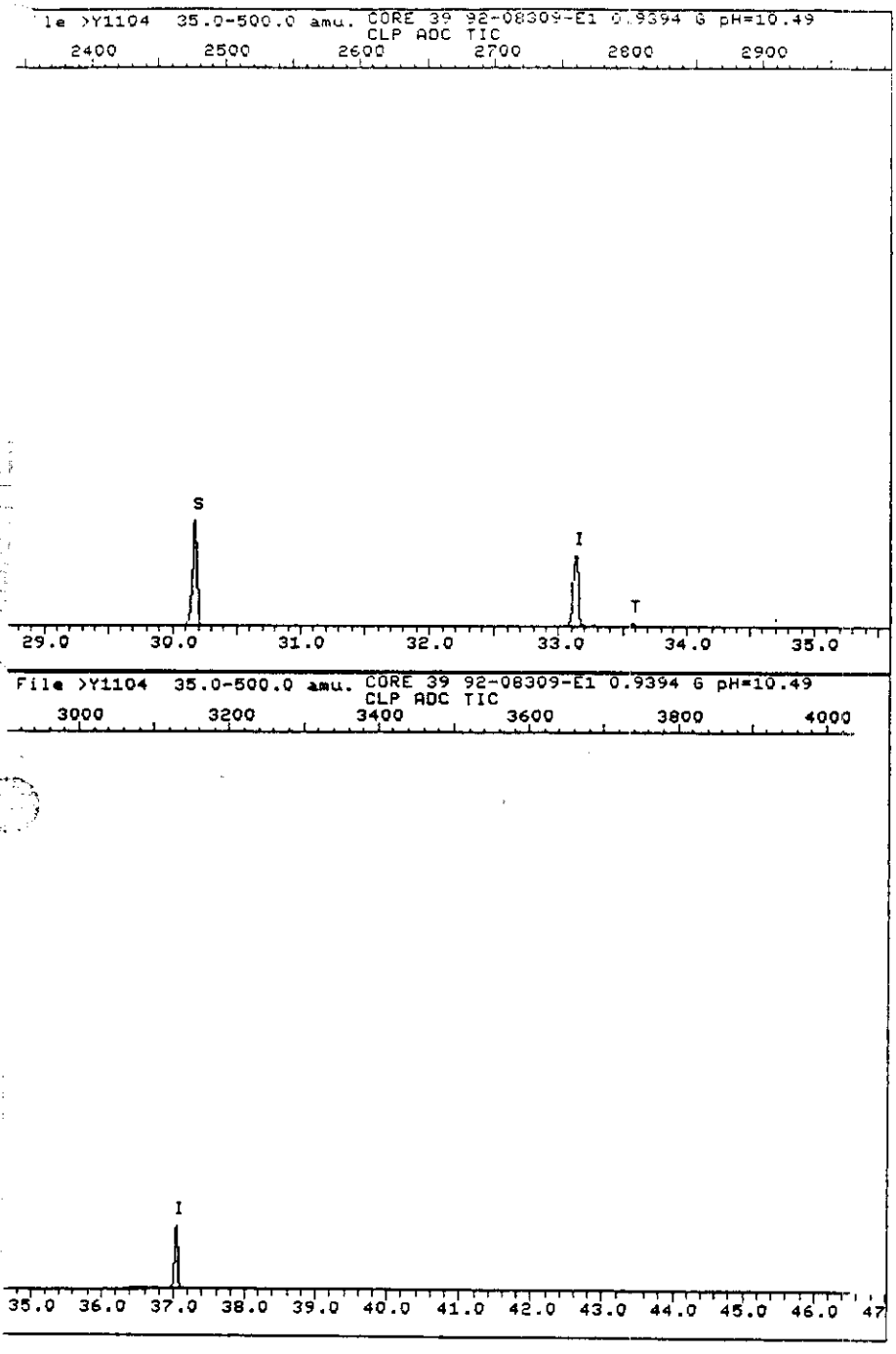
Page 1 of 4



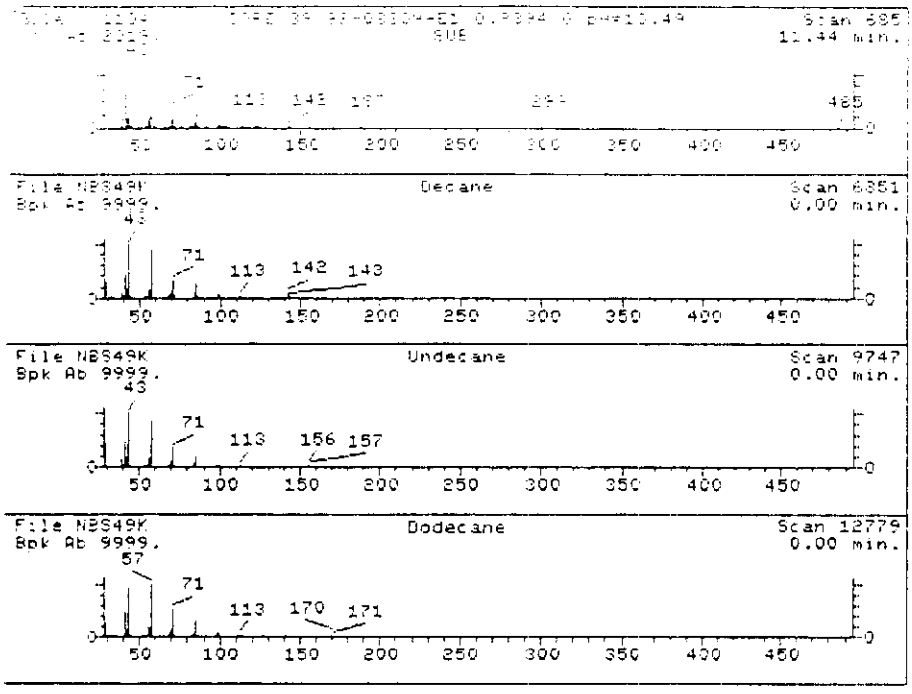
Instrument ID: BNA2 Analyzed on: 12/11/92 13:57



Instrument ID: BNA2 Analyzed on: 12/11/92 13:57



Instrument ID: BNA2 Analyzed on: 12/11/92 13:57

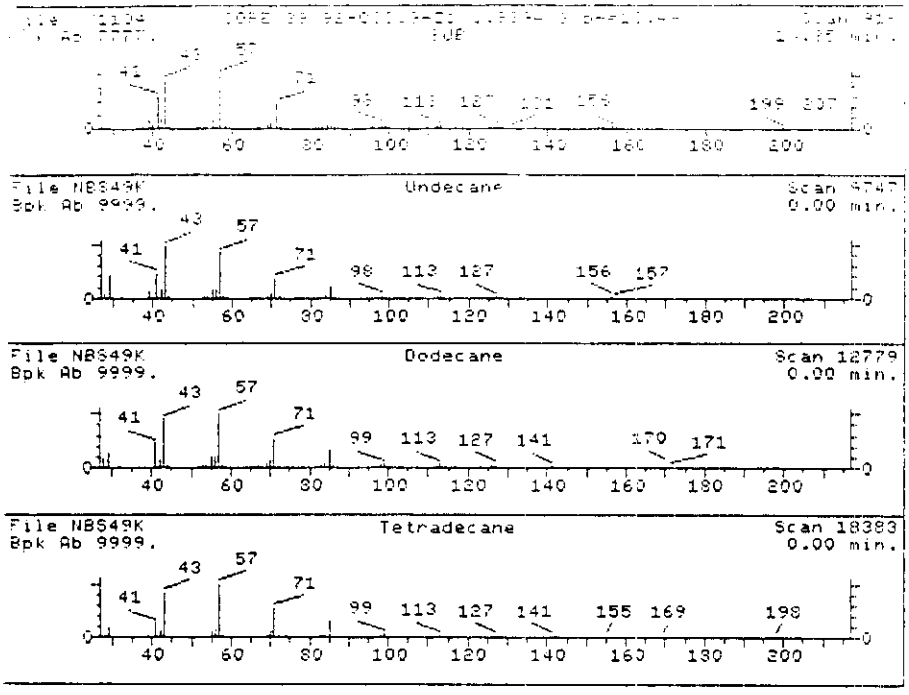


Instrument ID: BNA2 Analyzed on: 12/11/92 13:57
Result 1 in PBM results file: LY1104
Retention Time: 11.44 Area: 28513 Tentative Conc: 8700.00
The unknown area is 10.25% of the nearest internal standard

1. Decane	142	C10H22
2. Undecane	156	C11H24
3. Dodecane	170	C12H26
4. Octane, 2,4,6-trimethyl-	156	C11H24
5. Decane, 2,9-dimethyl-	170	C12H26
6. Nonane, 2-methyl-	142	C10H22

Sample file: >Y1104 Spectrum #: 685
Search speed: 3 Tilting option: F No. of ion ranges searched: 72

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IO
1.	94*	124185	18079	NBS49K	91	9	1	2	91	2	72	92
2.	83	1120214	6682	NBS49K	77	20	2	0	100	5	57	28
3.	67	112403	6732	NBS49K	81	18	2	4	87	14	34	23
4.	67	62016379	6679	NBS49K	65	20	2	0	99	11	34	23
5.	67	1002171	6738	NBS49K	60	32	2	0	89	11	34	21
6.	60*	871830	9512	NBS49K	42	54	3	0	100	13	30	13

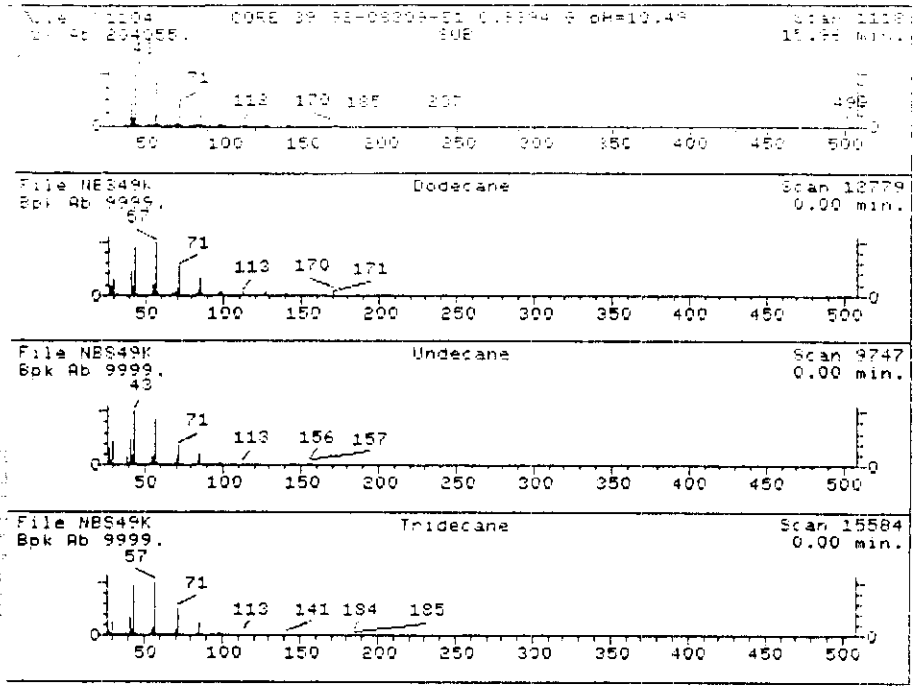


Instrument ID: BNA2 . Analyzed on: 12/11/92 13:57
Result 2 in PBM results file: LY1104
Retention Time: 13.85 Area: 79189 Tentative Conc: 20000.00
The unknown area is 23.73% of the nearest internal standard

1.	Undecane	156	C11H24
2.	Dodecane	170	C12H26
3.	Tetradecane	198	C14H30
4.	Tridecane	184	C13H28
5.	Heptadecane, 2,6,10,14-tetramethyl-	296	C21H44
6.	Undecane, 4,6-dimethyl-	184	C13H28

Sample file: >Y1104 Spectrum #: 916
Search speed: 3 Tilting option: F No. of ion ranges searched: 59

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	96*	1120214	6682	NBS49K	89	8	0	0	90	0	72	96
2.	83	112403	6732	NBS49K	87	12	2	4	81	1	57	27
3.	83	629594	6804	NBS49K	82	26	2	2	97	2	57	23
4.	83	629505	6761	NBS49K	70	36	2	0	92	2	57	23
5.	78	18344371	6880	NBS49K	79	50	2	2	81	4	55	14
6.	70	17312822	4387	NBS49K	70	28	2	1	84	10	42	18



Instrument ID: BNA2 Analyzed on: 12/11/92 13:57
Result 3 in PBM results file: LY1104
Retention Time: 15.96 Area: 3213469 Tentative Conc: 820000.00
The unknown area is 962.97% of the nearest internal standard

1. Dodecane	170	C12H26
2. Undecane	156	C11H24
3. Tridecane	184	C13H28
4. Tetradecane	198	C14H30
5. Pentadecane	212	C15H32
6. Undecane, 2-methyl-	170	C12H26

Sample file: >Y1104 Spectrum #: 1118
Search speed: 3 Tilting option: F No. of ion ranges searched: 58

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	96*	112403	6732	NBS49K	99	0	0	4	91	0	72	94
2.	87	1120214	6682	NBS49K	81	16	1	0	85	1	63	42
3.	83	629505	6761	NBS49K	88	18	2	3	100	2	57	27
4.	83	629594	6804	NBS49K	87	21	2	3	99	1	57	27
5.	83	629629	6819	NBS49K	87	33	2	4	73	4	57	23
6.	79*	7045718	6735	NBS49K	55	39	2	1	89	10	48	34

Instrument ID: [illegible] Analyzed on: [illegible]

Retention Time: [illegible] Area: [illegible] Tentative Conc: [illegible]

The unknown area is [illegible] of the nearest internal standard

This peak is less than 10% of the nearest internal standard.

No library search has been performed on this peak.

WHC-SD-WM-DP-027

QUANT REPORT Page 1

Operator ID: BOE
Output File: ^Y1105::OF
Data File: ^Y1105::D2
Name: CORE 39 92-08309-E2
Misc: 1.2502 G pH=10.49

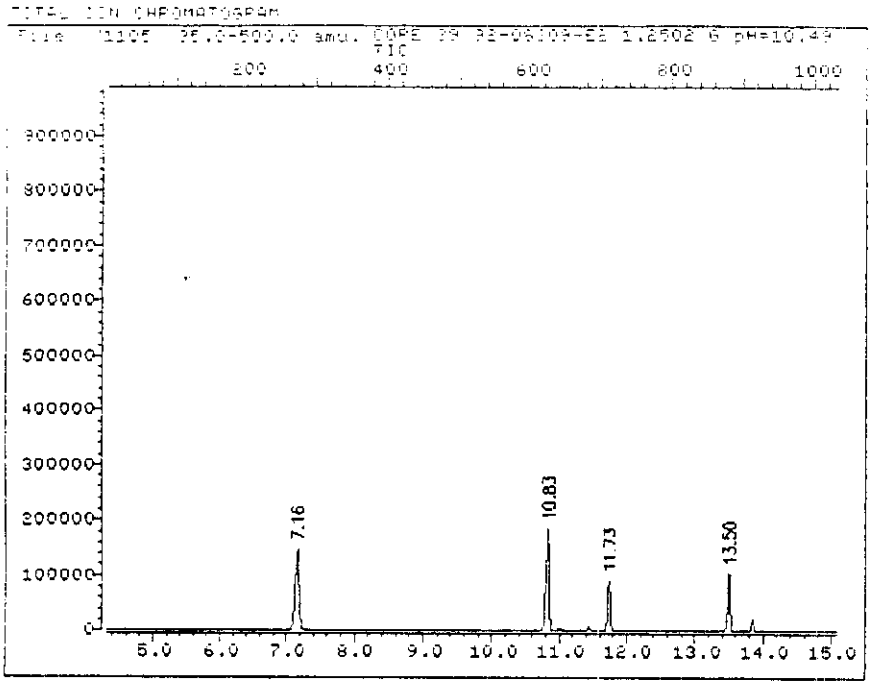
Quant Rev: 7 Quant Time: 921211 15:43
Injected at: 921211 14:55
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 3

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40 Last Qcal Time: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	711	42493	40.00	ng/uL	96
2)	2-Fluorophenol	7.16	273	156654	107.94	ng/uL	88
3)	Phenol-d5	10.83	625	191478	103.36	ng/uL	97
16)	*Naphthalene-d8	15.64	1085	151881	40.00	ng/uL	95
17)	Nitrobenzene-d5	13.50	880	79839	51.63	ng/uL	94
31)	*Acenaphthene-d10	20.89	1587	76952	40.00	ng/uL	99
36)	2-Fluorobiphenyl	18.99	1405	134374	52.52	ng/uL	98
51)	*Phenanthrene-d10	25.28	2007	140806	40.00	ng/uL	99
54)	2,4,6-Tribromophenol	23.24	1812	66114	106.85	ng/uL	97
62)	*Chrysene-d12	33.13	2758	120828	40.00	ng/uL	89
64)	Terphenyl-d14	30.17	2475	164778	52.69	ng/uL	89
69)	Bis(2-Ethylhexyl)phthalate	33.58	2801	2220	.693	ng/uL	93
70)	*Perylene-d12	37.05	3132	144732	40.00	ng/uL	98

* Compound is ISTD

Preliminary data
12.17.92



Data File: >Y1105::D2
Name: CORE 39 92-08309-E2
Misc: 1.2502 G pH=10.49

Quant Output File: ^Y1105::OF
Instrument ID: BNA2

BTL# 3

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 15:43
Injected at: 921211 14:55

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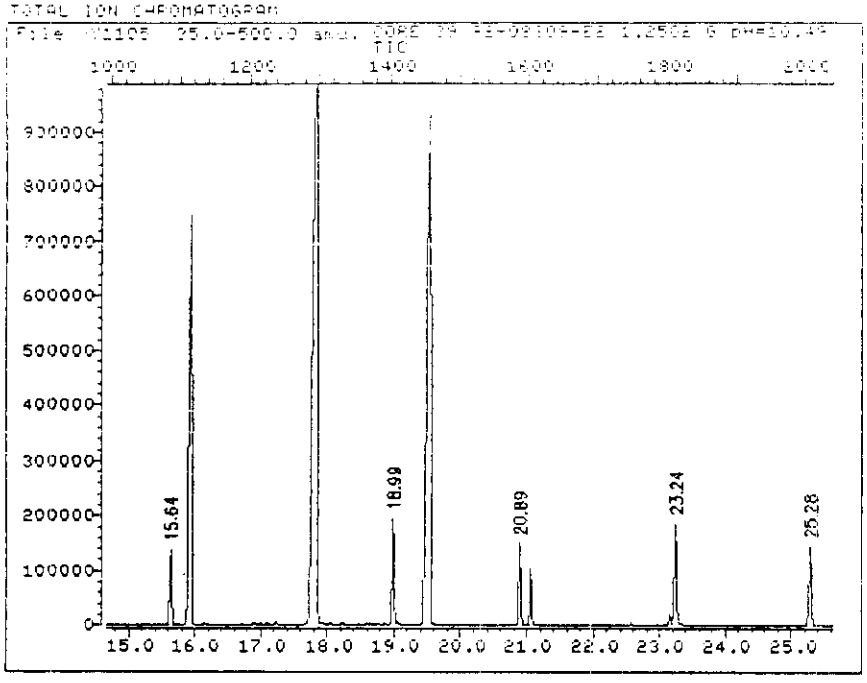

Data File: >Y1105::D2
Name: CORE 39 92-08309-E2
Misc: 1.2502 G pH=10.49

Quant Output File: ^Y1105::OF
Instrument ID: BNA2

BTL# 3

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 15:43
Injected at: 921211 14:55

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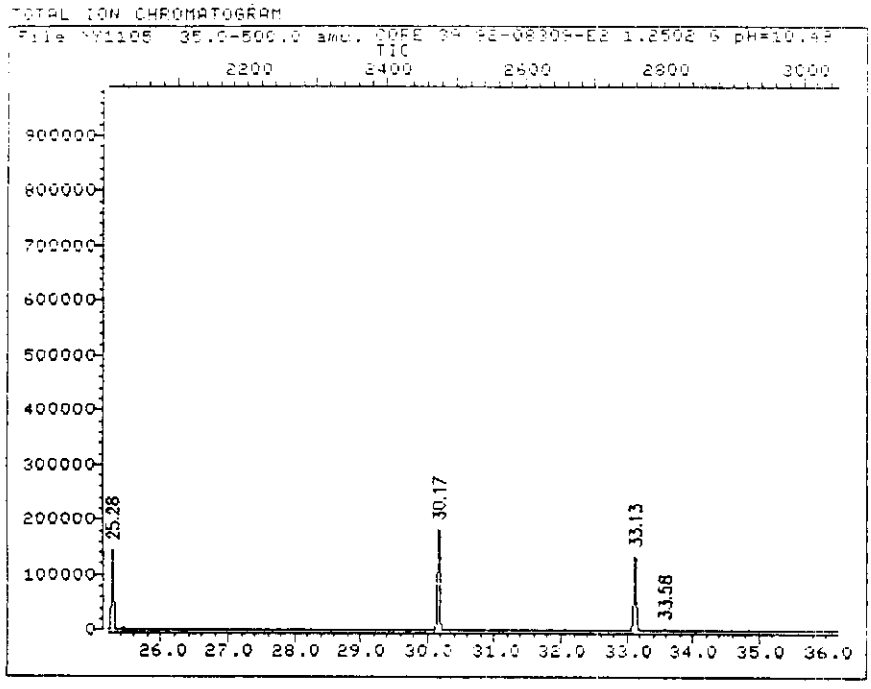

Data File: >Y1105::D2
Name: CORE 39 92-08309-E2
Misc: 1.2502 G pH=10.49

Quant Output File: ^Y1105::DF
Instrument ID: BNA2

STL# 3

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qual Time: 921211 11:54

Operator ID: BDB
Quant Time : 921211 15:43
Injected at: 921211 14:55

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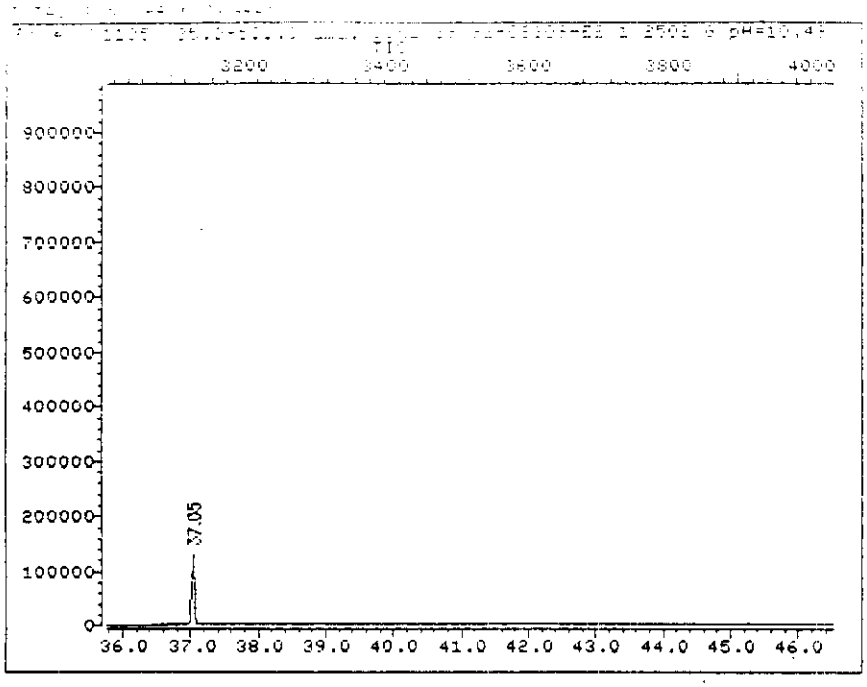

Data File: >Y1105::D2 Quant Output File: ^Y1105::QF
Name: CORE 39 92-08309-E2 Instrument ID: BNA2
Misc: 1.2502 G pH=10.49 BTL# 3

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40 Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 15:43
Injected at: 921211 14:55

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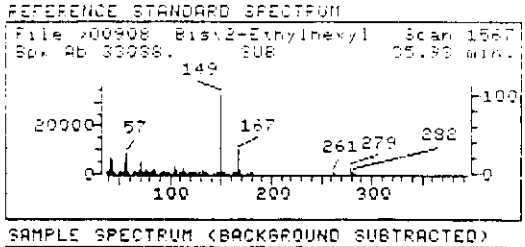
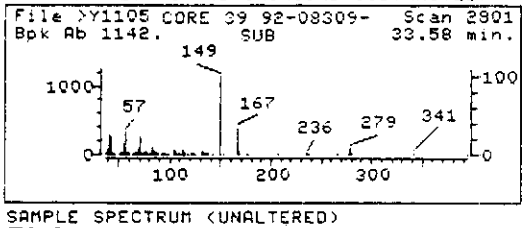
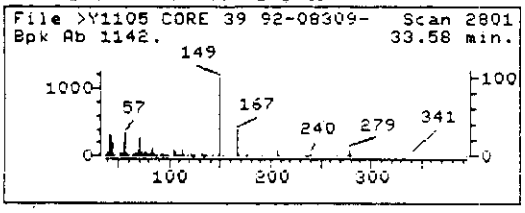
REFERENCE STANDARD SPECTRUM

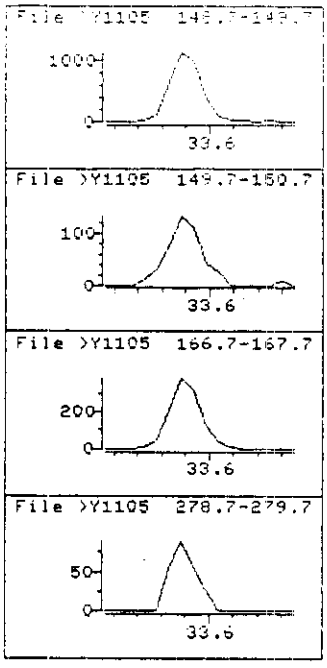


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





Data File: >Y1105::D2
Name: CORE 39 92-08309-E2
Misc: 1.2502 G pH=10.49
Quant Time: 921211 15:43
Injected at: 921211 14:55
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1105::OF
Instrument ID: BNA2
BTL# 3
Quant ID File: ID2BNA::Q"
Last Calibration: 921105 16:40

Compound No : 69
Compound Name : Bis(2-Ethylhexyl)phthalate
Scan Number : 2801
Retention Time: 33.58 min.
Quant Ion : 149.0
Area : 2220
Concentration : .693 ng/uL
q-value : 93

QUANT REPORT

Operator ID: BOB
Output File: ^Y1105::OF
Data File: >Y1105::D2
Name: CORE 39 92-08309-E2
Misc: 1.2502 G pH=10.49

Quant Rev: 7
Quant Time: 921211 15:43
Injected at: 921211 14:55
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 3

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	711	42493	40.00	ng/uL	96
2)	2-Fluorophenol	7.16	273	156654	107.94	ng/uL	88
3)	Phenol-d5	10.83	625	191478	108.36	ng/uL	97
4)	Phenol	0.00	0	0	0.00	ng/uL	
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL	
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL	
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	0.00	880	0	0.00	ng/uL	
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.64	1085	151881	40.00	ng/uL	95
17)	Nitrobenzene-d5	13.50	880	79839	51.63	ng/uL	94
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL	
19)	Isophorone	0.00	0	0	0.00	ng/uL	
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL	
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL	
22)	Benzoic acid	0.00	0	0	0.00	ng/uL	
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL	
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL	
25)	1,2,4-Trichlorobenzene	0.00	0	0	0.00	ng/uL	
26)	Naphthalene	0.00	0	0	0.00	ng/uL	
27)	4-Chloroaniline	0.00	1114	0	0.00	ng/uL	
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL	
29)	4-Chloro-3-methylphenol	0.00	0	0	0.00	ng/uL	
30)	2-Methylnaphthalene	0.00	1293	0	0.00	ng/uL	
31)	*Acenaphthene-d10	20.89	1587	76952	40.00	ng/uL	99
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL	
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL	
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL	
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL	
36)	2-Fluorobiphenyl	18.99	1405	134374	52.52	ng/uL	98
37)	2-Nitroaniline	0.00	1458	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1587	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	0.00	0	0	0.00	ng/uL	

43)	2,4-Dinitrophenol	0.00	0	0	0.00	ng/uL	
44)	4-Nitrophenol	0.00	0	0	0.00	ng/uL	
45)	Dibenzofuran	0.00	0	0	0.00	ng/uL	
46)	2,4-Dinitrotoluene	0.00	0	0	0.00	ng/uL	
47)	Diethylphthalate	0.00	0	0	0.00	ng/uL	
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00	ng/uL	
49)	Fluorene	0.00	0	0	0.00	ng/uL	
50)	4-Nitroaniline	0.00	0	0	0.00	ng/uL	
51)	*Phenanthrene-d10	25.28	2007	140806	40.00	ng/uL	99
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00	ng/uL	
53)	N-Nitrosodiphenylamine	0.00	1812	0	0.00	ng/uL	
54)	2,4,6-Tribromophenol	23.24	1812	66114	106.85	ng/uL	97
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00	ng/uL	
56)	Hexachlorobenzene	0.00	0	0	0.00	ng/uL	
57)	Pentachlorophenol	0.00	0	0	0.00	ng/uL	
58)	Phenanthrene	0.00	0	0	0.00	ng/uL	
59)	Anthracene	0.00	0	0	0.00	ng/uL	
60)	Di-n-butylphthalate	0.00	0	0	0.00	ng/uL	
61)	Fluoranthene	0.00	0	0	0.00	ng/uL	
62)	*Chrysene-d12	33.13	2758	120828	40.00	ng/uL	89
63)	Pyrene	0.00	0	0	0.00	ng/uL	
64)	Terphenyl-d14	30.17	2475	164778	52.69	ng/uL	89
65)	Butylbenzylphthalate	0.00	0	0	0.00	ng/uL	
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00	ng/uL	
67)	Benzo(a)anthracene	0.00	0	0	0.00	ng/uL	
68)	Chrysene	0.00	0	0	0.00	ng/uL	
69)	Bis(2-Ethylhexyl)phthalate	33.58	2801	2220	.693	ng/uL	93
70)	*Perylene-d12	37.05	3132	144732	40.00	ng/uL	98
71)	Di-n-octylphthalate	0.00	0	0	0.00	ng/uL	
72)	Benzo(b)fluoranthene	0.00	0	0	0.00	ng/uL	
73)	Benzo(k)fluoranthene	0.00	0	0	0.00	ng/uL	
74)	Benzo(a)pyrene	0.00	0	0	0.00	ng/uL	
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00	ng/uL	
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00	ng/uL	
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00	ng/uL	

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS _AB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1105
CAL CHECK FILE = >Y1102
DATE AND TIME OF ANALYSIS = 12/11/92 14:55
MISCELLANEOUS = 1.2502 G pH=10.49
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	42493	35181	17591	70362	OK
Naphthalene-d8	151881	121257	60629	242514	OK
Acenaphthene-d10	76952	62320	31160	124640	OK
Phenanthrene-d10	140806	110649	55325	221298	OK
Chrysene-d12	120828	89739	44870	179478	OK
Perylene-d12	144732	104732	52366	209464	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.73	11.73	11.23	12.23	OK
Naphthalene-d8	15.64	15.64	15.14	16.14	OK
Acenaphthene-d10	20.89	20.89	20.39	21.39	OK
Phenanthrene-d10	25.28	25.29	24.79	25.79	OK
Chrysene-d12	33.13	33.14	32.64	33.64	OK
Perylene-d12	37.05	37.05	36.55	37.55	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1105::D2
DATE AND TIME OF ANALYSIS = 12/11/92 14:55
SAMPLE = CORE 39 92-08309-E2
MISCELLANEOUS = 1.2502 G pH=10.49
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVERY
2-Fluorophenol	107.94	100.00	21-100	25-121	107.94
Phenol-d5	108.36	100.00	10-94	24-113	108.36
Nitrobenzene-d5	51.63	50.00	35-114	23-120	103.26
2-Fluorobiphenyl	52.52	50.00	43-116	30-115	105.04
2,4,6-tribromo-phenol	106.85	100.00	10-123	19-122	106.85
Terphenyl-d14	52.69	50.00	33-141	18-137	105.37

MS data file header from : >Y1105::D2

Sample: CORE 39 92-08309-E2 Operator: BOB SUPER GRF. 12/11/92 14:58
Misc : 1.2502 G pH=10.49 BTL# 3
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 3 Equip ID: BNA2
Method file: BNAME2 Tuning file: MTBNA2 No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	40.	300.	0.	0.	0.
Chromatographic times, min. :	4.0	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	8.0	0.0	0.0	.5	0.0

>Y1105 CORE 39 92-08309-E2 1.2502 G pH=10.49
35.01 500.0 CLP TIC
Upslope: .2000 Area Reject: 26839. Max Peaks: 5 Bunch: -1 Valley >100 %
Dnslope: 0.0000 Results File IY1105 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	13.85	908	914	921	23600	56873	52646	.97	.433
2	15.94	1102	1114	1119	747063	2332610	2324192	42.91	19.125
3	17.85	1278	1296	1302	982709	5449022	5416784	100.00	44.574
4	19.54	1438	1458	1471	941430	4204646	4176339	77.10	34.366
5	21.06	1597	1603	1610	102581	185973	182497	3.37	1.502

Sum of corrected areas: 12152460.

Summary of Unknowns PBM Library Search and Quantitation

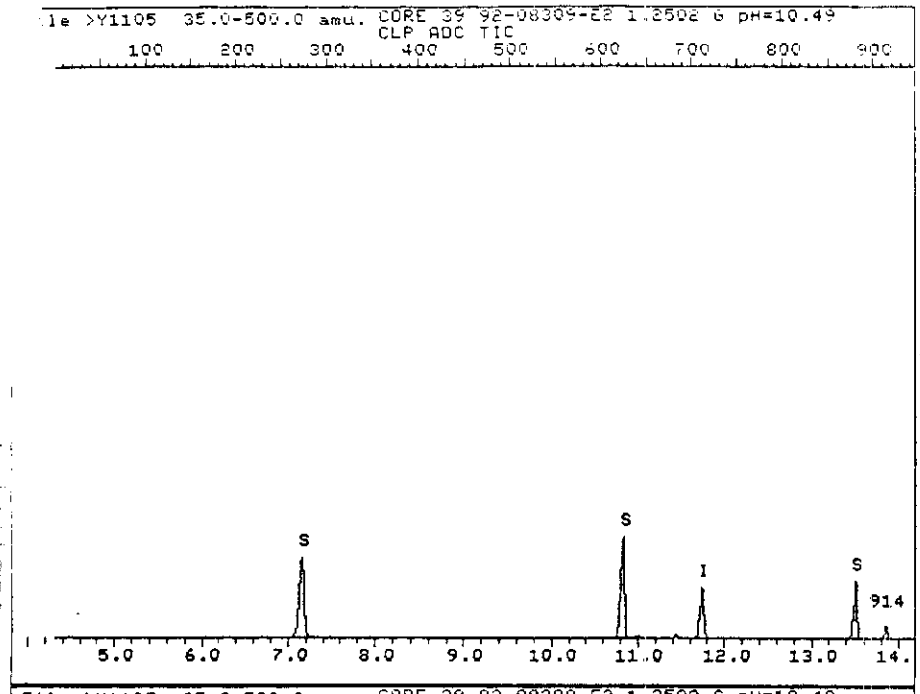
Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	268385.	11.73	4.32 - 13.68
2	40.0	323458.	15.64	13.68 - 18.27
3	40.0	349253.	20.89	18.27 - 23.09
4	40.0	365521.	25.28	23.09 - 29.20
5	40.0	362183.	33.13	29.20 - 35.09
6	40.0	398619.	37.05	35.09 - 46.52

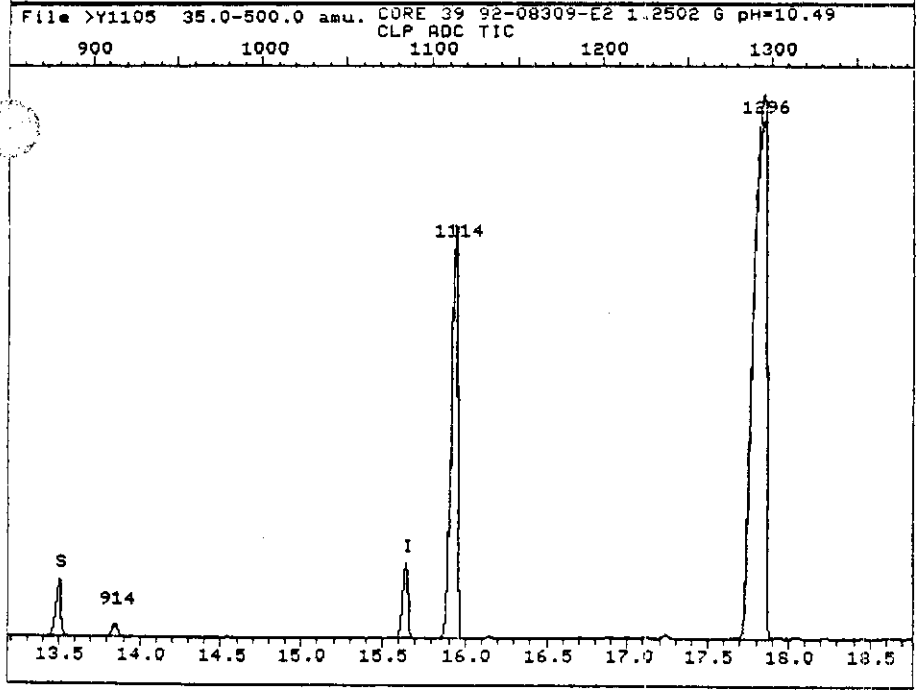
Dilution Factor = 1.00 This sample was 1.25020 g or mL

Correction Factor = 1601.35

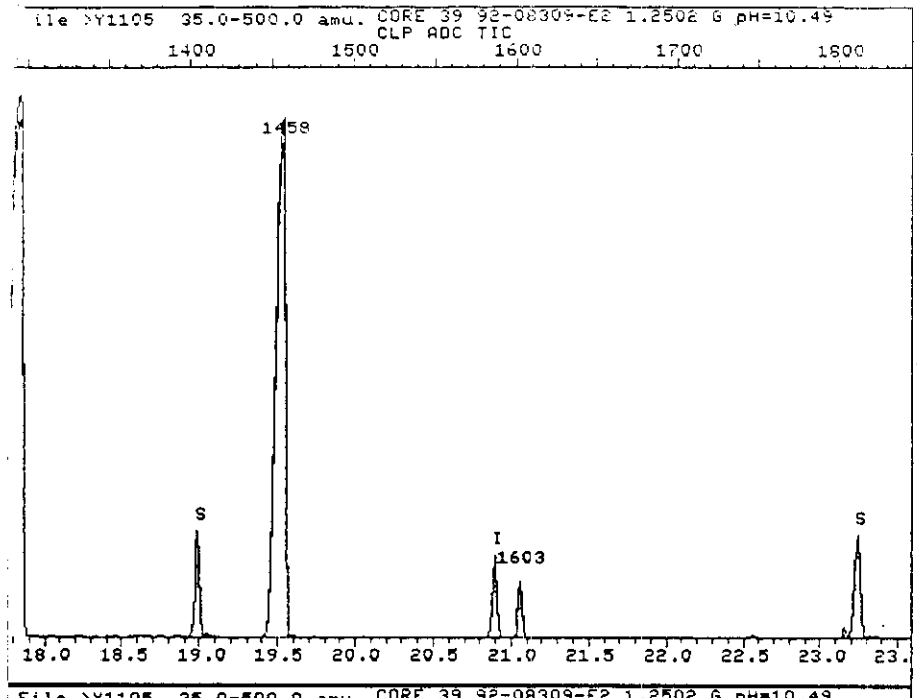
$$\text{Unknown Concentration} = \frac{\text{Conc Int Std} * \text{Area Unknown}}{\text{Area Int Std}} * \text{Correction Factor}$$

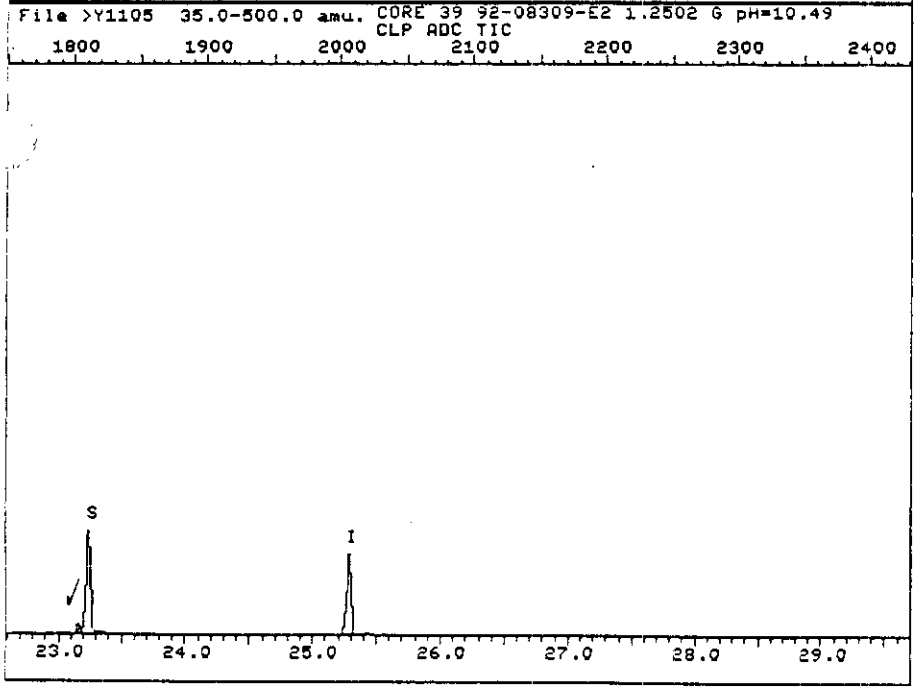
8:53 AM WED., 16 DEC., 1992



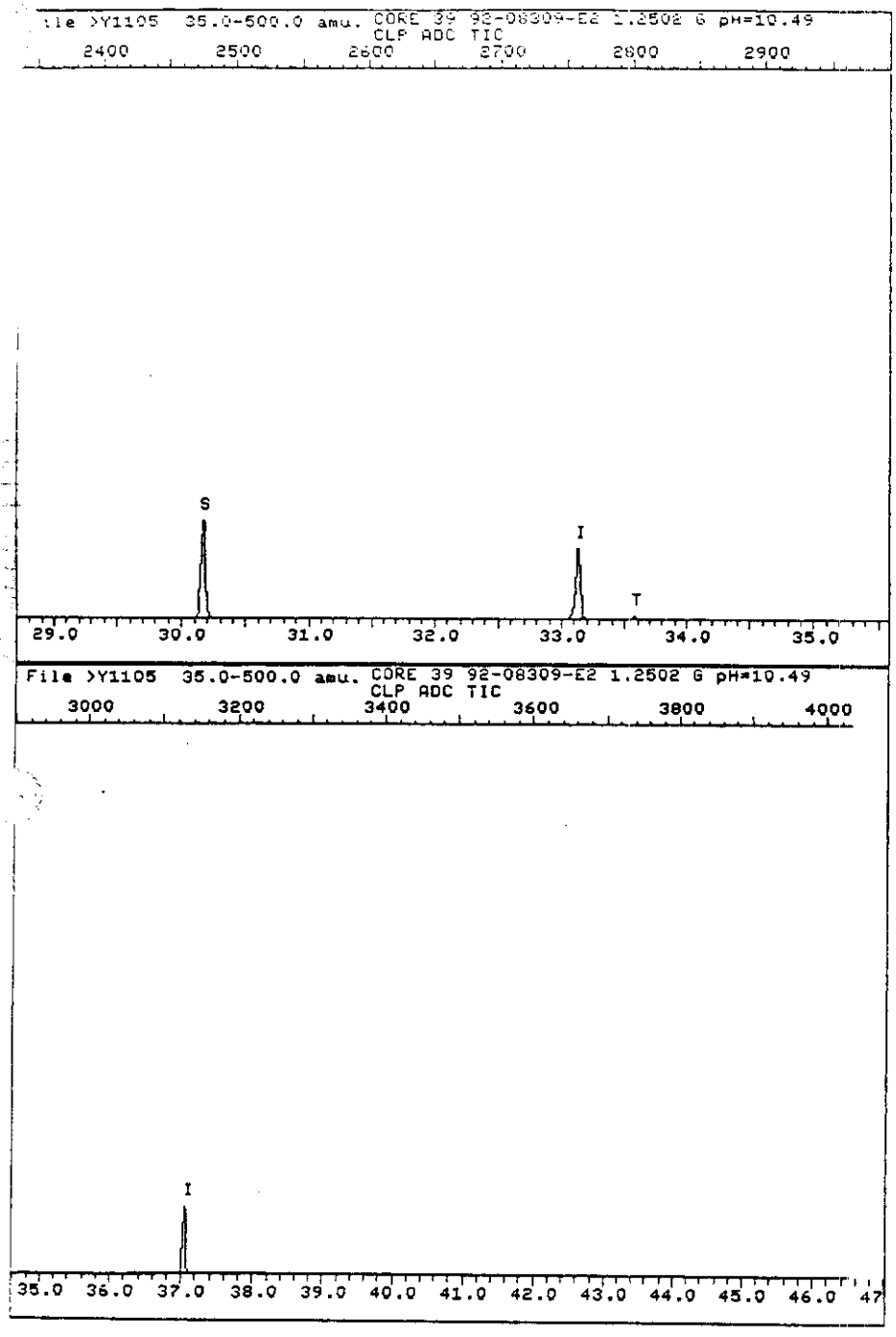


Instrument ID: BNA2 Analyzed on: 12/11/92 14:55





Instrument ID: BNA2 Analyzed on: 12/11/92 14:55



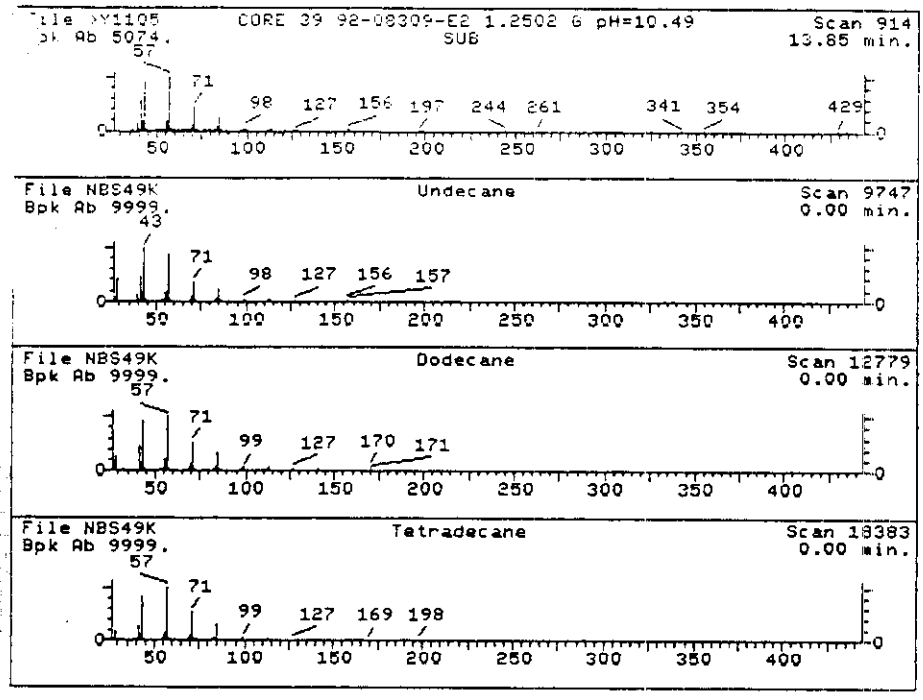
Instrument ID: BNA2 Analyzed on: 12/11/92 14:55

```
FMGR : new
fi,>y1105
FMGR : ec,,,23:26
 reg type  # pts  scan#    range: amu\r.t.      base   file     ion range
 --- ----  -----  -----   ----------------   -------  -----  --------------
  X   GC     288   1789    23.00-    26.00  186201.0 >Y1105   35.00- 500.00
FMGR : int

 >Y1105        CORE 39 92-08309-E2 1.2502 G pH=10.49
   35.0| 500.0 TIC
 Upslope:  .2000 Area Reject: 5.00 %   Max Peaks:  3  Bunch:  1 Valley >100 %
 Dnslope: 0.0000 Results File VDIR76   Sorted by Time/Area      INT

 Peak   R.T.  first    max   last    peak     raw      corr.    corr.    % of
   #    min.   scan   scan   scan   height   area     area    % max.   total
 ---  ------  -----  -----  -----  ------  -------  -------  -------  -------
   1   23.16<w/1800   1804   1806   18115    32987    31815     6.81    3.680
   2   23.24Sur 1806  1812   1825  185145   482561   467301*  100.00   54.046
   3   25.29 2000     2008   2017  145016   369144   365521    78.22   42.275

                          Sum of corrected areas:     864637.
FMGR : dr,1
  working...
  draw complete...
```

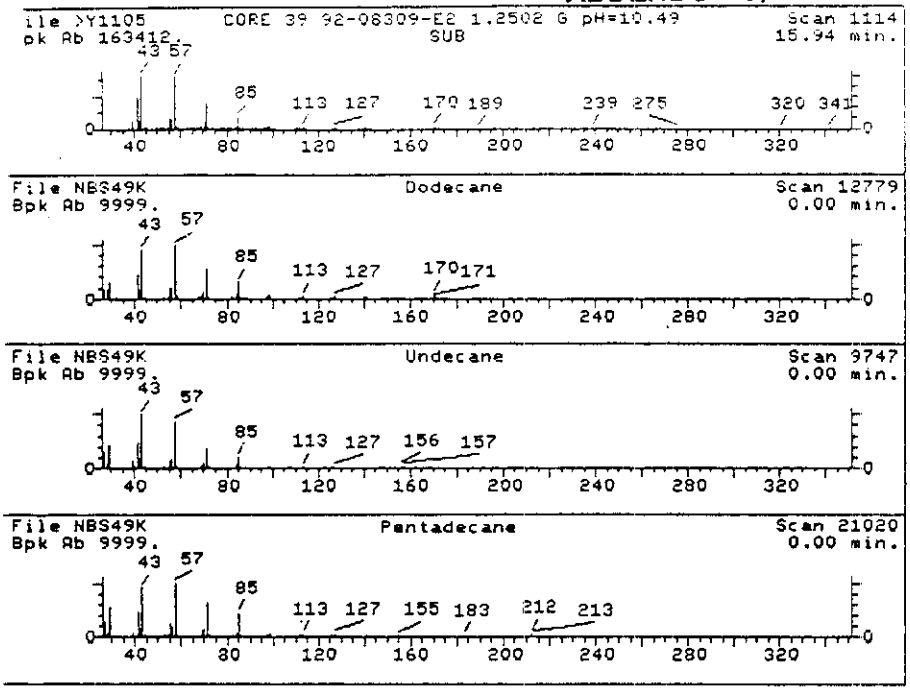


Instrument ID: BNA2 Analyzed on: 12/11/92 14:55
Result 1 in PBM results file: LY1105
Retention Time: 13.85 Area: 52646 Tentative Conc: 10000.00
The unknown area is 16.28% of the nearest internal standard

1. Undecane	156	C11H24
2. Dodecane	170	C12H26
3. Tetradecane	198	C14H30
4. Dodecane, 2,7,10-trimethyl-	212	C15H32
5. Tridecane	184	C13H28
6. Decane, 6-ethyl-2-methyl-	184	C13H28

Sample file: >Y1105 Spectrum #: 914
Search speed: 3 Tilting option: F No. of ion ranges searched: 65

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	96*	1120214	6682	NBS49K	88	9	0	0	89	4	72	96
2.	83	112403	6732	NBS49K	87	12	2	4	80	5	57	27
3.	78	629594	6804	NBS49K	74	34	2	2	92	4	55	19
4.	76	74645980	4422	NBS49K	78	31	1	3	69	10	45	29
5.	76	629505	6761	NBS49K	70	36	2	0	88	7	45	23
6.	76	62108218	6767	NBS49K	62	37	2	0	93	7	45	21

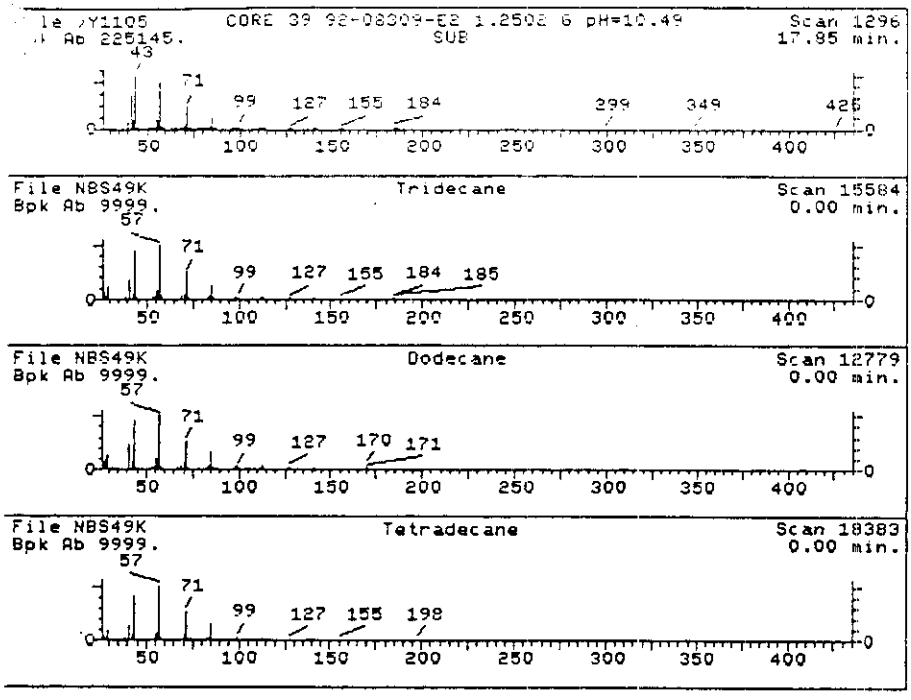


Instrument ID: BNA2 Analyzed on: 12/11/92 14:55
Result 2 in PBM results file: LY1105
Retention Time: 15.94 Area: 2324192 Tentative Conc: 460000.00
The unknown area is 718.55% of the nearest internal standard

1. Dodecane	170	C12H26
2. Undecane	156	C11H24
3. Pentadecane	212	C15H32
4. Tridecane	184	C13H28
5. Tetradecane	198	C14H30
6. Heptadecane, 2,6,10,14-tetramethyl-	296	C21H44

Sample file: >Y1105 Spectrum #: 1114
Search speed: 3 Tilting option: F No. of ion ranges searched: 58

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	96*	112403	6732	NBS49K	99	0	0	4	91	1	72	94
2.	87	1120214	6682	NBS49K	82	15	1	0	93	2	63	44
3.	86	629629	6819	NBS49K	98	22	2	4	72	5	60	33
4.	86	629505	6761	NBS49K	79	27	1	0	75	2	60	38
5.	83	629594	6804	NBS49K	92	16	2	3	100	1	57	29
6.	78	18344371	6880	NBS49K	79	50	2	2	81	2	55	14

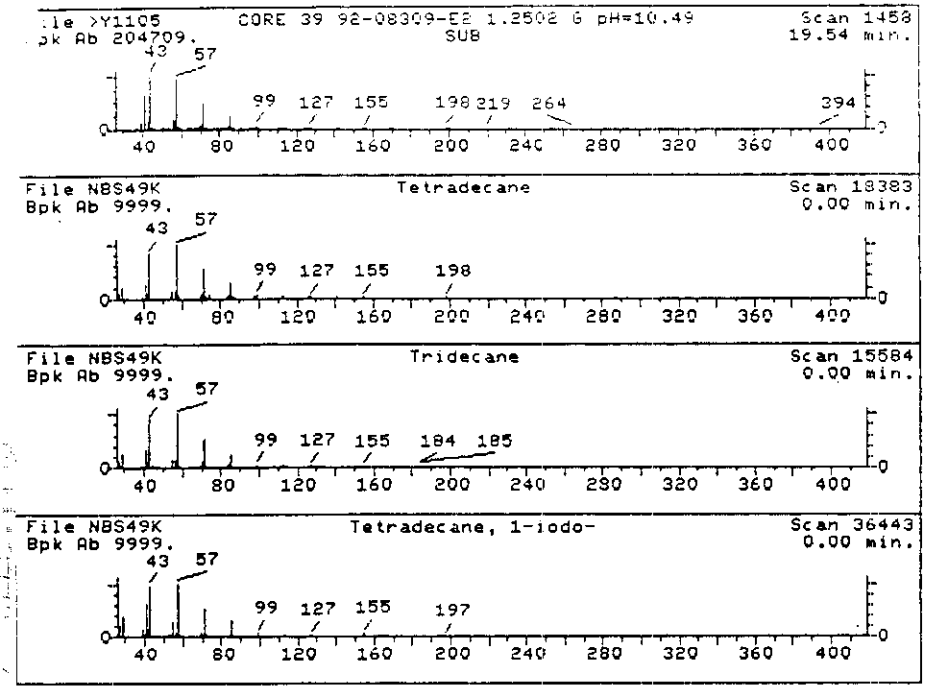


Instrument ID: BNA2 Analyzed on: 12/11/92 14:55
Result 3 in PBM results file: LY1105
Retention Time: 17.85 Area: 5416784 Tentative Conc:110000.00
The unknown area is 1674.6% of the nearest internal standard

1. Tridecane	184	C13H28
2. Dodecane	170	C12H26
3. Tetradecane	198	C14H30
4. Decane, 2,9-dimethyl-	170	C12H26
5. Undecane, 2,10-dimethyl-	184	C13H28
6. Tetradecane, 1-iodo-	324	C14H29I

Sample file: >Y1105 Spectrum #: 1296
Search speed: 3 Tilting option: F No. of ion ranges searched: 59

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CCN	C_I	R_IV
1.	95*	629505	6761	NBS49K	84	22	0	0	68	3	72	95
2.	88	112403	6732	NBS49K	92	7	1	3	78	4	65	53
3.	83	629594	6804	NBS49K	92	16	2	3	100	3	57	29
4.	83	1002171	6738	NBS49K	60	32	2	0	79	4	57	21
5.	83*	17301278	17913	NBS49K	56	53	2	2	74	4	57	27
6.	81	19218941	6889	NBS49K	93	35	1	2	69	7	53	44

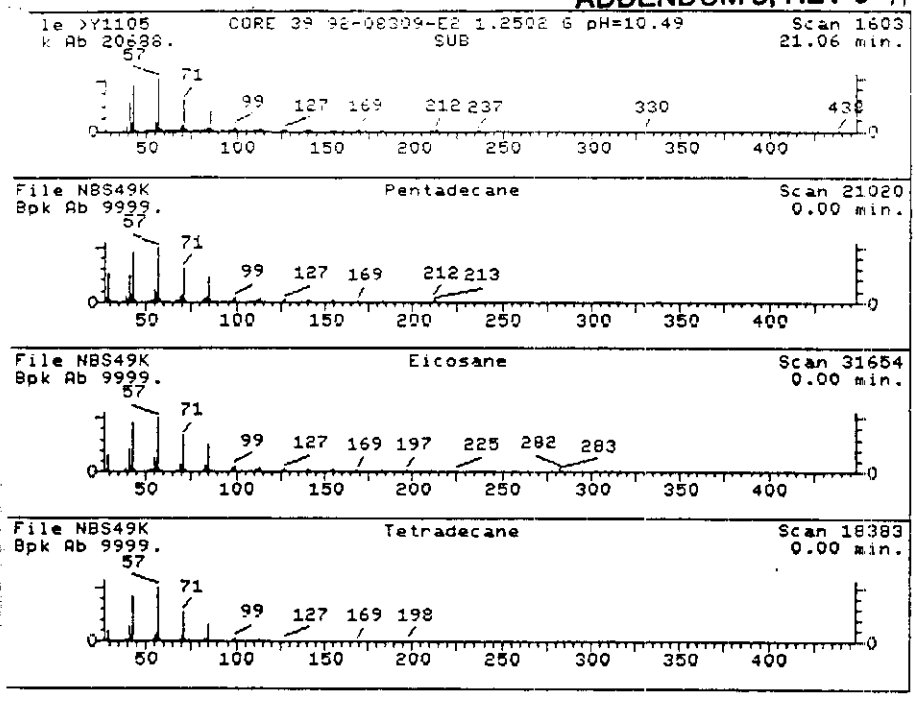


Instrument ID: BNA2 Analyzed on: 12/11/92 14:55
Result 4 in PBM results file: LY1105
Retention Time: 19.54 Area: 4176339 Tentative Conc: 770000.00
The unknown area is 1195.8% of the nearest internal standard

1. Tetradecane	198	C14H30
2. Tridecane	184	C13H28
3. Tetradecane, 1-iodo-	324	C14H29I
4. Dodecane, 2,5-dimethyl-	198	C14H30
5. Pentadecane	212	C15H32
6. Eicosane	282	C20H42

Sample file: >Y1105 Spectrum #: 1458
Search speed: 3 Tilting option: F No. of ion ranges searched: 62

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	96*	629594	6804	NBS49K	97	11	1	0	80	0	72	94
2.	89	629505	6761	NBS49K	91	15	1	0	79	3	66	60
3.	87	19218941	6889	NBS49K	94	34	1	1	72	4	63	45
4.	83*	56292650	14883	NBS49K	50	59	2	0	93	4	57	23
5.	83	629629	6819	NBS49K	93	27	2	3	80	3	57	29
6.	83	112958	6871	NBS49K	100	39	2	4	80	4	57	27



Instrument ID: BNA2 Analyzed on: 12/11/92 14:55
Result 5 in PBM results file: LY1105
Retention Time: 21.06 Area: 182497 Tentative Conc: 33000.00
The unknown area is 52.25% of the nearest internal standard

1. Pentadecane	212	$C_{15}H_{32}$
2. Eicosane	282	$C_{20}H_{42}$
3. Tetradecane	198	$C_{14}H_{30}$
4. Nonadecane	268	$C_{19}H_{40}$
5. Octacosane	394	$C_{28}H_{58}$
6. Pentatriacontane	492	$C_{35}H_{72}$

Sample file: >Y1105 Spectrum #: 1603
Search speed: 3 Tilting option: F No. of ion ranges searched: 72

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	94*	629629	6819	NBS49K	111	9	1	2	79	4	72	92
2.	87	112958	6871	NBS49K	113	26	2	4	76	5	63	44
3.	86	629594	6804	NBS49K	91	17	2	0	100	4	60	35
4.	83	629925	6864	NBS49K	89	28	2	1	100	5	57	27
5.	83	630024	6906	NBS49K	99	42	2	1	80	4	57	26
6.	83	630079	6915	NBS49K	98	53	2	3	83	5	57	25

QUANT REPORT Page 1

Operator ID: BOB
Output File: ^Y1106::OF
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49

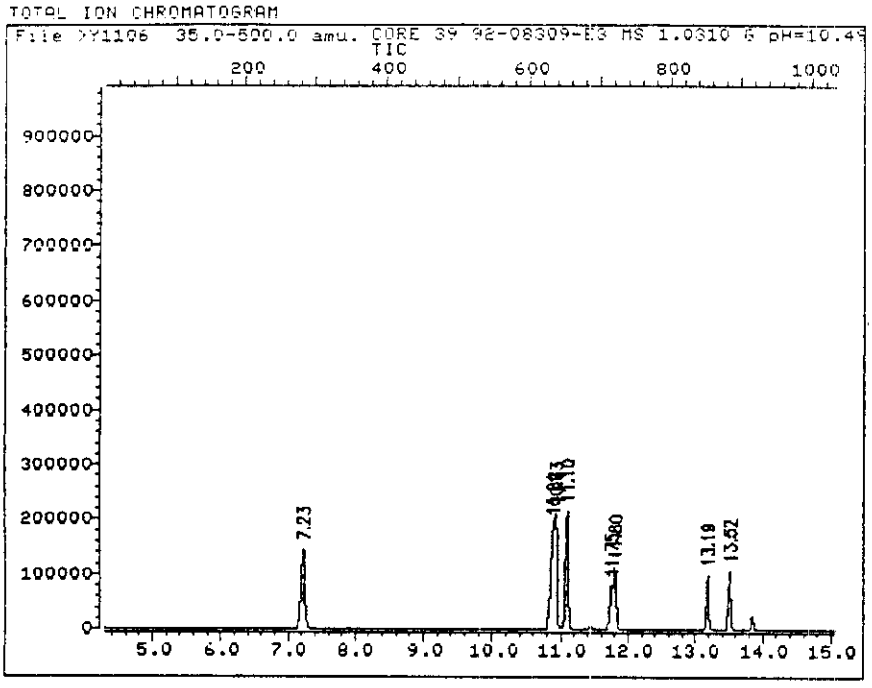
Quant Rev: 7
Quant Time: 921211 16:40
Injected at: 921211 15:53
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 4

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Time: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.75	715	38336	40.00	ng/uL	99
2)	2-Fluorophenol	7.23	282	155999	119.14	ng/uL	89
3)	Phenol-d5	10.89	633	187910	117.87	ng/uL	96
x4)	Phenol	10.93	637	184314	118.55	ng/uL	88
x6)	2-Chlorophenol	11.10	653	153344	118.21	ng/uL	96
7)	1,3-Dichlorobenzene	11.80	720	78295	54.47	ng/uL	98
x8)	1,4-Dichlorobenzene	11.80	720	78295	53.36	ng/uL	98
10)	1,2-Dichlorobenzene	11.80	720	78295	56.15	ng/uL	95
x14)	N-Nitroso-di-n-propylamine	13.19	853	51816	65.91	ng/uL	94
16)	*Naphthalene-d8	15.65	1088	140772	40.00	ng/uL	94
17)	Nitrobenzene-d5	13.52	884	84046	58.64	ng/uL	95
x25)	1,2,4-Trichlorobenzene	15.51	1075	66779	53.05	ng/uL	98
x29)	4-Chloro-3-methylphenol	17.52	1267	127984	112.39	ng/uL	98
31)	*Acenaphthene-d10	20.90	1589	73919	40.00	ng/uL	95
36)	2-Fluorobiphenyl	18.99	1407	133644	54.38	ng/uL	98
x42)	Acenaphthene	21.00	1599	118824	54.74	ng/uL	98
x44)	4-Nitrophenol	21.47	1644	27847	67.44	ng/uL	96
x46)	2,4-Dinitrotoluene	21.59	1655	51448	52.52	ng/uL	92
51)	*Phenanthrene-d10	25.29	2009	134775	40.00	ng/uL	99
54)	2,4,6-Tribromophenol	23.24	1813	67063	113.24	ng/uL	95
x57)	Pentachlorophenol	24.77	1959	48880	90.82	ng/uL	97
62)	*Chrysene-d12	33.12	2756	119579	40.00	ng/uL	88
x63)	Pyrene	29.54	2415	213339	50.86	ng/uL	98
64)	Terphenyl-d14	30.18	2476	167942	54.26	ng/uL	89
69)	Bis(2-Ethylhexyl)phthalate	33.59	2800	2768	.873	ng/uL	96
70)	*Perylene-d12	37.05	3130	139908	40.00	ng/uL	96

* Compound is ISTD

Preliminary data
12-17-92



Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49

Quant Output File: ^Y1106::OF
Instrument ID: BNA2

BTL# 4

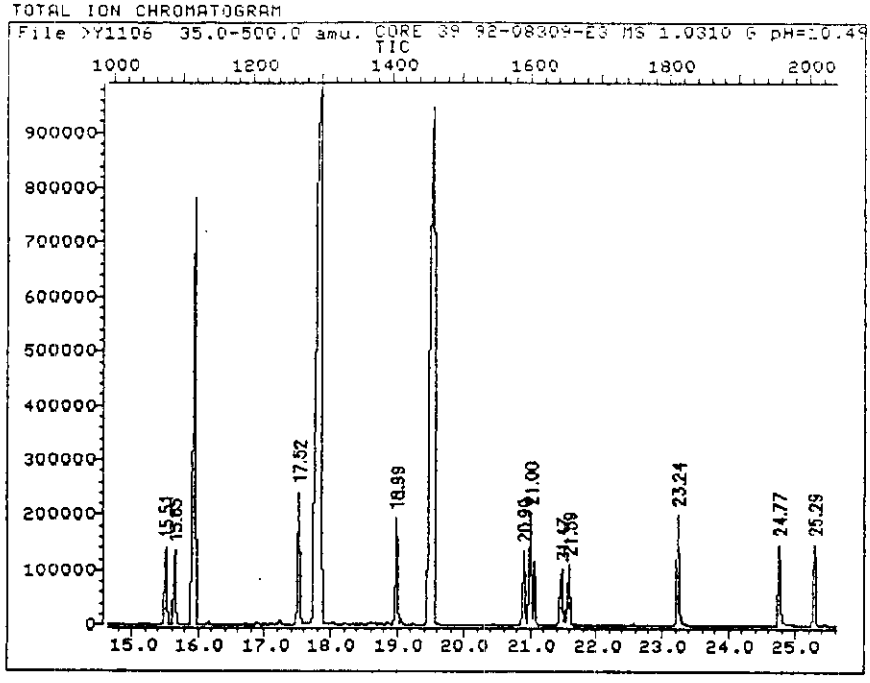
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 16:40
Injected at: 921211 15:53

Page 1 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49

Quant Output File: ^Y1106::QF
Instrument ID: BNA2
BTL# 4

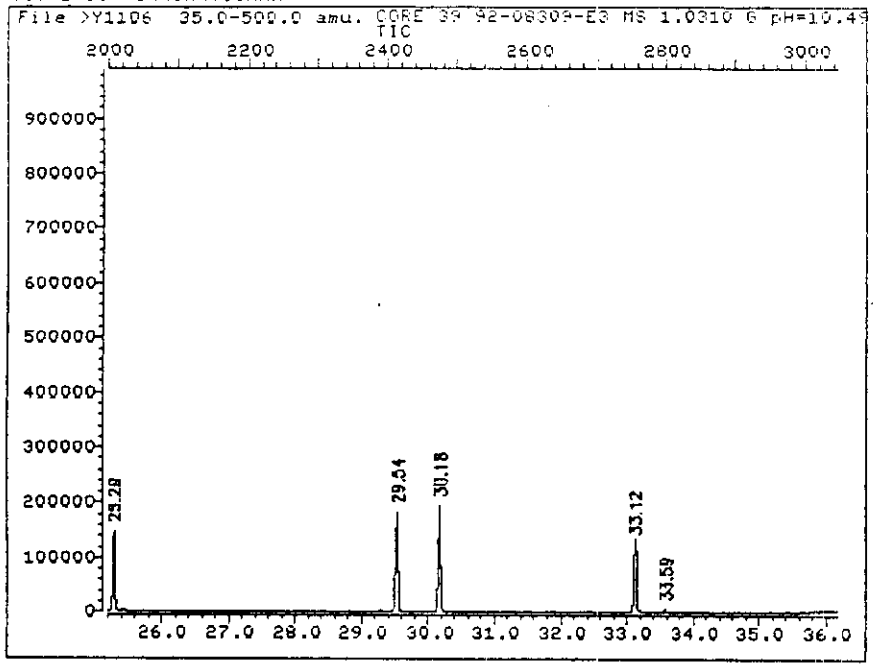
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: 808
Quant Time : 921211 16:40
Injected at: 921211 15:53

Page 2 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49

Quant Output File: ^Y1106::OF
Instrument ID: BNA2

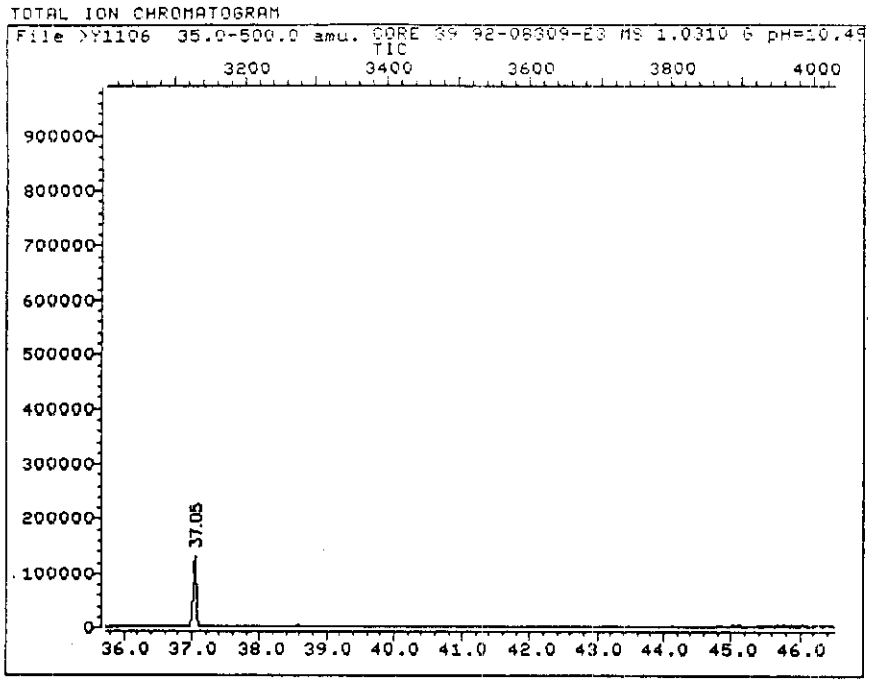
BTL# 4

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 16:40
Injected at: 921211 15:53

Page 3 of 4



Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4

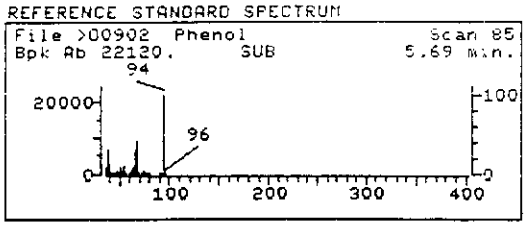
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

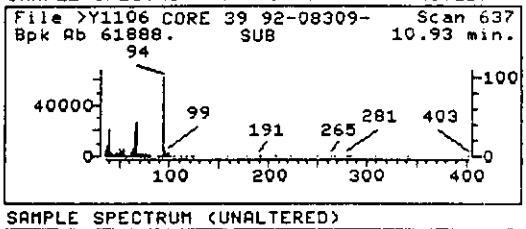
Operator ID: BOB
Quant Time : 921211 16:40
Injected at: 921211 15:53

Page 4 of 4

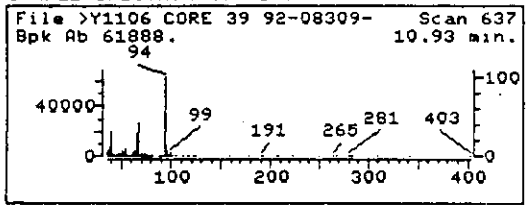
REFERENCE STANDARD SPECTRUM

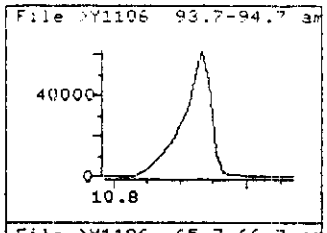


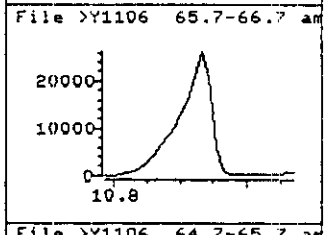
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

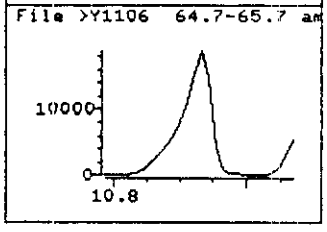


SAMPLE SPECTRUM (UNALTERED)







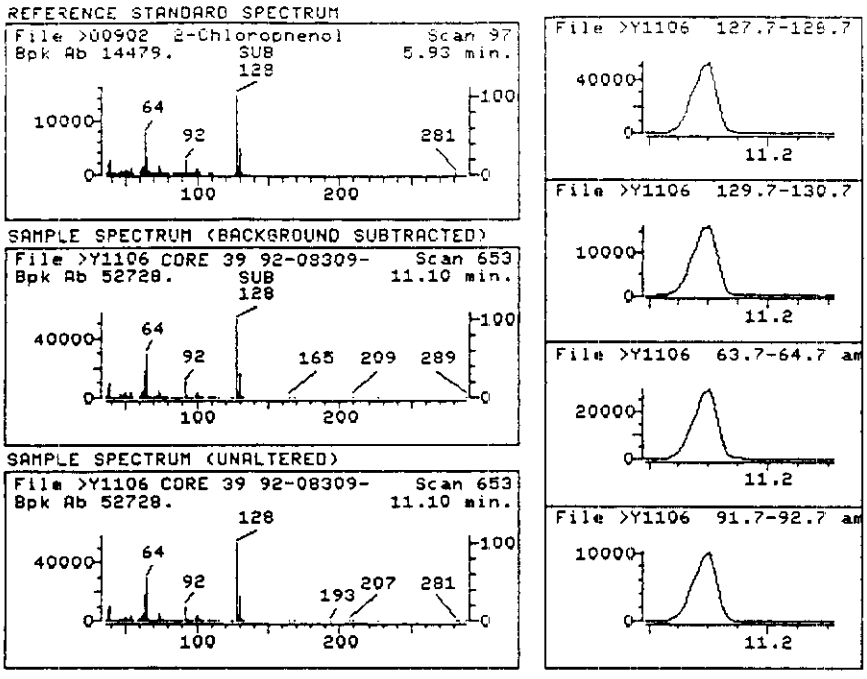


Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 4
Compound Name : Phenol
Scan Number : 637
Retention Time: 10.93 min.
Quant Ion : 94.0
Area : 184314
Concentration : 118.55 ng/uL
q-value : 88

ok



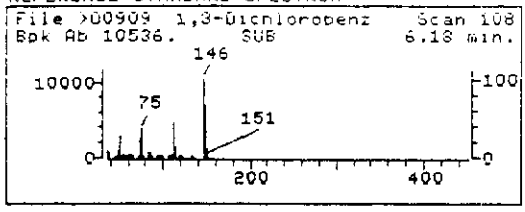
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

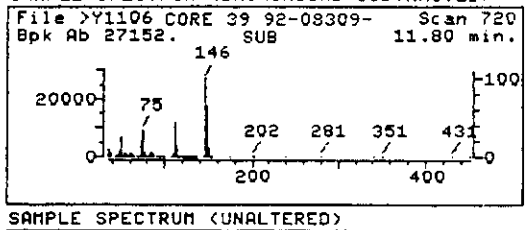
Compound No : 6
Compound Name : 2-Chlorophenol
Scan Number : 653
Retention Time: 11.10 min.
Quant Ion : 128.0
Area : 153344
Concentration : 118.21 ng/uL
q-value : 96

ok

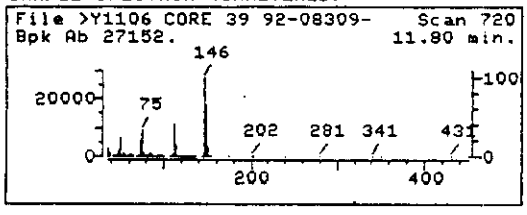
REFERENCE STANDARD SPECTRUM

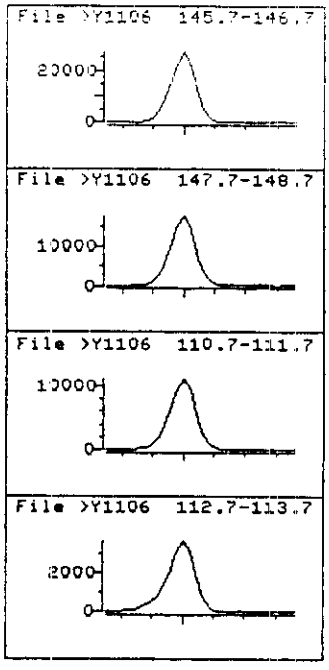


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



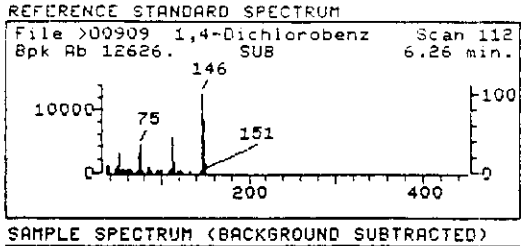


Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

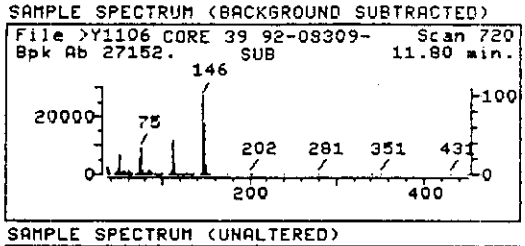
Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA>:QT
Last Calibration: 921105 16:40

Compound No : 7
Compound Name : 1,3-Dichlorobenzene
Scan Number : 720
Retention Time: 11.80 min.
Quant Ion : 146.0
Area : 78295
Concentration : 54.47 ng/uL
q-value : 98

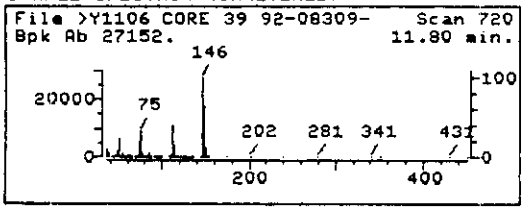
REFERENCE STANDARD SPECTRUM

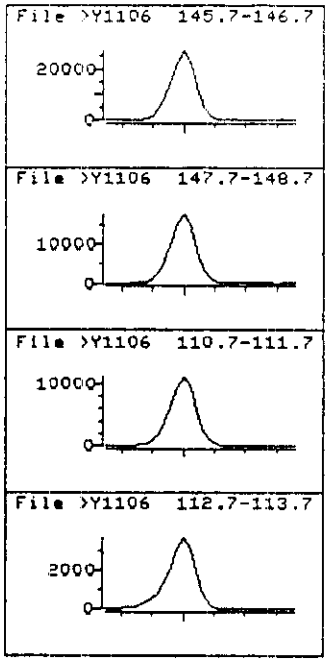


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





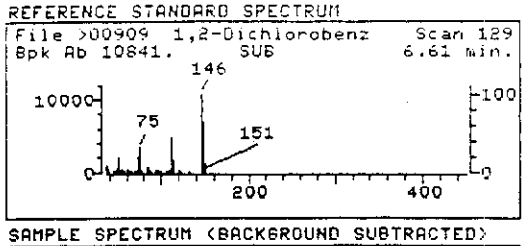
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::QF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

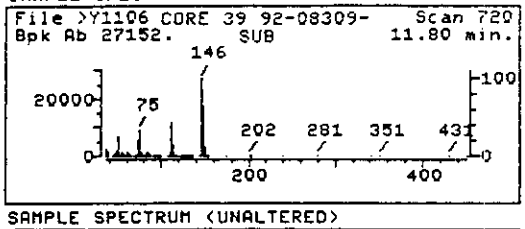
Compound No : 8
Compound Name : 1,4-Dichlorobenzene
Scan Number : 720
Retention Time: 11.80 min.
Quant Ion : 146.0
Area : 78295
Concentration : 53.36 ng/uL
q-value : 98

OK

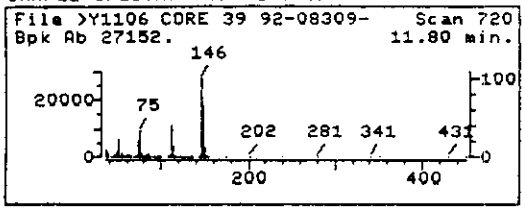
REFERENCE STANDARD SPECTRUM

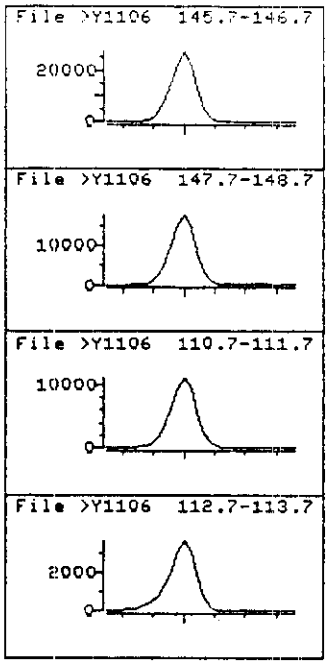


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





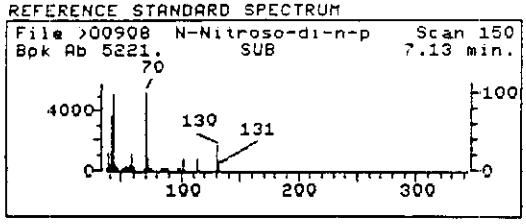
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

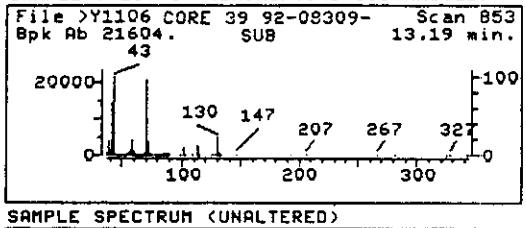
Compound No : 10
Compound Name : 1,2-Dichlorobenzene
Scan Number : 720
Retention Time: 11.80 min.
Quant Ion : 146.0
Area : 78295
Concentration : 56.15 ng/uL
q-value : 95

delete

REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



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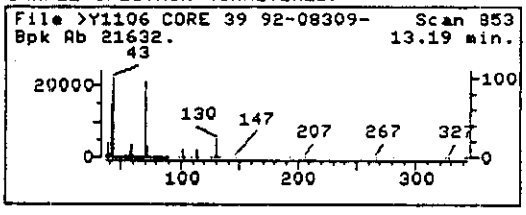
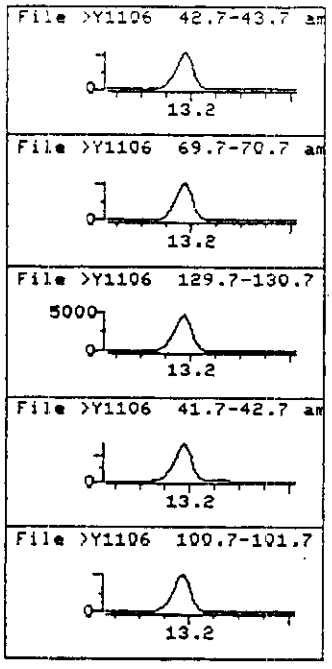


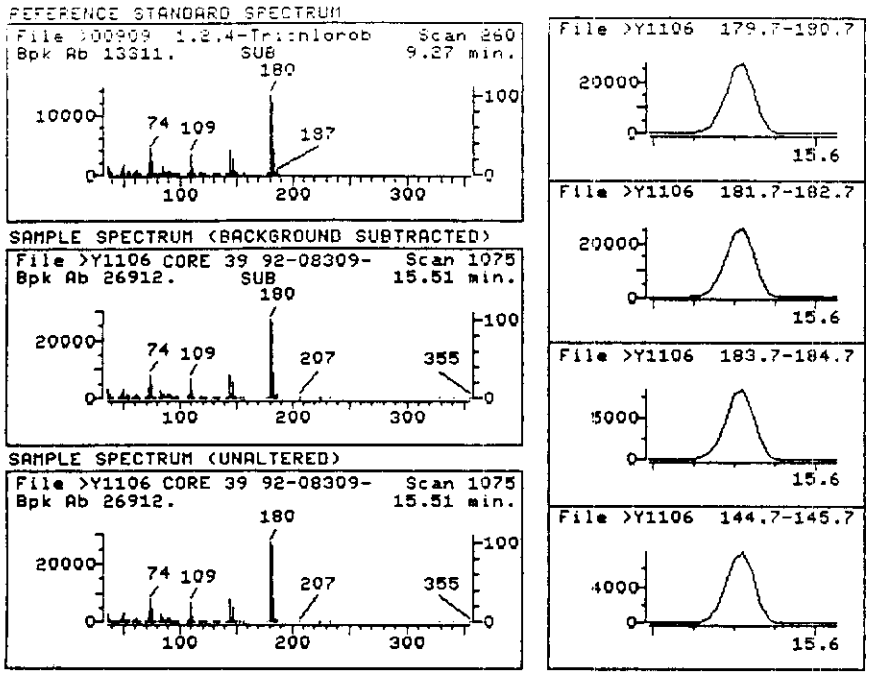


Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::Q
Last Calibration: 921105 16:40

Compound No : 14
Compound Name : N-Nitroso-di-n-propylamine
Scan Number : 853
Retention Time: 13.19 min.
Quant Ion : 70.0
Area : 51816
Concentration : 65.91 ng/uL
q-value : 94

61



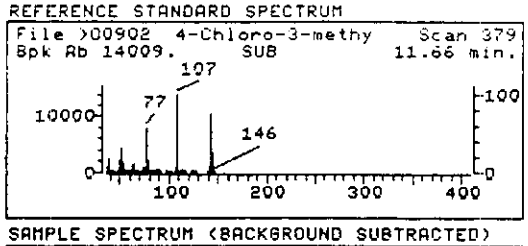
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

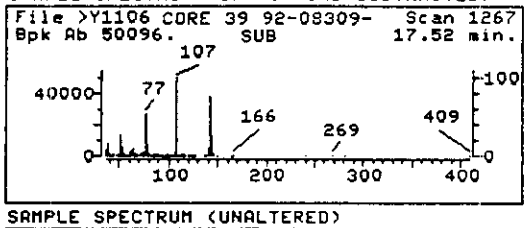
Compound No : 25
Compound Name : 1,2,4-Trichlorobenzene
Scan Number : 1075
Retention Time: 15.51 min.
Quant Ion : 180.0
Area : 66779
Concentration : 53.05 ng/uL
q-value : 98

ok

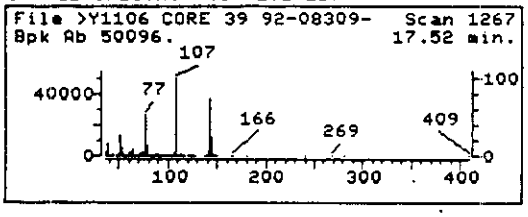
REFERENCE STANDARD SPECTRUM

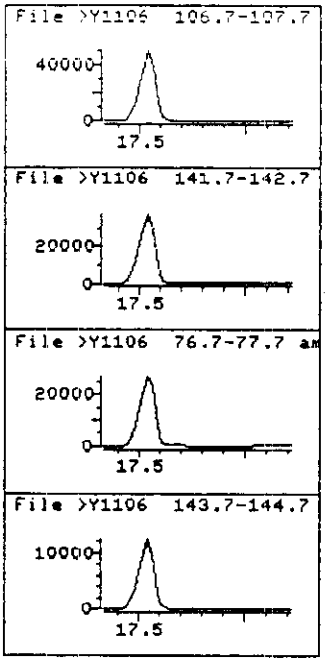


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



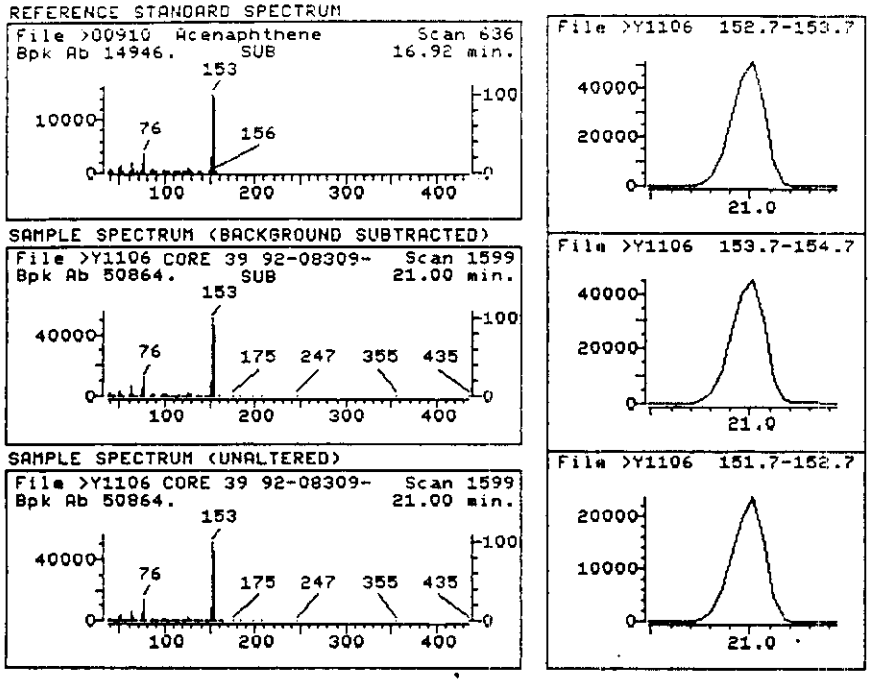


Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 29
Compound Name : 4-Chloro-3-methylphenol
Scan Number : 1267
Retention Time: 17.52 min.
Quant Ion : 107.0
Area : 127984
Concentration : 112.39 ng/uL
q-value : 98

ok



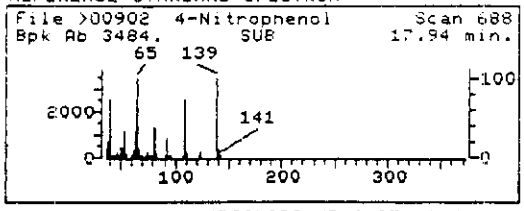
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

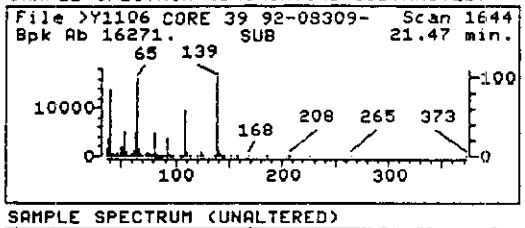
Compound No : 42
Compound Name : Acenaphthene
Scan Number : 1599
Retention Time: 21.00 min.
Quant Ion : 153.0
Area : 118824
Concentration : 54.74 ng/uL
q-value : 98

6K

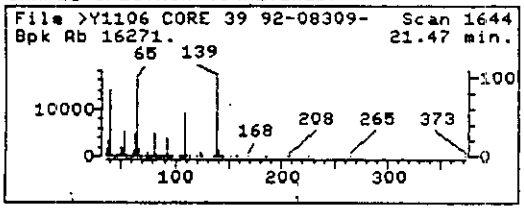
REFERENCE STANDARD SPECTRUM

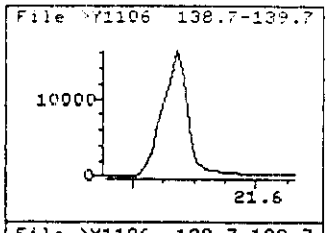


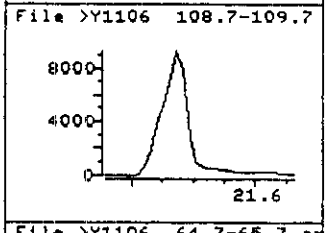
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

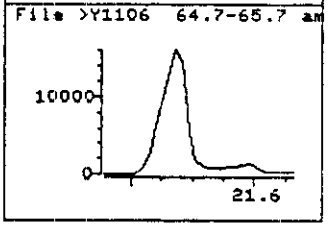


SAMPLE SPECTRUM (UNALTERED)









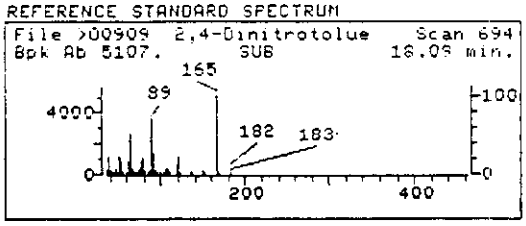
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

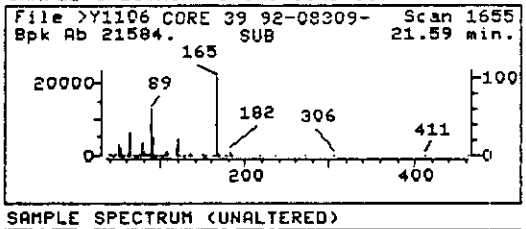
Compound No : 44
Compound Name : 4-Nitrophenol
Scan Number : 1644
Retention Time: 21.47 min.
Quant Ion : 109.0
Area : 27847
Concentration : 67.44 ng/uL
q-value : 96

OK

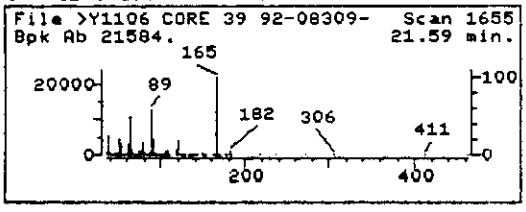
REFERENCE STANDARD SPECTRUM

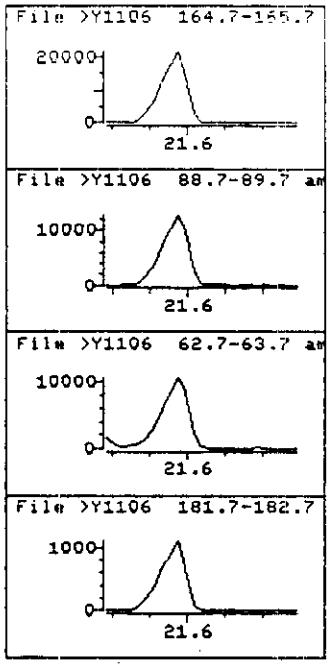


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





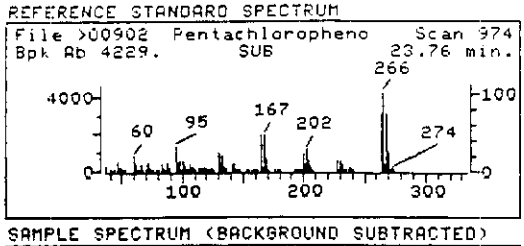
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

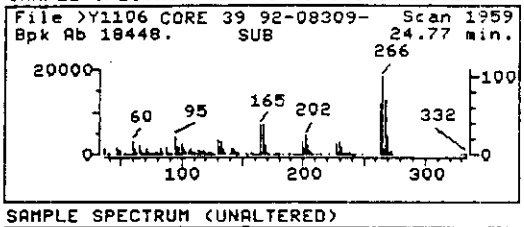
Compound No : 46
Compound Name : 2,4-Dinitrotoluene
Scan Number : 1655
Retention Time: 21.59 min.
Quant Ion : 165.0
Area : 51448
Concentration : 52.52 ng/uL
q-value : 92

OK

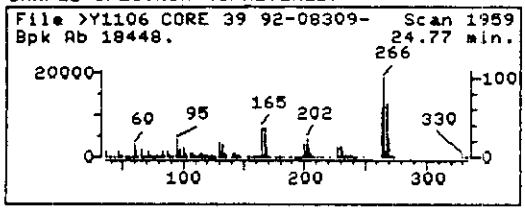
REFERENCE STANDARD SPECTRUM

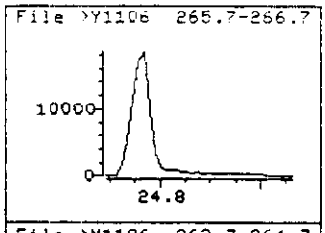


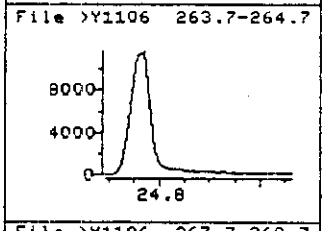
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

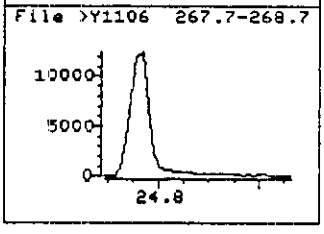


SAMPLE SPECTRUM (UNALTERED)









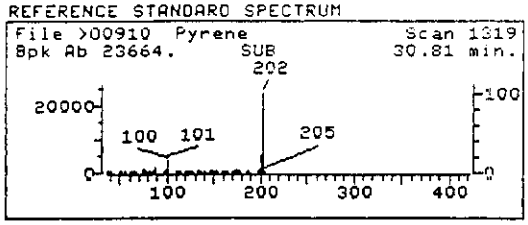
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

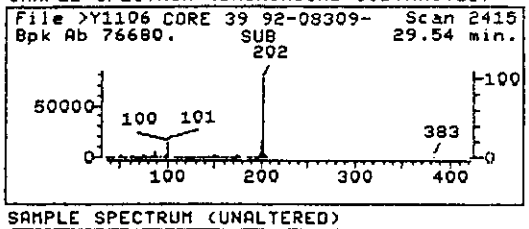
Compound No : 57
Compound Name : Pentachlorophenol
Scan Number : 1959
Retention Time: 24.77 min.
Quant Ion : 266.0
Area : 48880
Concentration : 90.82 ng/uL
q-value : 97

OK

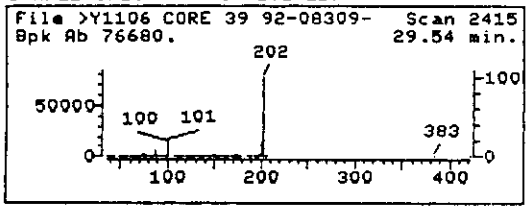
REFERENCE STANDARD SPECTRUM

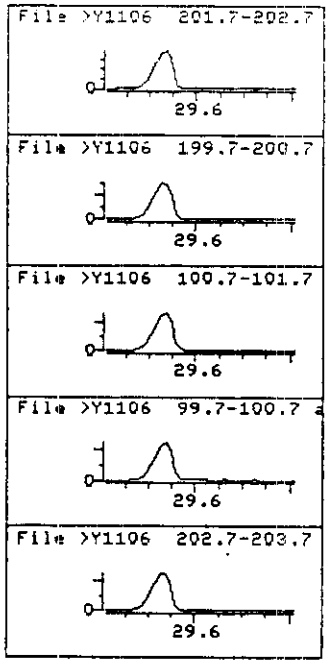


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





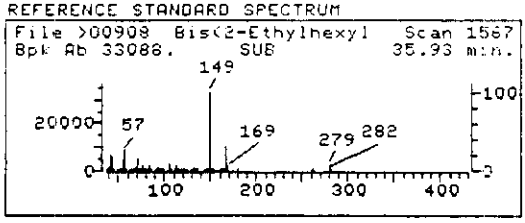
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::OF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

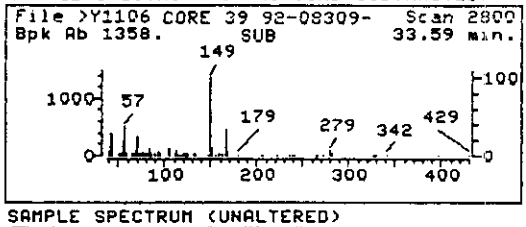
Compound No : 63
Compound Name : Pyrene
Scan Number : 2415
Retention Time: 29.54 min.
Quant Ion : 202.0
Area : 213339
Concentration : 50.86 ng/uL
q-value : 98

6 K

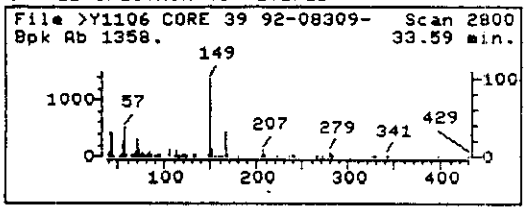
REFERENCE STANDARD SPECTRUM

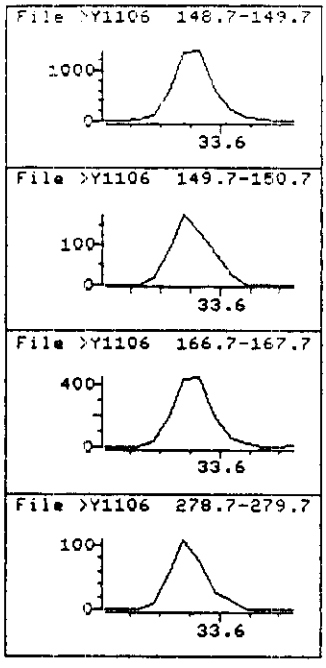


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49
Quant Time: 921211 16:40
Injected at: 921211 15:53
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1106::DF
Instrument ID: BNA2
BTL# 4
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 69
Compound Name : Bis(2-Ethylhexyl)phthalate
Scan Number : 2800
Retention Time: 33.59 min.
Quant Ion : 149.0
Area : 2768
Concentration : .873 ng/uL
q-value : 96

ok

QUANT REPORT

Operator ID: BOB
Output File: ^Y1106::OF
Data File: >Y1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49

Quant Rev: 7
Quant Time: 921211 16:40
Injected at: 921211 15:53
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 4

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.75	715	38336	40.00	ng/uL	99
2)	2-Fluorophenol	7.23	282	155999	119.14	ng/uL	89
3)	Phenol-d5	10.89	633	187910	117.87	ng/uL	96
4)	Phenol	10.93	637	184314	118.55	ng/uL	88
5)	bis(2-Chloroethyl)ether	0.00	653	0	0.00	ng/uL	
6)	2-Chlorophenol	11.10	653	153344	118.21	ng/uL	96
7)	~~1,3-Dichlorobenzene~~	~~11.80~~	~~720~~	~~78295~~	~~54.47~~	~~ng/uL~~	98
8)	1,4-Dichlorobenzene	11.80	720	78295	53.36	ng/uL	98
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	~~1,2-Dichlorobenzene~~	~~11.80~~	~~720~~	~~78295~~	~~56.15~~	~~ng/uL~~	95
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	13.19	853	51816	65.91	ng/uL	94
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.65	1088	140772	40.00	ng/uL	94
17)	Nitrobenzene-d5	13.52	884	84046	58.64	ng/uL	95
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL	
19)	Isophorone	0.00	0	0	0.00	ng/uL	
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL	
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL	
22)	Benzoic acid	0.00	0	0	0.00	ng/uL	
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL	
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL	
25)	1,2,4-Trichlorobenzene	15.51	1075	66779	53.05	ng/uL	98
26)	Naphthalene	0.00	1116	0	0.00	ng/uL	
27)	4-Chloroaniline	0.00	1117	0	0.00	ng/uL	
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL	
29)	4-Chloro-3-methylphenol	17.52	1267	127984	112.39	ng/uL	98
30)	2-Methylnaphthalene	0.00	1267	0	0.00	ng/uL	
31)	*Acenaphthene-d10	20.90	1589	73919	40.00	ng/uL	95
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL	
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL	
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL	
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL	
36)	2-Fluorobiphenyl	18.99	1407	133644	54.38	ng/uL	98
37)	2-Nitroaniline	0.00	1459	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1589	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	21.00	1599	118824	54.74	ng/uL	98

43)	2,4-Dinitrophenol	0.00	0	0	0.00 ng/uL	
44)	4-Nitrophenol	21.47	1644	27847	67.44 ng/uL	96
45)	Dibenzofuran	0.00	0	0	0.00 ng/uL	
46)	2,4-Dinitrotoluene	21.59	1655	51448	52.52 ng/uL	92
47)	Diethylphthalate	0.00	0	0	0.00 ng/uL	
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00 ng/uL	
49)	Fluorene	0.00	0	0	0.00 ng/uL	
50)	4-Nitroaniline	0.00	0	0	0.00 ng/uL	
51)	*Phenanthrene-d10	25.29	2009	134775	40.00 ng/uL	99
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00 ng/uL	
53)	N-Nitrosodiphenylamine	0.00	1813	0	0.00 ng/uL	
54)	2,4,6-Tribromophenol	23.24	1813	67063	113.24 ng/uL	95
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00 ng/uL	
56)	Hexachlorobenzene	0.00	0	0	0.00 ng/uL	
57)	Pentachlorophenol	24.77	1959	48880	90.82 ng/uL	97
58)	Phenanthrene	0.00	0	0	0.00 ng/uL	
59)	Anthracene	0.00	0	0	0.00 ng/uL	
60)	Di-n-butylphthalate	0.00	0	0	0.00 ng/uL	
61)	Fluoranthene	0.00	0	0	0.00 ng/uL	
62)	*Chrysene-d12	33.12	2756	119579	40.00 ng/uL	88
63)	Pyrene	29.54	2415	213339	50.86 ng/uL	98
64)	Terphenyl-d14	30.18	2476	167942	54.26 ng/uL	89
65)	Butylbenzylphthalate	0.00	0	0	0.00 ng/uL	
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00 ng/uL	
67)	Benzo(a)anthracene	0.00	0	0	0.00 ng/uL	
68)	Chrysene	0.00	0	0	0.00 ng/uL	
69)	Bis(2-Ethylhexyl)phthalate	33.59	2800	2768	.873 ng/uL	96
70)	*Perylene-d12	37.05	3130	139908	40.00 ng/uL	96
71)	Di-n-octylphthalate	0.00	0	0	0.00 ng/uL	
72)	Benzo(b)fluoranthene	0.00	0	0	0.00 ng/uL	
73)	Benzo(k)fluoranthene	0.00	0	0	0.00 ng/uL	
74)	Benzo(a)pyrene	0.00	0	0	0.00 ng/uL	
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00 ng/uL	
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00 ng/uL	
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00 ng/uL	

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1106
CAL CHECK FILE = >Y1102
DATE AND TIME OF ANALYSIS = 12/11/92 15:53
MISCELLANEOUS = MS 1.0310 G pH=10.49
METHOD = BNAME2
INSTRUMENT = ENA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	38336	35181	17591	70362	OK
Naphthalene-d8	140772	121257	60629	242514	OK
Acenaphthene-d10	73919	62320	31160	124640	OK
Phenanthrene-d10	134775	110649	55325	221298	OK
Chrysene-d12	119579	89739	44870	179478	OK
Perylene-d12	139908	104732	52366	209464	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.75	11.73	11.23	12.23	OK
Naphthalene-d8	15.65	15.64	15.14	16.14	OK
Acenaphthene-d10	20.90	20.89	20.39	21.39	OK
Phenanthrene-d10	25.29	25.29	24.79	25.79	OK
Chrysene-d12	33.13	33.14	32.64	33.64	OK
Perylene-d12	37.05	37.05	36.55	37.55	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1106::D2
DATE AND TIME OF ANALYSIS = 12/11/92 15:53
SAMPLE = CORE 39 92-08309-E3
MISCELLANEOUS = MS 1.0310 G pH=10.49
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVERY
2-Fluorophenol	119.14	100.00	21-100	25-121	119.14
Phenol-d5	117.87	100.00	10-94	24-113	117.87
Nitrobenzene-d5	58.64	50.00	35-114	23-120	117.28
2-Fluorobiphenyl	54.38	50.00	43-116	30-115	108.76
2,4,6-tribromo-phenol	113.24	100.00	10-123	19-122	113.24
Terphenyl-d14	54.26	50.00	33-141	18-137	108.52

QUANT REPORT Page 1

Operator ID: BOB
Output File: ^Y1107::OF
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49

Quant Rev: 7
Quant Time: 921211 17:38
Injected at: 921211 16:50
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 5

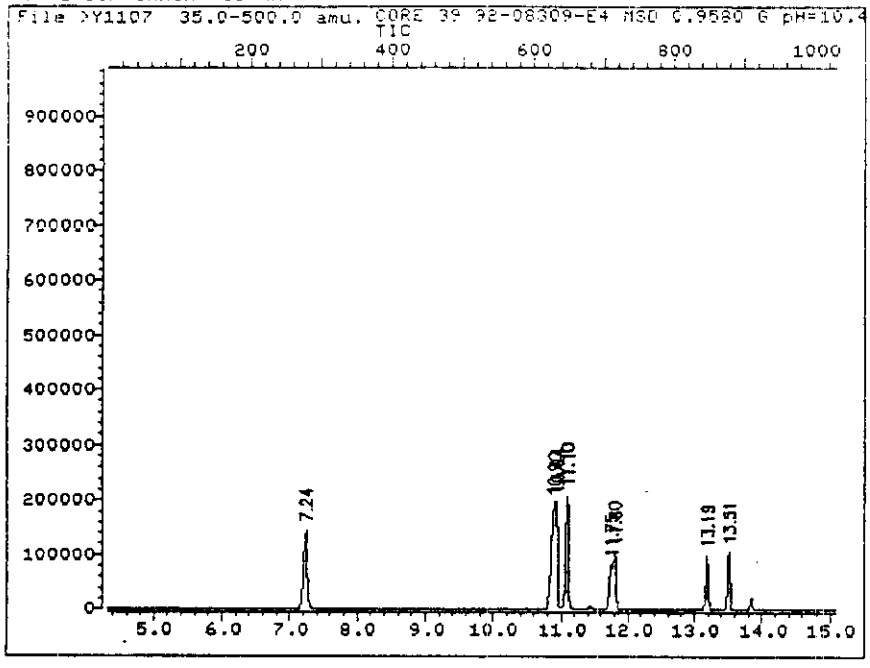
ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Time: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.75	711	38814	40.00	ng/uL	98
2)	2-Fluorophenol	7.24	280	149408	112.70	ng/uL	86
3)	Phenol-d5	10.90	630	178019	110.29	ng/uL	94
4)	Phenol	10.94	634	183925	116.84	ng/uL	94
6)	2-Chlorophenol	11.10	649	148938	113.40	ng/uL	98
7)	1,3-Dichlorobenzene	11.80	716	74758	51.37	ng/uL	97
8)	1,4-Dichlorobenzene	11.80	716	74758	50.32	ng/uL	95
10)	1,2-Dichlorobenzene	11.80	716	74758	52.95	ng/uL	94
14)	N-Nitroso-di-n-propylamine	13.19	849	50514	63.46	ng/uL	95
16)	*Naphthalene-d8	15.64	1083	143500	40.00	ng/uL	95
17)	Nitrobenzene-d5	13.51	880	80137	54.85	ng/uL	93
25)	1,2,4-Trichlorobenzene	15.50	1070	63565	49.54	ng/uL	97
29)	4-Chloro-3-methylphenol	17.52	1263	123961	106.79	ng/uL	97
31)	*Acenaphthene-d10	20.90	1585	76881	40.00	ng/uL	96
36)	2-Fluorobiphenyl	18.98	1402	129479	50.66	ng/uL	97
42)	Acenaphthene	20.99	1594	113797	50.40	ng/uL	97
44)	4-Nitrophenol	21.46	1639	22071	51.40	ng/uL	97
46)	2,4-Dinitrotoluene	21.58	1650	49893	48.97	ng/uL	91
51)	*Phenanthrene-d10	25.29	2005	140443	40.00	ng/uL	99
54)	2,4,6-Tribromophenol	23.24	1809	66498	107.75	ng/uL	94
57)	Pentachlorophenol	24.76	1954	49136	87.61	ng/uL	97
62)	*Chrysene-d12	33.13	2754	128582	40.00	ng/uL	86
63)	Pyrene	29.53	2410	207793	46.07	ng/uL	98
64)	Terphenyl-d14	30.16	2471	160537	48.24	ng/uL	90
69)	Bis(2-Ethylhexyl)phthalate	33.58	2797	2421	.710	ng/uL	92
70)	*Perylene-d12	37.05	3128	147765	40.00	ng/uL	95

* Compound is ISTD

Preliminary [illegible] 12 14 92

TOTAL ION CHROMATOGRAM



Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49

Quant Output File: ^Y1107::DF
Instrument ID: BNA2

BTL# 5

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 17:38
Injected at: 921211 16:50

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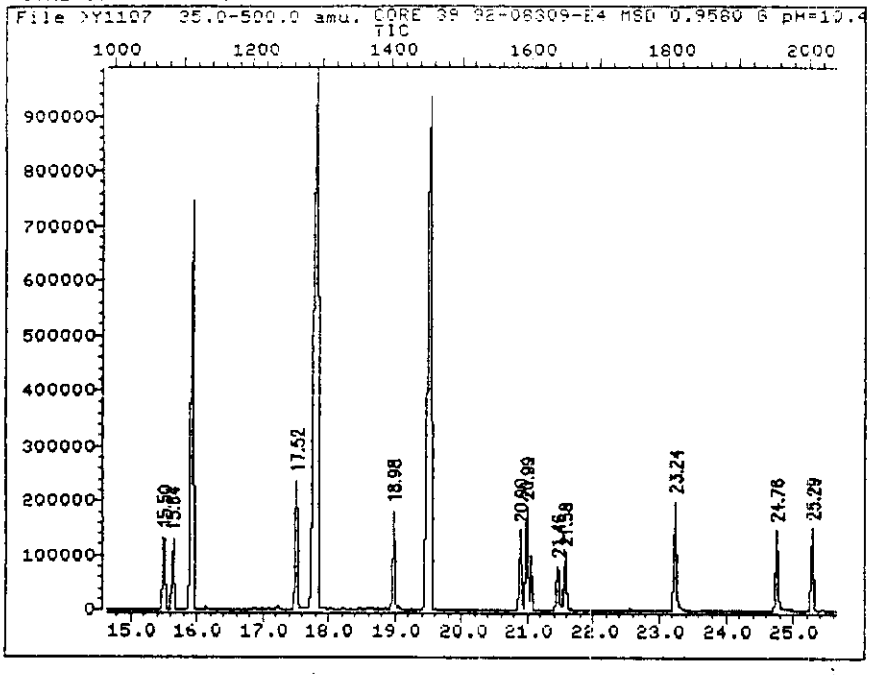
TOTAL ION CHROMATOGRAM



Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49

Quant Output File: ^Y1107::DF
Instrument ID: BNA2

BTL# 5

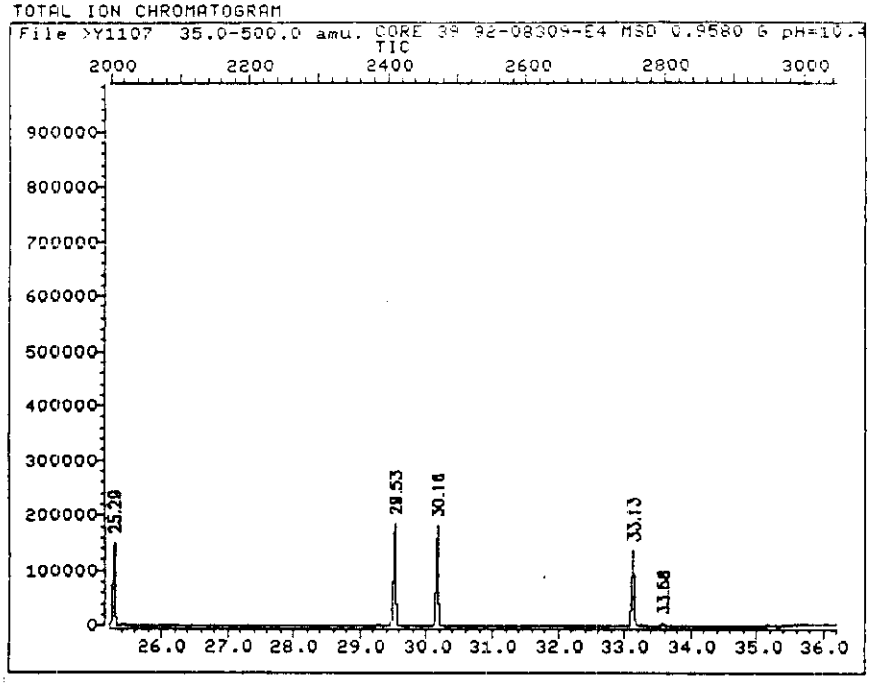
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 17:38
Injected at: 921211 16:50

Page 2 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49

Quant Output File: ^Y1107::DF
Instrument ID: BNA2
BTL# 5

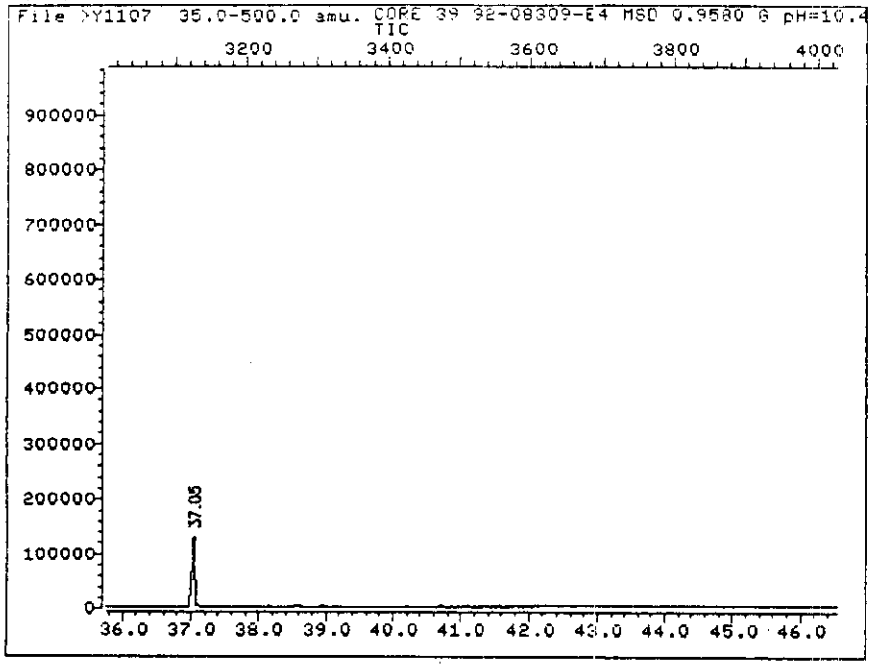
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 17:38
Injected at: 921211 16:50

Page 3 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49

Quant Output File: ^Y1107::OF
Instrument ID: BNA2

BTL# 5

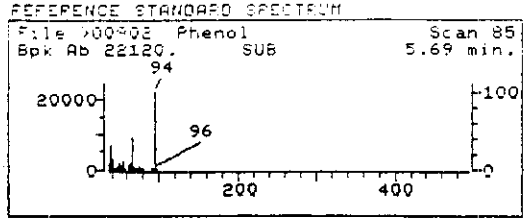
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

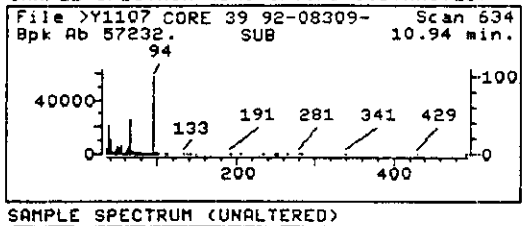
Operator ID: BOB
Quant Time : 921211 17:38
Injected at: 921211 16:50

Page 4 of 4

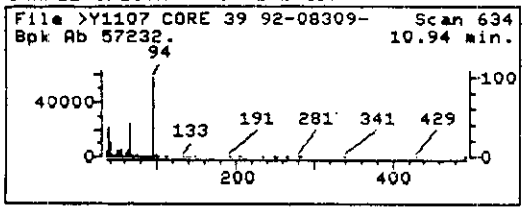
REFERENCE STANDARD SPECTRUM

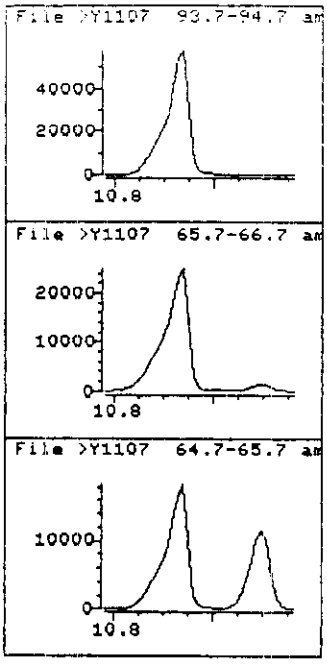


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



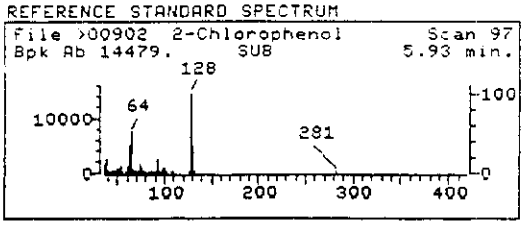


Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

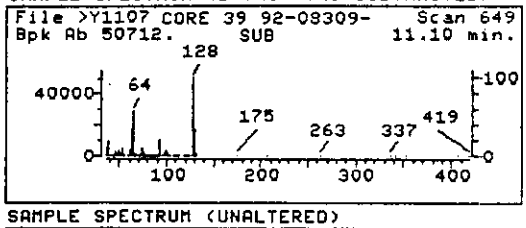
Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 4
Compound Name : Phenol
Scan Number : 634
Retention Time: 10.94 min.
Quant Ion : 94.0
Area : 183925
Concentration : 116.84 ng/uL
q-value : 94

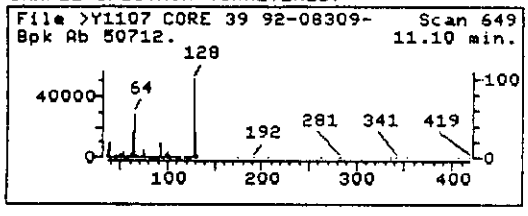
REFERENCE STANDARD SPECTRUM

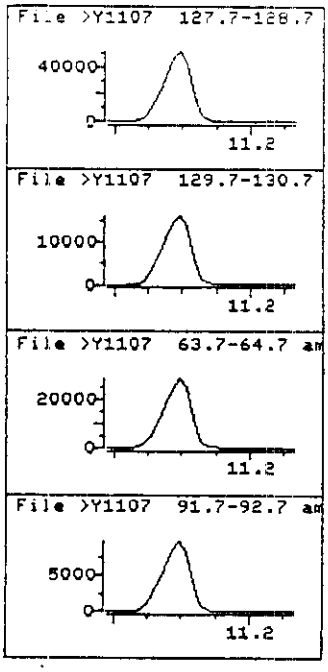


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





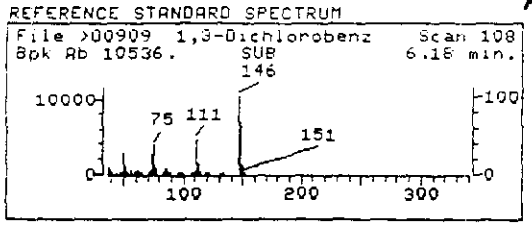
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

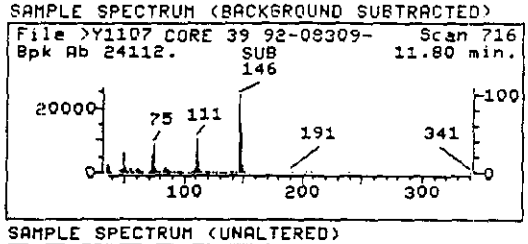
Compound No : 6
Compound Name : 2-Chlorophenol
Scan Number : 649
Retention Time: 11.10 min.
Quant Ion : 128.0
Area : 148938
Concentration : 113.40 ng/uL
q-value : 98

6 C

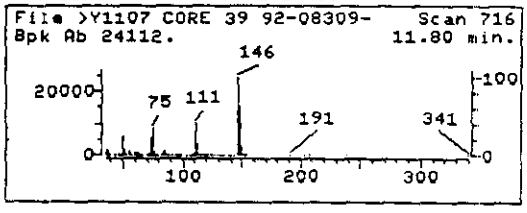
REFERENCE STANDARD SPECTRUM

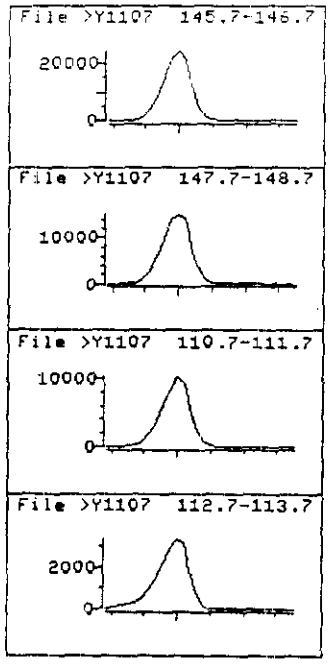


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



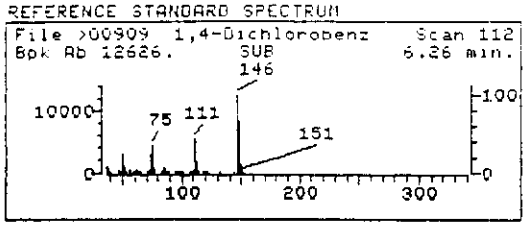


Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

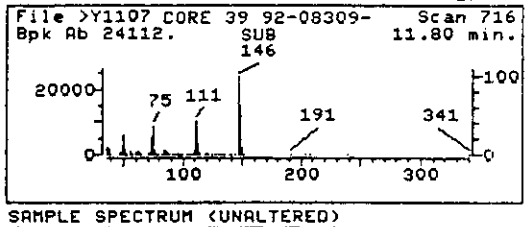
Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 7
Compound Name : 1,3-Dichlorobenzene
Scan Number : 716
Retention Time: 11.80 min.
Quant Ion : 146.0
Area : 74758
Concentration : 51.37 ng/uL
q-value : 97

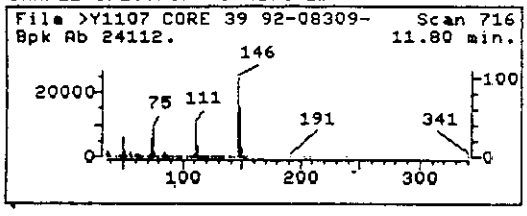
REFERENCE STANDARD SPECTRUM

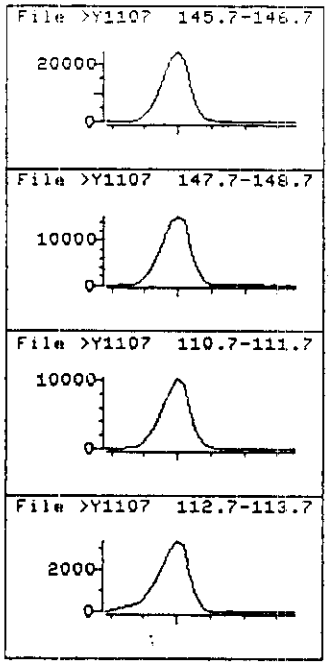


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



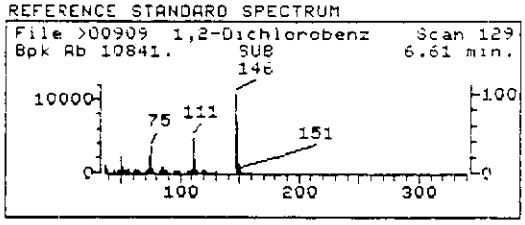


Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

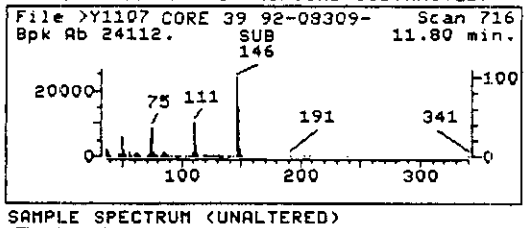
Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 8
Compound Name : 1,4-Dichlorobenzene
Scan Number : 716
Retention Time: 11.80 min.
Quant Ion : 146.0
Area : 74758
Concentration : 50.32 ng/uL
q-value : 95

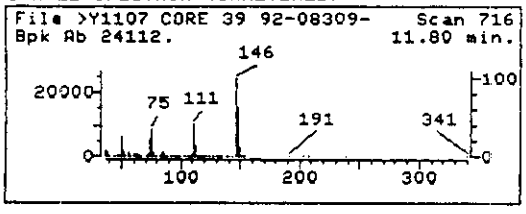
REFERENCE STANDARD SPECTRUM

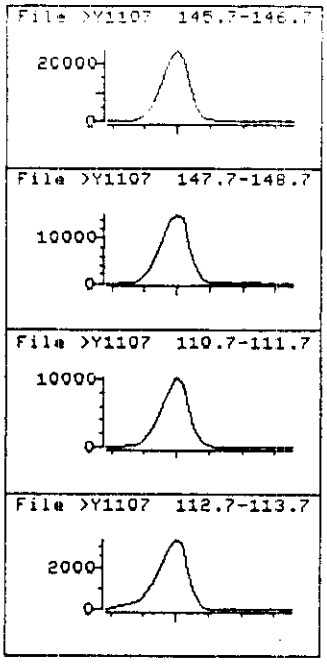


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





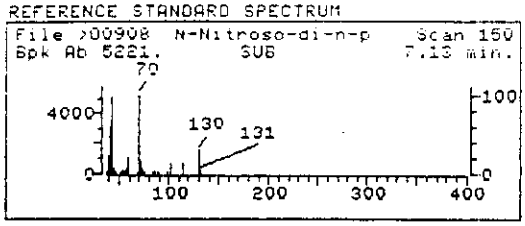
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

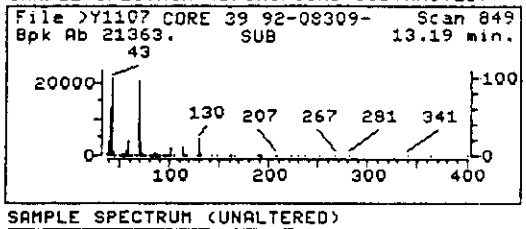
Compound No : 10
Compound Name : 1,2-Dichlorobenzene
Scan Number : 716
Retention Time: 11.80 min.
Quant Ion : 146.0
Area : 74758
Concentration : 52.95 ng/uL
q-value : 94

Sdt

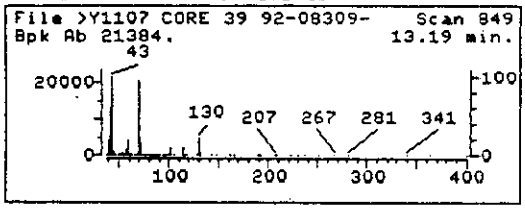
REFERENCE STANDARD SPECTRUM

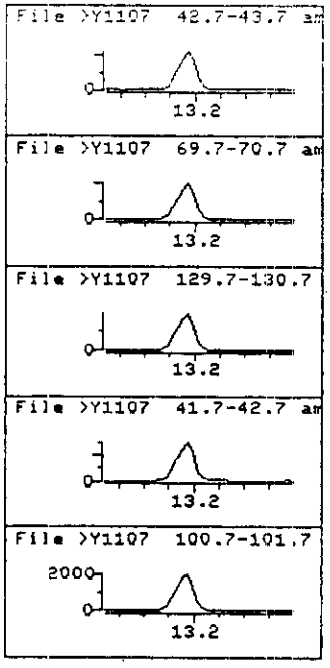


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





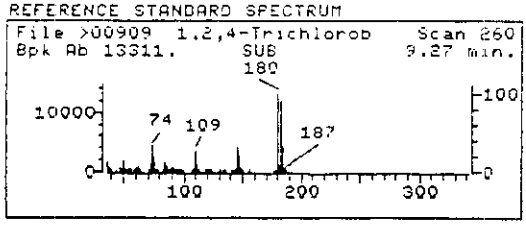
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::Q
Last Calibration: 921105 16:40

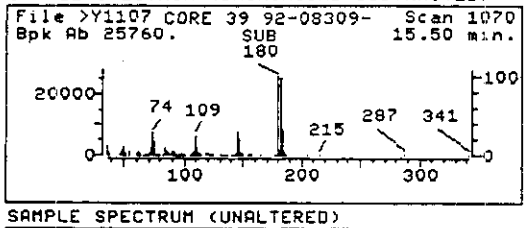
Compound No : 14
Compound Name : N-Nitroso-di-n-propylamine
Scan Number : 849
Retention Time: 13.19 min.
Quant Ion : 70.0
Area : 50514
Concentration : 63.46 ng/uL
q-value : 95

OK

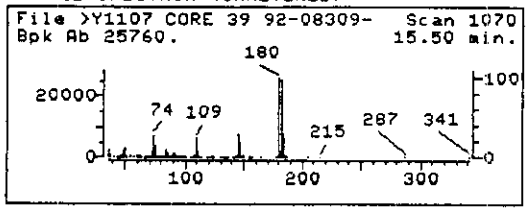
REFERENCE STANDARD SPECTRUM

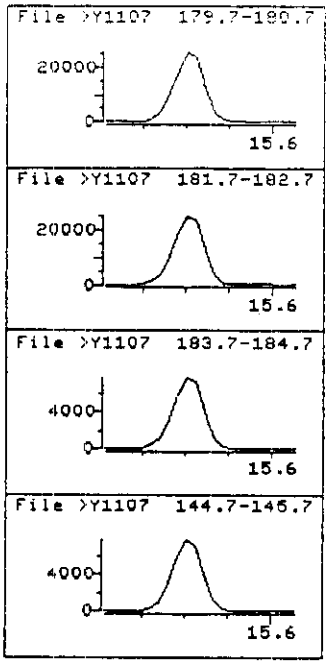


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





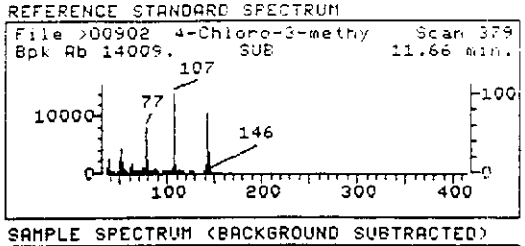
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1107::DF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

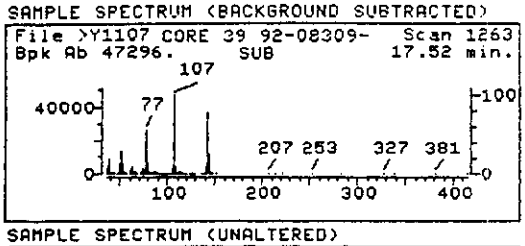
Compound No : 25
Compound Name : 1,2,4-Trichlorobenzene
Scan Number : 1070
Retention Time: 15.50 min.
Quant Ion : 180.0
Area : 63565
Concentration : 49.54 ng/uL
q-value : 97

of

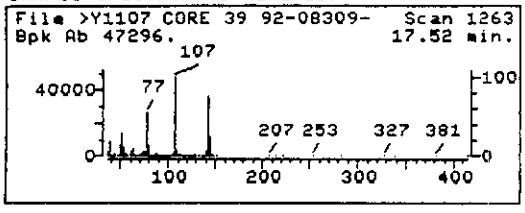
REFERENCE STANDARD SPECTRUM

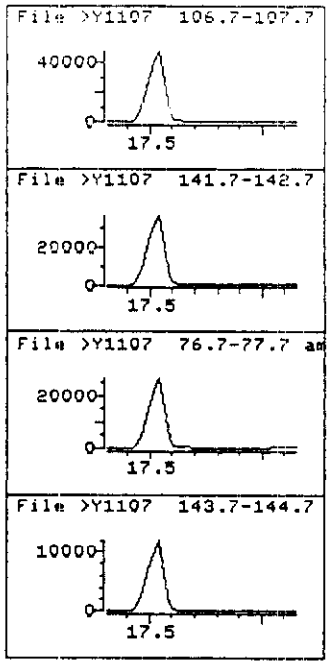


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





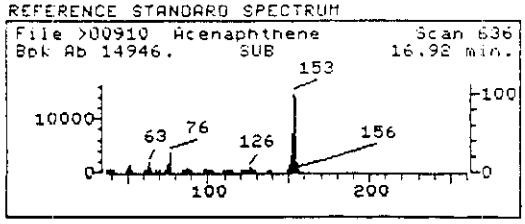
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1107::QF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

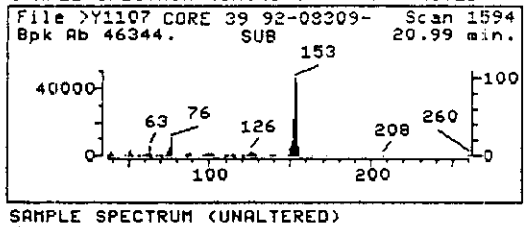
Compound No : 29
Compound Name : 4-Chloro-3-methylphenol
Scan Number : 1263
Retention Time: 17.52 min.
Quant Ion : 107.0
Area : 123961
Concentration : 106.79 ng/uL
q-value : 97

DF

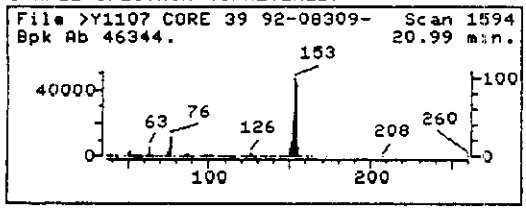
REFERENCE STANDARD SPECTRUM

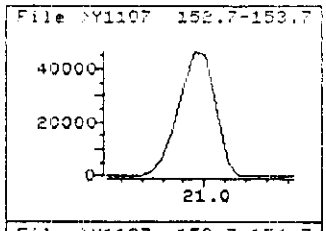


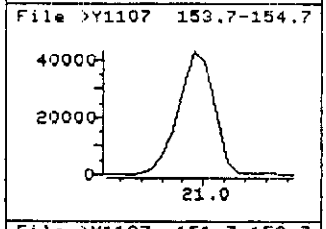
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

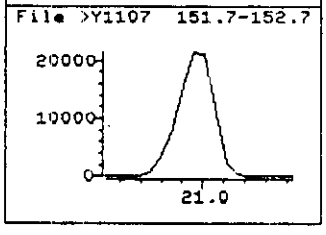


SAMPLE SPECTRUM (UNALTERED)









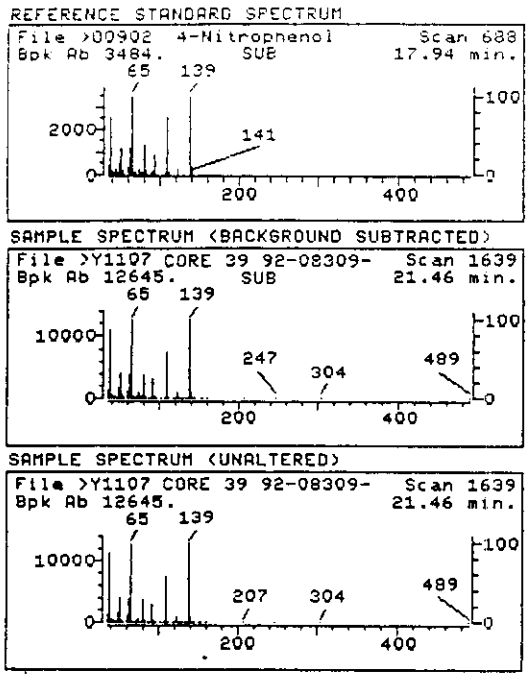
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

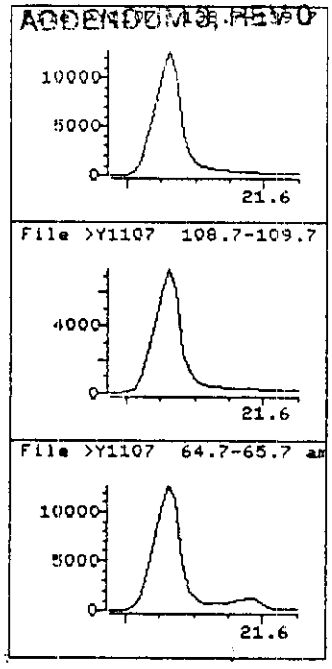
Quant Output File: ^Y1107::DF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 42
Compound Name : Acenaphthene
Scan Number : 1594
Retention Time: 20.99 min.
Quant Ion : 153.0
Area : 113797
Concentration : 50.40 ng/uL
q-value : 97

OK

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0



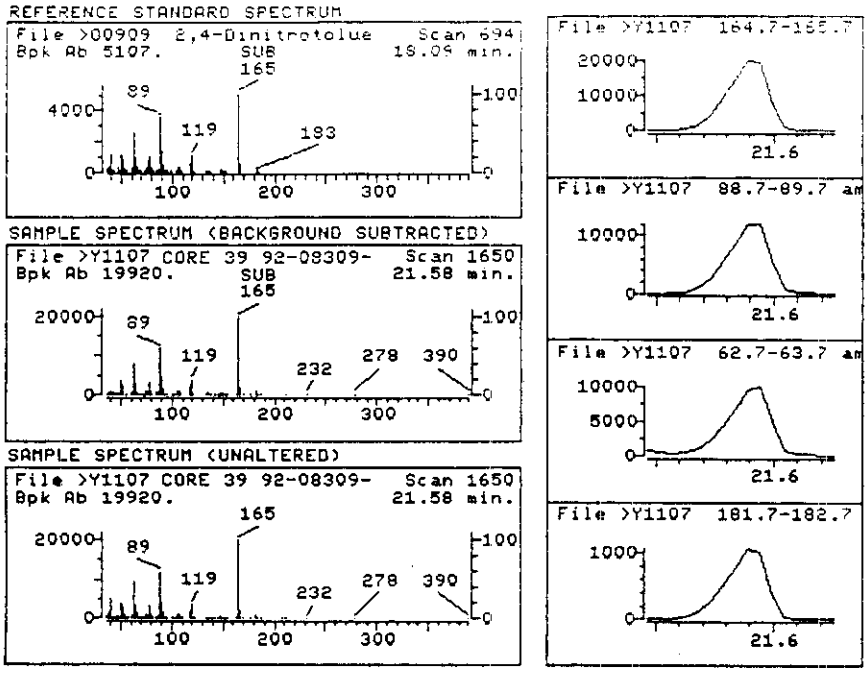


Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 44
Compound Name : 4-Nitrophenol
Scan Number : 1639
Retention Time: 21.46 min.
Quant Ion : 109.0
Area : 22071
Concentration : 51.40 ng/uL
q-value : 97

ok



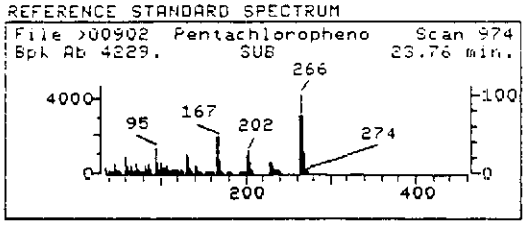
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

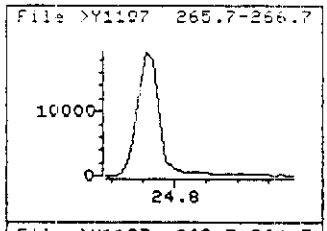
Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 46
Compound Name : 2,4-Dinitrotoluene
Scan Number : 1650
Retention Time: 21.58 min.
Quant Ion : 165.0
Area : 49893
Concentration : 48.97 ng/uL
q-value : 91

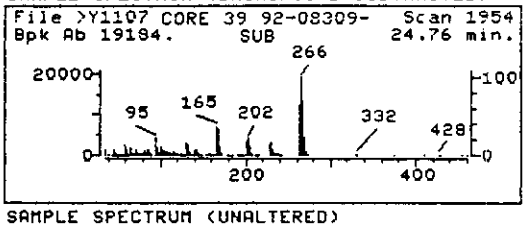
OK

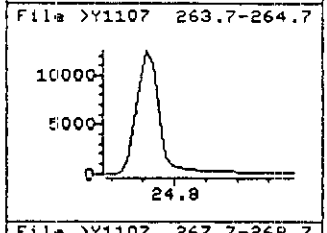
REFERENCE STANDARD SPECTRUM



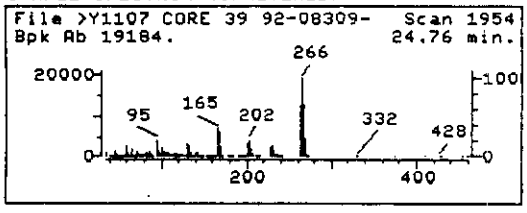


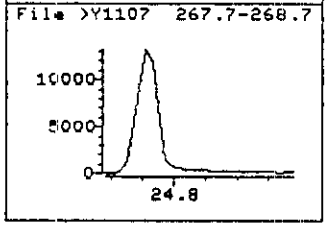
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)





SAMPLE SPECTRUM (UNALTERED)





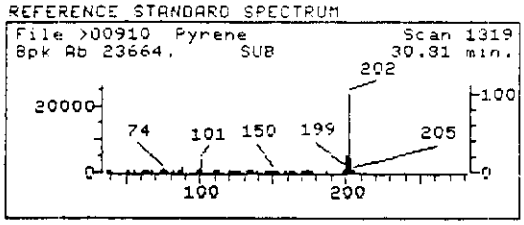
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

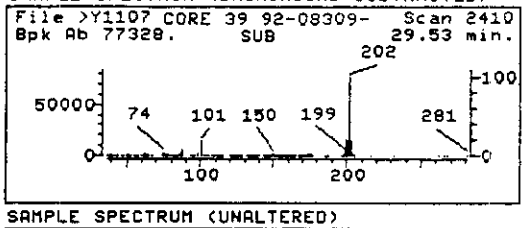
Compound No : 57
Compound Name : Pentachlorophenol
Scan Number : 1954
Retention Time: 24.76 min.
Quant Ion : 266.0
Area : 49136
Concentration : 87.61 ng/uL
q-value : 97

OK

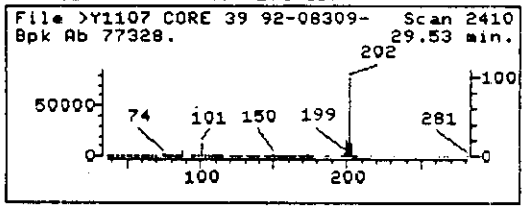
REFERENCE STANDARD SPECTRUM

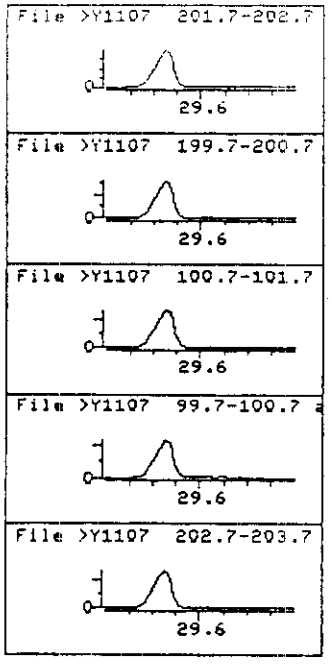


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





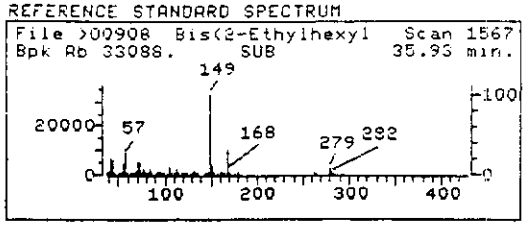
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

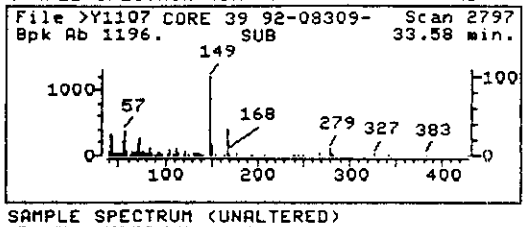
Compound No : 63
Compound Name : Pyrene
Scan Number : 2410
Retention Time: 29.53 min.
Quant Ion : 202.0
Area : 207793
Concentration : 46.07 ng/uL
q-value : 98

OK

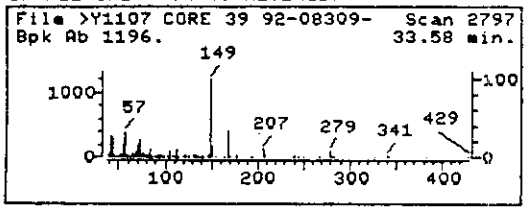
REFERENCE STANDARD SPECTRUM

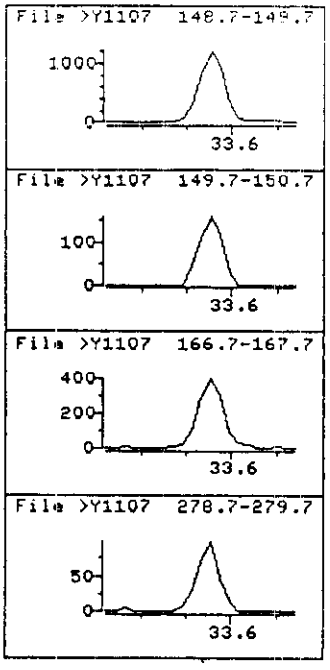


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49
Quant Time: 921211 17:38
Injected at: 921211 16:50
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1107::OF
Instrument ID: BNA2
BTL# 5
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 69
Compound Name : Bis(2-Ethylhexyl)phthalate
Scan Number : 2797
Retention Time: 33.58 min.
Quant Ion : 149.0
Area : 2421
Concentration : .710 ng/uL
q-value : 92

OK

QUANT REPORT

Operator ID: BOB
Output File: ^Y1107::OF
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49

Quant Rev: 7
Quant Time: 921211 17:38
Injected at: 921211 16:50
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 5

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.75	711	38814	40.00	ng/uL	98
2)	2-Fluorophenol	7.24	280	149408	112.70	ng/uL	86
3)	Phenol-d5	10.90	630	178019	110.29	ng/uL	94
4)	Phenol	10.94	634	183925	116.84	ng/uL	94
5)	bis(2-Chloroethyl)ether	0.00	649	0	0.00	ng/uL	
6)	2-Chlorophenol	11.10	649	148933	113.40	ng/uL	98
7)	~~1,3-Dichlorobenzene~~	~~11.80~~	~~716~~	~~74758~~	~~51.37~~	~~ng/uL~~	~~97~~
8)	1,4-Dichlorobenzene	11.80	716	74758	50.32	ng/uL	95
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	~~1,2-Dichlorobenzene~~	~~11.80~~	~~716~~	~~74758~~	~~52.95~~	~~ng/uL~~	~~94~~
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	13.19	849	50514	63.46	ng/uL	95
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.64	1083	143500	40.00	ng/uL	95
17)	Nitrobenzene-d5	13.51	880	80137	54.85	ng/uL	93
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL	
19)	Isophorone	0.00	0	0	0.00	ng/uL	
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL	
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL	
22)	Benzoic acid	0.00	0	0	0.00	ng/uL	
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL	
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL	
25)	1,2,4-Trichlorobenzene	15.50	1070	63565	49.54	ng/uL	97
26)	Naphthalene	0.00	0	0	0.00	ng/uL	
27)	4-Chloroaniline	0.00	1112	0	0.00	ng/uL	
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL	
29)	4-Chloro-3-methylphenol	17.52	1263	123961	106.79	ng/uL	97
30)	2-Methylnaphthalene	0.00	1263	0	0.00	ng/uL	
31)	*Acenaphthene-d10	20.90	1585	76881	40.00	ng/uL	96
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL	
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL	
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL	
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL	
36)	2-Fluorobiphenyl	18.98	1402	129479	50.66	ng/uL	97
37)	2-Nitroaniline	0.00	1455	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1585	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	20.99	1594	113797	50.40	ng/uL	97

43)	2,4-Dinitrophenol	0.00	0	0	0.00	ng/uL	
44)	4-Nitrophenol	21.46	1639	22071	51.40	ng/uL	97
45)	Dibenzofuran	0.00	0	0	0.00	ng/uL	
46)	2,4-Dinitrotoluene	21.58	1650	49893	48.97	ng/uL	91
47)	Diethylphthalate	0.00	0	0	0.00	ng/uL	
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00	ng/uL	
49)	Fluorene	0.00	0	0	0.00	ng/uL	
50)	4-Nitroaniline	0.00	0	0	0.00	ng/uL	
51)	*Phenanthrene-d10	25.29	2005	140443	40.00	ng/uL	99
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00	ng/uL	
53)	N-Nitrosodiphenylamine	0.00	1809	0	0.00	ng/uL	
54)	2,4,6-Tribromophenol	23.24	1809	66498	107.75	ng/uL	94
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00	ng/uL	
56)	Hexachlorobenzene	0.00	0	0	0.00	ng/uL	
57)	Pentachlorophenol	24.76	1954	49136	87.61	ng/uL	97
58)	Phenanthrene	0.00	0	0	0.00	ng/uL	
59)	Anthracene	0.00	0	0	0.00	ng/uL	
60)	Di-n-butylphthalate	0.00	0	0	0.00	ng/uL	
61)	Fluoranthene	0.00	0	0	0.00	ng/uL	
62)	*Chrysene-d12	33.13	2754	128582	40.00	ng/uL	86
63)	Pyrene	29.53	2410	207793	46.07	ng/uL	98
64)	Terphenyl-d14	30.16	2471	160537	48.24	ng/uL	90
65)	Butylbenzylphthalate	0.00	0	0	0.00	ng/uL	
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00	ng/uL	
67)	Benzo(a)anthracene	0.00	0	0	0.00	ng/uL	
68)	Chrysene	0.00	0	0	0.00	ng/uL	
69)	Bis(2-Ethylhexyl)phthalate	33.58	2797	2421	.710	ng/uL	92
70)	*Perylene-d12	37.05	3128	147765	40.00	ng/uL	95
71)	Di-n-octylphthalate	0.00	0	0	0.00	ng/uL	
72)	Benzo(b)fluoranthene	0.00	0	0	0.00	ng/uL	
73)	Benzo(k)fluoranthene	0.00	0	0	0.00	ng/uL	
74)	Benzo(a)pyrene	0.00	0	0	0.00	ng/uL	
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00	ng/uL	
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00	ng/uL	
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00	ng/uL	

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1107
CAL CHECK FILE = >Y1102
DATE AND TIME OF ANALYSIS = 12/11/92 16:50
MISCELLANEOUS = MSD 0.9580 G pH=10.49
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	38814	35181	17591	70362	OK
Naphthalene-d8	143500	121257	60629	242514	OK
Acenaphthene-d10	76881	62320	31160	124640	OK
Phenanthrene-d10	140443	110649	55325	221298	OK
Chrysene-d12	128582	89739	44870	179478	OK
Perylene-d12	147765	104732	52366	209464	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.75	11.73	11.23	12.23	OK
Naphthalene-d8	15.64	15.64	15.14	16.14	OK
Acenaphthene-d10	20.90	20.89	20.39	21.39	OK
Phenanthrene-d10	25.29	25.29	24.79	25.79	OK
Chrysene-d12	33.13	33.14	32.64	33.64	OK
Perylene-d12	37.05	37.05	36.55	37.55	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1107::D2
DATE AND TIME OF ANALYSIS = 12/11/92 16:50
SAMPLE = CORE 39 92-08309-E4
MISCELLANEOUS = MSD 0.9580 G pH=10.49
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVERY
2-Fluorophenol	112.70	100.00	21-100	25-121	112.70
Phenol-d5	110.29	100.00	10-94	24-113	110.29
Nitrobenzene-d5	54.85	50.00	35-114	23-120	109.70
2-Fluorobiphenyl	50.65	50.00	43-116	30-115	101.31
2,4,6-tribromo-phenol	107.75	100.00	10-123	19-122	107.75
Terphenyl-d14	48.24	50.00	33-141	18-137	96.47

QUANT REPORT Page 1

Operator ID: BOB
Output File: ^Y1108::OF
Data File: >Y1108::D2
Name: CORE 39 92-08311-E1
Misc: 1.0031 G pH=10.57

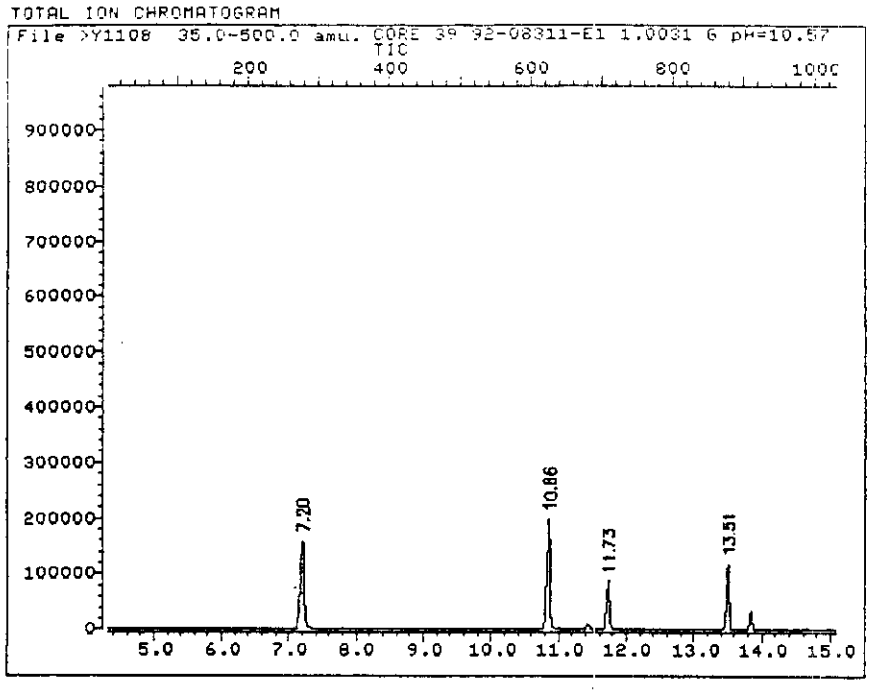
Quant Rev: 7
Quant Time: 921211 18:35
Injected at: 921211 17:48
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 6

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Time: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	710	43098	40.00	ng/uL	97
2)	2-Fluorophenol	7.20	277	175020	118.90	ng/uL	84
3)	Phenol-d5	10.86	627	207885	115.99	ng/uL	96
16)	*Naphthalene-d8	15.64	1084	149659	40.00	ng/uL	96
17)	Nitrobenzene-d5	13.51	880	92265	60.55	ng/uL	94
31)	*Acenaphthene-d10	20.89	1585	76510	40.00	ng/uL	96
36)	2-Fluorobiphenyl	18.99	1403	149165	58.64	ng/uL	98
51)	*Phenanthrene-d10	25.28	2005	143138	40.00	ng/uL	97
54)	2,4,6-Tribromophenol	23.23	1809	68021	108.14	ng/uL	96
62)	*Chrysene-d12	33.12	2755	126542	40.00	ng/uL	89
64)	Terphenyl-d14	30.17	2473	182279	55.65	ng/uL	91
69)	Bis(2-Ethylhexyl)phthalate	33.58	2798	3621	1.08	ng/uL	97
70)	*Perylene-d12	37.04	3128	149072	40.00	ng/uL	96

* Compound is ISTD

Preliminary data
BMH 12-17-92



Data File: >Y1108::D2
Name: CORE 39 92-08311-E1
Misc: 1.0031 G pH=10.57

Quant Output File: ^Y1108::OF
Instrument ID: BNA2
BTL# 6

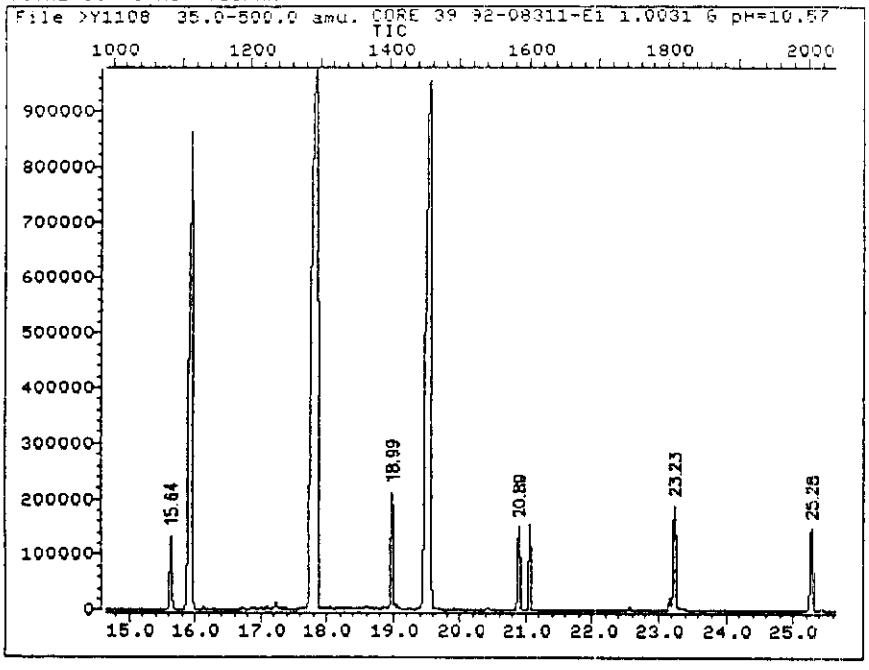
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 18:35
Injected at: 921211 17:48

Page 1 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1108::D2
Name: CORE 39 92-08311-E1
Misc: 1.0031 G pH=10.57

Quant Output File: ^Y1108::OF
Instrument ID: BNA2
BTL# 6

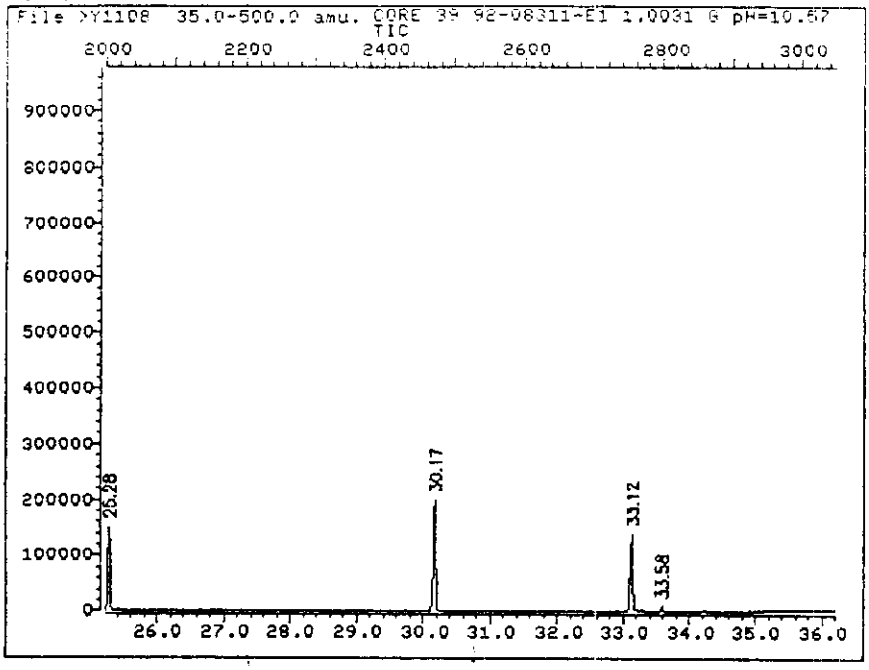
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 18:35
Injected at: 921211 17:48

Page 2 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1108::D2
Name: CORE 39 92-08311-E1
Misc: 1.0031 G pH=10.57

Quant Output File: ^Y1108::QF
Instrument ID: BNA2

BTL# 6

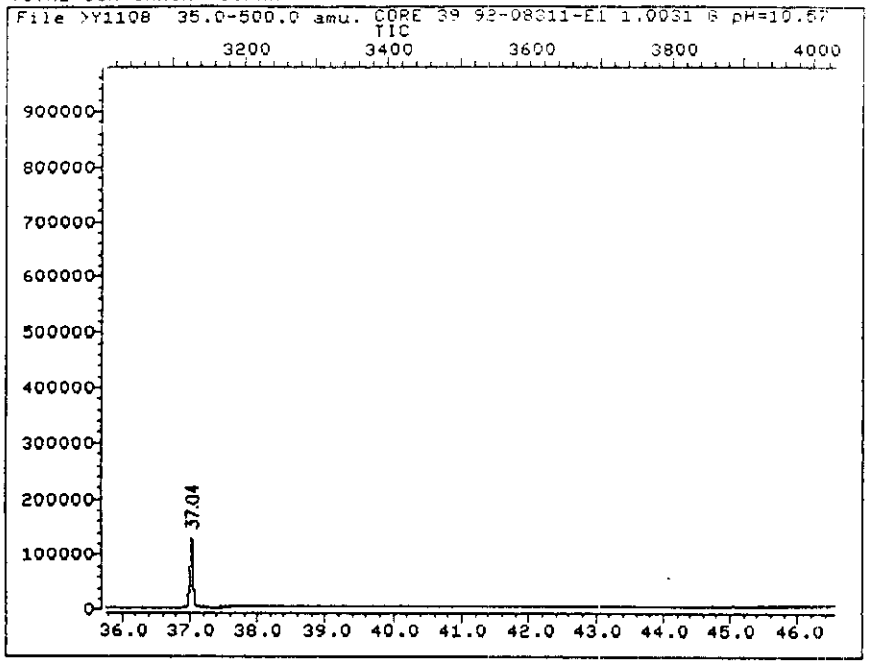
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 18:35
Injected at: 921211 17:48

Page 3 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1108::D2
Name: CORE 39 92-08311-E1
Misc: 1.0031 G pH=10.57

Quant Output File: ^Y1108::QF
Instrument ID: BNA2
BTL# 6

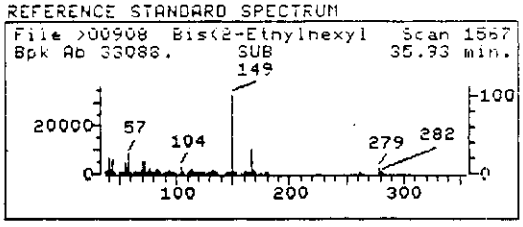
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

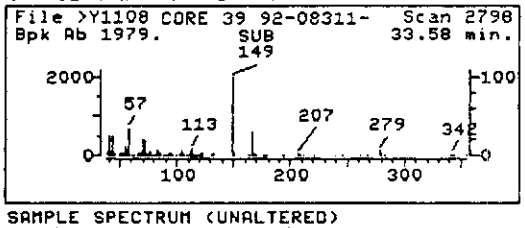
Operator ID: BOB
Quant Time : 921211 18:35
Injected at: 921211 17:48

Page 4 of 4

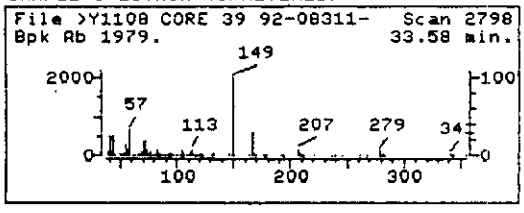
REFERENCE STANDARD SPECTRUM

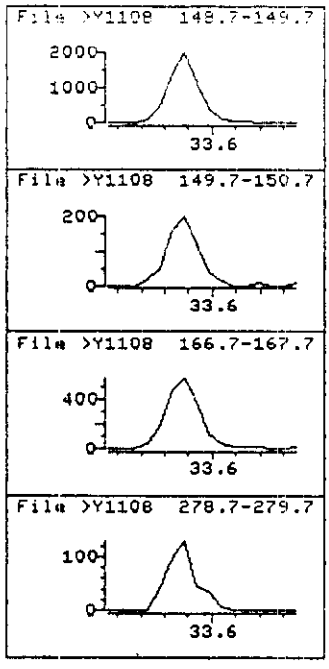


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





Data File: >Y1108::D2
Name: CORE 39 92-08311-E1
Misc: 1.0031 G pH=10.57
Quant Time: 921211 18:35
Injected at: 921211 17:48
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1108::OF
Instrument ID: BNA2
BTL# 6
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 69
Compound Name : Bis(2-Ethylhexyl)phthalate
Scan Number : 2798
Retention Time: 33.58 min.
Quant Ion : 149.0
Area : 3621
Concentration : 1.08 ng/uL
q-value : 97

OK

QUANT REPORT

Operator ID: BOB
Output File: ^Y1108::OF
Data File: >Y1108::D2
Name: CORE 39 92-08311-E1
Misc: 1.0031 G pH=10.57

Quant Rev: 7
Quant Time: 921211 18:35
Injected at: 921211 17:48
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 6

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	710	43098	40.00	ng/uL	97
2)	2-Fluorophenol	7.20	277	175020	118.90	ng/uL	84
3)	Phenol-d5	10.86	627	207885	115.99	ng/uL	96
4)	Phenol	0.00	0	0	0.00	ng/uL	
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL	
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL	
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	0.00	880	0	0.00	ng/uL	
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.64	1084	149659	40.00	ng/uL	96
17)	Nitrobenzene-d5	13.51	880	92265	60.55	ng/uL	94
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL	
19)	Isophorone	0.00	0	0	0.00	ng/uL	
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL	
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL	
22)	Benzoic acid	0.00	0	0	0.00	ng/uL	
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL	
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL	
25)	1,2,4-Trichlorobenzene	0.00	0	0	0.00	ng/uL	
26)	Naphthalene	0.00	1113	0	0.00	ng/uL	
27)	4-Chloroaniline	0.00	1114	0	0.00	ng/uL	
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL	
29)	4-Chloro-3-methylphenol	0.00	0	0	0.00	ng/uL	
30)	2-Methylnaphthalene	0.00	1289	0	0.00	ng/uL	
31)	*Acenaphthene-d10	20.89	1585	76510	40.00	ng/uL	96
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL	
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL	
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL	
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL	
36)	2-Fluorobiphenyl	18.99	1403	149165	58.64	ng/uL	98
37)	2-Nitroaniline	0.00	1458	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1585	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	0.00	0	0	0.00	ng/uL	

43)	2,4-Dinitrophenol	0.00	0	0	0.00	ng/uL	
44)	4-Nitrophenol	0.00	0	0	0.00	ng/uL	
45)	Dibenzofuran	0.00	0	0	0.00	ng/uL	
46)	2,4-Dinitrotoluene	0.00	0	0	0.00	ng/uL	
47)	Diethylphthalate	0.00	0	0	0.00	ng/uL	
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00	ng/uL	
49)	Fluorene	0.00	0	0	0.00	ng/uL	
50)	4-Nitroaniline	0.00	0	0	0.00	ng/uL	
51)	*Phenanthrene-d10	25.28	2005	143138	40.00	ng/uL	97
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00	ng/uL	
53)	N-Nitrosodiphenylamine	0.00	1809	0	0.00	ng/uL	
54)	2,4,6-Tribromophenol	23.23	1809	68021	108.14	ng/uL	96
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00	ng/uL	
56)	Hexachlorobenzene	0.00	0	0	0.00	ng/uL	
57)	Pentachlorophenol	0.00	0	0	0.00	ng/uL	
58)	Phenanthrene	0.00	0	0	0.00	ng/uL	
59)	Anthracene	0.00	0	0	0.00	ng/uL	
60)	Di-n-butylphthalate	0.00	0	0	0.00	ng/uL	
61)	Fluoranthene	0.00	0	0	0.00	ng/uL	
62)	*Chrysene-d12	33.12	2755	126542	40.00	ng/uL	89
63)	Pyrene	0.00	0	0	0.00	ng/uL	
64)	Terphenyl-d14	30.17	2473	182279	55.65	ng/uL	91
65)	Butylbenzylphthalate	0.00	0	0	0.00	ng/uL	
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00	ng/uL	
67)	Benzo(a)anthracene	0.00	0	0	0.00	ng/uL	
68)	Chrysene	0.00	0	0	0.00	ng/uL	
69)	Bis(2-Ethylhexyl)phthalate	33.58	2798	3621	1.08	ng/uL	97
70)	*Perylene-d12	37.04	3128	149072	40.00	ng/uL	96
71)	Di-n-octylphthalate	0.00	0	0	0.00	ng/uL	
72)	Benzo(b)fluoranthene	0.00	0	0	0.00	ng/uL	
73)	Benzo(k)fluoranthene	0.00	0	0	0.00	ng/uL	
74)	Benzo(a)pyrene	0.00	0	0	0.00	ng/uL	
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00	ng/uL	
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00	ng/uL	
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00	ng/uL	

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1108
CAL CHECK FILE = >Y1102
DATE AND TIME OF ANALYSIS = 12/11/92 17:48
MISCELLANEOUS = 1.0031 G pH=10.57
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	43098	35181	17591	70362	OK
Naphthalene-d8	149659	121257	60629	242514	OK
Acenaphthene-d10	76510	62320	31160	124640	OK
Phenanthrene-d10	143138	110649	55325	221298	OK
Chrysene-d12	126542	89739	44870	179478	OK
Perylene-d12	149072	104732	52366	209464	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.73	11.73	11.23	12.23	OK
Naphthalene-d8	15.64	15.64	15.14	16.14	OK
Acenaphthene-d10	20.89	20.89	20.39	21.39	OK
Phenanthrene-d10	25.28	25.29	24.79	25.79	OK
Chrysene-d12	33.13	33.14	32.64	33.64	OK
Perylene-d12	37.04	37.05	36.55	37.55	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1108::D2
DATE AND TIME OF ANALYSIS = 12/11/92 17:48
SAMPLE = CORE 39 92-08311-E1
MISCELLANEOUS = 1.0031 G pH=10.57
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVERY
2-Fluorophenol	118.90	100.00	21-100	25-121	118.90
Phenol-d5	115.99	100.00	10-94	24-113	115.99
Nitrobenzene-d5	60.55	50.00	35-114	23-120	121.11
2-Fluorobiphenyl	58.64	50.00	43-116	30-115	117.28
2,4,6-tribromo-phenol	108.14	100.00	10-123	19-122	108.14
Terphenyl-d14	55.65	50.00	33-141	18-137	111.30

MS data file header from : >Y1108::D2

Sample: CORE 39 92-08311-E1 Operator: BOB SUPER GRP. 12/11/92 17:48
Misc : 1.0031 G pH=10.57 BTL# 6
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 6 Equip ID: BNA2
Method file: BNAME2 Tuning file: MTBNA2 No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	40.	300.	0.	0.	0.
Chromatographic times, min. :	4.0	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	8.0	0.0	0.0	.5	0.0

>Y1108 CORE 39 92-08311-E1 1.0031 G pH=10.57
35.01 500.0 CLP TIC
Upslope: .2000 Area Reject: 26614. Max Peaks: 7 Bunch: -1 Valley >100 %
Dnslope: 0.0000 Results File IY1108 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	11.44	675	682	691	8708	33521	28644	.43	.184
2	13.84	905	912	920	35452	84928	80223	1.21	.515
3	15.95	1101	1114	1119	862996	3164693	3154101	47.41	20.257
4	17.23	1231	1236	1244	10683	46725	29492	.44	.189
5	17.85	1276	1295	1301	971585	6702237	6652965	100.00	42.728
6	19.55	1436	1457	1468	952700	5394583	5356680	80.52	34.402
7	21.06	1596	1601	1607	154341	273205	268559	4.04	1.725

Sum of corrected areas: 15570666.

Summary of Unknowns PBM Library Search and Quantitation

Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	266141.	11.73	4.32 - 13.68
2	40.0	324100.	15.64	13.68 - 18.27
3	40.0	353965.	20.89	18.27 - 23.09
4	40.0	368873.	25.28	23.09 - 29.20
5	40.0	371991.	33.12	29.20 - 35.08
6	40.0	406878.	37.04	35.08 - 46.54

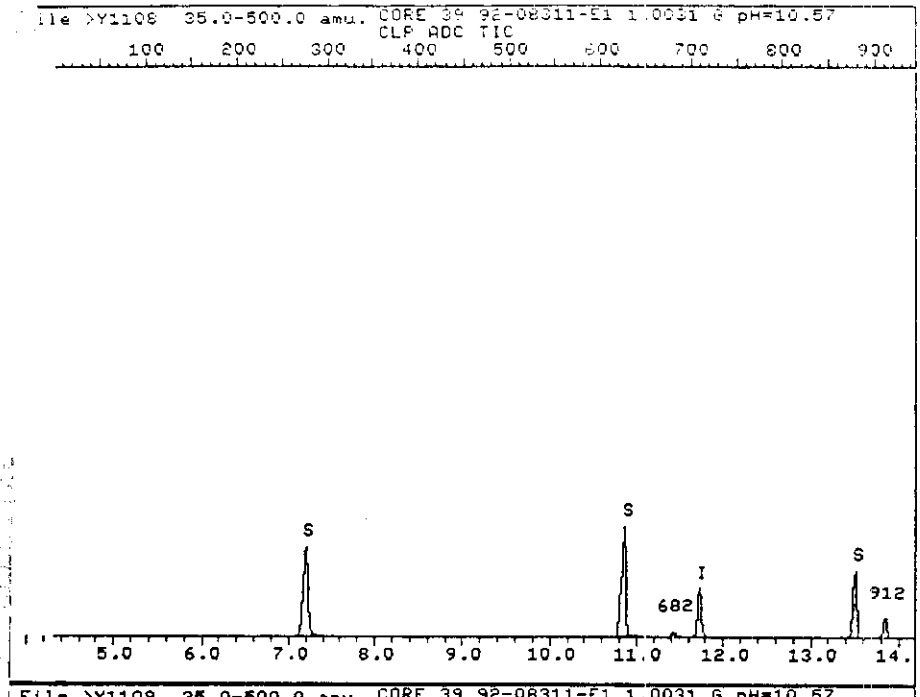
Dilution Factor = 1.00 This sample was 1.00310 g or mL

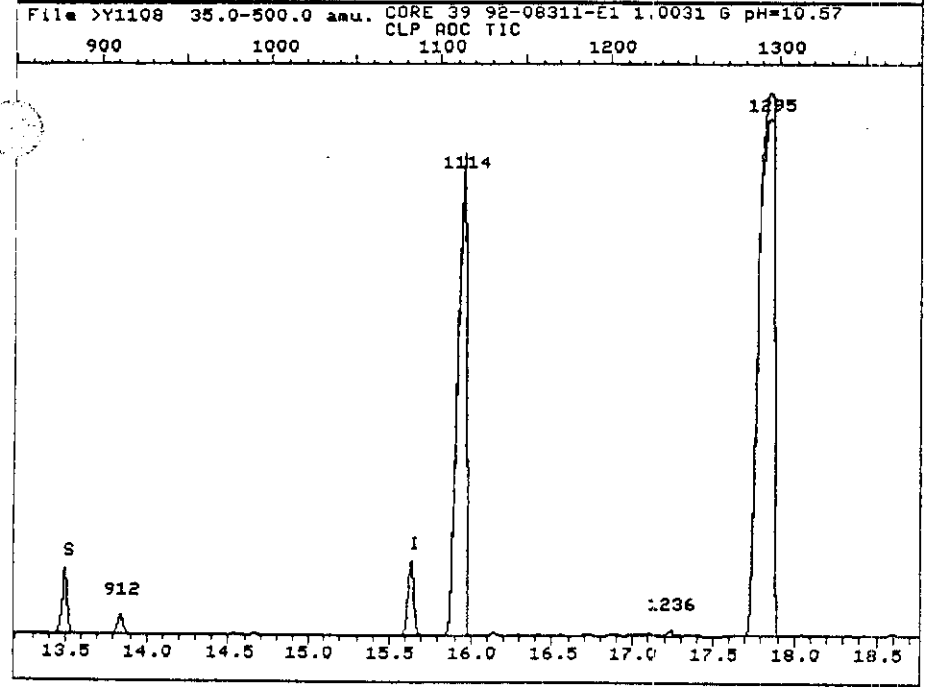
Correction Factor = 1995.82

$$\text{Unknown Concentration} = \frac{\text{Conc Int Std} * \text{Area Unknown}}{\text{Area Int Std}} * \text{Correction Factor}$$

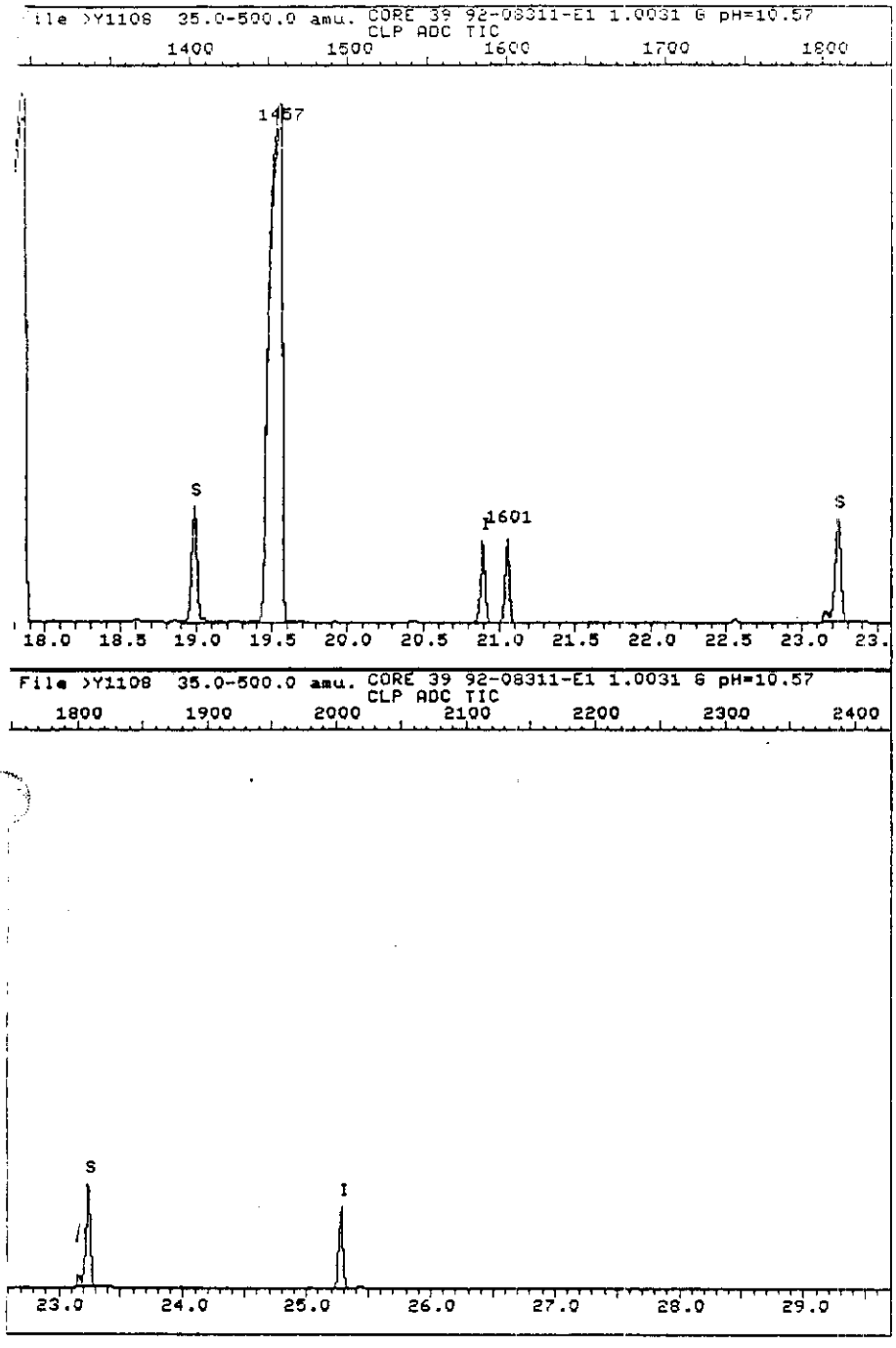
9:18 AM WED., 16 DEC., 1992

CT 23.16 - $\frac{40 \times 48630 \times 1995.82}{371156} = 10,400$

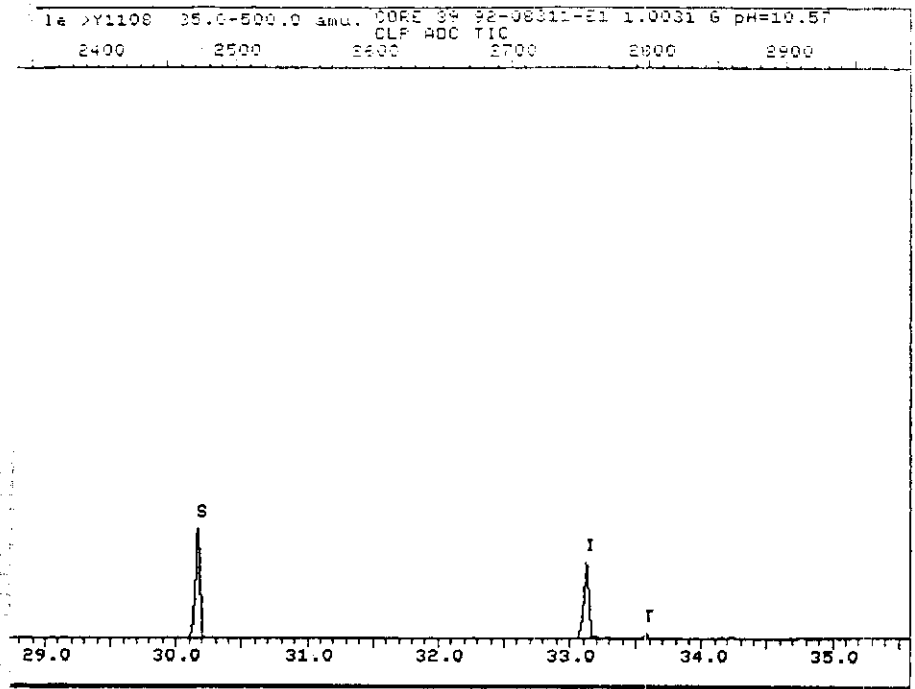


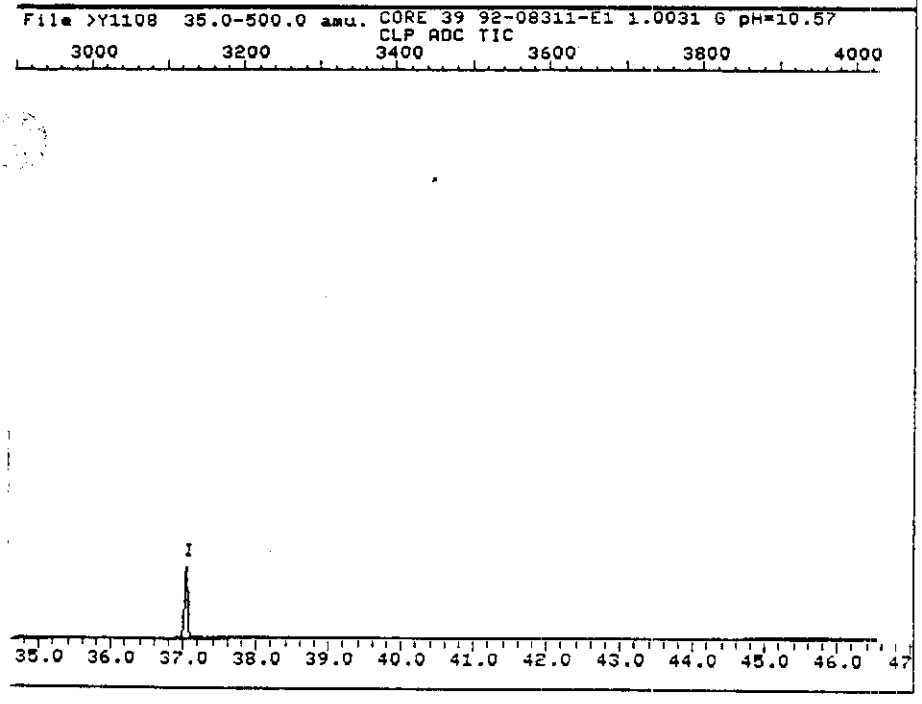


Instrument ID: BNA2 Analyzed on: 12/11/92 17:48



Instrument ID: BNA2 Analyzed on: 12/11/92 17:48





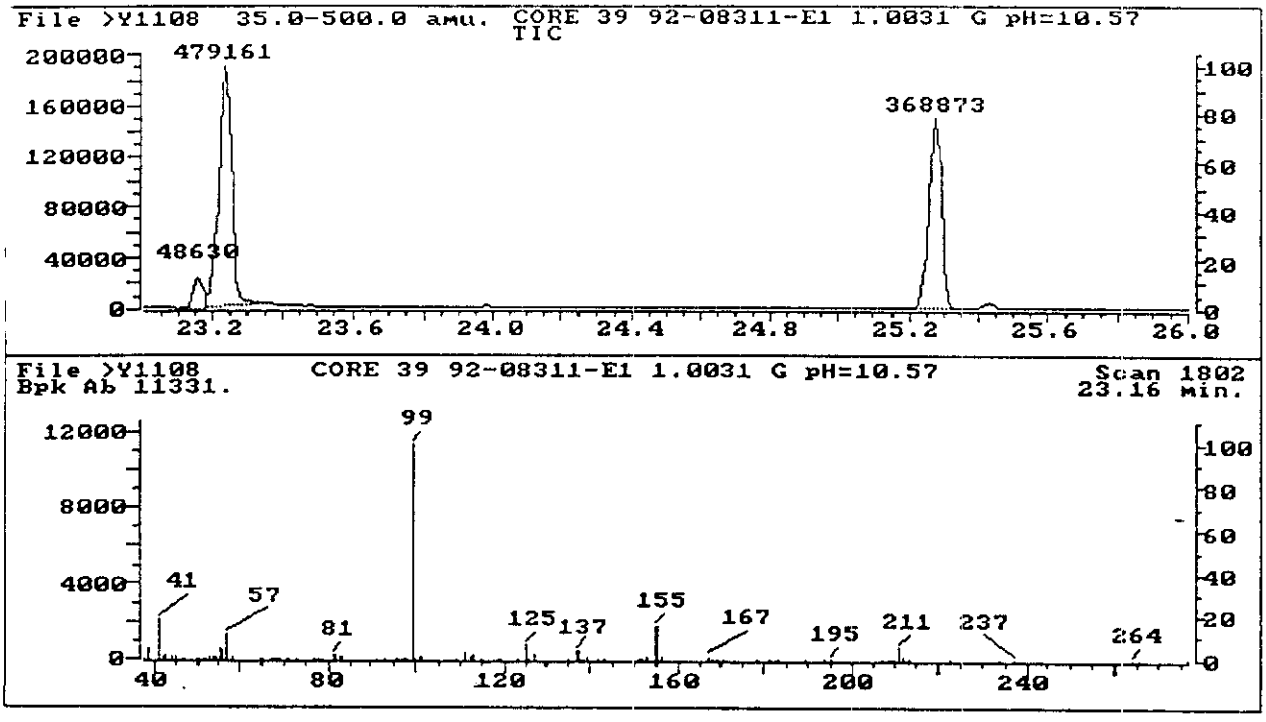
Instrument ID: BNA2 Analyzed on: 12/11/92 17:48

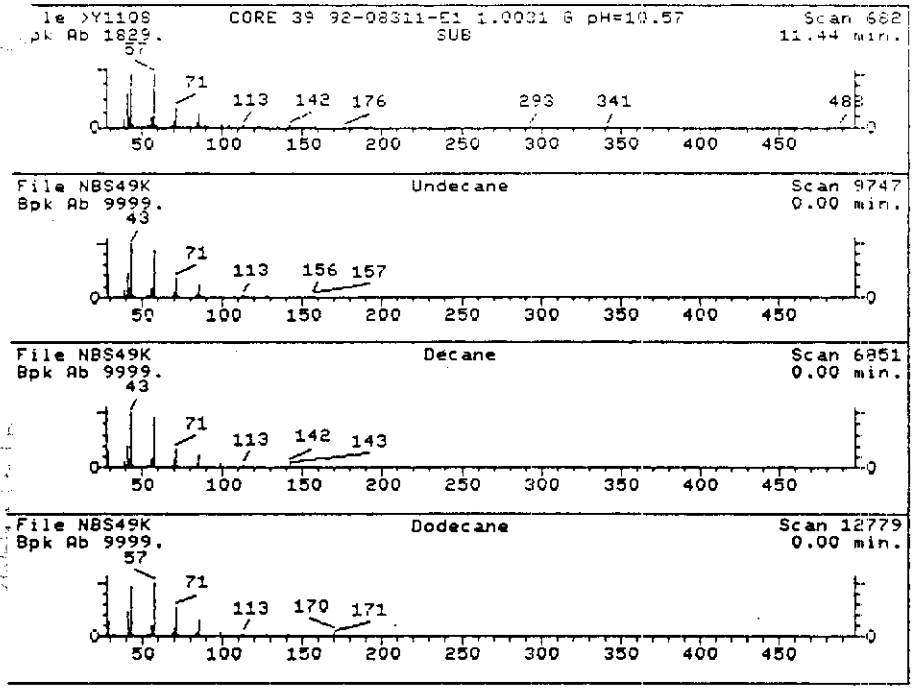
```
 MGR : new
FMGR : fi,>y1108
FMGR : ec,,,23:26
 reg type  # pts  scan#    range: amu\r.t.      base   file     ion range
 --- ----  -----  -----   ----------------   -------  -----  --------------
  X   GC     288   1787    23.00-    26.01  190811.0 >Y1108   35.00- 500.00
FMGR : int

 >Y1108        CORE 39 92-08311-E1 1.0031 G pH=10.57
   35.0| 500.0 TIC
 Upslope:  .2000 Area Reject: 5.00 %   Max Peaks:  3  Bunch:  1 Valley >100 %
 Dnslope: 0.0000 Results File VDIR76   Sorted by Time/Area      INT

 Peak   R.T.  first    max   last    peak     raw      corr.    corr.    % of
   #    min.   scan   scan   scan   height   area     area    % max.   total
 ---  ------  -----  -----  -----  ------  -------  -------  -------  -------
   1   23.16TBP 1796   1802   1804   23325   50002    48630    10.15    5.423
   2   23.23Sur 1804   1809   1821  188847  505125   479161*  100.00   53.438
   3   25.28BMP 1998   2005   2014  149161  374156   368873    76.98   41.138

                              Sum of corrected areas:     896664.          -
FMGR : dr,1
  working...
  draw complete...
FMGR : lp
FMGR : es,0r
 reg type  # pts  scan#    range: amu\r.t.      base   file     ion range
 --- ----  -----  -----   ----------------   -------  -----  --------------
  X   MS      87   1802    38.00-   277.05   11331.0 >Y1108
FMGR : dr,2
  working...
  draw complete...
```


File >Y1108 35.0-500.0 amu. CORE 39 92-08311-E1 1.0031 G pH=10.57
TIC
479161
368873
48630
200000
160000
120000
80000
40000
0
23.2
23.6
24.0
24.4
24.8
25.2
25.6
26.0
100
80
60
40
20
0
File >Y1108 CORE 39 92-08311-E1 1.0031 G pH=10.57
Bpk Ab 11331.
Scan 1802
23.16 min.
99
41
57
81
125
137
155
167
195
211
237
264
12000
8000
4000
0
40
80
120
160
200
240

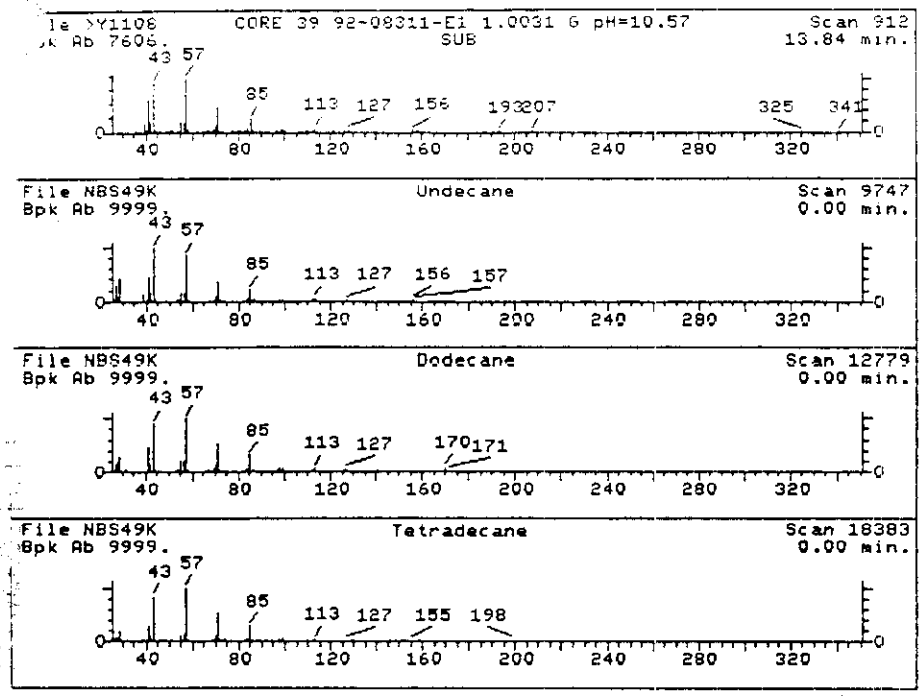


Instrument ID: BNA2 Analyzed on: 12/11/92 17:48
Result 1 in PBM results file: LY1108
Retention Time: 11.44 Area: 28644 Tentative Conc: 8600.00
The unknown area is 10.76% of the nearest internal standard

1. Undecane	156	C11H24
2. Decane	142	C10H22
3. Dodecane	170	C12H26
4. Pentadecane	212	C15H32
5. Undecane, 4,6-dimethyl-	184	C13H28
6. Nonane, 2,5-dimethyl-	156	C11H24

Sample file: >Y1108 Spectrum #: 682
Search speed: 3 Tilting option: F No. of ion ranges searched: 49

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CCN	C_I	R_IU
1.	71	1120214	6682	NBS49K	77	20	1	0	98	15	38	38
2.	69*	124185	18079	NBS49K	78	22	1	2	80	33	26	66
3.	67	112403	6732	NBS49K	81	18	2	3	83	12	34	23
4.	60	629629	6819	NBS49K	64	56	2	0	52	15	30	14
5.	45	17312822	4387	NBS49K	64	34	1	4	61	27	19	23
6.	44	17302271	9794	NBS49K	68	27	1	4	54	33	16	27

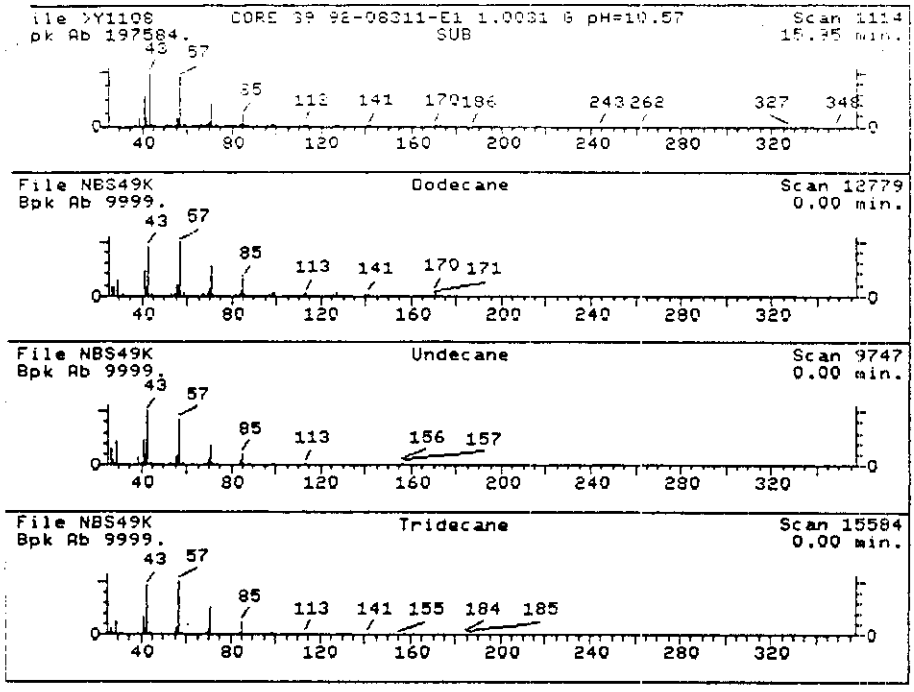


Instrument ID: BNA2 Analyzed on: 12/11/92 17:48
Result 2 in PBM results file: LY1108
Retention Time: 13.84 Area: 80223 Tentative Conc: 20000.00
The unknown area is 24.75% of the nearest internal standard

1.	Undecane	156	C11H24
2.	Dodecane	170	C12H26
3.	Tetradecane	198	C14H30
4.	Tridecane	184	C13H28
5.	Heptadecane, 2,6,10,14-tetramethyl-	296	C21H44
6.	Decane, 2,5,9-trimethyl-	184	C13H28

Sample file: >Y1108 Spectrum #: 912
Search speed: 3 Tilting option: F No. of ion ranges searched: 57

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TI_T	%	CON	C_I	R_IU
1.	96*	1120214	6682	NBS49K	89	8	0	0	91	0	72	96
2.	83	112403	6732	NBS49K	87	12	2	4	83	1	57	27
3.	83	629594	6804	NBS49K	82	26	2	2	97	2	57	23
4.	83	629505	6761	NBS49K	70	36	2	0	92	2	57	23
5.	78	18344371	6880	NBS49K	79	50	2	1	77	4	55	14
6.	71	62108229	4388	NBS49K	55	36	0	0	100	14	38	33



Instrument ID: BNA2 Analyzed on: 12/11/92 17:48
Result 3 in PBM results file: LY1108
Retention Time: 15.95 Area: 3154101 Tentative Conc: 780000.00
The unknown area is 973.19% of the nearest internal standard

1. Dodecane	170	C12H26
2. Undecane	156	C11H24
3. Tridecane	184	C13H28
4. Tetradecane	198	C14H30
5. Pentadecane	212	C15H32
6. Undecane, 2-methyl-	170	C12H26

Sample file: >Y1108 Spectrum #: 1114
Search speed: 3 Tilting option: F No. of ion ranges searched: 57

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	96*	112403	6732	NBS49K	99	0	0	4	92	1	72	94
2.	87	1120214	6682	NBS49K	81	16	1	0	84	2	63	42
3.	83	629505	6761	NBS49K	88	18	2	3	100	4	57	27
4.	83	629594	6804	NBS49K	87	21	2	4	100	2	57	27
5.	83	629629	6819	NBS49K	87	33	2	4	73	5	57	23
6.	79*	7045718	6735	NBS49K	55	39	2	1	89	8	48	34

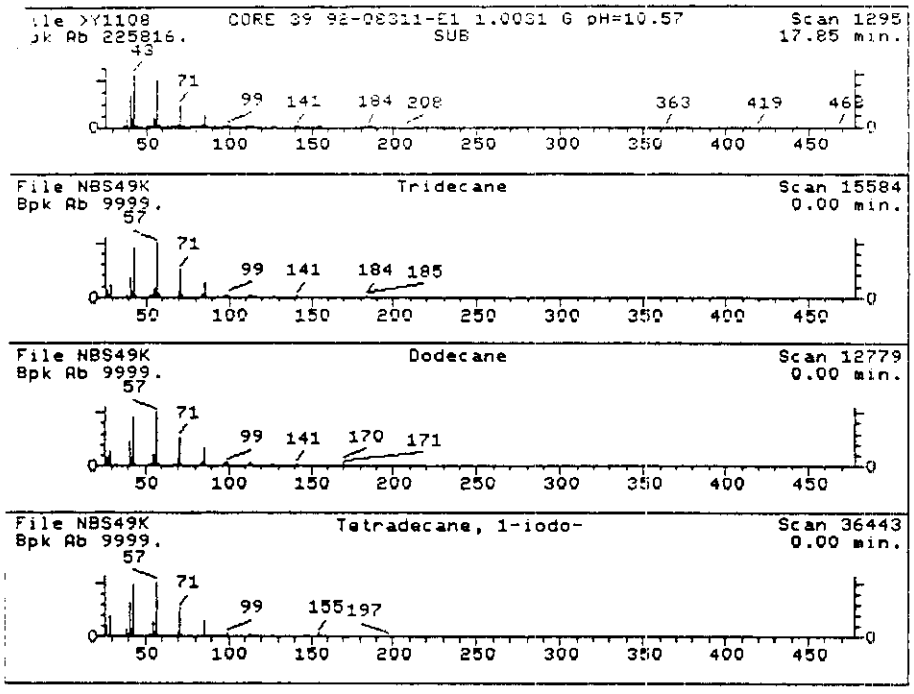
Instrument ID: BNA2 Analyzed on: 12/11/92 17:48

Retention Time: 17.23 Area: 29492 Tentative Conc: 7300.00

The unknown area is 9.10% of the nearest internal standard

This peak is less than 10% of the nearest internal standard.

No library search has been performed on this peak.

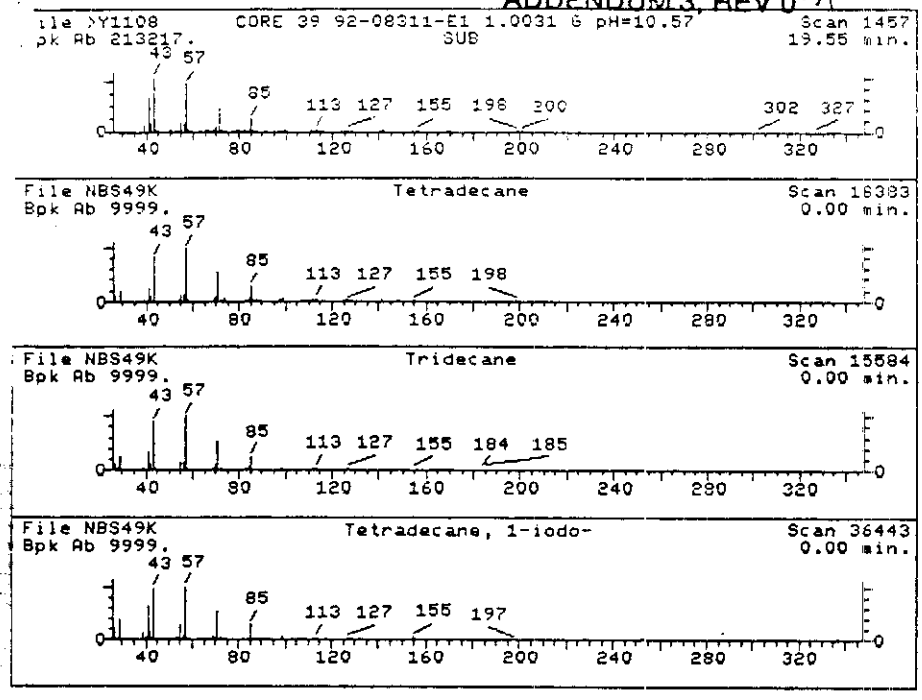


Instrument ID: BNA2 Analyzed on: 12/11/92 17:48
Result 4 in PBM results file: LY1108
Retention Time: 17.85 Area: 6652965 Tentative Conc:1600000.00
The unknown area is 2052.8% of the nearest internal standard

1.	Tridecane	184	C13H28
2.	Dodecane	170	C12H26
3.	Tetradecane, 1-iodo-	324	C14H29I
4.	Tetradecane	198	C14H30
5.	Decane, 2,9-dimethyl-	170	C12H26
6.	Undecane, 2,10-dimethyl-	184	C13H28

Sample file: >Y1108 Spectrum #: 1295
Search speed: 3 Tilting option: F No. of ion ranges searched: 59

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	95*	629505	6761	NBS49K	77	29	0	0	66	3	72	93
2.	88	112403	6732	NBS49K	92	7	1	3	74	4	65	53
3.	87	19218941	6889	NBS49K	93	35	1	2	66	4	63	44
4.	86	629594	6804	NBS49K	97	11	2	3	100	3	60	32
5.	83	1002171	6738	NBS49K	60	32	2	0	79	4	57	21
6.	83*	17301278	17913	NBS49K	56	53	2	2	74	4	57	27

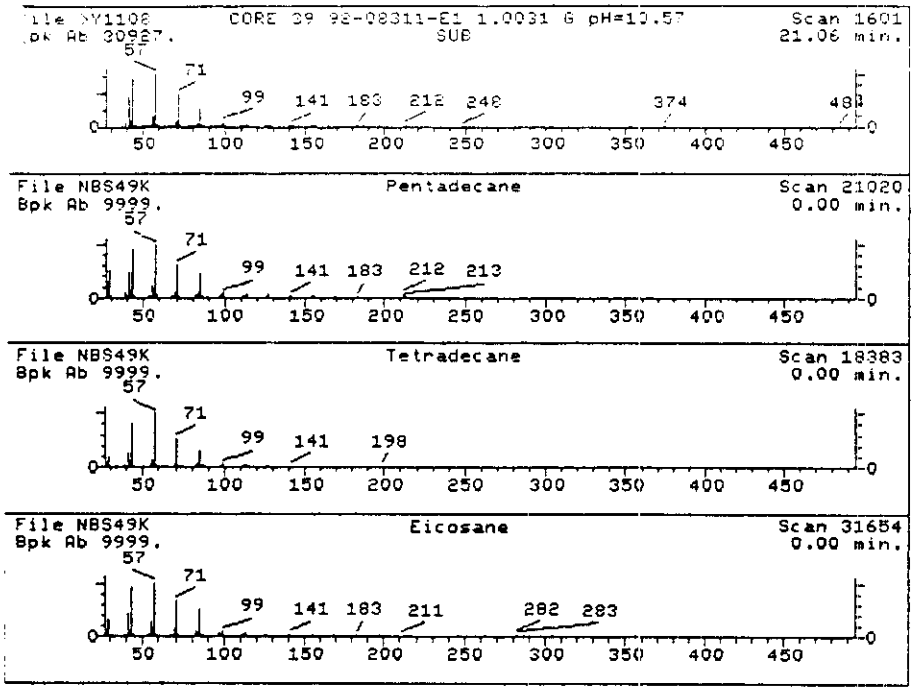


Instrument ID: 8NA2 Analyzed on: 12/11/92 17:48
Result 5 in PBM results file: LY1108
Retention Time: 19.55 Area: 5356680 Tentative Conc:1200000.00
The unknown area is 1513.3% of the nearest internal standard

1.	Tetradecane	198	$C_{14}H_{30}$
2.	Tridecane	184	$C_{13}H_{28}$
3.	Tetradecane, 1-iodo-	324	$C_{14}H_{29}I$
4.	Dodecane, 2,5-dimethyl-	198	$C_{14}H_{30}$
5.	Pentadecane	212	$C_{15}H_{32}$
6.	Eicosane	282	$C_{20}H_{42}$

Sample file: >Y1108 Spectrum #: 1457
Search speed: 3 Tilting option: F No. of ion ranges searched: 62

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	95*	629594	6804	NBS49K	102	6	1	1	83	0	72	93
2.	89	629505	6761	NBS49K	91	15	1	0	75	3	66	60
3.	88	19218941	6889	NBS49K	100	28	1	1	70	4	65	50
4.	86*	56292650	14883	NBS49K	55	54	2	0	88	4	60	32
5.	83	629629	6819	NBS49K	93	27	2	4	88	4	57	29
6.	83	112958	6871	NBS49K	94	45	2	4	79	4	57	22



Instrument ID: BNA2 Analyzed on: 12/11/92 17:48
Result 6 in PBM results file: LY1108
Retention Time: 21.06 Area: 268559 Tentative Conc: 61000.00
The unknown area is 75.87% of the nearest internal standard

1.	Pentadecane	212	C15H32
2.	Tetradecane	198	C14H30
3.	Eicosane	282	C20H42
4.	Octacosane	394	C28H58
5.	Tridecane	184	C13H28
6.	Dodecane, 2,6,10-trimethyl-	212	C15H32

Sample file: >Y1108 Spectrum #: 1601
Search speed: 3 Tilting option: F No. of ion ranges searched: 73

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	93*	629629	6819	NBS49K	106	14	1	2	83	4	68	83
2.	86	629594	6804	NBS49K	97	11	2	0	100	4	60	39
3.	86	112958	6871	NBS49K	106	33	2	4	80	4	60	35
4.	83	630024	6906	NBS49K	99	42	2	2	81	4	57	26
5.	81	629505	6761	NBS49K	81	25	1	0	98	8	53	42
6.	79*	3891983	4420	NBS49K	56	68	2	0	73	10	48	33

QUANT REPORT

Operator ID: BGB
Output File: ^Y1109::OF
Data File: >Y1109::D2
Name: CORE 39 92-08311-E2
Misc: 1.0500 G pH=10.57

Quant Rev: 7
Quant Time: 921211 19:33
Injected at: 921211 18:45
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 7

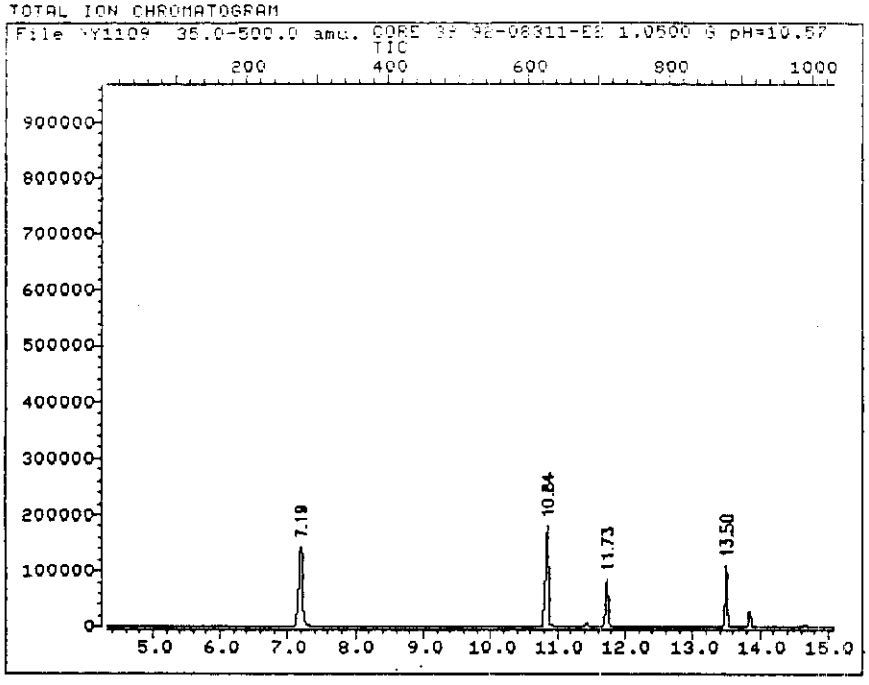
ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	711	40081	40.00	ng/uL	99
2)	2-Fluorophenol	7.19	276	157050	114.72	ng/uL	88
3)	Phenol-d5	10.84	626	185076	111.04	ng/uL	95
16)	*Naphthalene-d8	15.63	1084	143165	40.00	ng/uL	96
17)	Nitrobenzene-d5	13.50	880	81112	55.65	ng/uL	94
31)	*Acenaphthene-d10	20.89	1586	75435	40.00	ng/uL	96
36)	2-Fluorobiphenyl	18.99	1404	136167	54.29	ng/uL	98
51)	*Phenanthrene-d10	25.28	2006	134917	40.00	ng/uL	98
54)	2,4,6-Tribromophenol	23.23	1810	61176	103.19	ng/uL	98
62)	*Chrysene-d12	33.12	2756	119040	40.00	ng/uL	88
64)	Terphenyl-d14	30.17	2474	165430	53.69	ng/uL	89
69)	Bis(2-Ethylhexyl)phthalate	33.58	2799	2746	.870	ng/uL	99
70)	*Perylene-d12	37.04	3129	139661	40.00	ng/uL	97

* Compound is ISTD

Reviewing data
12-17-92



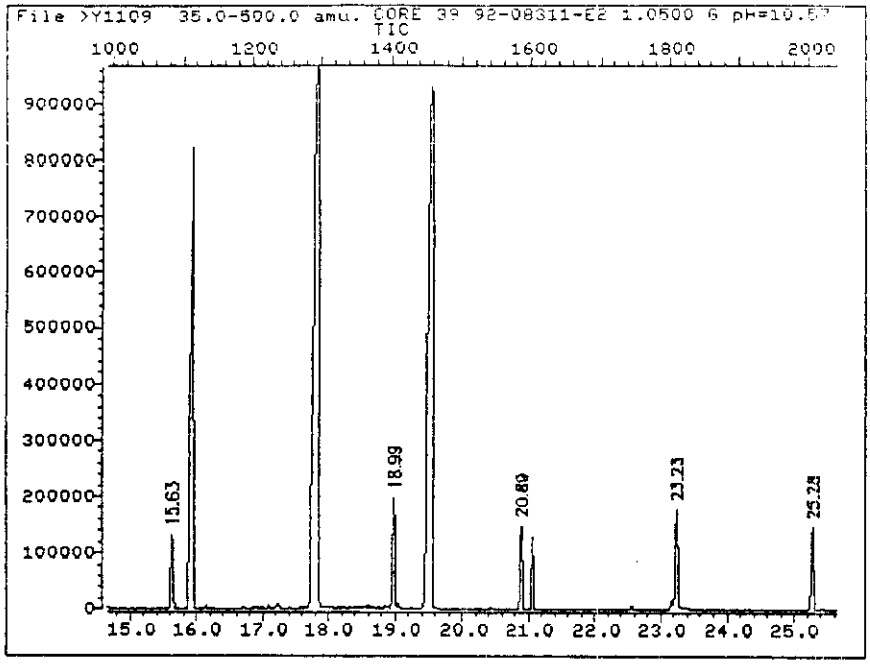
Data File: >Y1109::D2 Quant Output File: ^Y1109::OF
Name: CORE 39 92-08311-E2 Instrument ID: BNA2
Misc: 1.0500 G pH=10.57 BTL# 7

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40 Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 19:33
Injected at: 921211 18:45

Page 1 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1109::D2
Name: CORE 39 92-08311-E2
Misc: 1.0500 G pH=10.57

Quant Output File: ^Y1109::QF
Instrument ID: BNA2

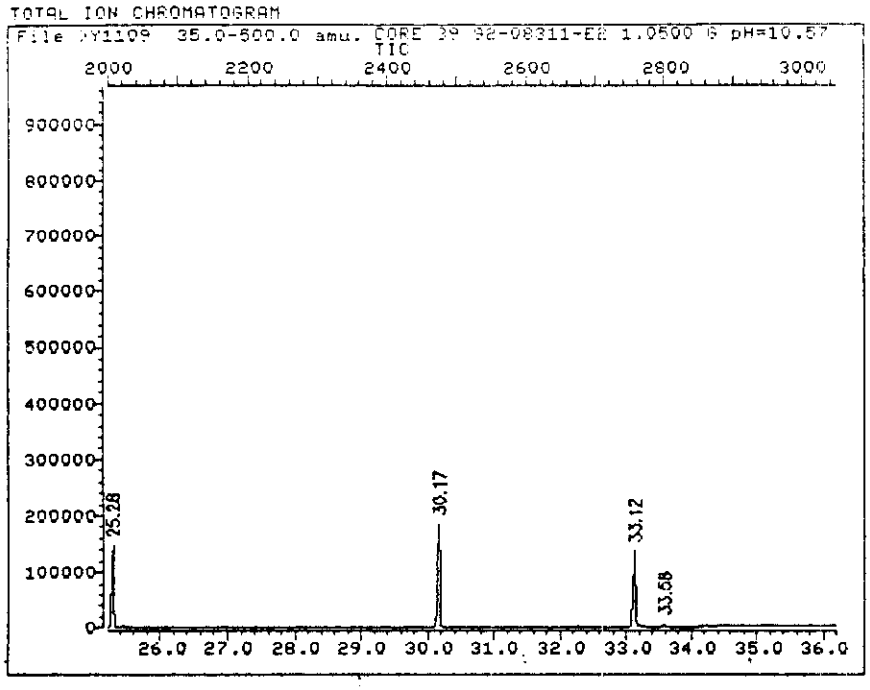
BTL# 7

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 19:33
Injected at: 921211 18:45

Page 2 of 4



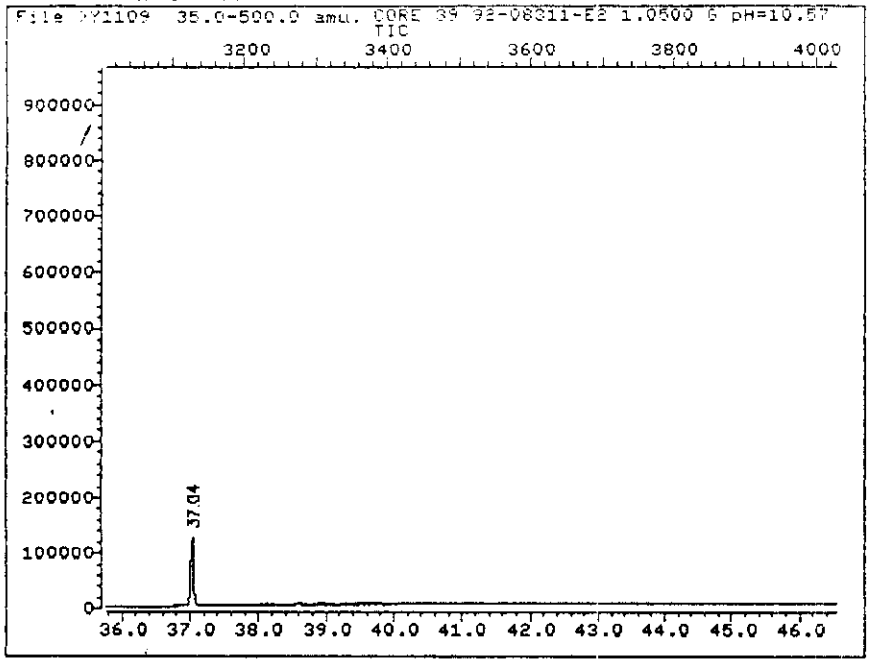
Data File: >Y1109::D2 Quant Output File: ^Y1109::OF
Name: CORE 39 92-08311-E2 Instrument ID: BNA2
Misc: 1.0500 G pH=10.57 BTL# 7

Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40 Last Qcal Time: 921211 11:34

Operator ID: BOB
Quant Time : 921211 19:33
Injected at: 921211 18:45

Page 3 of 4

TOTAL ION CHROMATOGRAM



Data File: >Y1109::D2
Name: CORE 39 92-08311-E2
Misc: 1.0500 G pH=10.57

Quant Output File: ^Y1109::OF
Instrument ID: BNA2

ETL# 7

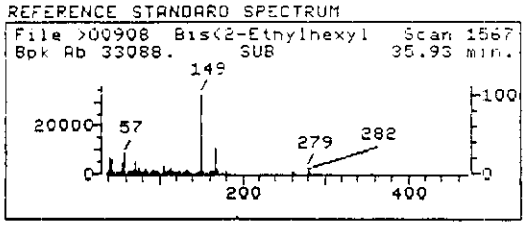
Id File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Time: 921211 11:34

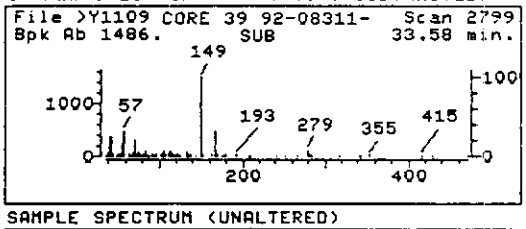
Operator ID: BOB
Quant Time : 921211 19:33
Injected at: 921211 18:45

Page 4 of 4

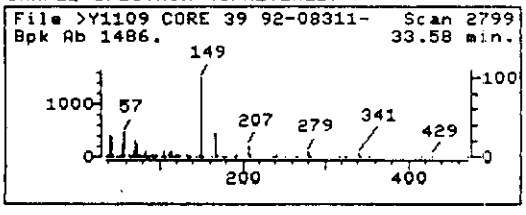
REFERENCE STANDARD SPECTRUM

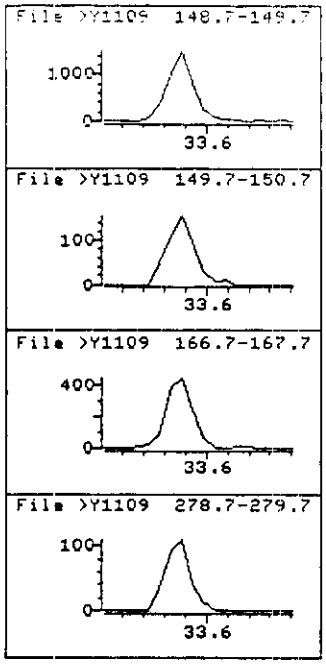


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





Data File: >Y1109::D2
Name: CORE 39 92-08311-E2
Misc: 1.0500 G pH=10.57
Quant Time: 921211 19:33
Injected at: 921211 18:45
Last Qcal Time: 921211 11:34

Quant Output File: ^Y1109::OF
Instrument ID: BNA2
BTL# 7
Quant ID File: ID2BNA::QT
Last Calibration: 921105 16:40

Compound No : 69
Compound Name : Bis(2-Ethylhexyl)phthalate
Scan Number : 2799
Retention Time: 33.58 min.
Quant Ion : 149.0
Area : 2746
Concentration : .870 ng/uL
q-value : 99

ok

QUANT REPORT

Operator ID: BOB
Output File: ^Y1109::OF
Data File: >Y1109::D2
Name: CORE 39 92-08311-E2
Misc: 1.0500 G pH=10.57

Quant Rev: 7
Quant Time: 921211 19:33
Injected at: 921211 18:45
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 7

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	711	40081	40.00	ng/uL	99
2)	2-Fluorophenol	7.19	276	157050	114.72	ng/uL	88
3)	Phenol-d5	10.84	626	185076	111.04	ng/uL	95
4)	Phenol	0.00	0	0	0.00	ng/uL	
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL	
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL	
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	0.00	880	0	0.00	ng/uL	
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.63	1084	143165	40.00	ng/uL	96
17)	Nitrobenzene-d5	13.50	880	81112	55.65	ng/uL	94
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL	
19)	Isophorone	0.00	0	0	0.00	ng/uL	
20)	2-Nitrophenol	0.00	0	0	0.00	ng/uL	
21)	2,4-Dimethylphenol	0.00	0	0	0.00	ng/uL	
22)	Benzoic acid	0.00	0	0	0.00	ng/uL	
23)	bis(2-Chloroethoxy)methane	0.00	0	0	0.00	ng/uL	
24)	2,4-Dichlorophenol	0.00	0	0	0.00	ng/uL	
25)	1,2,4-Trichlorobenzene	0.00	0	0	0.00	ng/uL	
26)	Naphthalene	0.00	1114	0	0.00	ng/uL	
27)	4-Chloroaniline	0.00	1114	0	0.00	ng/uL	
28)	Hexachlorobutadiene	0.00	0	0	0.00	ng/uL	
29)	4-Chloro-3-methylphenol	0.00	0	0	0.00	ng/uL	
30)	2-Methylnaphthalene	0.00	1291	0	0.00	ng/uL	
31)	*Acenaphthene-d10	20.89	1586	75435	40.00	ng/uL	96
32)	Hexachlorocyclopentadiene	0.00	0	0	0.00	ng/uL	
33)	2,4,6-Trichlorophenol	0.00	0	0	0.00	ng/uL	
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL	
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL	
36)	2-Fluorobiphenyl	18.99	1404	136167	54.29	ng/uL	98
37)	2-Nitroaniline	0.00	1458	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1586	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	0.00	0	0	0.00	ng/uL	

43)	2,4-Dinitrophenol	0.00	0	0	0.00	ng/uL	
44)	4-Nitrophenol	0.00	0	0	0.00	ng/uL	
45)	Dibenzofuran	0.00	0	0	0.00	ng/uL	
46)	2,4-Dinitrotoluene	0.00	0	0	0.00	ng/uL	
47)	Diethylphthalate	0.00	0	0	0.00	ng/uL	
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00	ng/uL	
49)	Fluorene	0.00	0	0	0.00	ng/uL	
50)	4-Nitroaniline	0.00	0	0	0.00	ng/uL	
51)	*Phenanthrene-d10	25.28	2006	134917	40.00	ng/uL	98
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00	ng/uL	
53)	N-Nitrosodiphenylamine	0.00	1810	0	0.00	ng/uL	
54)	2,4,6-Tribromophenol	23.23	1810	61176	103.19	ng/uL	98
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00	ng/uL	
56)	Hexachlorobenzene	0.00	0	0	0.00	ng/uL	
57)	Pentachlorophenol	0.00	0	0	0.00	ng/uL	
58)	Phenanthrene	0.00	0	0	0.00	ng/uL	
59)	Anthracene	0.00	0	0	0.00	ng/uL	
60)	Di-n-butylphthalate	0.00	0	0	0.00	ng/uL	
61)	Fluoranthene	0.00	0	0	0.00	ng/uL	
62)	*Chrysene-d12	33.12	2756	119040	40.00	ng/uL	88
63)	Pyrene	0.00	0	0	0.00	ng/uL	
64)	Terphenyl-d14	30.17	2474	165430	53.69	ng/uL	89
65)	Butylbenzylphthalate	0.00	0	0	0.00	ng/uL	
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00	ng/uL	
67)	Benzo(a)anthracene	0.00	0	0	0.00	ng/uL	
68)	Chrysene	0.00	0	0	0.00	ng/uL	
69)	Bis(2-Ethylhexyl)phthalate	33.58	2799	2746	.870	ng/uL	99
70)	*Perylene-d12	37.04	3129	139661	40.00	ng/uL	97
71)	Di-n-octylphthalate	0.00	0	0	0.00	ng/uL	
72)	Benzo(b)fluoranthene	0.00	0	0	0.00	ng/uL	
73)	Benzo(k)fluoranthene	0.00	0	0	0.00	ng/uL	
74)	Benzo(a)pyrene	0.00	0	0	0.00	ng/uL	
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00	ng/uL	
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00	ng/uL	
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00	ng/uL	

* Compound is ISTD

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[INTERNAL STANDARD CHECK REPORT]

SAMPLE FILE = >Y1109
CAL CHECK FILE = >Y1102
DATE AND TIME OF ANALYSIS = 12/11/92 18:45
MISCELLANEOUS = 1.0500 G pH=10.57
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BOB SUPER GRP

I. Areas

Name of the BNA Internal Standard	The Sample ISTD Area	Daily Check ISTD Area	Daily Check ISTD Area / 2	Daily Check ISTD Area x 2	Status of the Sample ISTD Area Precision
1,4-Dichlorobenz-d4	40081	35181	17591	70362	OK
Naphthalene-d8	143165	121257	60629	242514	OK
Acenaphthene-d10	75435	62320	31160	124640	OK
Phenanthrene-d10	134917	110649	55325	221298	OK
Chrysene-d12	119040	89739	44870	179478	OK
Perylene-d12	139661	104732	52366	209464	OK

II. Retention Times

Name of the BNA Internal Standard	The Sample ISTD R.Time	Daily Check ISTD R.Time	Daily Check ISTD RT - 0.5	Daily Check ISTD RT + 0.5	Status of the Sample ISTD R.T. Precision
1,4-Dichlorobenz-d4	11.73	11.73	11.23	12.23	OK
Naphthalene-d8	15.63	15.64	15.14	16.14	OK
Acenaphthene-d10	20.89	20.89	20.39	21.39	OK
Phenanthrene-d10	25.28	25.29	24.79	25.79	OK
Chrysene-d12	33.13	33.14	32.64	33.64	OK
Perylene-d12	37.04	37.05	36.55	37.55	OK

[GC/MS OPERATOR REPORT]

[GC/MS LAB SEMIVOLATILES]

[Preliminary Surrogate Report]

DATA FILE NAME = >Y1109::D2
DATE AND TIME OF ANALYSIS = 12/11/92 18:45
SAMPLE = CORE 39 92-08311-E2
MISCELLANEOUS = 1.0500 G pH=10.57
METHOD = BNAME2
INSTRUMENT = BNA2
OPERATOR = BDB SUPER GRP

SURROGATE	AS FOUND IN SAMPLE	WAS SPIKED AT	WATER LIMITS	SOIL LIMITS	% RECOVERY
2-Fluorophenol	114.72	100.00	21-100	25-121	114.72
Phenol-d5	111.04	100.00	10-94	24-113	111.04
Nitrobenzene-d5	55.65	50.00	35-114	23-120	111.30
2-Fluorobiphenyl	54.29	50.00	43-116	30-115	108.59
2,4,6-tribromo-phenol	103.19	100.00	10-123	19-122	103.19
Terphenyl-d14	53.69	50.00	33-141	18-137	107.38

MS data file header from : >Y1109::D2

Sample: CORE 39 92-08311-E2 Operator: BOB SUPER GRP. 12/11/92 18:45
Misc : 1.0500 G pH=10.57 BTL# 7
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 7 Equip ID: BNA2
Method file: BNAME2 Tuning file: MTBNA2 No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	40.	300.	0.	0.	0.
Chromatographic times, min. :	4.0	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	8.0	0.0	0.0	.5	0.0

>Y1109 CORE 39 92-08311-E2 1.0500 G pH=10.57
35.01 500.0 CLP TIC
Upslope: .2000 Area Reject: 24958. Max Peaks: 5 Burch: -1 Valley >100 %
Onslope: 0.0000 Results File IY1109 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	13.84	908	913	923	29337	69112	62835	1.06	.465
2	15.95	1105	1114	1125	819848	2643437	2635858	44.53	19.504
3	17.84	1277	1295	1301	961531	5959395	5918671	100.00	43.795
4	19.54	1437	1457	1462	929935	4700937	4673530	78.96	34.581
5	21.06	1597	1602	1614	128060	229329	223736	3.78	1.656

Sum of corrected areas: 13514630.

Summary of Unknowns PBM Library Search and Quantitation

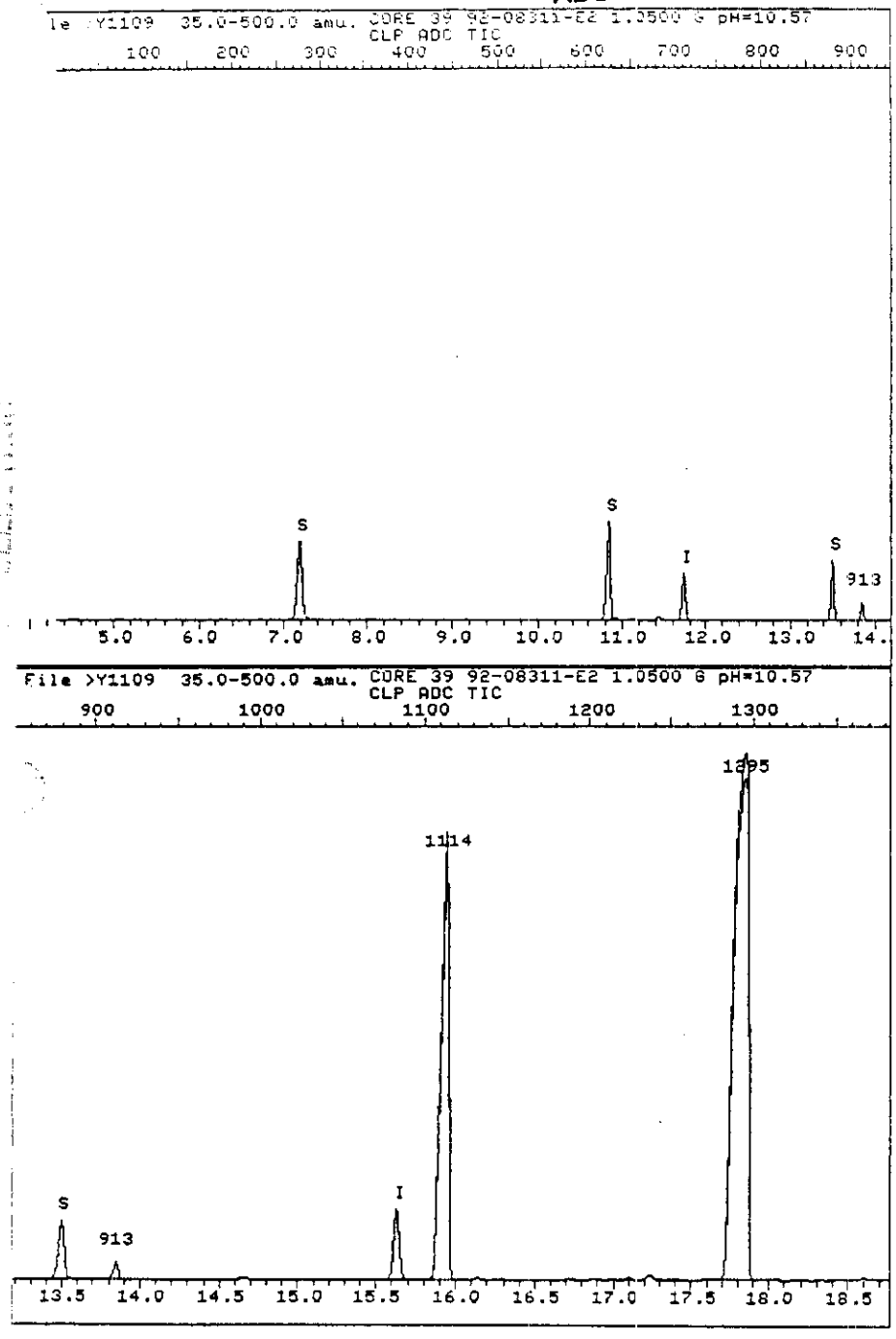
Standard	Concentration	Area	Retention Time	Unknown Window
1	40.0	249578.	11.73	4.32 - 13.68
2	40.0	307907.	15.63	13.68 - 18.26
3	40.0	339420.	20.89	18.26 - 23.09
4	40.0	350841.	25.28	23.09 - 29.20
5	40.0	352011.	33.12	29.20 - 35.08
6	40.0	379666.	37.04	35.08 - 46.53

Dilution Factor = 1.00 This sample was 1.05000 g or mL

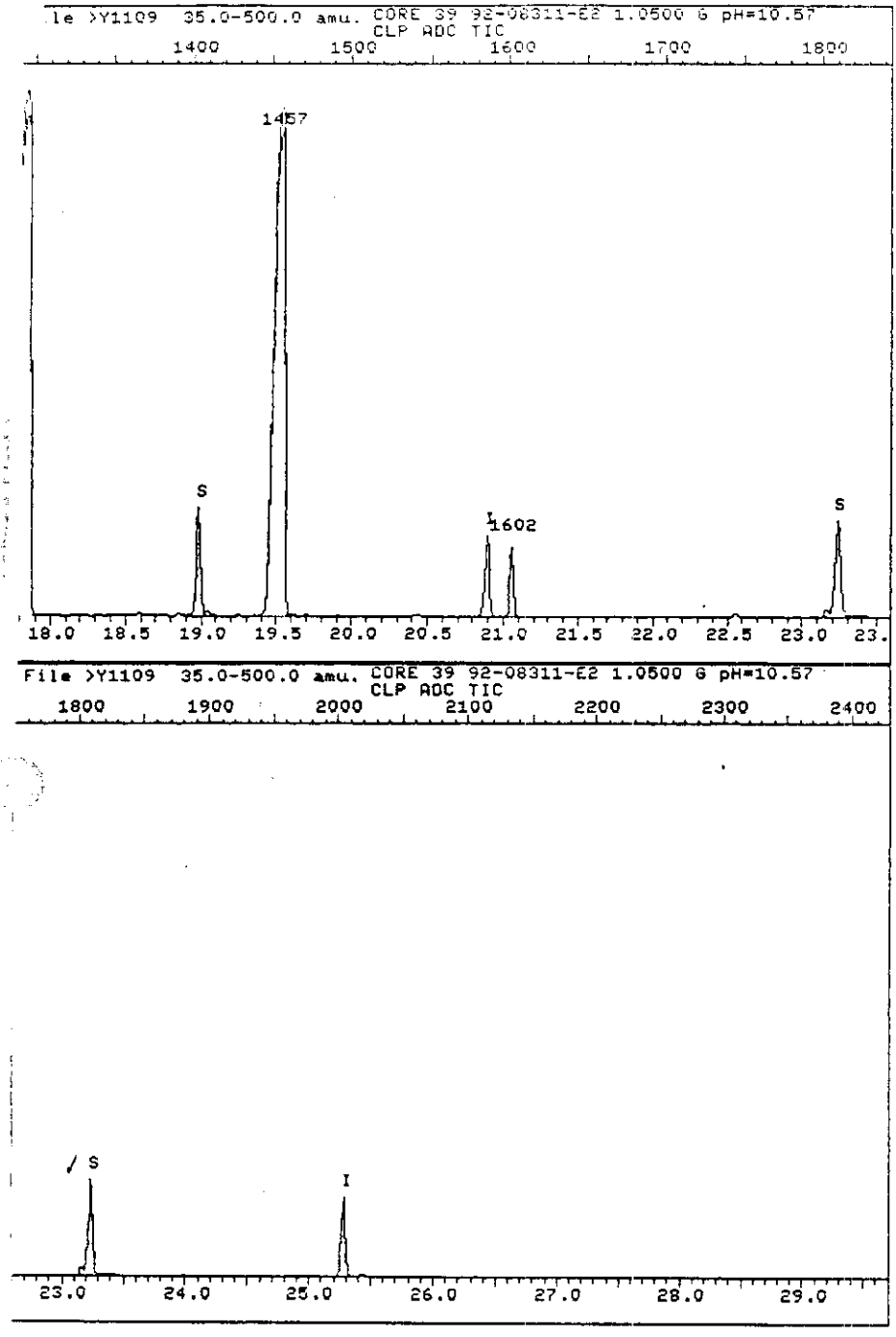
Correction Factor = 1906.67

$$\text{Unknown Concentration} = \frac{\text{Conc Int Std} * \text{Area Unknown}}{\text{Area Int Std}} * \text{Correction Factor}$$

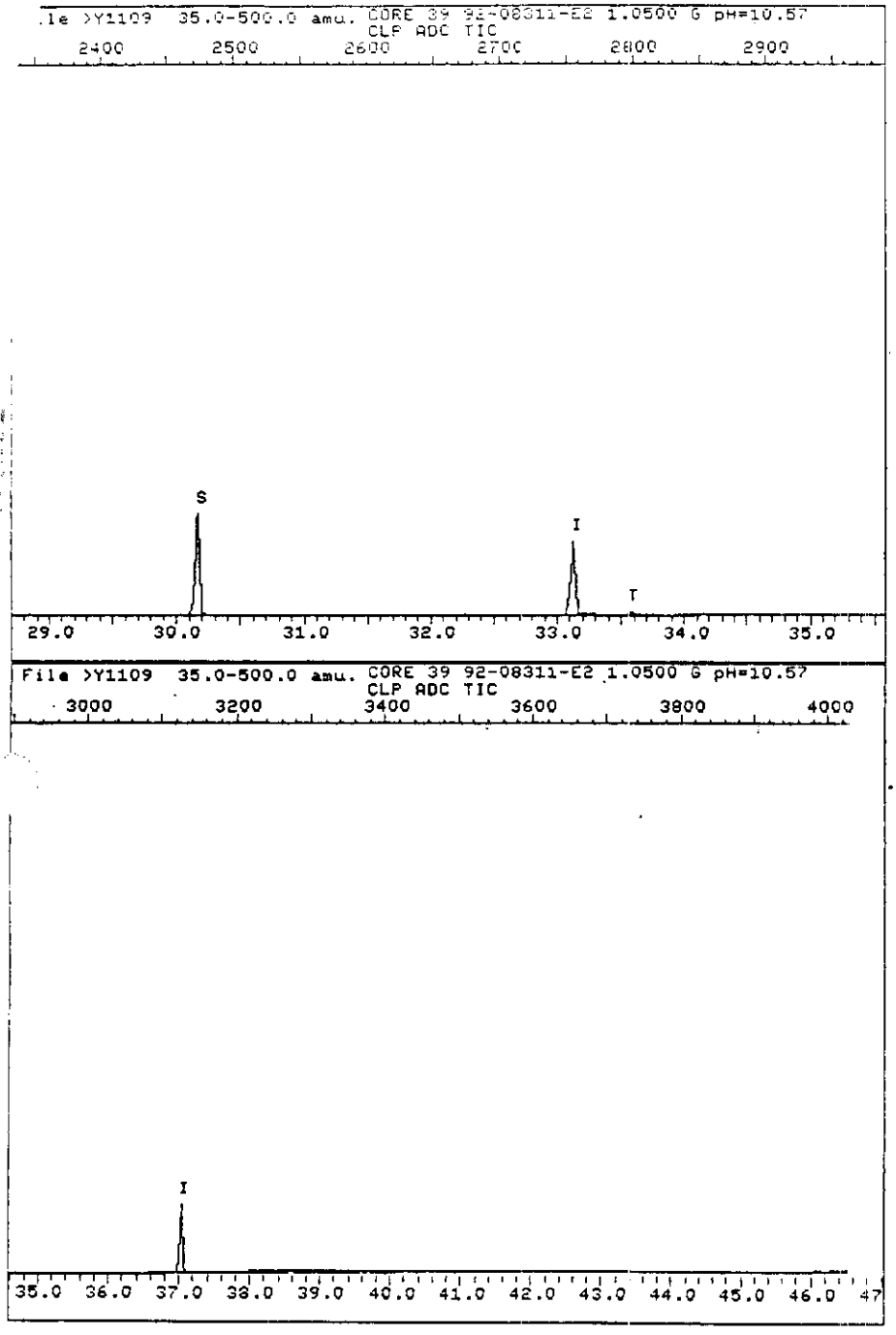
9:45 AM WED., 16 DEC., 1992



Instrument ID: BNA2 Analyzed on: 12/11/92 18:45



Instrument ID: BNA2 Analyzed on: 12/11/92 18:45



Instrument ID: BNA2 Analyzed on: 12/11/92 18:45

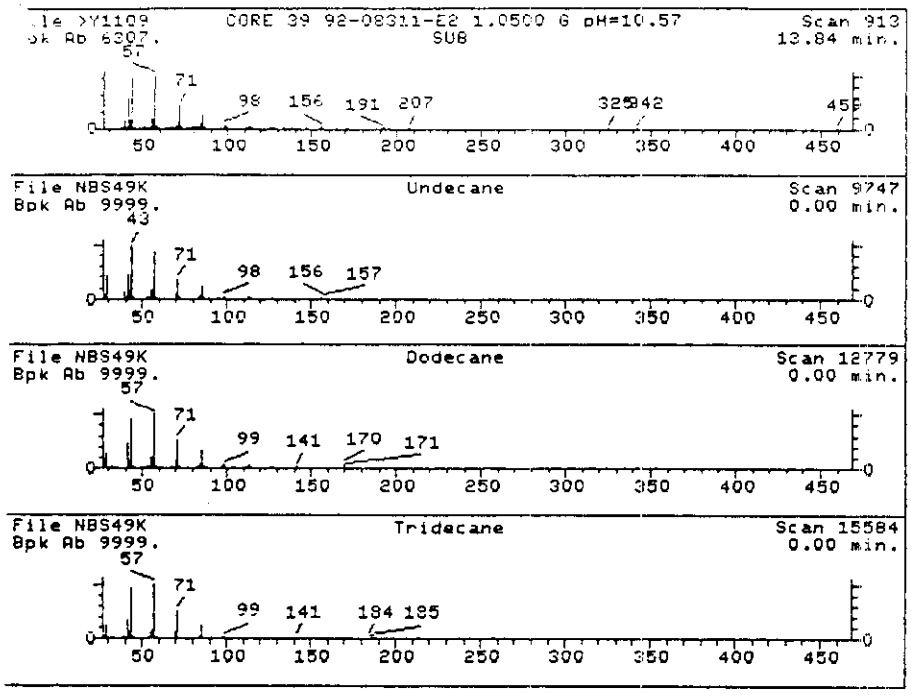
FMGR : int

>Y1109 CORE 39 92-08311-E2 1.0500 G pH=10.57
35.0| 500.0 TIC
Upslope: .2000 Area Reject: 5.00 % Max Peaks: 3 Bunch: 1 Valley >100 %
Dnslope: 0.0000 Results File VDIR76 Sorted by Time/Area INT

Peak #	R.T. min.	first scan	max scan	last scan	peak height	raw area	corr. area	corr. % max.	% of total
1	23.16 TB	1798	1803	1805	16257	34842	33213	7.99	4.153
2	23.23 Sur	1805	1810	1818	175143	439563	415750*	100.00	51.986
3	25.28 TSTD	1998	2006	2011	145426	355419	350779	84.37	43.862

Sum of corrected areas: 799742.

FMGR : dr,1
working...
draw complete...

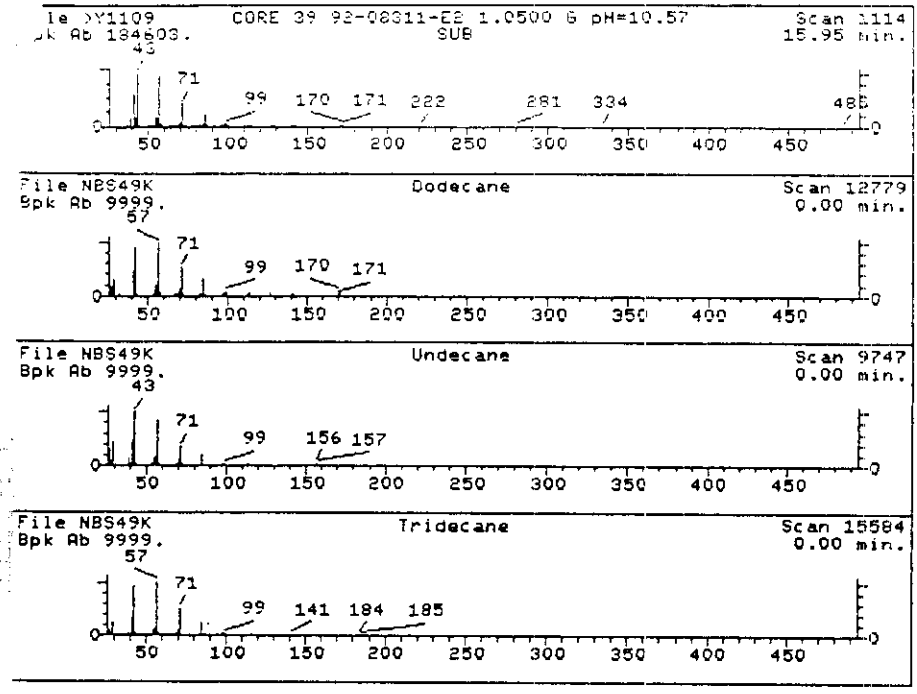


Instrument ID: BNA2 Analyzed on: 12/11/92 18:45
Result 1 in PBM results file: LY1109
Retention Time: 13.84 Area: 62835 Tentative Conc: 16000.00
The unknown area is 20.41% of the nearest internal standard

1. Undecane	156	C11H24
2. Dodecane	170	C12H26
3. Tridecane	184	C13H28
4. Tetradecane	198	C14H30
5. Heptadecane, 2,6,10,14-tetramethyl-	296	C21H44
6. Heptadecane, 2,6,10,15-tetramethyl-	296	C21H44

Sample file: >Y1109 Spectrum #: 913
Search speed: 3 Tilting option: F No. of ion ranges searched: 63

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	96*	1120214	6682	NBS49K	89	8	0	0	94	2	72	96
2.	83	112403	6732	NBS49K	87	12	2	4	85	4	57	27
3.	83	629505	6761	NBS49K	69	37	2	0	86	5	57	21
4.	78	629594	6804	NBS49K	74	34	2	2	90	4	55	19
5.	78	18344371	6880	NBS49K	79	50	2	1	72	5	55	14
6.	78	54833486	6878	NBS49K	76	59	2	4	70	4	55	12

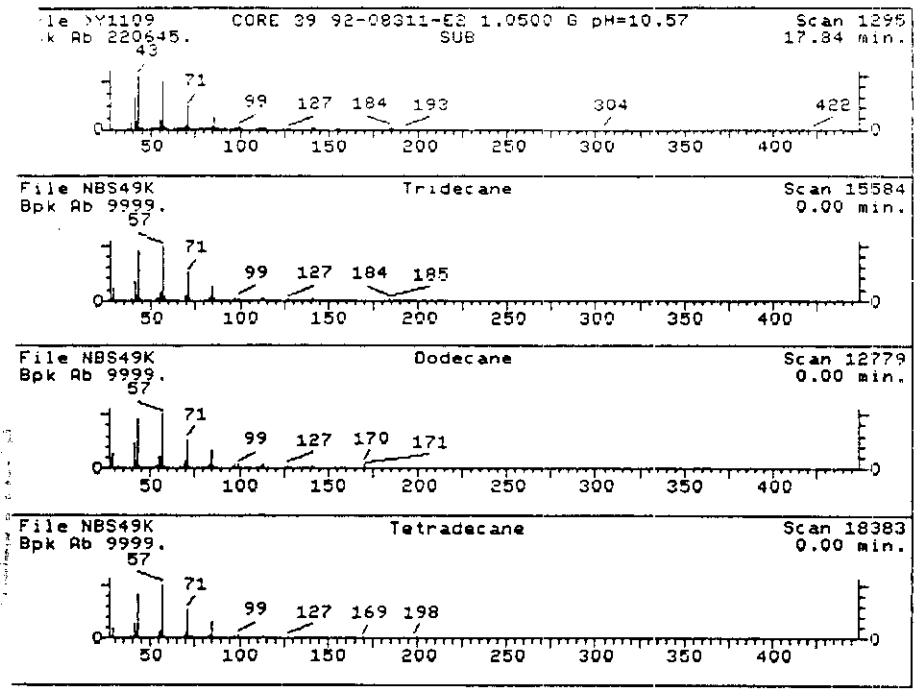


Instrument ID: BNA2 Analyzed on: 12/11/92 18:45
Result 2 in PBM results file: LY1109
Retention Time: 15.95 Area: 2635858 Tentative Conc: 650000.00
The unknown area is 856.06% of the nearest internal standard

1. Dodecane	170	C12H26
2. Undecane	156	C11H24
3. Tridecane	184	C13H28
4. Tetradecane	198	C14H30
5. Pentadecane	212	C15H32
6. Undecane, 2-methyl-	170	C12H26

Sample file: >Y1109 Spectrum #: 1114
Search speed: 3 Tilting option: F No. of ion ranges searched: 58

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	96*	112403	6732	NBS49K	99	0	0	4	89	0	72	94
2.	87	1120214	6682	NBS49K	81	16	1	0	85	1	63	42
3.	87	629505	6761	NBS49K	81	25	1	0	74	1	63	42
4.	83	629594	6804	NBS49K	92	16	2	4	100	1	57	29
5.	83	629629	6819	NBS49K	86	34	2	4	72	4	57	22
6.	79*	7045718	6735	NBS49K	55	39	2	1	88	10	48	34

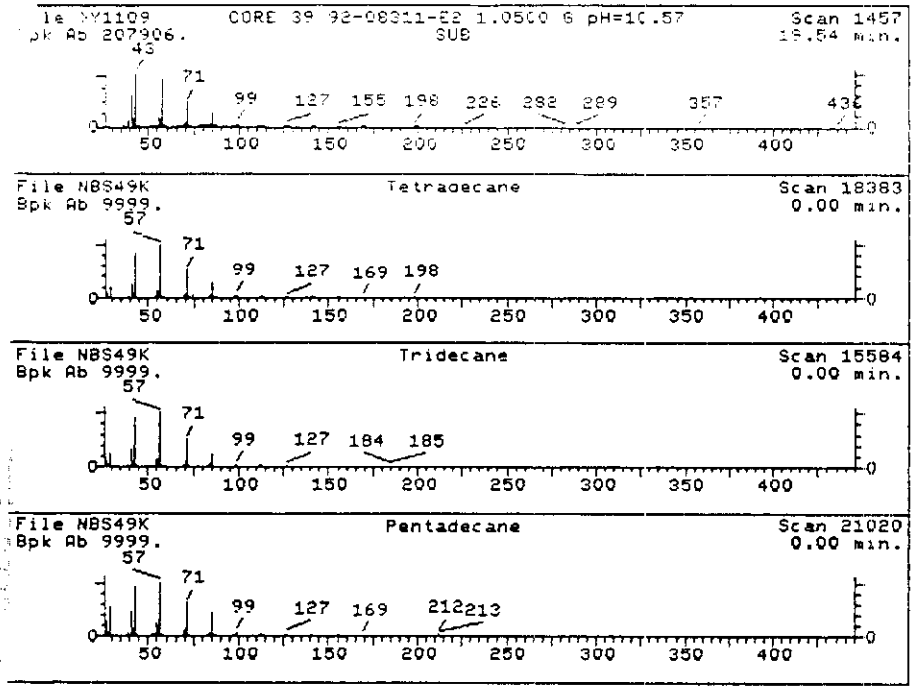


Instrument ID: BNA2 Analyzed on: 12/11/92 18:45
Result 3 in PBM results file: LY1109
Retention Time: 17.84 Area: 5918671 Tentative Conc:1500000.00
The unknown area is 1922.2% of the nearest internal standard

1. Tridecane	184	C13H28
2. Dodecane	170	C12H26
3. Tetradecane	198	C14H30
4. Eicosane	282	C20H42
5. Tetradecane, 1-iodo-	324	C14H29I
6. Dodecane, 2,7,10-trimethyl-	212	C15H32

Sample file: >Y1109 Spectrum #: 1295
Search speed: 3 Tilting option: F No. of ion ranges searched: 60

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	96*	629505	6761	NBS49K	90	16	0	0	70	1	72	96
2.	88	112403	6732	NBS49K	92	7	1	3	71	3	65	53
3.	86	629594	6804	NBS49K	97	11	2	3	100	3	60	32
4.	83	112958	6871	NBS49K	93	46	2	4	70	4	57	22
5.	81	19218941	6889	NBS49K	93	35	1	2	68	10	53	44
6.	76	74645980	4422	NBS49K	72	37	1	4	74	9	45	21

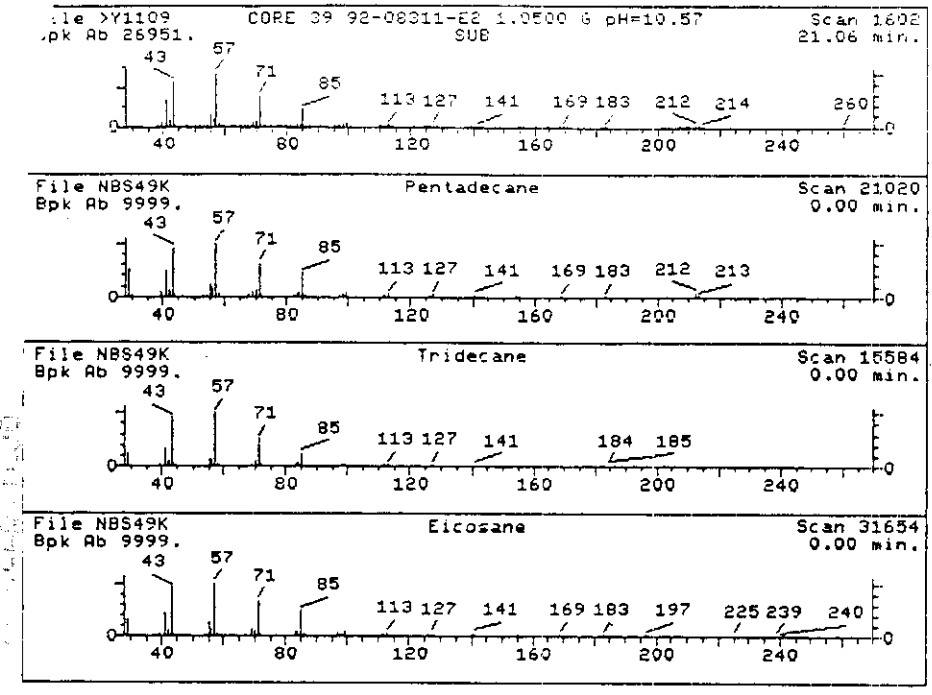


Instrument ID: BNA2 Analyzed on: 12/11/92 18:45
Result 4 in PBM results file: LY1109
Retention Time: 19.54 Area: 4673530 Tentative Conc:1100000.00
The unknown area is 1376.9% of the nearest internal standard

1. Tetradecane	198	C14H30
2. Tridecane	184	C13H28
3. Pentadecane	212	C15H32
4. Dodecane	170	C12H26
5. Tetradecane, 1-iodo-	324	C14H29I
6. Tridecane, 4-methyl-	198	C14H30

Sample file: >Y1109 Spectrum #: 1457
Search speed: 3 Tilting option: F No. of ion ranges searched: 63

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	95*	629594	6804	NBS49K	102	6	1	1	88	1	72	93
2.	89	629505	6761	NBS49K	91	15	1	0	74	4	66	60
3.	83	629629	6819	NBS49K	93	27	2	3	81	4	57	29
4.	81	112403	6732	NBS49K	87	12	1	4	85	10	53	45
5.	81	19218941	6889	NBS49K	93	35	1	1	66	6	53	44
6.	79*	26730121	4409	NBS49K	60	54	2	3	82	10	48	31



Instrument ID: BNA2 Analyzed on: 12/11/92 18:45
Result 5 in PBM results file: LY1109
Retention Time: 21.06 Area: 223736 Tentative Conc: 50000.00
The unknown area is 65.92% of the nearest internal standard

1. Pentadecane	212	C15H32
2. Tridecane	184	C13H28
3. Eicosane	282	C20H42
4. Tetradecane	198	C14H30
5. Octacosane	394	C28H58
6. Pentatriacontane	492	C35H72

Sample file: >Y1109 Spectrum #: 1602
Search speed: 3 Tilting option: F No. of ion ranges searched: 72

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	94*	629629	6819	NBS49K	111	9	1	3	79	5	72	92
2.	87	629505	6761	NBS49K	81	25	1	0	92	5	63	42
3.	86	112958	6871	NBS49K	106	33	2	4	76	5	60	35
4.	83	629594	6804	NBS49K	92	16	2	1	97	4	57	29
5.	83	630024	6906	NBS49K	95	46	2	2	76	2	57	23
6.	83	630079	6915	NBS49K	98	53	2	3	83	4	57	25

FORM III SV-2 1/87 Rev.

3D
SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix Spike - EPA Sample No.: CORE 39 Level: (low/med) MED

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
Phenol	194000.00	0.00	230000.00	119 *	26- 90
2-Chlorophenol	194000.00	0.00	230000.00	119 *	25-102
1,4-Dichlorobenzene	97000.00	0.00	104000.00	107 *	28-104
N-Nitroso-di-n-prop.(1)	97000.00	0.00	128000.00	132 *	41-126
1,2,4-Trichlorobenzene	97000.00	0.00	103000.00	106	38-107
4-Chloro-3-methylphenol	194000.00	0.00	218000.00	112 *	26-103
Acenaphthene	97000.00	0.00	106000.00	109	31-137
4-Nitrophenol	194000.00	0.00	131000.00	68	11-114
2,4-Dinitrotoluene	97000.00	0.00	102000.00	105 *	28- 89
Pentachlorophenol	194000.00	0.00	176000.00	91	17-109
Pyrene	97000.00	0.00	98800.00	102	35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	209000.00	244000.00	117 *	2	35	26- 90
2-Chlorophenol	209000.00	237000.00	113 *	5	50	25-102
1,4-Dichlorobenzene	104000.00	105000.00	101	6	27	28-104
N-Nitroso-di-n-prop.(1)	104000.00	133000.00	128 *	3	38	
1,2,4-Trichlorobenzene	104000.00	104000.00	100	6	23	
4-Chloro-3-methylphenol	209000.00	223000.00	107 *	5	33	
Acenaphthene	104000.00	105000.00	101	8	19	
4-Nitrophenol	209000.00	107000.00	51	28	50	25.57 = 29%
2,4-Dinitrotoluene	104000.00	102000.00	98 *	7	47	
Pentachlorophenol	209000.00	183000.00	88	3	47	
Pyrene	104000.00	96300.00	93	9	36	

(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: 0 out of 11 outside limits
Spike Recovery: 11 out of 22 outside limits

COMMENTS: _____

Name: CONTINUING CALIB Instrument ID: BNA2
Misc: Bfile: 1

ID File: ID2BNA::DT
Title: BNA ID QUANT FILE
Last Calibration: 921105 1c:40 Last Ocal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	712	35181	40.00	ng/uL	97
2)	2-Fluorophenol	7.05	264	120159	100.00	ng/uL	94
3)	Phenol-d5	10.80	623	146301	100.00	ng/uL	96
4)	Phenol	10.84	627	71340	50.00	ng/uL	89
5)	bis(2-Chloroethyl)ether	11.06	648	65181	50.00	ng/uL	97
6)	2-Chlorophenol	11.04	646	59523	50.00	ng/uL	98
7)	1,3-Dichlorobenzene	11.52	692	65952	50.00	ng/uL	98
8)	1,4-Dichlorobenzene	11.78	717	67324	50.00	ng/uL	98
9)	Benzyl alcohol	12.30	766	36698	50.00	ng/uL	97
10)	1,2-Dichlorobenzene	12.23	760	63983	50.00	ng/uL	98
11)	2-Methylphenol	12.72	806	48325	50.00	ng/uL	97
12)	bis(2-Chloroisopropyl)ether	12.79	813	70061	50.00	ng/uL	93
13)	4-Methylphenol	13.22	854	51607	50.00	ng/uL	97
14)	N-Nitroso-di-n-propylamine	13.18	850	36073	50.00	ng/uL	96
15)	Hexachloroethane	13.27	859	28280	50.00	ng/uL	97
16)	*Naphthalene-d8	15.64	1086	121257	40.00	ng/uL	96
17)	Nitrobenzene-d5	13.50	881	61727	50.00	ng/uL	97
18)	Nitrobenzene	13.55	886				
19)	Isophorone	14.36	963				
20)	2-Nitrophenol	14.52	979				
21)	2,4-Dimethylphenol	14.82	1007				
22)	Benzoic acid	15.33	1056				
23)	bis(2-Chloroethoxy)methane	15.12	1036				
24)	2,4-Dichlorophenol	15.28	1051				
25)	1,2,4-Trichlorobenzene	15.50	1072				
26)	Naphthalene	15.71	1092				
27)	4-Chloroaniline	15.95	1115				
28)	Hexachlorobutadiene	16.16	1135				
29)	4-Chloro-3-methylphenol	17.50	1264				
30)	2-Methylnaphthalene	17.81	1293				
31)	*Acenaphthene-d10	20.89	1588				
32)	Hexachlorocyclopentadiene	18.30	1340				
33)	2,4,6-Trichlorophenol	18.70	1378				
34)	2,4,5-Trichlorophenol	18.77	1385				
35)	2-Chloronaphthalene	19.24	1430	[illegible]	50.00	ng/uL	98
36)	2-Fluorobiphenyl	18.98	1405	103598	50.00	ng/uL	97
37)	2-Nitroaniline	19.62	1466	36160	50.00	ng/uL	95
38)	Dimethylphthalate	20.29	1530	116748	50.00	ng/uL	97
39)	Acenaphthylene	20.45	1546	153145	50.00	ng/uL	99
40)	2,6-Dinitrotoluene	20.41	1542	28443	50.00	ng/uL	89
41)	3-Nitroaniline	20.86	1585	29884	50.00	ng/uL	96
42)	Acenaphthene	20.99	1597	91511	50.00	ng/uL	99
43)	2,4-Dinitrophenol	21.18	1615	13541	50.00	ng/uL	94
44)	4-Nitrophenol	21.46	1642	17405	50.00	ng/uL	96
45)	Dibenzofuran	21.51	1647	132684	50.00	ng/uL	88
46)	2,4-Dinitrotoluene	21.58	1654	41297	50.00	ng/uL	96
47)	Diethylphthalate	22.43	1735	122766	50.00	ng/uL	94
48)	4-Chlorophenyl-phenylether	22.63	1754	51336	50.00	ng/uL	89
49)	Fluorene	22.54	1745	102103	50.00	ng/uL	99

Form 7 Check

1,4 DCB

$\frac{67324}{35181} \cdot \frac{40}{50} = 1.5309$ ok

$\%D = \left|\frac{1.502 - 1.531}{1.502}\right| = 1.9\%$ ok

QUANT REPORT

Operator ID: BOB
Output File: ^Y1103::OF
Data File: >Y1103::D2
Name: METHOD BLANK C-39
Misc:

Quant Rev: 7
Quant Time: 921211 13:48
Injected at: 921211 13:00
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 1

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	712	36638	40.00	ng/uL	98
2)	2-Fluorophenol	7.11	269	135722	108.46	ng/uL	91
3)	Phenol-d5	10.80	623	163668	107.42	ng/uL	97
4)	Phenol	0.00	0	0	0.00	ng/uL	
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL	
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL	
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	0.00	881	0	0.00	ng/uL	
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.64	1086	126704	40.00	ng/uL	94
17)	Nitrobenzene-d5	13.50	881	68578	53.16	ng/uL	94
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL	
19)	Isophorone	0.00					
20)	2-Nitrophenol	0.00					
21)	2,4-Dimethylphenol	0.00					
22)	Benzoic acid	0.00					
23)	bis(2-Chloroethoxy)methane	0.00					
24)	2,4-Dichlorophenol	0.00					
25)	1,2,4-Trichlorobenzene	0.00					
26)	Naphthalene	0.00					
27)	4-Chloroaniline	0.00					
28)	Hexachlorobutadiene	0.00					
29)	4-Chloro-3-methylphenol	0.00					
30)	2-Methylnaphthalene	0.00					
31)	*Acenaphthene-d10	20.88					96
32)	Hexachlorocyclopentadiene	0.00					
33)	2,4,6-Trichlorophenol	0.00					
34)	2,4,5-Trichlorophenol	0.00					
35)	2-Chloronaphthalene	0.00					
36)	2-Fluorobiphenyl	18.97					97
37)	2-Nitroaniline	0.00	0	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1589	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	0.00	0	0	0.00	ng/uL	

IS matches Form 8

Surrog Check

NBZ $\frac{100ug}{1g} = 100ug/g$

Found 53.16ug/ml

$53.16ug/ml \frac{10ml}{1g} \frac{1ml}{5ml} \frac{1ml}{1ml} =$

$= \frac{106.32}{100} = 106\%$ OK.

DL Check $= 5\ ug/ml \cdot \frac{10}{5} = 10ug/ml$ ok

QUANT REPORT

Operator ID: BOB
Output File: >Y1104::DF
Data File: >Y1104::D2
Name: CORE 39 92-08309-E1
Misc: 0.9394 G pH=10.49

Quant Rev: 7
Quant Time: 921211 14:48
Injected at: 921211 13:57
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 2

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	713	44386	40.00	ng/uL	94
2)	2-Fluorophenol	7.13	272	173660	114.55	ng/uL	92
3)	Phenol-d5	10.81	625	212264	115.00	ng/uL	95
4)	Phenol	0.00	0	0	0.00	ng/uL	
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL	
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL	
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	0.00	883	0	0.00	ng/uL	
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.				/uL	95
17)	Nitrobenzene-d5	13.				/uL	95
18)	Nitrobenzene	0.				/uL	
19)	Isophorone	0.				/uL	
20)	2-Nitrophenol	0.				/uL	
21)	2,4-Dimethylphenol	0.				/uL	
22)	Benzoic acid	0.				/uL	
23)	bis(2-Chloroethoxy)methane	0.				/uL	
24)	2,4-Dichlorophenol	0.				/uL	
25)	1,2,4-Trichlorobenzene	0.				/uL	
26)	Naphthalene	0.				/uL	
27)	4-Chloroaniline	0.				/uL	
28)	Hexachlorobutadiene	0.				/uL	
29)	4-Chloro-3-methylphenol	0.				/uL	
30)	2-Methylnaphthalene	0.				/uL	
31)	*Acenaphthene-d10	20.				/uL	96
32)	Hexachlorocyclopentadiene	0.				/uL	
33)	2,4,6-Trichlorophenol	0.				/uL	
34)	2,4,5-Trichlorophenol	0.00	0	0	0.00	ng/uL	
35)	2-Chloronaphthalene	0.00	0	0	0.00	ng/uL	
36)	2-Fluorobiphenyl	18.99	1407	150020	56.88	ng/uL	98
37)	2-Nitroaniline	0.00	1461	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1589	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	0.00	0	0	0.00	ng/uL	

bis(2-ethylhex) Check
$0.985 ug/mL \left(\frac{10 mL}{0.9394 g}\right)\left(\frac{1 mL}{5 mL}\right)$ no split conc.
= 2.088 ug/g ok
ORGA Check at 5
$5 ug/mL \left(\frac{10}{0.9394}\right)\left(\frac{1}{5}\right) = 10.6$ ok

43)	2,4-Dinitrophenol	0.00	0	0	0.00	ng/uL	
44)	4-Nitrophenol	0.00	0	0	0.00	ng/uL	
45)	Dibenzofuran	0.00	0	0	0.00	ng/uL	
46)	2,4-Dinitrotoluene	0.00	0	0	0.00	ng/uL	
47)	Diethylphthalate	0.00	0	0	0.00	ng/uL	
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00	ng/uL	
49)	Fluorene	0.00	0	0	0.00	ng/uL	
50)	4-Nitroaniline	0.00	0	0	0.00	ng/uL	
51)	*Phenanthrene-d10	25.28	2009	141654	40.00	ng/uL	98
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00	ng/uL	
53)	N-Nitrosodiphenylamine	0.00	1814	0	0.00	ng/uL	
54)	2,4,6-Tribromophenol	23.25	1814	72941	117.18	ng/uL	98
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00	ng/uL	
56)	Hexachlorobenzene	0.00	0	0	0.00	ng/uL	
57)	Pentachlorophenol	0.00	0	0	0.00	ng/uL	
58)	Phenanthrene	0.00	0	0	0.00	ng/uL	
59)	Anthracene	0.00	0	0	0.00	ng/uL	
60)	Di-n-butylphthalate	0.00	0	0	0.00	ng/uL	
61)	Fluoranthene	0.00	0	0	0.00	ng/uL	
62)	*Chrysene-d12	33.14	2761	127307	40.00	ng/uL	88
63)	Pyrene	0.00	0	0	0.00	ng/uL	
64)	Terphenyl-d14	30.18	2478	181436	55.06	ng/uL	91
65)	Butylbenzylphthalate	0.00	0	0	0.00	ng/uL	
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00	ng/uL	
67)	Benzo(a)anthracene	0.00	0	0	0.00	ng/uL	
68)	Chrysene	0.00	0	0	0.00	ng/uL	
69)	Bis(2-Ethylhexyl)phthalate	33.58	2803	3326	.985	ng/uL	94
70)	*Perylene-d12	37.05	3134	142531	40.00	ng/uL	97
71)	Di-n-octylphthalate	0.00	0	0	0.00	ng/uL	
72)	Benzo(b)fluoranthene	0.00	0	0	0.00	ng/uL	
73)	Benzo(k)fluoranthene	0.00	0	0	0.00	ng/uL	
74)	Benzo(a)pyrene	0.00	0	0	0.00	ng/uL	
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00	ng/uL	
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00	ng/uL	
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00	ng/uL	

* Compound is ISTD

QUANT REPORT

Operator ID: BOB
Output File: ^Y1105::DF
Data File: >Y1105::D2
Name: CORE 39 92-08309-E2
Misc: 1.2502 G pH=10.49

Quant Rev: 7
Quant Time: 921211 15:43
Injected at: 921211 14:55
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 3

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.73	711	42493	40.00	ng/uL	96
2)	2-Fluorophenol	7.16	273	156654	107.94	ng/uL	88
3)	Phenol-d5	10.83	625	191478	108.36	ng/uL	97
4)	Phenol	0.00	0	0	0.00	ng/uL	
5)	bis(2-Chloroethyl)ether	0.00	0	0	0.00	ng/uL	
6)	2-Chlorophenol	0.00	0	0	0.00	ng/uL	
7)	1,3-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
8)	1,4-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	1,2-Dichlorobenzene	0.00	0	0	0.00	ng/uL	
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	0.00	880	0	0.00	ng/uL	
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.64	1085	151881	40.00	ng/uL	95
17)	Nitrobenzene-d5	13.50	880	79839	51.63	ng/uL	94
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL	
19)	Isophorone	0.0	[illegible]	[illegible]	0.00	ng/uL	
20)	2-Nitrophenol	0.0				uL	
21)	2,4-Dimethylphenol	0.0				uL	
22)	Benzoic acid	0.0				uL	
23)	bis(2-Chloroethoxy)methane	0.0				uL	
24)	2,4-Dichlorophenol	0.0				uL	
25)	1,2,4-Trichlorobenzene	0.0				uL	
26)	Naphthalene	0.0				uL	
27)	4-Chloroaniline	0.0				uL	
28)	Hexachlorobutadiene	0.0				uL	
29)	4-Chloro-3-methylphenol	0.0				uL	
30)	2-Methylnaphthalene	0.0				uL	
31)	*Acenaphthene-d10	20.8				uL	99
32)	Hexachlorocyclopentadiene	0.[illegible]				uL	
33)	2,4,6-Trichlorophenol	0.[illegible]				uL	
34)	2,4,5-Trichlorophenol	0.				uL	
35)	2-Chloronaphthalene	0.				uL	
36)	2-Fluorobiphenyl	18.[illegible]				uL	98
37)	2-Nitroaniline	0.00	1496	0	[illegible]	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1587	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	0.00	0	0	0.00	ng/uL	

Sulfur, 10ml / 1.2502g = 7.9987 mg/g

GRQL check

QUANT REPORT

Operator ID: BDE
Output File: YY1106::OF
Data File: YY1106::D2
Name: CORE 39 92-08309-E3
Misc: MS 1.0310 G pH=10.49

Quant Rev: 7
Quant Time: 921211 16:40
Injected at: 921211 15:53
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 4

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40
Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.75	715	38336	40.00	ng/uL	99
2)	2-Fluorophenol	7.23	282	155999	119.14	ng/uL	89
3)	Phenol-d5	10.89	633	187910	117.87	ng/uL	96
4)	Phenol	10.93	637	184314	118.55	ng/uL	88
5)	bis(2-Chloroethyl)ether	0.00	653	0	0.00	ng/uL	
6)	2-Chlorophenol	11.10	653	153344	118.21	ng/uL	96
7)	~~1,3-Dichlorobenzene~~	~~11.80~~	~~720~~	~~78295~~	~~54.47~~	~~ng/uL~~	98
8)	1,4-Dichlorobenzene	11.80	720	78295	53.36	ng/uL	98
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	~~1,2-Dichlorobenzene~~	~~11.80~~	~~720~~	~~78295~~	~~56.15~~	~~ng/uL~~	95
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	13.19	853	51816	65.91	ng/uL	94
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.65	1088	140772	40.00	ng/uL	94
17)	Nitrobenzene-d5	13.52	884	84046	58.64	ng/uL	95
18)	Nitrobenzene	0.00				uL	
19)	Isophorone	0.00				uL	
20)	2-Nitrophenol	0.00				uL	
21)	2,4-Dimethylphenol	0.00				uL	
22)	Benzoic acid	0.00				uL	
23)	bis(2-Chloroethoxy)methane	0.00				uL	
24)	2,4-Dichlorophenol	0.00				uL	
25)	1,2,4-Trichlorobenzene	15.5				uL	98
26)	Naphthalene	0.0				uL	
27)	4-Chloroaniline	0.0				uL	
28)	Hexachlorobutadiene	0.0				uL	
29)	4-Chloro-3-methylphenol	17.5				uL	98
30)	2-Methylnaphthalene	0.0				uL	
31)	*Acenaphthene-d10	20.9				uL	95
32)	Hexachlorocyclopentadiene	0.0				uL	
33)	2,4,6-Trichlorophenol	0.0				uL	
34)	2,4,5-Trichlorophenol	0.0				uL	
35)	2-Chloronaphthalene	0.0				uL	
36)	2-Fluorobiphenyl	18.99	1407	133644	54.38	ng/uL	98
37)	2-Nitroaniline	0.00	1459	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1589	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	21.00	1599	118824	54.74	ng/uL	98

Phenol

$T = \frac{200\,ug}{1.0310\,g} = 193.986\,ug/g$

$F = \frac{118.55\,ug}{ml} \cdot \left(\frac{10\,ml}{1.0310\,g}\right)\left(\frac{1\,ml}{5\,ml}\right)$

$= \frac{229.971\,ug/g}{118.55} = 118.6\%$ ok

QUANT REPORT

Operator ID: BOB
Output File: >Y1107::OF
Data File: >Y1107::D2
Name: CORE 39 92-08309-E4
Misc: MSD 0.9580 G pH=10.49

Quant Rev: 7 Quant Time: 921211 17:36
Injected at: 921211 16:50
Dilution Factor: 1.00000
Instrument ID: BNA2
BTL# 5

ID File: ID2BNA::QT
Title: BNA ID QUANT FILE
Last Calibration: 921105 16:40

Last Qcal Date: 921211 11:34

	Compound	R.T.	Scan#	Area	Conc	Units	q
1)	*1,4-Dichlorobenzene-d4	11.75	711	38814	40.00	ng/uL	98
2)	2-Fluorophenol	7.24	280	149408	112.70	ng/uL	86
3)	Phenol-d5	10.90	630	178019	110.29	ng/uL	94
4)	Phenol	10.94	634	183925	116.84	ng/uL	94
5)	bis(2-Chloroethyl)ether	0.00	649	0	0.00	ng/uL	
6)	2-Chlorophenol	11.10	649	148938	113.40	ng/uL	98
7)	~~1,3-Dichlorobenzene~~	~~11.80~~	~~716~~	~~74758~~	~~51.37~~	~~ng/uL~~	~~97~~
8)	1,4-Dichlorobenzene	11.80	716	74758	50.32	ng/uL	95
9)	Benzyl alcohol	0.00	0	0	0.00	ng/uL	
10)	~~1,2-Dichlorobenzene~~	~~11.80~~	~~716~~	~~74758~~	~~52.95~~	~~ng/uL~~	~~94~~
11)	2-Methylphenol	0.00	0	0	0.00	ng/uL	
12)	bis(2-Chloroisopropyl)ether	0.00	0	0	0.00	ng/uL	
13)	4-Methylphenol	0.00	0	0	0.00	ng/uL	
14)	N-Nitroso-di-n-propylamine	13.19	849	50514	63.46	ng/uL	95
15)	Hexachloroethane	0.00	0	0	0.00	ng/uL	
16)	*Naphthalene-d8	15.64	1083	143500	40.00	ng/uL	95
17)	Nitrobenzene-d5	13.51	880	80137	54.85	ng/uL	93
18)	Nitrobenzene	0.00	0	0	0.00	ng/uL	
19)	Isophorone	[illegible]	[illegible]	[illegible]	0.00	ng/uL	
20)	2-Nitrophenol				.00	ng/uL	
21)	2,4-Dimethylphenol				.00	ng/uL	
22)	Benzoic acid				.00	ng/uL	
23)	bis(2-Chloroethoxy)methane				.00	ng/uL	
24)	2,4-Dichlorophenol				.00	ng/uL	
25)	1,2,4-Trichlorobenzene				.54	ng/uL	97
26)	Naphthalene				.00	ng/uL	
27)	4-Chloroaniline				.00	ng/uL	
28)	Hexachlorobutadiene				.00	ng/uL	
29)	4-Chloro-3-methylphenol				.79	ng/uL	97
30)	2-Methylnaphthalene				.00	ng/uL	
31)	*Acenaphthene-d10				.00	ng/uL	96
32)	Hexachlorocyclopentadiene				.00	ng/uL	
33)	2,4,6-Trichlorophenol				.00	ng/uL	
34)	2,4,5-Trichlorophenol				.00	ng/uL	
35)	2-Chloronaphthalene				.00	ng/uL	
36)	2-Fluorobiphenyl				1.66	ng/uL	97
37)	2-Nitroaniline	0.00	1472	0	0.00	ng/uL	
38)	Dimethylphthalate	0.00	0	0	0.00	ng/uL	
39)	Acenaphthylene	0.00	0	0	0.00	ng/uL	
40)	2,6-Dinitrotoluene	0.00	1585	0	0.00	ng/uL	
41)	3-Nitroaniline	0.00	0	0	0.00	ng/uL	
42)	Acenaphthene	20.99	1594	113797	50.40	ng/uL	97

2,4-DNTolvene Check

$T = \frac{100\ ug}{0.9580\ g} = 104.38\ ug/g$

$F = 48.97\ ug/ml \left(\frac{10\ ml}{0.958\ g}\right)\left(\frac{1\ ml}{5\ ml}\right)$

$F = \frac{102.23}{104.38} = 97.9\%$ ok

RPD = 7% ok.

43)	2,4-Dinitrophenol	0.00	0	0	0.00	ng/uL	
44)	4-Nitrophenol	21.46	1639	22071	21.46	ng/uL	[illegible]
45)	Dibenzofuran	0.00	0	0	0.00	ng/uL	
46)	2,4-Dinitrotoluene	21.58	1650	49893	48.97	ng/uL	[illegible]
47)	Diethylphthalate	0.00	0	0	0.00	ng/uL	
48)	4-Chlorophenyl-phenylether	0.00	0	0	0.00	ng/uL	
49)	Fluorene	0.00	0	0	0.00	ng/uL	
50)	4-Nitroaniline	0.00	0	0	0.00	ng/uL	
51)	*Phenanthrene-d10	25.29	2009	140443	40.00	ng/uL	99
52)	4,6-Dinitro-2-methylphenol	0.00	0	0	0.00	ng/uL	
53)	N-Nitrosodiphenylamine	0.00	1809	0	0.00	ng/uL	
54)	2,4,6-Tribromophenol	23.24	1809	66498	107.75	ng/uL	94
55)	4-Bromophenyl-phenylether	0.00	0	0	0.00	ng/uL	
56)	Hexachlorobenzene	0.00	0	0	0.00	ng/uL	
57)	Pentachlorophenol	24.76	1954	49136	87.61	ng/uL	97
58)	Phenanthrene	0.00	0	0	0.00	ng/uL	
59)	Anthracene	0.00	0	0	0.00	ng/uL	
60)	Di-n-butylphthalate	0.00	0	0	0.00	ng/uL	
61)	Fluoranthene	0.00	0	0	0.00	ng/uL	
62)	*Chrysene-d12	33.13	2754	128582	40.00	ng/uL	86
63)	Pyrene	29.53	2410	207793	46.07	ng/uL	98
64)	Terphenyl-d14	30.16	2471	160537	48.24	ng/uL	90
65)	Butylbenzylphthalate	0.00	0	0	0.00	ng/uL	
66)	3,3'-Dichlorobenzidine	0.00	0	0	0.00	ng/uL	
67)	Benzo(a)anthracene	0.00	0	0	0.00	ng/uL	
68)	Chrysene	0.00	0	0	0.00	ng/uL	
69)	Bis(2-Ethylhexyl)phthalate	33.58	2797	2421	.710	ng/uL	92
70)	*Perylene-d12	37.05	3128	147765	40.00	ng/uL	95
71)	Di-n-octylphthalate	0.00	0	0	0.00	ng/uL	
72)	Benzo(b)fluoranthene	0.00	0	0	0.00	ng/uL	
73)	Benzo(k)fluoranthene	0.00	0	0	0.00	ng/uL	
74)	Benzo(a)pyrene	0.00	0	0	0.00	ng/uL	
75)	Indeno(1,2,3-cd)pyrene	0.00	0	0	0.00	ng/uL	
76)	Dibenz(a,h)anthracene	0.00	0	0	0.00	ng/uL	
77)	Benzo(g,h,i)perylene	0.00	0	0	0.00	ng/uL	

* Compound is ISTD

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

TANK C-110

222-S LAB HOT-CELL BLANK SEMI-VOLATILE ORGANIC ANALYSIS

E03-686

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ORGANIC COMPOUND ANALYSIS REPORT

SEMIVOLATILE COMPOUNDS

SAMPLE ANALYSIS REPORTED

Analysis of a C110, 222S Hot Cell Blank sample for semivolatile organic compounds by gas chromatography/mass spectrometry (GC/MS) is the subject of this report.

SAMPLE DESCRIPTION AND PREPARATION

Sample ID	ACL Lab Number
222S Hot Cell Blank	92-08312

The samples were received on 10/07/92. Extractions of samples and spiked samples were performed.

- Extraction procedure: PNL-ALO-122.1
- Extraction location: Lab 306, 325 building
- Extraction type: Separatory funnel, med level, water
- Sample/Extract storage temperature: 4°C(+/-2°)

ANALYSIS METHOD

- GC/MS procedure: PNL-ALO-345.
- GC/MS instrumentation: HP-5890/5970 GC/MS (WB46867)
- GC/MS location: Lab 325, 325 building.

QUALITY CONTROL

The QC features in the analytical procedure were followed as described below. The following lists the attached CLP forms that relate to QC and summarizes the QC results.

Form	Information	Comments
2D	Surrogate Recovery	All requirements were met.
3D	MS/MSD Recovery	All requirements were met.
4B	Method Blank Summary	All requirements were met.
5B	Tune/Mass Calibration	All requirements were met.
6B,C	Initial Calibration	All requirements were met.

7B,C	Daily Calibration	All requirements were met.
8B,C	Internal Standards	All requirements were met.

DATA

The data and calibration are archived on magnetic tape in the 325 building 325 laboratory. The following is the list of the pertinent files.

File Name	Sample Number	Sample Analyzed
>Y2101		Mass calibration and tune check
>Y2102		Continuing calibration
>Y2103		Method blank SBLKY21
>Y2104	92-08312-E1	C110, 222S hot cell blank
>Y2105	92-08312-E2	C110, 222S hot cell blank dup
>Y2106	92-08312-E3	C110, 222S hot cell blank MS
>Y2107	92-08312-E4	C110, 222S hot cell blank MSD

Laboratory data is maintained as follows:

Activity	Location
• GC/MS injection log	BNW-53728 pg. 40-43
• Extraction bench sheet:	filed with data in the ACL/ALO records center
• GC/MS data, sample report:	filed with data in the ACL/ALO records center

RESULTS

CLP Target Compounds: As seen in the attached 1B,C Forms, no target compounds were found.

Tentatively Identified Compounds (TIC): As seen in the attached 1F Forms, no TIC's were found.

There was no operational contamination observed for these samples. Since the 222S hot cell blank quantitation limits of 4000 µg/L are below those for actual samples (usually about 10,000 µg/Kg for the nominal 1-gram samples), a significant contamination would be found in the analysis of samples.

The following defines the Q-flags in the Form 1's

"Q" Flag	Definition
U	Indicates the compound was analyzed for but not detected, the U-flagged concentration is the Contract Required Quantitation Limit.
J	Indicates an estimated value for target and tentatively identified compounds, spectra meet criteria but response is below Contract Required Quantitation Limit for the target compounds.
B	Indicates compound was found in the blank.
X	Indicates compound was manually deleted because all requirements were not met.
D	Indicates analysis was performed on a diluted sample.
E	Indicates that quantitation was outside of the calibration range.
A	Aldol condensation product.

ANALYST [signature] DATE 12-23-92 REVIEW [signature] DATE 12-23-92

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

CURRENT DATE: January 7, 1993

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - Semi-VOA

Data Package/Report - 222S Hot Cell Blank

ALO Numbers - 92-08312-E1 92-08312-E2 92-08312-E3 92-08312-E4

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

1/20/93
Date

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0 A

TANK C-110

222-S LAB HOT-CELL BLANK

Sample Analysis Report Forms

E03-691

1078

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKY21

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLAN

Sample wt/vol: 10 (g/mL) mL Lab File ID: >Y2103

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	1000.	U
111-44-4	bis(2-Chloroethyl)Ether	1000.	U
95-57-8	2-Chlorophenol	1000.	U
541-73-1	1,3-Dichlorobenzene	1000.	U
106-46-7	1,4-Dichlorobenzene	1000.	U
100-51-6	Benzyl_alcohol	1000.	U
95-50-1	1,2-Dichlorobenzene	1000.	U
95-48-7	2-Methylphenol	1000.	U
39638-32-9	bis(2-chloroisopropyl)ether	1000.	U
106-44-5	4-Methylphenol	1000.	U
621-64-7	N-Nitroso-Di-n-propylamine	1000.	U
67-72-1	Hexachloroethane	1000.	U
98-95-3	Nitrobenzene	1000.	U
78-59-1	Isophorone	1000.	U
88-75-5	2-Nitrophenol	1000.	U
105-67-9	2,4-Dimethylphenol	1000.	U
65-85-0	Benzoic_acid	5000.	U
111-91-1	bis(2-Chloroethoxy)methane	1000.	U
120-83-2	2,4-Dichlorophenol	1000.	U
120-82-1	1,2,4-Trichlorobenzene	1000.	U
91-20-3	Naphthalene	1000.	U
106-47-8	4-Chloroaniline	1000.	U
87-68-3	Hexachlorobutadiene	1000.	U
59-50-7	4-Chloro-3-methylphenol	1000.	U
91-57-6	2-Methylnaphthalene	1000.	U
77-47-4	Hexachlorocyclopentadiene	1000.	U
88-06-2	2,4,6-Trichlorophenol	1000.	U
95-95-4	2,4,5-Trichlorophenol	5000.	U
91-58-7	2-Chloronaphthalene	1000.	U
88-74-4	2-Nitroaniline	5000.	U
131-11-3	Dimethylphthalate	1000.	U
208-96-8	Acenaphthylene	1000.	U
606-20-2	2,6-Dinitrotoluene	1000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKY21

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLAN

Sample wt/vol: 10 (g/mL) mL Lab File ID: >Y2103

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH:7.03 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	5000.	U
83-32-9	Acenaphthene	1000.	U
51-28-5	2,4-Dinitrophenol	5000.	U
100-02-7	4-Nitrophenol	5000.	U
132-64-9	Dibenzofuran	1000.	U
121-14-2	2,4-Dinitrotoluene	1000.	U
84-66-2	Diethylphthalate	1000.	U
7005-72-3	4-Chlorophenyl-phenylether	1000.	U
86-73-7	Fluorene	1000.	U
100-01-6	4-Nitroaniline	5000.	U
534-52-1	4,6-Dinitro-2-methylphenol	5000.	U
86-30-6	N-Nitrosodiphenylamine (1)	1000.	U
101-55-3	4-Bromophenyl-phenylether	1000.	U
118-74-1	Hexachlorobenzene	1000.	U
87-86-5	Pentachlorophenol	5000.	U
85-01-8	Phenanthrene	1000.	U
120-12-7	Anthracene	1000.	U
84-74-2	Di-n-butylphthalate	1000.	U
206-44-0	Fluoranthene	1000.	U
129-00-0	Pyrene	1000.	U
85-68-7	Butylbenzylphthalate	1000.	U
91-94-1	3,3'-Dichlorobenzidine	2000.	U
56-55-3	Benzo(a)anthracene	1000.	U
218-01-9	Chrysene	1000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	1000.	U
117-84-0	Di-n-octylphthalate	1000.	U
205-99-2	Benzo(b)fluoranthene	1000.	U
207-08-9	Benzo(k)fluoranthene	1000.	U
50-32-8	Benzo(a)pyrene	1000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	1000.	U
53-70-3	Dibenz(a,h)anthracene	1000.	U
191-24-2	Benzo(g,h,i)perylene	1000.	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
SBLKY21

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLAN

Sample wt/vol: 10 (g/mL) mL Lab File ID: >Y2103

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

222S HC BLK

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-08312-E1

Sample wt/vol: 2.5 (g/mL) mL Lab File ID: >Y2104

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	4000.	U
111-44-4	bis(2-Chloroethyl)Ether	4000.	U
95-57-8	2-Chlorophenol	4000.	U
541-73-1	1,3-Dichlorobenzene	4000.	U
106-46-7	1,4-Dichlorobenzene	4000.	U
100-51-6	Benzyl alcohol	4000.	U
95-50-1	1,2-Dichlorobenzene	4000.	U
95-48-7	2-Methylphenol	4000.	U
39638-32-9	bis(2-chloroisopropyl)ether	4000.	U
106-44-5	4-Methylphenol	4000.	U
621-64-7	N-Nitroso-Di-n-propylamine	4000.	U
67-72-1	Hexachloroethane	4000.	U
98-95-3	Nitrobenzene	4000.	U
78-59-1	Isophorone	4000.	U
88-75-5	2-Nitrophenol	4000.	U
105-67-9	2,4-Dimethylphenol	4000.	U
65-85-0	Benzoic acid	20000.	U
111-91-1	bis(2-Chloroethoxy)methane	4000.	U
120-83-2	2,4-Dichlorophenol	4000.	U
120-82-1	1,2,4-Trichlorobenzene	4000.	U
91-20-3	Naphthalene	4000.	U
106-47-8	4-Chloroaniline	4000.	U
87-68-3	Hexachlorobutadiene	4000.	U
59-50-7	4-Chloro-3-methylphenol	4000.	U
91-57-6	2-Methylnaphthalene	4000.	U
77-47-4	Hexachlorocyclopentadiene	4000.	U
88-06-2	2,4,6-Trichlorophenol	4000.	U
95-95-4	2,4,5-Trichlorophenol	20000.	U
91-58-7	2-Chloronaphthalene	4000.	U
88-74-4	2-Nitroaniline	20000.	U
131-11-3	Dimethylphthalate	4000.	U
208-96-8	Acenaphthylene	4000.	U
606-20-2	2,6-Dinitrotoluene	4000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

222S HC BLK

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-08312-E1

Sample wt/vol: 2.5 (g/mL) mL Lab File ID: >Y2104

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	20000.	U
83-32-9	Acenaphthene	4000.	U
51-28-5	2,4-Dinitrophenol	20000.	U
100-02-7	4-Nitrophenol	20000.	U
132-64-9	Dibenzofuran	4000.	U
121-14-2	2,4-Dinitrotoluene	4000.	U
84-66-2	Diethylphthalate	4000.	U
7005-72-3	4-Chlorophenyl-phenylether	4000.	U
86-73-7	Fluorene	4000.	U
100-01-6	4-Nitroaniline	20000.	U
534-52-1	4,6-Dinitro-2-methylphenol	20000.	U
86-30-6	N-Nitrosodiphenylamine (1)	4000.	U
101-55-3	4-Bromophenyl-phenylether	4000.	U
118-74-1	Hexachlorobenzene	4000.	U
87-86-5	Pentachlorophenol	20000.	U
85-01-8	Phenanthrene	4000.	U
120-12-7	Anthracene	4000.	U
84-74-2	Di-n-butylphthalate	4000.	U
206-44-0	Fluoranthene	4000.	U
129-00-0	Pyrene	4000.	U
85-68-7	Butylbenzylphthalate	4000.	U
91-94-1	3,3'-Dichlorobenzidine	8000.	U
56-55-3	Benzo(a)anthracene	4000.	U
218-01-9	Chrysene	4000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	4000.	U
117-84-0	Di-n-octylphthalate	4000.	U
205-99-2	Benzo(b)fluoranthene	4000.	U
207-08-9	Benzo(k)fluoranthene	4000.	U
50-32-8	Benzo(a)pyrene	4000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	4000.	U
53-70-3	Dibenz(a,h)anthracene	4000.	U
191-24-2	Benzo(g,h,i)perylene	4000.	U

(1) - Cannot be separated from Diphenylamine

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

222S HC BLK

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLAN

Sample wt/vol: 2.5 (g/mL) mL Lab File ID: >Y2104

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

222S HC DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-08312-E2

Sample wt/vol: 2.5 (g/mL) mL Lab File ID: >Y2105

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	4000.	U
111-44-4	bis(2-Chloroethyl)Ether	4000.	U
95-57-8	2-Chlorophenol	4000.	U
541-73-1	1,3-Dichlorobenzene	4000.	U
106-46-7	1,4-Dichlorobenzene	4000.	U
100-51-6	Benzyl alcohol	4000.	U
95-50-1	1,2-Dichlorobenzene	4000.	U
95-48-7	2-Methylphenol	4000.	U
39638-32-9	bis(2-chloroisopropyl)ether	4000.	U
106-44-5	4-Methylphenol	4000.	U
621-64-7	N-Nitroso-Di-n-propylamine	4000.	U
67-72-1	Hexachloroethane	4000.	U
98-95-3	Nitrobenzene	4000.	U
78-59-1	Isophorone	4000.	U
88-75-5	2-Nitrophenol	4000.	U
105-67-9	2,4-Dimethylphenol	4000.	U
65-85-0	Benzoic acid	20000.	U
111-91-1	bis(2-Chloroethoxy)methane	4000.	U
120-83-2	2,4-Dichlorophenol	4000.	U
120-82-1	1,2,4-Trichlorobenzene	4000.	U
91-20-3	Naphthalene	4000.	U
106-47-8	4-Chloroaniline	4000.	U
87-68-3	Hexachlorobutadiene	4000.	U
59-50-7	4-Chloro-3-methylphenol	4000.	U
91-57-6	2-Methylnaphthalene	4000.	U
77-47-4	Hexachlorocyclopentadiene	4000.	U
88-06-2	2,4,6-Trichlorophenol	4000.	U
95-95-4	2,4,5-Trichlorophenol	20000.	U
91-58-7	2-Chloronaphthalene	4000.	U
88-74-4	2-Nitroaniline	20000.	U
131-11-3	Dimethylphthalate	4000.	U
208-96-8	Acenaphthylene	4000.	U
606-20-2	2,6-Dinitrotoluene	4000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

222S HC DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-08312-E2

Sample wt/vol: 2.5 (g/mL) mL Lab File ID: >Y2105

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	20000.	U
83-32-9	Acenaphthene	4000.	U
51-28-5	2,4-Dinitrophenol	20000.	U
100-02-7	4-Nitrophenol	20000.	U
132-64-9	Dibenzofuran	4000.	U
121-14-2	2,4-Dinitrotoluene	4000.	U
84-66-2	Diethylphthalate	4000.	U
7005-72-3	4-Chlorophenyl-phenylether	4000.	U
86-73-7	Fluorene	4000.	U
100-01-6	4-Nitroaniline	20000.	U
534-52-1	4,6-Dinitro-2-methylphenol	20000.	U
86-30-6	N-Nitrosodiphenylamine (1)	4000.	U
101-55-3	4-Bromophenyl-phenylether	4000.	U
118-74-1	Hexachlorobenzene	4000.	U
87-86-5	Pentachlorophenol	20000.	U
85-01-8	Phenanthrene	4000.	U
120-12-7	Anthracene	4000.	U
84-74-2	Di-n-butylphthalate	4000.	U
206-44-0	Fluoranthene	4000.	U
129-00-0	Pyrene	4000.	U
85-68-7	Butylbenzylphthalate	4000.	U
91-94-1	3,3'-Dichlorobenzidine	8000.	U
56-55-3	Benzo(a)anthracene	4000.	U
218-01-9	Chrysene	4000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	4000.	U
117-84-0	Di-n-octylphthalate	4000.	U
205-99-2	Benzo(b)fluoranthene	4000.	U
207-08-9	Benzo(k)fluoranthene	4000.	U
50-32-8	Benzo(a)pyrene	4000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	4000.	U
53-70-3	Dibenz(a,h)anthracene	4000.	U
191-24-2	Benzo(g,h,i)perylene	4000.	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

222S HC DUP

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLAN

Sample wt/vol: 2.5 (g/mL) mL Lab File ID: >Y2105

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

222S HC MS

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-08312-E3

Sample wt/vol: 2.5 (g/mL) mL Lab File ID: >Y2106

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	66000.	
111-44-4	bis(2-Chloroethyl)Ether	4000.	U
95-57-8	2-Chlorophenol	65000.	
541-73-1	1,3-Dichlorobenzene	4000.	U
106-46-7	1,4-Dichlorobenzene	26000.	
100-51-6	Benzyl_alcohol	4000.	U
95-50-1	1,2-Dichlorobenzene	4000.	U
95-48-7	2-Methylphenol	4000.	U
39638-32-9	bis(2-chloroisopropyl)ether	4000.	U
106-44-5	4-Methylphenol	4000.	U
621-64-7	N-Nitroso-Di-n-propylamine	34000.	
67-72-1	Hexachloroethane	4000.	U
98-95-3	Nitrobenzene	4000.	U
78-59-1	Isophorone	4000.	U
88-75-5	2-Nitrophenol	4000.	U
105-67-9	2,4-Dimethylphenol	4000.	U
65-85-0	Benzoic_acid	20000.	U
111-91-1	bis(2-Chloroethoxy)methane	4000.	U
120-83-2	2,4-Dichlorophenol	4000.	U
120-82-1	1,2,4-Trichlorobenzene	28000.	
91-20-3	Naphthalene	4000.	U
106-47-8	4-Chloroaniline	4000.	U
87-68-3	Hexachlorobutadiene	4000.	U
59-50-7	4-Chloro-3-methylphenol	66000.	
91-57-6	2-Methylnaphthalene	4000.	U
77-47-4	Hexachlorocyclopentadiene	4000.	U
88-06-2	2,4,6-Trichlorophenol	4000.	U
95-95-4	2,4,5-Trichlorophenol	20000.	U
91-58-7	2-Chloronaphthalene	4000.	U
88-74-4	2-Nitroaniline	20000.	U
131-11-3	Dimethylphthalate	4000.	U
208-96-8	Acenaphthylene	4000.	U
606-20-2	2,6-Dinitrotoluene	4000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

222S HC MS

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-08312-E3

Sample wt/vol: 2.5 (g/mL) mL Lab File ID: >Y2106

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	20000.	U
83-32-9	Acenaphthene	36000.	
51-28-5	2,4-Dinitrophenol	20000.	U
100-02-7	4-Nitrophenol	53000.	
132-64-9	Dibenzofuran	4000.	U
121-14-2	2,4-Dinitrotoluene	35000.	
84-66-2	Diethylphthalate	4000.	U
7005-72-3	4-Chlorophenyl-phenylether	4000.	U
86-73-7	Fluorene	4000.	U
100-01-6	4-Nitroaniline	20000.	U
534-52-1	4,6-Dinitro-2-methylphenol	20000.	U
86-30-6	N-Nitrosodiphenylamine (1)	4000.	U
101-55-3	4-Bromophenyl-phenylether	4000.	U
118-74-1	Hexachlorobenzene	4000.	U
87-86-5	Pentachlorophenol	65000.	
85-01-8	Phenanthrene	4000.	U
120-12-7	Anthracene	4000.	U
84-74-2	Di-n-butylphthalate	4000.	U
206-44-0	Fluoranthene	4000.	U
129-00-0	Pyrene	40000.	
85-68-7	Butylbenzylphthalate	4000.	U
91-94-1	3,3'-Dichlorobenzidine	8000.	U
56-55-3	Benzo(a)anthracene	4000.	U
218-01-9	Chrysene	4000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	4000.	U
117-84-0	Di-n-octylphthalate	4000.	U
205-99-2	Benzo(b)fluoranthene	4000.	U
207-08-9	Benzo(k)fluoranthene	4000.	U
50-32-8	Benzo(a)pyrene	4000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	4000.	U
53-70-3	Dibenz(a,h)anthracene	4000.	U
191-24-2	Benzo(g,h,i)perylene	4000.	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 1/87 Rev.

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

222S HC MSD

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-08312-E4

Sample wt/vol: 2.5 (g/mL) mL Lab File ID: >Y2107

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
108-95-2	Phenol	67000.	
111-44-4	bis(2-Chloroethyl)Ether	4000.	U
95-57-8	2-Chlorophenol	67000.	
541-73-1	1,3-Dichlorobenzene	4000.	U
106-46-7	1,4-Dichlorobenzene	25000.	
100-51-6	Benzyl alcohol	4000.	U
95-50-1	1,2-Dichlorobenzene	4000.	U
95-48-7	2-Methylphenol	4000.	U
39638-32-9	bis(2-chloroisopropyl)ether	4000.	U
106-44-5	4-Methylphenol	4000.	U
621-64-7	N-Nitroso-Di-n-propylamine	32000.	
67-72-1	Hexachloroethane	4000.	U
98-95-3	Nitrobenzene	4000.	U
78-59-1	Isophorone	4000.	U
88-75-5	2-Nitrophenol	4000.	U
105-67-9	2,4-Dimethylphenol	4000.	U
65-85-0	Benzoic acid	20000.	U
111-91-1	bis(2-Chloroethoxy)methane	4000.	U
120-83-2	2,4-Dichlorophenol	4000.	U
120-82-1	1,2,4-Trichlorobenzene	26000.	
91-20-3	Naphthalene	4000.	U
106-47-8	4-Chloroaniline	4000.	U
87-68-3	Hexachlorobutadiene	4000.	U
59-50-7	4-Chloro-3-methylphenol	64000.	
91-57-6	2-Methylnaphthalene	4000.	U
77-47-4	Hexachlorocyclopentadiene	4000.	U
88-06-2	2,4,6-Trichlorophenol	4000.	U
95-95-4	2,4,5-Trichlorophenol	20000.	U
91-58-7	2-Chloronaphthalene	4000.	U
88-74-4	2-Nitroaniline	20000.	U
131-11-3	Dimethylphthalate	4000.	U
208-96-8	Acenaphthylene	4000.	U
606-20-2	2,6-Dinitrotoluene	4000.	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

222S HC MSD

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix: (soil/water) WATER Lab Sample ID: 92-08312-E4

Sample wt/vol: 2.5 (g/mL) mL Lab File ID: >Y2107

Level: (low/med) MED Date Received: 10/07/92

% Moisture: not dec.-- dec. -- Date Extracted: 12/15/92

Extraction: (Sepf/Cont/Sonc) SEPF Date Analyzed: 12/21/92

GPC Cleanup: (Y/N) N pH: 7.03 Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
99-09-2	3-Nitroaniline	20000.	U
83-32-9	Acenaphthene	33000.	
51-28-5	2,4-Dinitrophenol	20000.	U
100-02-7	4-Nitrophenol	51000.	
132-64-9	Dibenzofuran	4000.	U
121-14-2	2,4-Dinitrotoluene	33000.	
84-66-2	Diethylphthalate	4000.	U
7005-72-3	4-Chlorophenyl-phenylether	4000.	U
86-73-7	Fluorene	4000.	U
100-01-6	4-Nitroaniline	20000.	U
534-52-1	4,6-Dinitro-2-methylphenol	20000.	U
86-30-6	N-Nitrosodiphenylamine (1)	4000.	U
101-55-3	4-Bromophenyl-phenylether	4000.	U
118-74-1	Hexachlorobenzene	4000.	U
87-86-5	Pentachlorophenol	66000.	
85-01-8	Phenanthrene	4000.	U
120-12-7	Anthracene	4000.	U
84-74-2	Di-n-butylphthalate	4000.	U
206-44-0	Fluoranthene	4000.	U
129-00-0	Pyrene	37000.	
85-68-7	Butylbenzylphthalate	4000.	U
91-94-1	3,3'-Dichlorobenzidine	8000.	U
56-55-3	Benzo(a)anthracene	4000.	U
218-01-9	Chrysene	4000.	U
117-81-7	bis(2-Ethylhexyl)phthalate	4000.	U
117-84-0	Di-n-octylphthalate	4000.	U
205-99-2	Benzo(b)fluoranthene	4000.	U
207-08-9	Benzo(k)fluoranthene	4000.	U
50-32-8	Benzo(a)pyrene	4000.	U
193-39-5	Indeno(1,2,3-cd)pyrene	4000.	U
53-70-3	Dibenz(a,h)anthracene	4000.	U
191-24-2	Benzo(g,h,i)perylene	4000.	U

(1) - Cannot be separated from Diphenylamine

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: BATTELLE-PNL Contract: -------

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

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT OUT
01	SBLKY21	77	84	100	69	69	75		0
02	222S HC BL	70	79	93	68	70	75		0
03	222S HC DU	75	84	97	62	62	76		0
04	222S HC MS	81	91	102	80	81	86		0
05	222S HC MS	77	87	99	79	82	89		0
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		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

FORM II SV-1 1/87 Rev.

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: BATTELLE-PNL Contract: -------

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

Matrix Spike - EPA Sample No.: 222S HC BL

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	80000.00	0.00	66400.00	83	12- 89
2-Chlorophenol	80000.00	0.00	65500.00	82	27-123
1,4-Dichlorobenzene	40000.00	0.00	25600.00	64	36- 97
N-Nitroso-di-n-prop.(1)	40000.00	0.00	33700.00	84	41-116
1,2,4-Trichlorobenzene	40000.00	0.00	27600.00	69	39- 98
4-Chloro-3-methylphenol	80000.00	0.00	66200.00	83	23- 97
Acenaphthene	40000.00	0.00	36300.00	91	46-118
4-Nitrophenol	80000.00	0.00	52600.00	66	10- 80
2,4-Dinitrotoluene	40000.00	0.00	34600.00	87	24- 96
Pentachlorophenol	80000.00	0.00	65400.00	82	9-103
Pyrene	40000.00	0.00	40100.00	100	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	80000.00	67000.00	84	1	42	12- 89
2-Chlorophenol	80000.00	66700.00	83	1	40	27-123
1,4-Dichlorobenzene	40000.00	24800.00	62	3	28	36- 97
N-Nitroso-di-n-prop.(1)	40000.00	32200.00	81	3	38	41-116
1,2,4-Trichlorobenzene	40000.00	26200.00	66	4	28	39- 98
4-Chloro-3-methylphenol	80000.00	64000.00	80	3	42	23- 97
Acenaphthene	40000.00	33300.00	83	9	31	46-118
4-Nitrophenol	80000.00	51200.00	64	3	50	10- 80
2,4-Dinitrotoluene	40000.00	33100.00	83	4	38	24- 96
Pentachlorophenol	80000.00	66300.00	83	1	50	9-103
Pyrene	40000.00	37200.00	93	7	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: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: _____

FORM III SV-1 1/87 Rev.

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: BATTELLE-PNL Contract: -------

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

Lab File ID: >Y2103 Lab Sample ID: METHOD BLAN

Date Extracted 12/15/92 Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 12/21/92 Time Analyzed: 10:04

Matrix: (soil/water) WATER Level: (low/med) MED

Instrument ID: BNA2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	222S HC BLK	92-08312-E1	>Y2104	12/21/92
02	222S HC DUP	92-08312-E2	>Y2105	12/21/92
03	222S HC MS	92-08312-E3	>Y2106	12/21/92
04	222S HC MSD	92-08312-E4	>Y2107	12/21/92
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COMMENTS:

5B

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

Lab Name: BATTELLE-PNL Contract: -------

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

Lab File ID: >Y2101 DFTPP Injection Date: 12/21/92

Instrument ID: BNA2 DFTPP Injection Time: 8:06

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 60.0% of mass 198	47.7
68	Less than 2.0% of mass 69	0.0(0.0)1
69	Mass 69 relative abundance	64.
70	Less than 2.0% of mass 69	0.0(0.0)1
127	40.0 - 60.0% of mass 198	47.1
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	7.1
275	10.0 - 30.0% of mass 198	21.9
365	Greater than 1.00% of mass 198	2.26
441	Present, but less than mass 443	9.2
442	Greater than 40.0% of mass 198	74.6
443	17.0 - 23.0% of mass 442	13.3(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	SSTD050	CONT CALIB	>Y2102	12/21/92	8:40
02	SBLKY21	METHOD BLANK	>Y2103	12/21/92	10:04
03	222S HC BLK	92-08312-E1	>Y2104	12/21/92	12:43
04	222S HC DUP	92-08312-E2	>Y2105	12/21/92	13:41
05	222S HC MS	92-08312-E3	>Y2106	12/21/92	14:39
06	222S HC MSD	92-08312-E4	>Y2107	12/21/92	15:37
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FORM V SV 1/87 Rev.

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: BATTELLE-PNL Contract: -------

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

Instrument ID: BNA2 Calibration Date(s): 11/05/92 ----

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>X0408 RRF50 =>X0407
RRF80 =>X0409 RRF120=>X0410 RRF160=>X0411

COMPOUND		RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD	
Phenol	*	1.464	1.414	1.479	1.545	1.475	1.476	3.2	*
bis(2-Chloroethyl)ether		1.282	1.218	1.231	1.201	1.114	1.209	5.1	
2-Chlorophenol		1.370	1.296	1.319	1.267	1.190	1.288	5.2	
1,3-Dichlorobenzene		1.580	1.516	1.522	1.470	1.403	1.498	4.4	
1,4-Dichlorobenzene	*	1.575	1.521	1.539	1.474	1.400	1.502	4.5	*
Benzyl alcohol		.774	.782	.816	.806	.769	.789	2.6	
1,2-Dichlorobenzene		1.523	1.456	1.486	1.415	1.273	1.431	6.8	
2-Methylphenol		1.086	1.025	1.048	1.016	.932	1.021	5.6	
bis(2-chloroisopropyl)ether		1.159	1.141	1.179	1.208	1.172	1.172	2.1	
4-Methylphenol		1.149	1.084	1.104	1.051	.951	1.068	7.0	
N-Nitroso-di-n-propylamine	#	.616	.636	.665	.637	.595	.630	4.2	#
Hexachloroethane		.580	.592	.603	.561	.513	.570	6.2	
Nitrobenzene		.355	.349	.365	.349	.346	.353	2.2	
Isophorone		.714	.676	.717	.705	.691	.701	2.4	
2-Nitrophenol	*	.227	.228	.244	.245	.239	.236	3.7	*
2,4-Dimethylphenol		.299	.282	.295	.289	.281	.289	2.7	
Benzoic acid		0.000	.228	.259	.245	.241	.243	5.2	
bis(2-Chloroethoxy)methane		.448	.423	.438	.420	.420	.430	3.0	
2,4-Dichlorophenol	*	.361	.336	.351	.340	.337	.345	3.1	*
1,2,4-Trichlorobenzene		.410	.381	.399	.376	.364	.386	4.3	
Naphthalene		1.051	.986	1.013	.970	.938	.992	4.3	
4-Chloroaniline		.480	.461	.481	.462	.447	.466	3.1	
Hexachlorobutadiene	*	.230	.215	.223	.210	.204	.217	4.8	*
4-Chloro-3-methylphenol	*	.313	.307	.320	.306	.298	.309	2.6	*
2-Methylnaphthalene		.711	.672	.676	.630	.600	.658	6.5	
Hexachlorocyclopentadiene	#	.380	.429	.479	.474	.460	.445	9.2	#
2,4,6-Trichlorophenol	*	.465	.474	.502	.489	.483	.483	3.0	*
2,4,5-Trichlorophenol		0.000	.519	.536	.489	.483	.507	4.9	
2-Chloronaphthalene		1.353	1.292	1.304	1.276	1.244	1.294	3.1	
2-Nitroaniline		0.000	.360	.391	.391	.389	.383	4.0	
Dimethylphthalate		1.612	1.564	1.640	1.642	1.602	1.612	2.0	
Acenaphthylene		2.081	2.021	2.058	1.956	1.899	2.003	3.7	
2,6-Dinitrotoluene		.342	.379	.410	.399	.382	.382	6.7	
3-Nitroaniline		0.000	.406	.429	.430	.422	.422	2.6	
Acenaphthene	*	1.217	1.180	1.216	1.174	1.155	1.188	2.3	*
2,4-Dinitrophenol	#	0.000	.260	.304	.319	.316	.300	9.2	#
4-Nitrophenol	#	0.000	.219	.243	.234	.223	.230	4.6	#

6C

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: BATTELLE-PNL Contract: -------

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

Instrument ID: BNA2 Calibration Date(s): 11/05/92 ----

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>X0408 RRF50 =>X0407
RRF80 =>X0409 RRF120=>X0410 RRF160=>X0411

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Dibenzofuran	1.805	1.770	1.834	1.749	1.707	1.773	2.8
2,4-Dinitrotoluene	.521	.559	.594	.603	.597	.575	6.0
Diethylphthalate	1.649	1.612	1.677	1.580	1.585	1.621	2.6
4-Chlorophenyl-phenylether	.726	.688	.720	.701	.700	.707	2.2
Fluorene	1.429	1.352	1.440	1.356	1.344	1.384	3.3
4-Nitroaniline	0.000	.429	.461	.465	.450	.451	3.5
4,6-Dinitro-2-methylphenol	0.000	.187	.207	.207	.201	.200	4.8
N-Nitrosodiphenylamine (1) *	.566	.519	.533	.513	.497	.525	4.9*
4-Bromophenyl-phenylether	.239	.228	.236	.227	.216	.229	3.9
Hexachlorobenzene	.283	.267	.277	.271	.262	.272	3.0
Pentachlorophenol *	0.000	.172	.169	.176	.167	.171	2.3*
Phenanthrene	1.120	1.057	1.062	1.004	.976	1.044	5.3
Anthracene	1.148	1.056	1.064	1.033	.989	1.058	5.5
Di-n-butylphthalate	1.455	1.425	1.449	1.401	1.335	1.413	3.4
Fluoranthene *	1.157	1.105	1.152	1.109	1.049	1.115	3.9*
Pyrene	1.493	1.469	1.531	1.661	1.539	1.539	4.8
Butylbenzylphthalate	.754	.797	.331	.879	.831	.818	5.7
3,3'-Dichlorobenzidine	.466	.442	.462	.516	.487	.475	6.0
Benzo(a)anthracene	1.311	1.296	1.338	1.450	1.345	1.348	4.5
Chrysene	1.303	1.286	1.318	1.410	1.338	1.331	3.6
bis(2-Ethylhexyl)phthalate	1.090	1.120	1.136	1.189	1.132	1.134	3.2
Di-n-octylphthalate *	1.697	1.751	1.814	1.682	1.649	1.718	3.8*
Benzo(b)fluoranthene	1.170	1.191	1.207	1.311	1.303	1.237	5.3
Benzo(k)fluoranthene	1.238	1.176	1.217	1.035	.944	1.122	11.3
Benzo(a)pyrene *	1.130	1.113	1.168	1.114	1.106	1.126	2.2*
Indeno(1,2,3-cd)pyrene	.947	1.003	1.088	1.272	1.253	1.112	13.1
Dibenz(a,h)anthracene	.905	.968	1.006	.977	.972	.966	3.8
Benzo(g,h,i)perylene	1.077	1.075	1.126	1.101	1.079	1.092	2.0
Nitrobenzene-d5	.330	.333	.364	.353	.346	.345	4.1
2-Fluorobiphenyl	1.451	1.374	1.422	1.385	1.364	1.399	2.6
Terphenyl-d14	1.100	1.058	1.119	1.185	1.112	1.115	4.1
Phenol-d5	1.365	1.325	1.404	1.374	1.291	1.352	3.3
2-Fluorophenol	1.193	1.190	1.226	1.209	1.165	1.197	1.9
2,4,6-Tribromophenol	.128	.124	.133	.129	.128	.128	2.6

(1) Cannot be separated from Diphenylamine

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/21/92 Time: 8:40

Lab File ID: >Y2102 Init. Calib. Date(s): 11/05/90 12/21/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Phenol	*	1.476	1.330	9.8	*
bis(2-Chloroethyl)ether		1.209	1.207	.1	
2-Chlorophenol		1.288	1.247	3.2	
1,3-Dichlorobenzene		1.498	1.385	7.6	
1,4-Dichlorobenzene	*	1.502	1.418	5.6	*
Benzyl alcohol		.789	.723	8.4	
1,2-Dichlorobenzene		1.431	1.342	6.2	
2-Methylphenol		1.021	.956	6.4	
bis(2-chloroisopropyl)ether		1.172	1.112	5.1	
4-Methylphenol		1.068	1.033	3.2	
N-Nitroso-di-n-propylamine	#	.630	.681	8.2	#
Hexachloroethane		.570	.648	13.7	
Nitrobenzene		.353	.375	6.2	
Isophorone		.701	.705	.7	
2-Nitrophenol	*	.236	.201	14.9	*
2,4-Dimethylphenol		.289	.268	7.3	
Benzoic acid		.243	.198	18.8	
bis(2-Chloroethoxy)methane		.430	.424	1.3	
2,4-Dichlorophenol	*	.345	.301	12.7	*
1,2,4-Trichlorobenzene		.386	.334	13.5	
Naphthalene		.992	.933	5.9	
4-Chloroaniline		.466	.418	10.2	
Hexachlorobutadiene	*	.217	.202	7.0	*
4-Chloro-3-methylphenol	*	.309	.309	.1	*
2-Methylnaphthalene		.658	.621	5.6	
Hexachlorocyclopentadiene	#	.445	.381	14.3	#
2,4,6-Trichlorophenol	*	.483	.398	17.6	*
2,4,5-Trichlorophenol		.507	.429	15.4	
2-Chloronaphthalene		1.294	1.154	10.8	
2-Nitroaniline		.383	.402	5.1	
Dimethylphthalate		1.612	1.399	13.2	
Acenaphthylene		2.003	1.791	10.6	
2,6-Dinitrotoluene		.382	.335	12.5	
3-Nitroaniline		.422	.343	18.7	
Acenaphthene	*	1.188	1.102	7.3	*
2,4-Dinitrophenol	#	.300	.209	30.3	#
4-Nitrophenol	#	.230	.268	16.5	#

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: -----

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

Instrument ID: BNA2 Calibration Date: 12/21/92 Time: 8:40

Lab File ID: >Y2102 Init. Calib. Date(s): 11/05/90 12/21/92

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Dibenzofuran		1.773	1.599	9.8	
2,4-Dinitrotoluene		.575	.485	15.7	
Diethylphthalate		1.621	1.516	6.4	
4-Chlorophenyl-phenylether		.707	.614	13.1	
Fluorene		1.384	1.244	10.1	
4-Nitroaniline		.451	.362	19.9	
4,6-Dinitro-2-methylphenol		.200	.161	19.5	
N-Nitrosodiphenylamine (1)	*	.525	.461	12.3	*
4-Bromophenyl-phenylether		.229	.198	13.7	
Hexachlorobenzene		.272	.258	5.2	
Pentachlorophenol	*	.171	.164	3.9	*
Phenanthrene		1.044	.965	7.5	
Anthracene		1.058	.932	11.9	
Di-n-butylphthalate		1.413	1.395	1.3	
Fluoranthene	*	1.115	1.004	10.0	*
Pyrene		1.539	1.240	19.4	
Butylbenzylphthalate		.818	.722	11.8	
3,3'-Dichlorobenzidine		.475	.285	39.9	
Benzo(a)anthracene		1.348	1.086	19.4	
Chrysene		1.331	1.112	16.5	
bis(2-Ethylhexyl)phthalate		1.134	1.053	7.1	
Di-n-octylphthalate	*	1.718	1.601	6.8	*
Benzo(b)fluoranthene		1.237	1.039	16.0	
Benzo(k)fluoranthene		1.122	1.032	8.0	
Benzo(a)pyrene	*	1.126	.979	13.1	*
Indeno(1,2,3-cd)pyrene		1.112	.928	16.6	
Dibenz(a,h)anthracene		.966	.901	6.7	
Benzo(g,h,i)perylene		1.092	.987	9.5	
Nitrobenzene-d5		.345	.376	8.9	
2-Fluorobipnenyl		1.399	1.240	11.4	
Terphenyl-d14		1.115	.930	16.6	
Phenol-d5		1.352	1.463	8.2	
2-Fluorophenol		1.197	1.227	2.5	
2,4,6-Tribromophenol		.128	.151	17.9	

(1) Cannot be separated from Diphenylamine

8B
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: -----

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

Lab File ID (Standard): >Y2102 Date Analyzed: 12/21/92

Instrument ID: BNA2 Time Analyzed: 8:40

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	28339.	11.63	98231.	15.55	52346.	20.80
	UPPER LIMIT	56678.		196462.		104692.	
	LOWER LIMIT	14169.		49115.		26173.	
	EPA SAMPLE NO.						
01	SBLKY21	46393.	11.63	155902.	15.54	79947.	20.79
02	222S HC BLK	39546.	11.61	133335.	15.53	68463.	20.78
03	222S HC DUP	38899.	11.63	129404.	15.54	65769.	20.79
04	222S HC MS	46738.	11.64	158840.	15.54	80485.	20.80
05	222S HC MSD	45226.	11.64	156556.	15.54	80644.	20.79
06							
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22							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

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

Column used to flag internal standard area values with an asterisk

FORM VIII SV-1 1/87 Rev.

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: -----

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

Lab File ID (Standard): >Y2102 Date Analyzed: 12/21/92

Instrument ID: BNA2 Time Analyzed: 8:40

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS3(PRY) AREA #	RT
	12 HOUR STD	95335.	25.19	79597.	33.04	88291.	36.95
	UPPER LIMIT	190670.		159194.		176582.	
	LOWER LIMIT	47668.		39799.		44145.	
	EPA SAMPLE NO.						
01	SBLKY21	141702.	25.19	110838.	33.03	121351.	36.94
02	222S HC BLK	116772.	25.18	96037.	33.03	99011.	36.93
03	222S HC DUP	116653.	25.18	96079.	33.02	101541.	36.93
04	222S HC MS	142834.	25.20	113167.	33.03	123251.	36.94
05	222S HC MSD	139514.	25.19	113478.	33.03	124632.	36.94
06							
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IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%
of internal stansard 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.

E03-714

1101

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-4

TANK C-110

222-S LAB HOT-CELL BLANK
Sample Analysis Raw Data

E03-715

1102

SD-WM-DP-067
(Addendum) 2
Rev. 0-A

Due to the large volume,
a copy of the data
supporting the Data
Validation Report and
the Sample Data Summary,

Pages E03-716 thru E03-815,

is available only from
Central Files.

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WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

E4 - VOLATILE ORGANIC ANALYSIS

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WHC-SD-WM-DP-027
ADDENDUM 3, REV 0 - A

CORE 38

VOLATILE ORGANIC ANALYSIS

E04-002

1204

ORGANIC COMPOUND ANALYSIS REPORT
VOLATILE COMPOUNDS

SAMPLE ANALYSIS REPORTED

Analysis of two single shell tank sludge samples for volatile organic compounds by gas chromatography/mass spectrometry (GC/MS) is the subject of this report.

SAMPLE DESCRIPTION

Sample ID	ACL Lab Number
CORE 38 (J742)	92-08297
CORE 38 (J745)	92-08298

The samples were received from the 325 Building B Hot Cells at ambient temperature with headspace in 20 mL I-Chem vials by the Organics Group on 10/16/92. After receipt they were refrigerated.

SAMPLE PREPARATION

1 gram of sample was extracted into 5mL of methanol per PNL-ALO-121, to permit the NPH (Normal Parrafin Hydrocarbon) cleanup, if necessary. 40 uL of the extract was placed in 5mL of lab water in a heated purge vessel attached to a Tekmar Liquid Sample Concentrator. The nominal Dilution for this prep is 625. NPH was observed in the samples. However, a lower dilution would not be obtained if the NPH cleanup procedure were used.

The analysis followed EPA-CLP SOW 2/88 procedures for analysis of volatile compounds in soils.

ANALYSIS METHOD

- GC/MS procedure: PNL-ALO-335.
- GC/MS instrumentation: HP-5890/5970 GC/MS (WB46864).
- GC/MS location: Lab 327A, 325 building.
- NPH Cleanup procedure: Not used.

QUALITY CONTROL

Quality control procedures specified for this method were followed. These forms are all included in this report, the quality assurance performance requirements are summarized as follows:

Form	Information	Comments
2A	Surrogate Recovery	Meets all requirements.
3A	MS/MSD Recovery	Meets all requirements.
4A	Method Blank Summary	Meets all requirements.
5A	Tune/Mass Calibration	Meets all requirements.
6A	Initial Calibration	5 point calibration. Meets all requirements.
7A	Daily Calibration	Meets all requirements.
8A	Internal Standards	Meets all requirements.

Deviations from protocol requirements are as follows:

• Sample condition.	Headspace present. Received at ambient temperature.

DATA

The data and calibration are archived on magnetic tape in the 325 building, 327-A laboratory. The following is the list of pertinent files:

File Name	Sample Number	Sample Analyzed
>V2101		Mass Calibration/Tune Check
>V2102		Continuing Calibration
>V2103	SYSTEM BLANK	Blank
>V2104	92-08297-M1	CORE 38 (J742)
>V2105	92-08297-M2	CORE 38 (J742) DUP
>V2106	92-08297-M3	CORE 38 (J742) MS
>V2107	92-08297-M4	CORE 38 (J742) MSD
>V2108	92-08298-M1	CORE 38 (J745)
>V2109	92-08298-M2	CORE 38 (J745) DUP

Lab data are also maintained as follows:

Activity	LRB Number	Page Number
GC/MS injection log	BNW-52907	114-115

RESULTS

CLP Target Compounds: The attached 1A Forms show that volatile target compound **Acetone** was observed in the BLANK. However, it was below the Contract Required Quantitation Limit (CRQL). No volatile target compounds were observed in the sample 92-08298. **Acetone** and **1,1,1-Trichloroethane** were observed in 92-08297, but were below the CRQL.

In summary, no CLP target compounds were observed above the CRQL in the samples 92-08297 and 92-08298.

The following defines the qualifiers, Q-flags, in the Form 1's:

"Q" Flag	Definition
U	Indicates the compound was analyzed for but not detected, the U-flagged concentration number is the CRQL.
J	Indicates an estimated value for the target or tentatively identified compounds, spectra meet criteria but response is below the CRQL for the target compounds.
B	Compound was found in the blank.
X	Indicates compound was manually deleted because all requirements were not met.
D	Analysis was performed on a diluted sample.
E	Indicates that Quantitation was outside the calibration range.

Tentatively Identified Compounds: As shown in the attached 1E Forms, no non-EPA Target Compounds were observed in the BLANK. However, the alkanes, **Decane**, **Undecane**, **Dodecane**, **Tridecane**, and **Tetradecane**, were observed in the samples 92-08297 and 92-08298 at the PPM level.

ANALYST B A Ross **DATE** 11/13/92 **REVIEW** [illegible] **DATE** 11-17-92

FILE: C:\WP51\ROSS\REPORTS\V92-08297.SST

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

CURRENT DATE: November 20, 1992

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - VOA

Data Package/Report - Core 38

ALO Numbers - 92-08297-M1 92-08297-M2 92-08297-M3 92-08297-M4 92-08298-M1 92-08298-M2

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

12/1/92
Date

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

CORE 38

Sample Analysis Report Forms

1209

E04-007

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLANK

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: BLANK

Sample wt/vol: 5 (g/mL) G Lab File ID: >V2103

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: (pack/cap) CAP Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	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	5.	U
67-64-1	Acetone	6.	J
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-02-2	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	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
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	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
133-02-7	Xylene (total)	5.	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BLANK

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: BLANK

Sample wt/vol: 5. (g/mL) G Lab File ID: >V2103

Level: (low/med) LOW Date Received: 10/21/92

% Moisture: not dec.--- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 1.00

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC 1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08297-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 38 (J742)

Sample wt/vol: 0.9263 (g/mL) G Lab File ID: >V2104

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: (pack/cap) CAP Dilution Factor: 675

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	6800.	U D
74-83-9	Bromomethane	6800.	U D
75-01-4	Vinyl Chloride	6800.	U D
75-00-3	Chloroethane	6800.	U D
75-09-2	Methylene Chloride	3400.	U D
67-64-1	Acetone	6000.	JBD
75-15-0	Carbon Disulfide	3400.	U D
75-35-4	1,1-Dichloroethene	3400.	U D
75-34-3	1,1-Dichloroethane	3400.	U D
540-59-0	1,2-Dichloroethene (total)	3400.	U D
67-66-3	Chloroform	3400.	U D
107-02-2	1,2-Dichloroethane	3400.	U D
78-93-3	2-Butanone	6800.	U D
71-55-6	1,1,1-Trichloroethane	800.	J D
56-23-5	Carbon Tetrachloride	3400.	U D
108-05-4	Vinyl Acetate	6800.	U D
75-27-4	Bromodichloromethane	3400.	U D
78-87-5	1,2-Dichloropropane	3400.	U D
10061-01-5	cis-1,3-Dichloropropene	3400.	U D
79-01-6	Trichloroethene	3400.	U D
124-48-1	Dibromochloromethane	3400.	U D
79-00-5	1,1,2-Trichloroethane	3400.	U D
71-43-2	Benzene	3400.	U D
10061-02-6	trans-1,3-Dichloropropene	3400.	U D
75-25-2	Bromoform	3400.	U D
108-10-1	4-Methyl-2-pentanone	6800.	U D
591-78-6	2-Hexanone	6800.	U D
127-18-4	Tetrachloroethene	3400.	U D
79-34-5	1,1,2,2-Tetrachloroethane	3400.	U D
108-88-3	Toluene	3400.	U D
108-90-7	Chlorobenzene	3400.	U D
100-41-4	Ethylbenzene	3400.	U D
100-42-5	Styrene	3400.	U D
133-02-7	Xylene (total)	3400.	U D

FORM I VOA 1/89 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08297-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE38(J742)

Sample wt/vol: 0.9263 (g/mL) G Lab File ID: >V2104

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 675

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	28.88	5700.	J
2.	1120214	Undecane	30.27	5400.	J
3.	112403	Dodecane	31.14	45000.	J
4.	629505	Tridecane	31.92	18000.	J
5.	629594	Tetradecane	32.80	3400.	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08297-M2

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 38 DUP

Sample wt/vol: 0.9391 (g/mL) G Lab File ID: >V2105

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: (pack/cap) CAP Dilution Factor: 666

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	6700.	U D
74-83-9	Bromomethane	6700.	U D
75-01-4	Vinyl Chloride	6700.	U D
75-00-3	Chloroethane	6700.	U D
75-09-2	Methylene Chloride	3300.	U D
67-64-1	Acetone	1900.	JBD
75-15-0	Carbon Disulfide	3300.	U D
75-35-4	1,1-Dichloroethene	3300.	U D
75-34-3	1,1-Dichloroethane	3300.	U D
540-59-0	1,2-Dichloroethene (total)	3300.	U D
67-66-3	Chloroform	3300.	U D
107-02-2	1,2-Dichloroethane	3300.	U D
78-93-3	2-Butanone	6700.	U D
71-55-6	1,1,1-Trichloroethane	570.	J D
56-23-5	Carbon Tetrachloride	3300.	U D
108-05-4	Vinyl Acetate	6700.	U D
75-27-4	Bromodichloromethane	3300.	U D
78-87-5	1,2-Dichloropropane	3300.	U D
10061-01-5	cis-1,3-Dichloropropene	3300.	U D
79-01-6	Trichloroethene	3300.	U D
124-48-1	Dibromochloromethane	3300.	U D
79-00-5	1,1,2-Trichloroethane	3300.	U D
71-43-2	Benzene	3300.	U D
10061-02-6	trans-1,3-Dichloropropene	3300.	U D
75-25-2	Bromoform	3300.	U D
108-10-1	4-Methyl-2-pentanone	6700.	U D
591-78-6	2-Hexanone	6700.	U D
127-18-4	Tetrachloroethene	3300.	U D
79-34-5	1,1,2,2-Tetrachloroethane	3300.	U D
108-88-3	Toluene	3300.	U D
108-90-7	Chlorobenzene	3300.	U D
100-41-4	Ethylbenzene	3300.	U D
100-42-5	Styrene	3300.	U D
133-02-7	Xylene (total)	3300.	U D

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08297-M2

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE38DUP(J742)

Sample wt/vol: 0.9391 (g/mL) G Lab File ID: >V2105

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 666

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	28.87	4000.	J
2.	1120214	Undecane	30.27	4400.	J
3.	112403	Dodecane	31.14	44000.	J
4.	629505	Tridecane	31.91	20000.	J
5.	629594	Tetradecane	32.79	4100.	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08297-M3

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 38 MS

Sample wt/vol: 1.0488 (g/mL) G Lab File ID: >V2106

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: (pack/cap) CAP Dilution Factor: 596

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	6000.	U D
74-83-9	Bromomethane	6000.	U D
75-01-4	Vinyl Chloride	6000.	U D
75-00-3	Chloroethane	6000.	U D
75-09-2	Methylene Chloride	3000.	U D
67-64-1	Acetone	6000.	U D
75-15-0	Carbon Disulfide	3000.	U D
75-35-4	1,1-Dichloroethene	26000.	D
75-34-3	1,1-Dichloroethane	3000.	U D
540-59-0	1,2-Dichloroethene (total)	3000.	U D
67-66-3	Chloroform	3000.	U D
107-02-2	1,2-Dichloroethane	3000.	U D
78-93-3	2-Butanone	6000.	U D
71-55-6	1,1,1-Trichloroethane	480.	J D
56-23-5	Carbon Tetrachloride	3000.	U D
108-05-4	Vinyl Acetate	6000.	U D
75-27-4	Bromodichloromethane	3000.	U D
78-87-5	1,2-Dichloropropane	3000.	U D
10061-01-5	cis-1,3-Dichloropropene	3000.	U D
79-01-6	Trichloroethene	29000.	D
124-48-1	Dibromochloromethane	3000.	U D
79-00-5	1,1,2-Trichloroethane	3000.	U D
71-43-2	Benzene	30000.	D
10061-02-6	trans-1,3-Dichloropropene	3000.	U D
75-25-2	Bromoform	3000.	U D
108-10-1	4-Methyl-2-pentanone	6000.	U D
591-78-6	2-Hexanone	6000.	U D
127-18-4	Tetrachloroethene	3000.	U D
79-34-5	1,1,2,2-Tetrachloroethane	3000.	U D
108-88-3	Toluene	30000.	D
108-90-7	Chlorobenzene	27000.	D
100-41-4	Ethylbenzene	3000.	U D
100-42-5	Styrene	3000.	U D
133-02-7	Xylene (total)	3000.	U D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08297-M4

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 38 MSD

Sample wt/vol: 1.0153 (g/mL) G Lab File ID: >V2107

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: (pack/cap) CAP Dilution Factor: 616

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	6200.	U D
74-83-9	Bromomethane	6200.	U D
75-01-4	Vinyl Chloride	6200.	U D
75-00-3	Chloroethane	6200.	U D
75-09-2	Methylene Chloride	3100.	U D
67-64-1	Acetone	6200.	U D
75-15-0	Carbon Disulfide	3100.	U D
75-35-4	1,1-Dichloroethene	30000.	D
75-34-3	1,1-Dichloroethane	3100.	U D
540-59-0	1,2-Dichloroethene (total)	3100.	U D
67-66-3	Chloroform	3100.	U D
107-02-2	1,2-Dichloroethane	3100.	U D
78-93-3	2-Butanone	6200.	U D
71-55-6	1,1,1-Trichloroethane	480.	J D
56-23-5	Carbon Tetrachloride	3100.	U D
108-05-4	Vinyl Acetate	6200.	U D
75-27-4	Bromodichloromethane	3100.	U D
78-87-5	1,2-Dichloropropane	3100.	U D
10061-01-5	cis-1,3-Dichloropropene	3100.	U D
79-01-6	Trichloroethene	31000.	D
124-48-1	Dibromochloromethane	3100.	U D
79-00-5	1,1,2-Trichloroethane	3100.	U D
71-43-2	Benzene	32000.	D
10061-02-6	trans-1,3-Dichloropropene	3100.	U D
75-25-2	Bromoform	3100.	U D
108-10-1	4-Methyl-2-pentanone	6200.	U D
591-78-6	2-Hexanone	6200.	U D
127-18-4	Tetrachloroethene	3100.	U D
79-34-5	1,1,2,2-Tetrachloroethane	3100.	U D
108-88-3	Toluene	33000.	D
108-90-7	Chlorobenzene	28000.	D
100-41-4	Ethylbenzene	3100.	U D
100-42-5	Styrene	3100.	U D
133-02-7	Xylene (total)	3100.	U D

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
92-08298-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 38 (J745)

Sample wt/vol: 0.9729 (g/mL) G Lab File ID: >V2108

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: (pack/cap) CAP Dilution Factor: 642

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	6400.	U D
74-83-9	Bromomethane	6400.	U D
75-01-4	Vinyl Chloride	6400.	U D
75-00-3	Chloroethane	6400.	U D
75-09-2	Methylene Chloride	3200.	U D
67-64-1	Acetone	6400.	U D
75-15-0	Carbon Disulfide	3200.	U D
75-35-4	1,1-Dichloroethene	3200.	U D
75-34-3	1,1-Dichloroethane	3200.	U D
540-59-0	1,2-Dichloroethene (total)	3200.	U D
67-66-3	Chloroform	3200.	U D
107-02-2	1,2-Dichloroethane	3200.	U D
78-93-3	2-Butanone	6400.	U D
71-55-6	1,1,1-Trichloroethane	3200.	U D
56-23-5	Carbon Tetrachloride	3200.	U D
108-05-4	Vinyl Acetate	6400.	U D
75-27-4	Bromodichloromethane	3200.	U D
78-87-5	1,2-Dichloropropane	3200.	U D
10061-01-5	cis-1,3-Dichloropropene	3200.	U D
79-01-6	Trichloroethene	3200.	U D
124-48-1	Dibromochloromethane	3200.	U D
79-00-5	1,1,2-Trichloroethane	3200.	U D
71-43-2	Benzene	3200.	U D
10061-02-6	trans-1,3-Dichloropropene	3200.	U D
75-25-2	Bromoform	3200.	U D
108-10-1	4-Methyl-2-pentanone	6400.	U D
591-78-6	2-Hexanone	6400.	U D
127-18-4	Tetrachloroethene	3200.	U D
79-34-5	1,1,2,2-Tetrachloroethane	3200.	U D
108-88-3	Toluene	3200.	U D
108-90-7	Chlorobenzene	3200.	U D
100-41-4	Ethylbenzene	3200.	U D
100-42-5	Styrene	3200.	U D
133-02-7	Xylene (total)	3200.	U D

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08298-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE38(J745)

Sample wt/vol: 0.9729 (g/mL) G Lab File ID: >V2108

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 642

Number TICs found: 5 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	28.88	3800.	J
2.	1120214	Undecane	30.27	3300.	J
3.	112403	Dodecane	31.15	33000.	J
4.	629505	Tridecane	31.92	15000.	J
5.	629594	Tetradecane	32.80	2500.	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
92-08298-M2

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 38 (J745)

Sample wt/vol: 1.1833 (g/mL) G Lab File ID: >V2109

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: (pack/cap) CAP Dilution Factor: 528

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	5300.	U D
74-83-9	Bromomethane	5300.	U D
75-01-4	Vinyl Chloride	5300.	U D
75-00-3	Chloroethane	5300.	U D
75-09-2	Methylene Chloride	2600.	U D
67-64-1	Acetone	5300.	U D
75-15-0	Carbon Disulfide	2600.	U D
75-35-4	1,1-Dichloroethene	2600.	U D
75-34-3	1,1-Dichloroethane	2600.	U D
540-59-0	1,2-Dichloroethene (total)	2600.	U D
67-66-3	Chloroform	2600.	U D
107-02-2	1,2-Dichloroethane	2600.	U D
78-93-3	2-Butanone	5300.	U D
71-55-6	1,1,1-Trichloroethane	2600.	U D
56-23-5	Carbon Tetrachloride	2600.	U D
108-05-4	Vinyl Acetate	5300.	U D
75-27-4	Bromodichloromethane	2600.	U D
78-87-5	1,2-Dichloropropane	2600.	U D
10061-01-5	cis-1,3-Dichloropropene	2600.	U D
79-01-6	Trichloroethene	2600.	U D
124-48-1	Dibromochloromethane	2600.	U D
79-00-5	1,1,2-Trichloroethane	2600.	U D
71-43-2	Benzene	2600.	U D
10061-02-6	trans-1,3-Dichloropropene	2600.	U D
75-25-2	Bromoform	2600.	U D
108-10-1	4-Methyl-2-pentanone	5300.	U D
591-78-6	2-Hexanone	5300.	U D
127-18-4	Tetrachloroethene	2600.	U D
79-34-5	1,1,2,2-Tetrachloroethane	2600.	U D
108-88-3	Toluene	2600.	U D
108-90-7	Chlorobenzene	2600.	U D
100-41-4	Ethylbenzene	2600.	U D
100-42-5	Styrene	2600.	U D
133-02-7	Xylene (total)	2600.	U D

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08298-M2

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE38(J745)DUP

Sample wt/vol: 1.1833 (g/mL) G Lab File ID: >V2109

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 528

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	28.89	3400.	J
2.	1120214	Undecane	30.28	3000.	J
3.	112403	Dodecane	31.15	33000.	J
4.	629505	Tridecane	31.92	16000.	J
5.	629594	Tetradecane	32.81	2500.	J
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2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: BATTELLE-PNL Contract: ------

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

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	DAILY CAL	100	100	100		0
02	BLANK	94	99	95		0
03	92-08297-M	102	108	101		0
04	92-08297-M	103	104	96		0
05	92-08297-M	99	99	98		0
06	92-08297-M	103	104	102		0
07	92-08298-M	96	101	93		0
08	92-08298-M	94	98	94		0
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		QC LIMITS
S1 (TOL)	= Toluene-d8	(81-117)
S2 (BFB)	= Bromofluorobenzene	(74-121)
S3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3B
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix Spike - EPA Sample No.: 92-08297-M2

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	30000.00	0.00	26000.00	87	61-145
Trichloroethene	30000.00	0.00	29000.00	97	71-120
Benzene	30000.00	0.00	30000.00	100	76-127
Toluene	30000.00	0.00	30000.00	100	76-125
Chlorobenzene	30000.00	0.00	27000.00	90	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	31000.00	30000.00	97	11	14	61-145
Trichloroethene	31000.00	31000.00	100	3	14	71-120
Benzene	31000.00	32000.00	103	2	11	76-127
Toluene	31000.00	33000.00	106	6	13	76-125
Chlorobenzene	31000.00	28000.00	90	0	13	75-130

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

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: BATTELLE-PNL Contract: ------

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

Lab File ID: >V2103 Lab Sample ID: BLANK

Date Analyzed: 10/21/92 Time Analyzed: 9:43

Matrix: (soil/water) SOIL Level: (low/med) LOW

Instrument ID: VOA2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	92-08297-M1	CORE 38 (J742	>V2104	11:43
02	92-08297-M2	CORE 38 DUP(J	>V2105	12:39
03	92-08297-M3	CORE 38 MS (J	>V2106	13:30
04	92-08297-M4	CORE 38 MSD(J	>V2107	14:21
05	92-08298-M1	CORE 38 (J745	>V2108	15:06
06	92-08298-M2	CORE 38 (J745	>V2109	15:58
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COMMENTS:

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: BATTELLE-PNL Contract: ------

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

Lab File ID: >V2101 BFB Injection Date: 10/21/92

Instrument ID: VOA2 BFB Injection Time: 7:36

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	22.2
75	30.0 - 60.0% OF MASS 95	49.4
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.2
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	66.8
175	5.0 - 9.0% of mass 174	5.4(8.1)1
176	Greater than 95.0%, but less than 101.0% of mass 174	67.0(100.2)1
177	5.0 - 9.0% of mass 176	4.1(6.1)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	DAILY CAL	50 PPB CONT C	>V2102	10/21/92	8:16
02	BLANK	BLANK	>V2103	10/21/92	9:43
03	92-08297-M1	CORE 38 (J742	>V2104	10/21/92	11:43
04	92-08297-M2	CORE 38 DUP(J	>V2105	10/21/92	12:39
05	92-08297-M3	CORE 38 MS (J	>V2106	10/21/92	13:30
06	92-08297-M4	CORE 38 MSD(J	>V2107	10/21/92	14:21
07	92-08298-M1	CORE 38 (J745	>V2108	10/21/92	15:06
08	92-08298-M2	CORE 38 (J745	>V2109	10/21/92	15:58
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6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name:BATTELLE-PNL Contract:------

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

Instrument ID: VOA2 Calibration Date(s):10/05/92 10/21/92

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) CAP

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>V0504 RRF50 =>V0502
RRF100=>V0505 RRF150=>V0506 RRF200=>V0507

COMPOUND		RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD	
Chloromethane	#	.656	.669	.636	.648	.636	.649	2.2	#
Bromomethane		1.251	1.235	1.286	1.338	1.336	1.289	3.7	
Vinyl_Chloride	*	.773	.808	.809	.830	.817	.807	2.5	*
Chloroethane		.463	.512	.488	.493	.483	.488	3.5	
Methylene_Chloride		1.088	1.097	1.120	1.164	1.177	1.129	3.5	
Acetone		.311	.221	.215	.250	.220	.243	16.6	
Carbon_Disulfide		2.332	2.766	2.654	2.594	2.368	2.543	7.3	
1,1-Dichloroethene	*	1.082	1.142	1.137	1.068	1.000	1.086	5.4	*
1,1-Dichloroethane	#	1.864	1.984	2.024	2.153	2.144	2.034	5.9	#
1,2-Dichloroethene_(total)		1.180	1.247	1.269	1.353	1.392	1.281	6.6	
Chloroform	*	2.768	2.888	2.965	3.173	3.165	2.992	5.9	*
1,2-Dichloroethane		1.786	1.877	1.856	1.987	1.991	1.899	4.7	
2-Butanone		.116	.096	.102	.120	.119	.111	9.9	
1,1,1-Trichloroethane		2.460	2.740	2.692	2.858	2.907	2.731	6.4	
Carbon_Tetrachloride		2.247	2.650	2.629	2.776	2.823	2.625	8.6	
Vinyl_Acetate		1.520	1.780	1.858	2.070	2.091	1.864	12.6	
Bromodichloromethane		2.621	3.045	3.067	3.305	3.381	3.083	9.6	
1,2-Dichloropropane	*	.279	.291	.300	.317	.315	.301	5.4	*
cis-1,3-Dichloropropene		.451	.516	.545	.579	.566	.532	9.6	
Trichloroethene		.413	.438	.459	.475	.483	.453	6.2	
Dibromochloromethane		.662	.764	.806	.874	.865	.794	10.9	
1,1,2-Trichloroethane		.344	.369	.396	.399	.405	.383	6.7	
Benzene		.660	.708	.716	.744	.757	.717	5.2	
trans-1,3-Dichloropropene		.396	.471	.490	.531	.538	.485	11.9	
Bromoform	#	.499	.595	.634	.692	.685	.621	12.7	#
4-Methyl-2-pentanone		.424	.391	.442	.443	.411	.422	5.1	
2-Hexanone		.311	.269	.311	.303	.290	.297	6.0	
Tetrachloroethene		.498	.480	.530	.488	.519	.503	4.2	
1,1,2,2-Tetrachloroethane		.842	.798	.905	.922	.873	.868	5.7	
Toluene	*	.659	.628	.711	.702	.687	.677	5.0	*
Chlorobenzene	#	.915	.987	.961	1.024	1.037	.985	5.0	#
Ethylbenzene	*	.397	.404	.452	.426	.408	.417	5.2	*
Styrene		.871	.856	.926	.909	.878	.888	3.2	
Xylene_(total)		.732	.712	.797	.785	.812	.768	4.3	
Toluene-d8		1.178	1.029	1.167	1.143	1.126	1.129	5.3	
Bromofluorobenzene		.828	.730	.799	.768	.772	.779	4.7	
1,2-Dichloroethane-d4		1.632	1.597	1.599	1.644	1.696	1.633	2.5	

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: ------

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

Instrument ID: VOA2 Calibration Date: 10/21/92 Time: 8:16

Lab File ID: >V2102 Init. Calib. Date(s): 10/05/92 10/21/92

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Chloromethane	#	.649	.601	7.4	#
Bromomethane		1.289	1.207	6.3	
Vinyl Chloride	*	.807	.774	4.1	*
Chloroethane		.488	.486	.4	
Methylene_Chloride		1.129	1.085	3.9	
Acetone		.243	.222	8.8	
Carbon_Disulfide		2.543	2.558	.6	
1,1-Dichloroethene	*	1.086	1.103	1.6	*
1,1-Dichloroethane	#	2.034	1.935	4.9	#
1,2-Dichloroethene_(total)		1.281	1.213	5.3	
Chloroform	*	2.992	2.864	4.3	*
1,2-Dichloroethane		1.899	1.835	3.4	
2-Butanone		.111	.095	13.9	
1,1,1-Trichloroethane		2.731	2.568	6.0	
Carbon_Tetrachloride		2.625	2.418	7.9	
Vinyl Acetate		1.864	1.739	6.7	
Bromodichloromethane		3.083	2.902	5.9	
1,2-Dichloropropane	*	.301	.304	1.2	*
cis-1,3-Dichloropropene		.532	.515	3.2	
Trichloroethene		.453	.440	3.0	
Dibromochloromethane		.794	.761	4.2	
1,1,2-Trichloroethane		.383	.373	2.4	
Benzene		.717	.720	.4	
trans-1,3-Dichloropropene		.485	.450	7.3	
Bromoform	#	.621	.587	5.4	#
4-Methyl-2-pentanone		.422	.421	.3	
2-Hexanone		.297	.304	2.4	
Tetrachloroethene		.503	.500	.6	
1,1,2,2-Tetrachloroethane		.868	.884	1.8	
Toluene	*	.677	.648	4.3	*
Chlorobenzene	#	.985	1.045	6.1	#
Ethylbenzene	*	.417	.404	3.3	*
Styrene		.888	.891	.3	
Xylene_(total)		.768	.752	2.1	
Toluene-d8		1.129	1.119	.8	
Bromofluorobenzene		.779	.712	8.7	
1,2-Dichloroethane-d4		1.633	1.583	3.1	

FORM VII VOA 1/87 Rev.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: ------

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

Lab File ID (Standard): >V2102 Date Analyzed: 10/21/92

Instrument ID: VOA2 Time Analyzed: 8:16

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	107628.	13.09	423952.	16.56	336982.	24.30
	UPPER LIMIT	215256.		847904.		673964.	
	LOWER LIMIT	53814.		211976.		168491.	
	EPA SAMPLE NO.						
01	BLANK	109885.	13.11	440960.	16.60	365776.	24.31
02	92-08297-M1	120417.	13.15	488980.	16.62	393580.	24.30
03	92-08297-M2	123346.	13.12	508155.	16.58	390955.	24.28
04	92-08297-M3	122396.	13.10	511439.	16.55	410222.	24.27
05	92-08297-M4	121218.	13.14	525777.	16.59	409603.	24.29
06	92-08298-M1	127437.	13.14	531538.	16.61	430733.	24.30
07	92-08298-M2	127360.	13.16	541784.	16.62	429519.	24.31
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IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal stansard 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.

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0 -A

CORE 38

Sample Analysis Raw Data

E04-027

1229

SA-WM-11-[illegible]
Addendum 5
Rev. Ø-A

Due to the large volume,
a copy of the data
supporting the Data
Validation Report and
the Sample Data Summary,

Pages E04-028 thru E04-140,

is available only from
Central Files.

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WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

CORE 39

VOLATILE ORGANIC ANALYSIS

1343

E04-141

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ORGANIC COMPOUND ANALYSIS REPORT
VOLATILE COMPOUNDS

SAMPLE ANALYSIS REPORTED

Analysis of three single shell tank sludge samples for volatile organic compounds by gas chromatography/mass spectrometry (GC/MS) is the subject of this report.

SAMPLE DESCRIPTION

Sample ID	ACL Lab Number
CORE 39 (J747)	92-08299
CORE 39 (J748)	92-08300
CORE 39 (J749)	92-08301

The samples were received by the Organics Group on 10/16/92 from the 325 Building B Hot Cells at ambient temperature with headspace present in 20 mL I-Chem vials. Upon receipt they were refrigerated. These composite core samples were from Tank C110.

SAMPLE PREPARATION

1 gram of sample was extracted into 5mL of methanol per PNL-ALO-121, to permit the NPH (Normal Parrafin Hydrocarbon) cleanup, if necessary. 40 uL of the extract was placed in 5mL of lab water in a heated purge vessel attached to a Tekmar Liquid Sample Concentrator. The nominal Dilution for this prep is 625. NPH was observed in the samples. However, a lower dilution would not be obtained if the NPH cleanup procedure were used.

The analysis followed EPA-CLP SOW 2/88 procedures for analysis of volatile compounds in soils.

ANALYSIS METHOD

- GC/MS procedure: PNL-ALO-335.
- GC/MS instrumentation: HP-5890/5970 GC/MS (WB46864).
- GC/MS location: Lab 327A, 325 building.
- NPH Cleanup procedure: Not used.

QUALITY CONTROL

Quality control procedures specified for this method were followed. These forms are all included in this report, the quality assurance performance requirements are summarized as follows:

Form	Information	Comments
2A	Surrogate Recovery	Meets all requirements.
3A	MS/MSD Recovery	Meets all requirements.
4A	Method Blank Summary	Meets all requirements.
5A	Tune/Mass Calibration	Meets all requirements.
6A	Initial Calibration	5 point calibration. Meets all requirements.
7A	Daily Calibration	Meets all requirements.
8A	Internal Standards	Meets all requirements.

Deviations from protocol requirements are as follows:

- Sample condition. Headspace present. Received at ambient temperature.

DATA

The data and calibration are archived on magnetic tape in the 325 building, 327-A laboratory. The following is the list of pertinent files:

File Name	Sample Number	Sample Analyzed
>V2601		Mass Calibration/Tune Check
>V2602		Continuing Calibration
>V2603	SYSTEM BLANK	Blank
>V2604	92-08299-M1	CORE 39 (J747)
>V2605	92-08299-M2	CORE 39 (J747) DUP
>V2606	92-08299-M3	CORE 39 (J747) MS
>V2607	92-08299-M4	CORE 39 (J747) MSD
>V2608	92-08300-M1	CORE 39 (J748)
>V2609	92-08300-M2	CORE 39 (J748) DUP
>V2610	92-08301-M1	CORE 39 (J749)
>V2611	92-08301-M2	CORE 39 (J749) DUP

Lab data are also maintained as follows:

Activity	LRB Number	Page Number
GC/MS injection log	BNW-52907	116-117

RESULTS

CLP Target Compounds: The attached 1A Forms show that the volatile target compound **2-Butanone** was observed in the BLANK. However, it was below the Contract Required Quantitation Limit (CRQL). **2-Butanone** was observed in sample 92-08299, but was below the CRQL. No volatile target compounds were observed in the sample 92-08299DUP. **Acetone** was observed in samples 92-08300, and 92-8300DUP, but it was below the CRQL. **2-Butanone** was observed in the samples 92-08301, and 92-08301DUP, but it was below the CRQL.

In summary, no CLP target compounds were observed above the CRQL in the samples 92-08299, 92-08300, and 92-08301.

The following defines the qualifiers, Q-flags, in the Form 1's:

"Q" Flag	Definition
U	Indicates the compound was analyzed for but not detected, the U-flagged concentration number is the CRQL.
J	Indicates an estimated value for the target or tentatively identified compounds, spectra meet criteria but response is below the CRQL for the target compounds.
B	Compound was found in the blank.
X	Indicates compound was manually deleted because all requirements were not met.
D	Analysis was performed on a diluted sample.
E	Indicates that Quantitation was outside the calibration range.

Tentatively Identified Compounds: As shown in the attached 1E Forms, no non-EPA Target Compounds were observed in the BLANK. However, the alkanes, **Decane**, **Undecane**, **Dodecane**, **Tridecane**, and **Tetradecane**, were observed in the samples 92-08299, 92-08300, and 92-08301, at the PPM level.

ANALYST GSRoss **DATE** 11/14/92 **REVIEW** [signature] **DATE** 11-17-92

FILE: C:\WP51\ROSS\REPORTS\V92-08299.SST

CURRENT DATE: November 20, 1992

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - VOA

Data Package/Report - Core 39

ALO Numbers - 92-08299-M1 92-08299-M2 92-08299-M3 92-08299-M4 92-08300-M1 92-08300-M2 92-08301-M1 92-08301-M2

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

12/1/92
Date

CORE 39

Sample Analysis Report Forms

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLANK

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: BLANK

Sample wt/vol: 5 (g/mL) G Lab File ID: >V2603

Level: (low/med) LOW Date Received: 10/26/92

% Moisture: not dec.---- Date Analyzed: 10/26/92

Column: (pack/cap) CAP Dilution Factor: 1.00000

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	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	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-02-2	1,2-Dichloroethane	5.	U
78-93-3	2-Butanone	3.	JB
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	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
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	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
133-02-7	Xylene (total)	5.	U

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BLANK

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: BLANK

Sample wt/vol: 5. (g/mL) G Lab File ID: >V2603

Level: (low/med) LOW Date Received: 10/26/92

% Moisture: not dec.--- Date Analyzed: 10/26/92

Column: CAP Dilution Factor: 1.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08299-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 39 (J747)

Sample wt/vol: 1.0055 (g/mL) G Lab File ID: >V2604

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/26/92

Column: (pack/cap) CAP Dilution Factor: 622

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	6200.	U D
74-83-9	Bromomethane	6200.	U D
75-01-4	Vinyl Chloride	6200.	U D
75-00-3	Chloroethane	6200.	U D
75-09-2	Methylene Chloride	3100.	U D
67-64-1	Acetone	6200.	U D
75-15-0	Carbon Disulfide	3100.	U D
75-35-4	1,1-Dichloroethene	3100.	U D
75-34-3	1,1-Dichloroethane	3100.	U D
540-59-0	1,2-Dichloroethene (total)	3100.	U D
67-66-3	Chloroform	3100.	U D
107-02-2	1,2-Dichloroethane	3100.	U D
78-93-3	2-Butanone	1300.	JBD
71-55-6	1,1,1-Trichloroethane	3100.	U D
56-23-5	Carbon Tetrachloride	3100.	U D
108-05-4	Vinyl Acetate	6200.	U D
75-27-4	Bromodichloromethane	3100.	U D
78-87-5	1,2-Dichloropropane	3100.	U D
10061-01-5	cis-1,3-Dichloropropene	3100.	U D
79-01-6	Trichloroethene	3100.	U D
124-48-1	Dibromochloromethane	3100.	U D
79-00-5	1,1,2-Trichloroethane	3100.	U D
71-43-2	Benzene	3100.	U D
10061-02-6	trans-1,3-Dichloropropene	3100.	U D
75-25-2	Bromoform	3100.	U D
108-10-1	4-Methyl-2-pentanone	6200.	U D
591-78-6	2-Hexanone	6200.	U D
127-18-4	Tetrachloroethene	3100.	U D
79-34-5	1,1,2,2-Tetrachloroethane	3100.	U D
108-88-3	Toluene	3100.	U D
108-90-7	Chlorobenzene	3100.	U D
100-41-4	Ethylbenzene	3100.	U D
100-42-5	Styrene	3100.	U D
133-02-7	Xylene (total)	3100.	U D

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08299-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE39 (J747)

Sample wt/vol: 1.0055 (g/mL) G Lab File ID: >V2604

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 622

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	28.92	2200.	J
2.	1120214	Undecane	30.30	2400.	J
3.	112403	Dodecane	31.16	25000.	J
4.	629505	Tridecane	31.95	11000.	J
5.	629594	Tetradecane	32.84	2300.	J
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FORM I VOA-TIC 1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08299-M2

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 39DUP(J747

Sample wt/vol: 1.1000 (g/mL) G Lab File ID: >V2605

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/26/92

Column: (pack/cap) CAP Dilution Factor: 568

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	5700.	U D
74-83-9	Bromomethane	5700.	U D
75-01-4	Vinyl Chloride	5700.	U D
75-00-3	Chloroethane	5700.	U D
75-09-2	Methylene Chloride	2800.	U D
67-64-1	Acetone	5700.	U D
75-15-0	Carbon Disulfide	2800.	U D
75-35-4	1,1-Dichloroethene	2800.	U D
75-34-3	1,1-Dichloroethane	2800.	U D
540-59-0	1,2-Dichloroethene (total)	2800.	U D
67-66-3	Chloroform	2800.	U D
107-02-2	1,2-Dichloroethane	2800.	U D
78-93-3	2-Butanone	5700.	U D
71-55-6	1,1,1-Trichloroethane	2800.	U D
56-23-5	Carbon Tetrachloride	2800.	U D
108-05-4	Vinyl Acetate	5700.	U D
75-27-4	Bromodichloromethane	2800.	U D
78-87-5	1,2-Dichloropropane	2800.	U D
10061-01-5	cis-1,3-Dichloropropene	2800.	U D
79-01-6	Trichloroethene	2800.	U D
124-48-1	Dibromochloromethane	2800.	U D
79-00-5	1,1,2-Trichloroethane	2800.	U D
71-43-2	Benzene	2800.	U D
10061-02-6	trans-1,3-Dichloropropene	2800.	U D
75-25-2	Bromoform	2800.	U D
108-10-1	4-Methyl-2-pentanone	5700.	U D
591-78-6	2-Hexanone	5700.	U D
127-18-4	Tetrachloroethene	2800.	U D
79-34-5	1,1,2,2-Tetrachloroethane	2800.	U D
108-88-3	Toluene	2800.	U D
108-90-7	Chlorobenzene	2800.	U D
100-41-4	Ethylbenzene	2800.	U D
100-42-5	Styrene	2800.	U D
133-02-7	Xylene (total)	2800.	U D

FORM I VOA 1/89 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08299-M2

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE39 DUP(J747)

Sample wt/vol: 1.1000 (g/mL) G Lab File ID: >V2605

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 568

Number TICs found: 5 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	28.92	2500.	J
2.	1120214	Undecane	30.30	2900.	J
3.	112403	Dodecane	31.16	28000.	J
4.	629505	Tridecane	31.95	9800.	J
5.	629594	Tetradecane	32.84	1800.	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08299-M3

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 39MS (J747)

Sample wt/vol: 1.0165 (g/mL) G Lab File ID: >V2606

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/26/92

Column: (pack/cap) CAP Dilution Factor: 615

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	6200.	U D
74-83-9	Bromomethane	6200.	U D
75-01-4	Vinyl Chloride	6200.	U D
75-00-3	Chloroethane	6200.	U D
75-09-2	Methylene Chloride	3100.	U D
67-64-1	Acetone	3100.	J D
75-15-0	Carbon Disulfide	3100.	U D
75-35-4	1,1-Dichloroethene	28000.	D
75-34-3	1,1-Dichloroethane	3100.	U D
540-59-0	1,2-Dichloroethene (total)	3100.	U D
67-66-3	Chloroform	3100.	U D
107-02-2	1,2-Dichloroethane	3100.	U D
78-93-3	2-Butanone	6200.	U D
71-55-6	1,1,1-Trichloroethane	3100.	U D
56-23-5	Carbon Tetrachloride	3100.	U D
108-05-4	Vinyl Acetate	6200.	U D
75-27-4	Bromodichloromethane	3100.	U D
78-87-5	1,2-Dichloropropane	3100.	U D
10061-01-5	cis-1,3-Dichloropropene	3100.	U D
79-01-6	Trichloroethene	28000.	D
124-48-1	Dibromochloromethane	3100.	U D
79-00-5	1,1,2-Trichloroethane	3100.	U D
71-43-2	Benzene	31000.	D
10061-02-6	trans-1,3-Dichloropropene	3100.	U D
75-25-2	Bromoform	3100.	U D
108-10-1	4-Methyl-2-pentanone	6200.	U D
591-78-6	2-Hexanone	6200.	U D
127-18-4	Tetrachloroethene	3100.	U D
79-34-5	1,1,2,2-Tetrachloroethane	3100.	U D
108-88-3	Toluene	31000.	D
108-90-7	Chlorobenzene	29000.	D
100-41-4	Ethylbenzene	3100.	U D
100-42-5	Styrene	3100.	U D
133-02-7	Xylene (total)	3100.	U D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08299-M4

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 39MSD(J747)

Sample wt/vol: 1.219 (g/mL) G Lab File ID: >V2607

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/26/92

Column: (pack/cap) CAP Dilution Factor: 513

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	5100.	U D
74-83-9	Bromomethane	5100.	U D
75-01-4	Vinyl Chloride	5100.	U D
75-00-3	Chloroethane	5100.	U D
75-09-2	Methylene Chloride	2600.	U D
67-64-1	Acetone	840.	J D
75-15-0	Carbon Disulfide	2600.	U D
75-35-4	1,1-Dichloroethene	23000.	D
75-34-3	1,1-Dichloroethane	2600.	U D
540-59-0	1,2-Dichloroethene (total)	2600.	U D
67-66-3	Chloroform	2600.	U D
107-02-2	1,2-Dichloroethane	2600.	U D
78-93-3	2-Butanone	5100.	U D
71-55-6	1,1,1-Trichloroethane	2600.	U D
56-23-5	Carbon Tetrachloride	2600.	U D
108-05-4	Vinyl Acetate	5100.	U D
75-27-4	Bromodichloromethane	2600.	U D
78-87-5	1,2-Dichloropropane	2600.	U D
10061-01-5	cis-1,3-Dichloropropene	2600.	U D
79-01-6	Trichloroethene	22000.	D
124-48-1	Dibromochloromethane	2600.	U D
79-00-5	1,1,2-Trichloroethane	2600.	U D
71-43-2	Benzene	24000.	D
10061-02-6	trans-1,3-Dichloropropene	2600.	U D
75-25-2	Bromoform	2600.	U D
108-10-1	4-Methyl-2-pentanone	5100.	U D
591-78-6	2-Hexanone	5100.	U D
127-18-4	Tetrachloroethene	2600.	U D
79-34-5	1,1,2,2-Tetrachloroethane	2600.	U D
108-88-3	Toluene	25000.	D
108-90-7	Chlorobenzene	23000.	D
100-41-4	Ethylbenzene	2600.	U D
100-42-5	Styrene	2600.	U D
133-02-7	Xylene (total)	2600.	U D

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08300-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 39 (J748)

Sample wt/vol: 1.0756 (g/mL) G Lab File ID: >V2608

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/26/92

Column: (pack/cap) CAP Dilution Factor: 581

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	5800.	U D
74-83-9	Bromomethane	5800.	U D
75-01-4	Vinyl Chloride	5800.	U D
75-00-3	Chloroethane	5800.	U D
75-09-2	Methylene Chloride	2900.	U D
67-64-1	Acetone	2700.	J D
75-15-0	Carbon Disulfide	2900.	U D
75-35-4	1,1-Dichloroethene	2900.	U D
75-34-3	1,1-Dichloroethane	2900.	U D
540-59-0	1,2-Dichloroethene (total)	2900.	U D
67-66-3	Chloroform	2900.	U D
107-02-2	1,2-Dichloroethane	2900.	U D
78-93-3	2-Butanone	5800.	U D
71-55-6	1,1,1-Trichloroethane	2900.	U D
56-23-5	Carbon Tetrachloride	2900.	U D
108-05-4	Vinyl Acetate	5800.	U D
75-27-4	Bromodichloromethane	2900.	U D
78-87-5	1,2-Dichloropropane	2900.	U D
10061-01-5	cis-1,3-Dichloropropene	2900.	U D
79-01-6	Trichloroethene	2900.	U D
124-48-1	Dibromochloromethane	2900.	U D
79-00-5	1,1,2-Trichloroethane	2900.	U D
71-43-2	Benzene	2900.	U D
10061-02-6	trans-1,3-Dichloropropene	2900.	U D
75-25-2	Bromoform	2900.	U D
108-10-1	4-Methyl-2-pentanone	5800.	U D
591-78-6	2-Hexanone	5800.	U D
127-18-4	Tetrachloroethene	2900.	U D
79-34-5	1,1,2,2-Tetrachloroethane	2900.	U D
108-88-3	Toluene	2900.	U D
108-90-7	Chlorobenzene	2900.	U D
100-41-4	Ethylbenzene	2900.	U D
100-42-5	Styrene	2900.	U D
133-02-7	Xylene (total)	2900.	U D

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08300-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE39 (J748)

Sample wt/vol: 1.0756 (g/mL) G Lab File ID: >V2608

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 581

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	28.89	5500.	J
2.	1120214	Undecane	30.28	5400.	J
3.	112403	Dodecane	31.15	36000.	J
4.	629505	Tridecane	31.93	15000.	J
5.	629594	Tetradecane	32.82	4300.	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08300-M2

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 39DUP(J748

Sample wt/vol: 1.1494 (g/mL) G Lab File ID: >V2609

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/26/92

Column: (pack/cap) CAP Dilution Factor: 544

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	5400.	U D
74-83-9	Bromomethane	5400.	U D
75-01-4	Vinyl Chloride	5400.	U D
75-00-3	Chloroethane	5400.	U D
75-09-2	Methylene Chloride	2700.	U D
67-64-1	Acetone	1900.	J D
75-15-0	Carbon Disulfide	2700.	U D
75-35-4	1,1-Dichloroethene	2700.	U D
75-34-3	1,1-Dichloroethane	2700.	U D
540-59-0	1,2-Dichloroethene (total)	2700.	U D
67-66-3	Chloroform	2700.	U D
107-02-2	1,2-Dichloroethane	2700.	U D
78-93-3	2-Butanone	5400.	U D
71-55-6	1,1,1-Trichloroethane	2700.	U D
56-23-5	Carbon Tetrachloride	2700.	U D
108-05-4	Vinyl Acetate	5400.	U D
75-27-4	Bromodichloromethane	2700.	U D
78-87-5	1,2-Dichloropropane	2700.	U D
10061-01-5	cis-1,3-Dichloropropene	2700.	U D
79-01-6	Trichloroethene	2700.	U D
124-48-1	Dibromochloromethane	2700.	U D
79-00-5	1,1,2-Trichloroethane	2700.	U D
71-43-2	Benzene	2700.	U D
10061-02-6	trans-1,3-Dichloropropene	2700.	U D
75-25-2	Bromoform	2700.	U D
108-10-1	4-Methyl-2-pentanone	5400.	U D
591-78-6	2-Hexanone	5400.	U D
127-18-4	Tetrachloroethene	2700.	U D
79-34-5	1,1,2,2-Tetrachloroethane	2700.	U D
108-88-3	Toluene	2700.	U D
108-90-7	Chlorobenzene	2700.	U D
100-41-4	Ethylbenzene	2700.	U D
100-42-5	Styrene	2700.	U D
133-02-7	Xylene (total)	2700.	U D

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08300-M2

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE39 DUP(J748)

Sample wt/vol: 1.1494 (g/mL) G Lab File ID: >V2609

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 544

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	28.89	5700.	J
2.	1120214	Undecane	30.29	4700.	J
3.	112403	Dodecane	31.15	33000.	J
4.	629505	Tridecane	31.93	20000.	J
5.	629594	Tetradecane	32.81	5000.	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08301-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 39 (J749)

Sample wt/vol: 0.9361 (g/mL) G Lab File ID: >V2610

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/26/92

Column: (pack/cap) CAP Dilution Factor: 668

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	6700.	U D
74-83-9	Bromomethane	6700.	U D
75-01-4	Vinyl Chloride	6700.	U D
75-00-3	Chloroethane	6700.	U D
75-09-2	Methylene Chloride	3300.	U D
67-64-1	Acetone	6700.	U D
75-15-0	Carbon Disulfide	3300.	U D
75-35-4	1,1-Dichloroethene	3300.	U D
75-34-3	1,1-Dichloroethane	3300.	U D
540-59-0	1,2-Dichloroethene (total)	3300.	U D
67-66-3	Chloroform	3300.	U D
107-02-2	1,2-Dichloroethane	3300.	U D
78-93-3	2-Butanone	1600.	JBD
71-55-6	1,1,1-Trichloroethane	3300.	U D
56-23-5	Carbon Tetrachloride	3300.	U D
108-05-4	Vinyl Acetate	6700.	U D
75-27-4	Bromodichloromethane	3300.	U D
78-87-5	1,2-Dichloropropane	3300.	U D
10061-01-5	cis-1,3-Dichloropropene	3300.	U D
79-01-6	Trichloroethene	3300.	U D
124-48-1	Dibromochloromethane	3300.	U D
79-00-5	1,1,2-Trichloroethane	3300.	U D
71-43-2	Benzene	3300.	U D
10061-02-6	trans-1,3-Dichloropropene	3300.	U D
75-25-2	Bromoform	3300.	U D
108-10-1	4-Methyl-2-pentanone	6700.	U D
591-78-6	2-Hexanone	6700.	U D
127-18-4	Tetrachloroethene	3300.	U D
79-34-5	1,1,2,2-Tetrachloroethane	3300.	U D
108-88-3	Toluene	3300.	U D
108-90-7	Chlorobenzene	3300.	U D
100-41-4	Ethylbenzene	3300.	U D
100-42-5	Styrene	3300.	U D
133-02-7	Xylene (total)	3300.	U D

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08301-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE39 (J749)

Sample wt/vol: 0.9361 (g/mL) G Lab File ID: >V2610

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 668

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	28.89	2400.	J
2.	1120214	Undecane	30.28	3300.	J
3.	112403	Dodecane	31.14	43000.	J
4.	629505	Tridecane	31.92	22000.	J
5.	629594	Tetradecane	32.80	4600.	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08301-M2

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE 39DUP(J749)

Sample wt/vol: 1.2462 (g/mL) G Lab File ID: >V2611

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/26/92

Column: (pack/cap) CAP Dilution Factor: 502

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg	Q
74-87-3	Chloromethane	5000.	U D
74-83-9	Bromomethane	5000.	U D
75-01-4	Vinyl Chloride	5000.	U D
75-00-3	Chloroethane	5000.	U D
75-09-2	Methylene Chloride	2500.	U D
67-64-1	Acetone	5000.	U D
75-15-0	Carbon Disulfide	2500.	U D
75-35-4	1,1-Dichloroethene	2500.	U D
75-34-3	1,1-Dichloroethane	2500.	U D
540-59-0	1,2-Dichloroethene (total)	2500.	U D
67-66-3	Chloroform	2500.	U D
107-02-2	1,2-Dichloroethane	2500.	U D
78-93-3	2-Butanone	1300.	JBD
71-55-6	1,1,1-Trichloroethane	2500.	U D
56-23-5	Carbon Tetrachloride	2500.	U D
108-05-4	Vinyl Acetate	5000.	U D
75-27-4	Bromodichloromethane	2500.	U D
78-87-5	1,2-Dichloropropane	2500.	U D
10061-01-5	cis-1,3-Dichloropropene	2500.	U D
79-01-6	Trichloroethene	2500.	U D
124-48-1	Dibromochloromethane	2500.	U D
79-00-5	1,1,2-Trichloroethane	2500.	U D
71-43-2	Benzene	2500.	U D
10061-02-6	trans-1,3-Dichloropropene	2500.	U D
75-25-2	Bromoform	2500.	U D
108-10-1	4-Methyl-2-pentanone	5000.	U D
591-78-6	2-Hexanone	5000.	U D
127-18-4	Tetrachloroethene	2500.	U D
79-34-5	1,1,2,2-Tetrachloroethane	2500.	U D
108-88-3	Toluene	2500.	U D
108-90-7	Chlorobenzene	2500.	U D
100-41-4	Ethylbenzene	2500.	U D
100-42-5	Styrene	2500.	U D
133-02-7	Xylene (total)	2500.	U D

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08301-M2

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) SOIL Lab Sample ID: CORE39 DUP(J749)

Sample wt/vol: 1.2462 (g/mL) G Lab File ID: >V2611

Level: (low/med) LOW Date Received: 10/16/92

% Moisture: not dec.---- Date Analyzed: 10/21/92

Column: CAP Dilution Factor: 502

Number TICs found: 5

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	124185	Decane	28.89	1700.	J
2.	1120214	Undecane	30.28	2400.	J
3.	112403	Dodecane	31.15	32000.	J
4.	629505	Tridecane	31.92	16000.	J
5.	629594	Tetradecane	32.81	2400.	J
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2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: BATTELLE-PNL Contract: ------

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

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	DAILY CAL	101	98	99		0
02	BLANK	100	104	99		0
03	92-08299-M	101	96	95		0
04	92-08299-M	104	97	97		0
05	92-08299-M	104	101	98		0
06	92-08299-M	102	98	97		0
07	92-08300-M	104	97	97		0
08	92-08300-M	102	95	92		0
09	92-08301-M	100	95	98		0
10	92-08301-M	100	93	94		0
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		QC LIMITS
S1 (TOL)	= Toluene-d8	(81-117)
S2 (BFB)	= Bromofluorobenzene	(74-121)
S3 (DCE)	= 1,2-Dichloroethane-d4	(70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

FORM II VOA-2 1/87 Rev.

3B
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix Spike - EPA Sample No.: 92-08299-M2 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	31000.00	0.00	28000.00	90	59-172
Trichloroethene	31000.00	0.00	28000.00	90	62-137
Benzene	31000.00	0.00	31000.00	100	66-142
Toluene	31000.00	0.00	31000.00	100	59-139
Chlorobenzene	31000.00	0.00	29000.00	94	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	26000.00	23000.00	88	2	22	59-172
Trichloroethene	26000.00	22000.00	85	6	24	62-137
Benzene	26000.00	24000.00	92	8	21	66-142
Toluene	26000.00	25000.00	96	4	21	59-139
Chlorobenzene	26000.00	23000.00	88	7	21	60-133

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

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: BATTELLE-PNL Contract: ------

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

Lab File ID: >V2603 Lab Sample ID: BLANK

Date Analyzed: 10/26/92 Time Analyzed: 10:04

Matrix: (soil/water) SOIL Level: (low/med) LOW

Instrument ID: VOA2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	92-08299-M1	CORE 39 (J747)	>V2604	11:06
02	92-08299-M2	CORE 39DUP(J74	>V2605	11:53
03	92-08299-M3	CORE 39MS (J74	>V2606	12:38
04	92-08299-M4	CORE 39MSD(J74	>V2607	13:34
05	92-08300-M1	CORE 39 (J748)	>V2608	14:18
06	92-08300-M2	CORE 39DUP(J74	>V2609	15:10
07	92-08301-M1	CORE 39 (J749)	>V2610	15:54
08	92-08301-M2	CORE 39DUP(J74	>V2611	16:39
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COMMENTS:

FORM IV VOA 1/87 Rev.

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: BATTELLE-PNL Contract: ------

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

Lab File ID: >V2601 BFB Injection Date: 10/26/92

Instrument ID: VOA2 BFB Injection Time: 7:33

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	19.1
75	30.0 - 60.0% OF MASS 95	47.3
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.6
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	91.6
175	5.0 - 9.0% of mass 174	7.8(8.5)1
176	Greater than 95.0%, but less than 101.0% of mass 174	87.4(95.5)1
177	5.0 - 9.0% of mass 176	5.7(6.6)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	DAILY CAL	50 PPB CONT C	>V2602	10/26/92	8:40
02	BLANK	BLANK	>V2603	10/26/92	10:04
03	92-08299-M1	CORE 39 (J747	>V2604	10/26/92	11:06
04	92-08299-M2	CORE 39DUP(J7	>V2605	10/26/92	11:53
05	92-08299-M3	CORE 39MS (J7	>V2606	10/26/92	12:38
06	92-08299-M4	CORE 39MSD(J7	>V2607	10/26/92	13:34
07	92-08300-M1	CORE 39 (J748	>V2608	10/26/92	14:18
08	92-08300-M2	CORE 39DUP(J7	>V2609	10/26/92	15:10
09	92-08301-M1	CORE 39 (J749	>V2610	10/26/92	15:54
10	92-08301-M2	CORE 39DUP(J7	>V2611	10/26/92	16:39
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6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: BATTELLE-PNL Contract: ------

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

Instrument ID: VOA2 Calibration Date(s): 10/05/92 10/26/92

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>V0504 RRF50 =>V0502
RRF100=>V0505 RRF150=>V0506 RRF200=>V0507

COMPOUND		RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD	
Chloromethane	#	.656	.669	.636	.648	.636	.649	2.2	#
Bromomethane		1.251	1.235	1.286	1.338	1.336	1.289	3.7	
Vinyl Chloride	*	.773	.808	.809	.830	.817	.807	2.6	*
Chloroethane		.463	.512	.488	.493	.483	.488	3.6	
Methylene Chloride		1.088	1.097	1.120	1.164	1.177	1.129	3.5	
Acetone		.311	.221	.215	.250	.220	.243	16.6	
Carbon Disulfide		2.332	2.766	2.654	2.594	2.368	2.543	7.3	
1,1-Dichloroethene	*	1.082	1.142	1.137	1.068	1.000	1.086	5.4	*
1,1-Dichloroethane	#	1.864	1.984	2.024	2.153	2.144	2.034	5.9	#
1,2-Dichloroethene (total)		1.180	1.247	1.269	1.353	1.392	1.281	6.6	
Chloroform	*	2.768	2.888	2.965	3.173	3.165	2.992	5.9	*
1,2-Dichloroethane		1.786	1.877	1.856	1.987	1.991	1.899	4.7	
2-Butanone		.116	.096	.102	.120	.119	.111	9.9	
1,1,1-Trichloroethane		2.460	2.740	2.692	2.858	2.907	2.731	6.4	
Carbon Tetrachloride		2.247	2.650	2.629	2.776	2.823	2.625	8.6	
Vinyl Acetate		1.520	1.780	1.858	2.070	2.091	1.864	12.6	
Bromodichloromethane		2.621	3.045	3.067	3.305	3.381	3.083	9.6	
1,2-Dichloropropane	*	.279	.291	.300	.317	.315	.301	5.4	*
cis-1,3-Dichloropropene		.451	.516	.545	.579	.566	.532	9.6	
Trichloroethene		.413	.438	.459	.475	.483	.453	6.2	
Dibromochloromethane		.662	.764	.806	.874	.865	.794	10.9	
1,1,2-Trichloroethane		.344	.369	.396	.399	.405	.383	6.7	
Benzene		.660	.708	.716	.744	.757	.717	5.2	
trans-1,3-Dichloropropene		.396	.471	.490	.531	.538	.485	11.9	
Bromoform	#	.499	.595	.634	.692	.685	.621	12.7	#
4-Methyl-2-pentanone		.424	.391	.442	.443	.411	.422	5.1	
2-Hexanone		.311	.269	.311	.303	.290	.297	6.0	
Tetrachloroethene		.498	.480	.530	.488	.519	.503	4.2	
1,1,2,2-Tetrachloroethane		.842	.798	.905	.922	.873	.868	5.7	
Toluene	*	.659	.628	.711	.702	.687	.677	5.0	*
Chlorobenzene	#	.915	.987	.961	1.024	1.037	.985	5.0	#
Ethylbenzene	*	.397	.404	.452	.426	.408	.417	5.2	*
Styrene		.871	.856	.926	.909	.878	.888	3.2	
Xylene (total)		.732	.712	.797	.785	.812	.768	4.3	
Toluene-d8		1.178	1.029	1.157	1.143	1.126	1.129	5.3	
Bromofluorobenzene		.828	.730	.799	.768	.772	.779	4.7	
1,2-Dichloroethane-d4		1.632	1.597	1.599	1.644	1.696	1.633	2.5	

FORM VI VOA 1/87 Rev.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: ------

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

Instrument ID: VOA2 Calibration Date: 10/26/92 Time: 8:40

Lab File ID: >V2602 Init. Calib. Date(s): 10/05/92 10/26/92

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Chloromethane	#	.649	.597	8.0	#
Bromomethane		1.289	1.306	1.3	
Vinyl Chloride	*	.807	.791	2.0	*
Chloroethane		.488	.505	3.5	
Methylene Chloride		1.129	1.157	2.5	
Acetone		.243	.220	9.7	
Carbon Disulfide		2.543	2.431	4.4	
1,1-Dichloroethene	*	1.086	1.165	7.3	*
1,1-Dichloroethane	#	2.034	2.010	1.2	#
1,2-Dichloroethene (total)		1.281	1.292	.9	
Chloroform	*	2.992	3.031	1.3	*
1,2-Dichloroethane		1.899	1.875	1.3	
2-Butanone		.111	.101	8.4	
1,1,1-Trichloroethane		2.731	2.691	1.5	
Carbon Tetrachloride		2.625	2.571	2.1	
Vinyl Acetate		1.864	1.628	12.7	
Bromodichloromethane		3.083	2.926	5.1	
1,2-Dichloropropane	*	.301	.301	.3	*
cis-1,3-Dichloropropene		.532	.527	.9	
Trichloroethene		.453	.472	4.0	
Dibromochloromethane		.794	.780	1.8	
1,1,2-Trichloroethane		.383	.404	5.5	
Benzene		.717	.738	2.8	
trans-1,3-Dichloropropene		.485	.468	3.6	
Bromoform	#	.621	.581	6.5	#
4-Methyl-2-pentanone		.422	.392	7.2	
2-Hexanone		.297	.282	5.1	
Tetrachloroethene		.503	.513	2.0	
1,1,2,2-Tetrachloroethane		.868	.817	5.9	
Toluene	*	.677	.668	1.4	*
Chlorobenzene	#	.985	1.022	3.7	#
Ethylbenzene	*	.417	.416	.2	*
Styrene		.883	.907	2.1	
Xylene (total)		.763	.755	1.7	
Toluene-d8		1.129	1.062	5.9	
Bromofluorobenzene		.779	.723	7.3	
1,2-Dichloroethane-d4		1.633	1.533	6.1	

FORM VII VOA 1/87 Rev.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: ------

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

Lab File ID (Standard): >V2602 Date Analyzed: 10/26/92

Instrument ID: VOA2 Time Analyzed: 8:40

Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAP

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	120120.	13.24	482415.	16.70	391249.	24.41
	UPPER LIMIT	240240.		964830.		782498.	
	LOWER LIMIT	60060.		241207.		195624.	
	EPA SAMPLE NO.						
01	BLANK	126026.	13.26	516941.	16.70	420962.	24.39
02	92-08299-M1	132535.	13.19	547839.	16.67	433841.	24.38
03	92-08299-M2	131153.	13.21	540739.	16.67	434027.	24.37
04	92-08299-M3	131151.	13.21	546327.	16.67	434327.	24.36
05	92-08299-M4	130302.	13.17	556220.	16.62	436898.	24.34
06	92-08300-M1	131155.	13.17	549009.	16.63	427985.	24.33
07	92-08300-M2	130978.	13.18	550266.	16.64	423451.	24.35
08	92-08301-M1	128710.	13.16	545348.	16.63	454115.	24.31
09	92-08301-M2	127951.	13.12	543556.	16.58	441382.	24.31
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IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal stansard 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.

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CORE 39

Sample Analysis Raw Data

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SD-WM-DP-[illegible]
Addendum 5
Rev. Ø-A

Due to the large volume,
a copy of the data
supporting the Data
Validation Report and
the Sample Data Summary,

Pages E04-171 thru E04-321,

is available only from
Central Files.

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WHC-SD-WM-DP-027
ADDENDUM 3, REV 0 -A

TANK C-110

222-S LAB HOT-CELL BLANK VOLATILE ORGANIC ANALYSIS

E04-322

1524

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ORGANIC COMPOUND ANALYSIS REPORT
VOLATILE COMPOUNDS

SAMPLE ANALYSIS REPORTED

Analysis of one water sample for volatile organic compounds by gas chromatography/mass spectrometry (GC/MS) is the subject of this report.

SAMPLE DESCRIPTION

Sample ID	ACL Lab Number
222S HC BLANK	92-08312-M-1

The sample was transferred with tank C110 drainable liquid sample to the Organics Group at ambient temperature from the 325 Building "B" Analytical Hot Cell on 10/07/92. This 222S HC BLANK sample contained about 15 mL of water in a 40 mL VOA vial.

SAMPLE PREPARATION

5 mL of sample water was placed in a heated purge vessel attached to a Tekmar Liquid Sample Concentrator.

The analysis followed EPA-CLP SOW 2/88 procedures for analysis of volatile compounds except the current calibration available employed a heated purge and consequently a heated purge was used for the sample as well.

ANALYSIS METHOD

- GC/MS procedure: PNL-ALO-335.
- GC/MS instrumentation: HP-5890/5970 GC/MS (WB46864).
- GC/MS location: Lab 327A, 325 building.

QUALITY CONTROL

Quality control procedures specified for this method were followed. These forms are all included in this report, the quality assurance performance requirements are summarized as follows:

Form	Information	Comments
2A	Surrogate Recovery	Meets all requirements.
3A	MS/MSD Recovery	Meets all requirements.
4A	Method Blank Summary	Meets all requirements.
5A	Tune/Mass Calibration	Meets all requirements.
6A	Initial Calibration	5 point calibration. Meets all requirements.
7A	Daily Calibration	Meets all requirements.
8A	Internal Standards	Meets all requirements.

Note: MS/MSD data was obtained from spiking laboratory blank water due to the limited amount of sample available.

Deviations from protocol requirements are as follows:

• Sample condition.	Sample was received at ambient temperature with a large amount of headspace.

DATA

The data and calibration are archived on magnetic tape in the 325 building, 327-A laboratory. The following is the list of pertinent files:

File Name	Sample Number	Sample Analyzed
>V1501		Mass Calibration/Tune Check
>V1502		Continuing Calibration
>V1503	SYSTEM BLANK	Blank
>V1504	92-08312-M1	222S HOT CELL BLANK
>V1505	92-08312-M3	Blank MS
>V1506	92-08312-M4	Blank MSD

Lab data are also maintained as follows:

Activity	LRB Number	Page Number
GC/MS injection log	BNW-52907	114-115

Note: The raw data printouts indicate the last calibration date of 10/04/91, instead of the correct date of 10/05/92.

RESULTS

CLP Target Compounds: The attached 1A Forms show that one volatile target compound, **Acetone** was observed in the BLANK, just above the Contract Required Quantitation limit (CRQL). No target compounds were observed in the sample 92-08312-M1.

In summary, no CLP target compounds were observed in the 222S HC BLANK, 92-08312-M1.

The following defines the qualifiers, Q-flags, in the Form 1's:

"Q" Flag	Definition
U	Indicates the compound was analyzed for but not detected, the U-flagged concentration number is the CRQL.
J	Indicates an estimated value for the target or tentatively identified compounds, spectra meet criteria but response is below the CRQL for the target compounds.
B	Compound was found in the blank.
X	Indicates compound was manually deleted because all requirements were not met.
D	Analysis was performed on a diluted sample.
E	Indicates that Quantitation was outside the calibration range.

Tentatively Identified Compounds: As shown in the attached 1E -Forms, no non-EPA Target Compounds were observed in the BLANK, or the 222S HOT CELL BLANK.

ANALYST [signature] DATE 12/11/92 REVIEW [signature] DATE 12-9-92

FILE: C:\ROSS\V9208312.SST

CURRENT DATE: December 11, 1992

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - VOA

Data Package/Report - 222S Hot-Cell Blank

ALO Numbers - 92-08312-M1 92-08312-M3 92-08312-M4

Berta L. Thomas

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

1/13/93
Date

Kristine J. Kuhl-Klinger 1/13/93

TANK C-110

222-S LAB HOT-CELL BLANK

Sample Analysis Report Forms

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BLANK

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) WATER Lab Sample ID: BLANK

Sample wt/vol: 5 (g/mL) mL Lab File ID: >V1503

Level: (low/med) LOW Date Received: 10/15/92

% Moisture: not dec.---- Date Analyzed: 10/15/92

Column: (pack/cap) CAP 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	5.	U
67-64-1	Acetone	11.	
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-02-2	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	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
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	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
133-02-7	Xylene (total)	5.	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BLANK

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) WATER Lab Sample ID: BLANK

Sample wt/vol: 5. (g/mL) mL Lab File ID: >V1503

Level: (low/med) LOW Date Received: 10/15/92

% Moisture: not dec.--- Date Analyzed: 10/15/92

Column: CAP Dilution Factor: 1.00

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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FORM I VOA-TIC 1/87 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08312-M3

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) WATER Lab Sample ID: BLANK MS

Sample wt/vol: 5 (g/mL) mL Lab File ID: >V1505

Level: (low/med) LOW Date Received: 10/15/92

% Moisture: not dec.---- Date Analyzed: 10/15/92

Column: (pack/cap) CAP 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	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	57.	
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-02-2	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	55.	
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	57.	
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	55.	
108-90-7	Chlorobenzene	55.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
133-02-7	Xylene (total)	5.	U

FORM I VOA 1/89 Rev.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08312-M4

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) WATER Lab Sample ID: BLANK MSD

Sample wt/vol: 5 (g/mL) mL Lab File ID: >V1506

Level: (low/med) LOW Date Received: 10/15/92

% Moisture: not dec.---- Date Analyzed: 10/15/92

Column: (pack/cap) CAP 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	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	57.	
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-02-2	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	52.	
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	55.	
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	57.	
108-90-7	Chlorobenzene	56.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
133-02-7	Xylene (total)	5.	U

2A
WATER VOLATILE SURROGATE RECOVERY

Lab Name: BATTELLE-PNL Contract: ------

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

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	DAILY CAL	98	103	97		0
02	BLANK	103	102	100		0
03	92-08312-M1	102	99	98		0
04	92-08312-M3	102	101	100		0
05	92-08312-M4	110	112	101		0
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		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

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix Spike - EPA Sample No.: 92-08312-M

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	57.00	115	61-145
Trichloroethene	50.00	0.00	55.00	109	71-120
Benzene	50.00	0.00	57.00	114	76-127
Toluene	50.00	0.00	55.00	111	76-125
Chlorobenzene	50.00	0.00	55.00	110	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	57.00	114	1	14	61-145
Trichloroethene	50.00	52.00	105	4	14	71-120
Benzene	50.00	55.00	110	4	11	76-127
Toluene	50.00	57.00	115	4	13	76-125
Chlorobenzene	50.00	56.00	111	1	13	75-130

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

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

FORM III VOA-1 1/87 Rev.

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: BATTELLE-PNL Contract: ------

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

Lab File ID: >V1503 Lab Sample ID: BLANK

Date Analyzed: 10/15/92 Time Analyzed: 11:07

Matrix: (soil/water) WATER Level: (low/med) LOW

Instrument ID: VOA2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	92-08312-M1	C110222SHCBLA	>V1504	14:51
02	92-08312-M3	BLANK MS	>V1505	16:07
03	92-08312-M4	BLANK MSD	>V1506	16:54
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COMMENTS:

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: BATTELLE-PNL Contract: ------

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

Lab File ID: >V1501 BFB Injection Date: 10/15/92

Instrument ID: VOA2 BFB Injection Time: 8:14

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	17.1
75	30.0 - 60.0% OF MASS 95	48.4
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	83.9
175	5.0 - 9.0% of mass 174	7.3(8.7)1
176	Greater than 95.0%, but less than 101.0% of mass 174	80.0(95.4)1
177	5.0 - 9.0% of mass 176	4.9(6.1)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	DAILY CAL	50 PPB CONT C	>V1502	10/15/92	9:15
02	BLANK	BLANK	>V1503	10/15/92	11:07
03	92-08312-M1	C110222SHCBLA	>V1504	10/15/92	14:51
04	92-08312-M3	BLANK MS	>V1505	10/15/92	16:07
05	92-08312-M4	BLANK MSD	>V1506	10/15/92	16:54
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FORM V VOA 1/87 Rev.

6A
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: BATTELLE-PNL Contract: ------

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

Instrument ID: VOA2 Calibration Date(s): 10/05/92 10/05/92

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

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 =>V0504 RRF50 =>V0502
RRF100=>V0505 RRF150=>V0506 RRF200=>V0507

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
Chloromethane #	.656	.669	.636	.648	.636	.649	2.2#
Bromomethane	1.251	1.235	1.286	1.338	1.336	1.289	3.7
Vinyl_Chloride *	.773	.808	.809	.830	.817	.807	2.6*
Chloroethane	.463	.512	.488	.493	.483	.488	3.6
Methylene_Chloride	1.088	1.097	1.120	1.164	1.177	1.129	3.6
Acetone	.311	.221	.215	.250	.220	.243	16.6
Carbon_Disulfide	2.332	2.766	2.654	2.594	2.368	2.543	7.3
1,1-Dichloroethene *	1.082	1.142	1.137	1.068	1.000	1.086	5.4*
1,1-Dichloroethane #	1.864	1.984	2.024	2.153	2.144	2.034	5.9#
1,2-Dichloroethene_(total)	1.180	1.247	1.269	1.353	1.392	1.281	6.5
Chloroform *	2.768	2.888	2.965	3.173	3.165	2.992	5.9*
1,2-Dichloroethane	1.786	1.877	1.856	1.987	1.991	1.899	4.7
2-Butanone	.116	.096	.102	.120	.119	.111	9.9
1,1,1-Trichloroethane	2.460	2.740	2.692	2.858	2.907	2.731	6.4
Carbon_Tetrachloride	2.247	2.650	2.629	2.776	2.823	2.625	8.5
Vinyl_Acetate	1.520	1.780	1.858	2.070	2.091	1.864	12.5
Bromodichloromethane	2.621	3.045	3.067	3.305	3.381	3.083	9.5
1,2-Dichloropropane *	.279	.291	.300	.317	.315	.301	5.4*
cis-1,3-Dichloropropene	.451	.516	.545	.579	.566	.532	9.5
Trichloroethene	.413	.438	.459	.475	.483	.453	6.2
Dibromochloromethane	.662	.764	.806	.874	.865	.794	10.9
1,1,2-Trichloroethane	.344	.369	.396	.399	.405	.383	6.7
Benzene	.660	.708	.716	.744	.757	.717	5.2
trans-1,3-Dichloropropene	.396	.471	.490	.531	.538	.485	11.9
Bromoform #	.499	.595	.634	.692	.685	.621	12.7#
4-Methyl-2-pentanone	.424	.391	.442	.443	.411	.422	5.1
2-Hexanone	.311	.269	.311	.303	.290	.297	6.0
Tetrachloroethene	.498	.480	.530	.488	.519	.503	4.2
1,1,2,2-Tetrachloroethane	.842	.798	.905	.922	.873	.868	5.7
Toluene *	.659	.628	.711	.702	.687	.677	5.0*
Chlorobenzene #	.915	.987	.961	1.024	1.037	.985	5.0#
Ethylbenzene *	.397	.404	.452	.426	.408	.417	5.2*
Styrene	.871	.856	.926	.909	.878	.888	3.2
Xylene_(total)	.732	.712	.797	.785	.812	.768	4.3
Toluene-d8	1.178	1.029	1.167	1.143	1.126	1.129	5.3
Bromofluorobenzene	.828	.730	.799	.768	.772	.779	4.7
1,2-Dichloroethane-d4	1.632	1.597	1.599	1.644	1.696	1.633	2.3

FORM VI VOA 1/87 Rev.

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: BATTELLE-PNL Contract: ------

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

Instrument ID: VOA2 Calibration Date: 10/15/92 Time: 9:15

Lab File ID: >V1502 Init. Calib. Date(s): 10/05/92 10/05/92

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

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Chloromethane	#	.649	.540	16.7	#
Bromomethane		1.289	1.135	12.0	
Vinyl Chloride	*	.807	.693	14.1	*
Chloroethane		.488	.448	8.2	
Methylene Chloride		1.129	1.006	10.9	
Acetone		.243	.166	31.7	
Carbon Disulfide		2.543	2.340	8.0	
1,1-Dichloroethene	*	1.086	1.033	4.9	*
1,1-Dichloroethane	#	2.034	1.754	13.8	#
1,2-Dichloroethene (total)		1.281	1.138	11.2	
Chloroform	*	2.992	2.640	11.7	*
1,2-Dichloroethane		1.899	1.647	13.3	
2-Butanone		.111	.085	22.9	
1,1,1-Trichloroethane		2.731	2.393	12.4	
Carbon Tetrachloride		2.625	2.295	12.6	
Vinyl Acetate		1.864	1.541	17.3	
Bromodichloromethane		3.083	2.662	13.7	
1,2-Dichloropropane	*	.301	.273	9.3	*
cis-1,3-Dichloropropene		.532	.488	8.2	
Trichloroethene		.453	.420	7.3	
Dibromochloromethane		.794	.724	8.9	
1,1,2-Trichloroethane		.383	.366	4.3	
Benzene		.717	.672	6.3	
trans-1,3-Dichloropropene		.485	.434	10.5	
Bromoform	#	.621	.568	8.5	#
4-Methyl-2-pentanone		.422	.360	14.7	
2-Hexanone		.297	.253	14.8	
Tetrachloroethene		.503	.474	5.8	
1,1,2,2-Tetrachloroethane		.868	.785	9.5	
Toluene	*	.677	.614	9.4	*
Chlorobenzene	#	.985	.917	6.9	#
Ethylbenzene	*	.417	.367	12.2	*
Styrene		.888	.796	10.4	
Xylene (total)		.768	.674	12.3	
Toluene-d8		1.129	1.045	7.5	
Bromofluorobenzene		.779	.738	5.4	
1,2-Dichloroethane-d4		1.633	1.489	8.9	

FORM VII VOA 1/87 Rev

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: BATTELLE-PNL Contract: ------

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

Lab File ID (Standard): >V1502 Date Analyzed: 10/15/92

Instrument ID: VOA2 Time Analyzed: 9:15

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

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	134632.	13.39	521996.	16.85	432552.	24.53
	UPPER LIMIT	269264.		1043992.		865104.	
	LOWER LIMIT	67316.		260998.		216276.	
	EPA SAMPLE NO.						
01	BLANK	125270.	13.43	498804.	16.83	400841.	24.52
02	92-08312-M1	130007.	13.31	526244.	16.75	435891.	24.46
03	92-08312-M3	127606.	13.35	505814.	16.79	415276.	24.48
04	92-08312-M4	124766.	13.37	510678.	16.80	382232.	24.49
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IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = + 100% of internal stansard 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.

WHC-SD-WM-DP-027
ADDENDUM 3, REV 0-A

TANK C-110

222-S LAB HOT-CELL BLANK

Sample Analysis Raw Data

E04-342

1542

Addendum 3
Rev. 0-4

Due to the large volume,
a copy of the data
supporting the Data
Validation Report and
the Sample Data Summary,

Pages E04-343 thru E04-384,

is available only from
Central Files.

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E5 - TOX/EOX ANALYSIS

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E05-001

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EXTRACTABLE ORGANIC HALIDE REPORT

SAMPLE ANALYSIS REPORTED

Extraction and analysis of two solid samples for the presence of halide is the subject of this report.

SAMPLE DESCRIPTION

Two samples (92-08303 and 92-08305) from Core 37 were received from the hot cells on 10-12-92. The samples were low level sludge and required preparation of each aliquot and extraction prior to analysis.

SAMPLE PREPARATION

Balance Calibration #:	360-06-01-016
Procedure:	PNL-ALO-320.2
Extraction date:	11-17-92

92-08303-F4 and 92-08305-F4, matrix spikes, were spiked with 50 ul of Trichlorobenzene in Ethyl Acetate (990ng/ul), Std. # 52838-34-6, resulting in a final spike concentration of 9.9 ng/ul in the sample.

ANALYSIS METHOD

Procedure: PNL-ALO-320.2

Instrumentation: Property control number WA94539 - Dohrmann microcoulometric-titration system

Location: Lab 701, 325 Building

QUALITY CONTROL

Quality control procedures for this method were followed.

DATA

A hard copy is kept on file in the ALO data management office.

Lab data is also maintained as follows:

Activity	Location
Organic sample date file	325 Bldg. room 934

RESULTS

Sample ALO Number	Sample Description	Halide Conc.
92-08303-F1	CORE-37 COMPOSITE 1 SAMPLE	23 ug/g
92-08303-F2	CORE-37 COMPOSITE 1 SAMPLE DUPE	4 ug/g (J)
92-08303-F3	CORE-37 BLANK	ND
92-08303-F4	CORE-37 COMPOSITE 1 MATRIX SPIKE	63% Recovery
92-08305-F1	CORE-37 COMPOSITE 2 SAMPLE	9 ug/g (J)
92-08305-F2	CORE-37 COMPOSITE 2 SAMPLE DUPE	106 ug/g
92-08305-F4	CORE-37 COMPOSITE 2 MATRIX SPIKE	389% Recovery
J	The value reported is less than the method detection limit (MDL).	

The Halide concentrations are based on the total wet weight of the sample aliquot received from the hot cells.

Each aliquot (F1, F2 and F4) from sample 92-08303 appeared to be similar in color and consistency. It was an rusty orange color and was very wet. The pH was 10.54 and required adjustment to near neutral prior to extraction. The halide content is very low (MDL is 10 ug/g) and the spike recovery is within the expected range.

The base material in each aliquot (F1, F2 and F4) from 92-08305 was similar in color and consistency to that of 92-08303. In addition, there were varying size chunks of dark brown material. The heterogeneous nature of this material probably accounts for the wide range of Halide results obtained on the samples. The Matrix Spike % Recovery is also impacted by the samples' heterogeneous nature and outside the range for expected spike recovery.

ANALYST MJ Steele DATE 11-25-92

REVIEW GW Ross DATE 12/14/92

A:EOXRPT

EXTRACTABLE ORGANIC HALIDE REPORT

SAMPLE ANALYSIS REPORTED

Extraction and analysis of two solid samples for the presence of halide is the subject of this report.

SAMPLE DESCRIPTION

Two samples (92-08309 and 92-08311) from Core 39 were received from the hot cells on 10-12-92. The samples were low level sludge and required preparation and extraction of each aliquot prior to analysis.

SAMPLE PREPARATION

Balance Calibration #:	360-06-01-016
Procedure:	PNL-ALO-320.2
Extraction date:	11-17-92

92-08309-F4 and 92-08311-F4, matrix spikes, were spiked with 50 ul of Trichlorobenzene in Ethyl Acetate (990ng/ul), Std. # 52838-34-6, resulting in a final spike concentration of 9.9 ng/ul in the sample.

ANALYSIS METHOD

Procedure: PNL-ALO-320.2

Instrumentation: Property control number WA94539 - Dohrmann microcoulometric-titration system

Location: Lab 701, 325 Building

QUALITY CONTROL

Quality control procedures for this method were followed.

DATA

A hard copy is kept on file in the ALO data management office.

Lab data is also maintained as follows:

Activity	Location
Organic sample date file	325 Bldg. room 934

RESULTS

Sample ALO Number	Sample Description	Halide Conc.
92-08309-F1	CORE-39 COMPOSITE 1 SAMPLE	ND
92-08309-F2	CORE-39 COMPOSITE 1 SAMPLE DUPE	4 ug/g (J)
92-08309-F3	CORE-39 BLANK	ND
92-08309-F4	CORE-39 COMPOSITE 1 MATRIX SPIKE	45% Recovery
92-08311-F1	CORE-39 COMPOSITE 2 SAMPLE	ND
92-08311-F2	CORE-39 COMPOSITE 2 SAMPLE DUPE	ND
92-08311-F4	CORE-39 COMPOSITE 2 MATRIX SPIKE	67% Recovery
J	The value reported is below the method detection limit (MDL).	

The Halide concentrations are based on the total wet weight of the sample aliquot received from the hot cells.

Each aliquot (F1, F2 and F4) from sample 92-08309 appeared to be similar in color and consistency. It was an rusty orange color and was very wet. The pH was 10.49 and required adjustment to near neutral prior to extraction. The halide content is below the method detection limit (MDL) of 10 ug/g, but the spike recovery is within the acceptable range.

The material in each aliquot (F1, F2 and F4) from 92-08311 was similar in color and consistency to that of 92-08309. The pH was 10.57 and required adjustment to near neutral prior to extraction. The halide content is below MDL, but the spike recovery is within the acceptable range.

ANALYST M J Steele DATE 11-24-92

REVIEW E S Ross DATE 12/15/92

A:EOXRPT

CURRENT DATE: December 16, 1992

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - TOX/EOX

Data Package/Report - Cores 37, 39, 40, & 41

ALO Numbers -	Core 37:	92-08303-F1	92-08303-F2	92-08303-F3	92-08303-F4
		92-08305-F1	92-08305-F2	92-08305-F4	
	Core 39:	92-08309-F1	92-08309-F2	92-08309-F3	92-08309-F4
		92-08311-F1	92-08311-F2	92-08311-F4	
	Core 40:	92-11296-F1	92-11296-F2	92-11296-F3	92-11296-F4
		92-11297-F1	92-11297-F2		
	Core 41:	92-11298-F1	92-11298-F2	92-11298-F4	92-11299-F1
		92-11299-F2			

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

1/26/93
Date

ORGANICS ANALYSIS BENCH SHEET

page 1 of 2

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	EXTRACTION PROCEDURES: PNL-ALO-320	TEST INSTRUCTIONS: 164, 165, 166, 170, 171	ANALYSIS PROCEDURES: PNL-ALO-320
WORK PKG: M90843	EXTRACTION ANALYST: MJL		ANALYST: MJL
MATRIX: Sludge	DATE: 11-17-92		DATE: 11-18-92

SAMPLE NUMBER	WEIGHT (g) ~~VOLUME~~	1.10 H_2SO_4		(ul) Spike		FINAL SOLVENT	FINAL VOLUME
92-08303 F1	.9067	147				Ethyl Acetate	5 ml
F2	1.0248	160					
F3	0	0					
F4	.9389	147		50			
92-08305 F1	1.0823	173					
F2	.9855	157					
F4	1.1186	178		50			
92-08307 F1	.9581	84					
F2	1.0397	90					
F3	0	0					
F4	.9575	84		50			
92-08309 F1	1.2128	153					
F2	1.2510	158					
F4	1.1248	142		50			
92-08311 F1	1.1572	162					
F2	1.0399	146					
F4	1.3428	155		50			
92-08313 F3	0						

SURROGATE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)	SPIKE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)
1,2,4 TCB	50	52838-34-6	990 mg/ml				

COMMENTS: all recd 3g Sodium Sulfate due to wet nature + amount of H_2SO_4 added
* Dark Chunks - various sizes

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL
PNL-ALO-320	0730 MJL 11-17-92	Spent	11-18-92	701		

ORGANICS ANALYSIS BENCH SHEET

page 2 of 2

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	EXTRACTION PROCEDURES: PNL-ALO-320	TEST INSTRUCTIONS: 164, 165, 166, 170, 171	ANALYSIS PROCEDURES: PNL-ALO-320
WORK PKG: M90848	EXTRACTION ANALYST: MJL		ANALYST: MJL
MATRIX: Sludge	DATE: 11-17-92		DATE: 11-18-92

SAMPLE NUMBER	WEIGHT (g) ~~VOLUME~~	~~Spike~~	1.20 (ml) H_2SO_4	Spike		FINAL SOLVENT	FINAL VOLUME
92-11296 F1	.9422		70			Ethyl	5 ml
F2	.8753		65			Acetate	
F3	0		0				
F4	.8808		66	50			
92-11297 F1	.9106		63				
F2	.8767		61				
92-11298 F1	1.0276		76				
F2	.9221		69				
4	.9991		74	50			
92-11299 F1	.8376		53				
F2	.9551		60				

SURROGATE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)	SPIKE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)
1,2,4 TCB	50	5285-94-6	990 mg/ml				

COMMENTS: * all rec'd 3g Sodium Sulfate due to amount of H_2SO_4 added + wetness of the sample

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL
PNL-ALO-320	@ 730 11-17-92 MJL	Spent	11-18-92	701		

pH BENCH SHEET

page 1 of 1

BATTELLE Pacific Northwest Laboratories ACL, Organic Analysis Group File Location:	PROJECT: 551 TI: 164, 165, 166, 170, 171	DATE: 11-5-92	PROCEDURES: PUL-ALO-120 -285
325 Building, Room 306	Work pkg: M10983 M90488	Matrix: S/Aqueous/Liquid	Analyst: MD
ph Meter ID# 164052 - 92	Buffer: 10-582108-(9-6-03) pH = 9.92 pH 7 ID# 31148 Exp. date 5/93 pH 4 ID# 588108 Exp. date 8-11-93		

AMOUNT OF WATER USED FOR pH LEACH 5 ml

REAGENT USED FOR TITRATION:
Name: 1:10 H_2SO_4 ID#: NA Conc: 1:10

Sample Id	Weight/Vol	Starting pH	Reagent added (ul)	Ending pH	(ul/g)
92-8303 pH	.9917	10.54	155	7.01	156.3
92-8305 E3	1.0030	10.25	160	7.03	159.5
92-8307 pH	.9719	10.02	85	7.01	87.5
92-8309 pH	1.1094	10.49	140	6.93	126.2
92-8311 pH	1.0008	10.57	140	6.88	139.9
92-1296 E1	.9418	9.64	70	6.90	74.3
92-1297 E1	1.0152	9.54	70	6.45	68.9
92-1298 E1	.9822	9.62	73	6.87	74.3
92-1299 E1	1.0034	9.61	63	7.07	62.8
92-09437-all	Ø	7.08	None	7.08	NA
Primary Sample					
92-09347all	Ø				
Primary Sample		10.42	none	10.42	NA

HALIDE ANALYZER PERFORMANCE DATA SHEET

Page 1 of 1

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	PROJECT: SST 37, 38, 39, 40, 41 TI: 164, 165, 166, 170, 171	DATE: 11-18-92	PROCEDURES: PNL-AL-320
325 Building, Room 701	Work Pkg: M90487, M90488	Matrix: Sludge	Analyst: MJL

TITRATION CELL PERFORMANCE CHECK: Std: DH4 C ID# 28385 Conc: 984.4

Inject 1-80 (nominal is 2-5) µg chloride directly into titration cell electrolyte. Acceptable recovery is ± 2% of amount injected. Integrate 2 injections in ng and 2 in ug.

Inj. (ul)	Expected (ng Cl⁻) (1)	Results (ng Cl⁻)	% Rec (2)	Accept (Y/N)	Inj. (ul) (25) 11-19-92	Expected (ng Cl⁻) (1)	Results (ng Cl⁻)	% Rec (2)	Accept (Y/N)
5	2422	2459	101	Y	5	2.42	2.38		Y
5	2422	2377	98.1	Y (34)	5	2.42	2.42	100	Y
2	968.8	982	101	Y					

SYSTEM BLANK CHECK: Solvent: Ethyl Acetate Lot#: 03751TY

Injection (ul)	~~ng~~/ug X⁻	COMMENTS:
10	22	Small amount of soot in
10	19	exit tube after completing all
		runs - really very clean

SYSTEM PERFORMANCE CHECK: Total system performance verification. See applicable procedure for analysis explanation.

STANDARD: 1,2,4 Trichlorobenzene ID#: 52838 - 34 - 7 34 - 6 CONC: 990 ng/ul 99 ng/ul

Injection (ul)	Expected (ng/ug) X⁻	Results (ng/ug) X⁻	Results-blk. (ng/ug) X⁻	%Recovery	Accept (Y/N)	After Sample#
10	990	812	791.5	79.9	N	
10		897	876.5	88.5	Y	
10		894	873.5	88.2	Y	
5	4950	4699	4678.5	94.5	Y	
10	990	896	875.5	88.4	Y	8
10		868	847.5	85.6	N	16
10		892	871.5	88.0	Y	16
10		872	851.5	86.0	N	24
10		910	889.5	89.8	Y	24

Acceptable % Recovery Range 88-112	Acceptable Deviation 5	Inst. ID# WA94539	Blank Mean 20.5 ng
Mean %Std Rec 88.4 # Determinations 2	RPD(3) # Determinations 0.3 Analyst: MJL	RSD(4) # Determinations Review: [illegible] Date:	

FORMULAS FOR CALCULATIONS: (1) Volume injected X Concentration (2) % Rec Std = Standard Results X 100 / Vol Std X Conc.

(3) RPD = (R1-R2)[100] / Avg. result (dups) 4) RSD = Standard Deviation X 100 / Avg % Recovery

mjs-eox-921119

EOX ANALYSIS DATA SHEET

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	PROJECT: SST TI: 1647/65	DATE REC'D: 10-12-92 EXTRACTED: 11-17-92 ANALYZED: 11-18-92	PROCEDURES: PNL-ALO-120 PNL-ALO-225 PNL-ALO-320
325 Building, Room 701	Work Pkg: M9N10/2088	Matrix: Sludge	Analyst: MJL
Instrument ID#: WA9453	Balance M&TE#: Hot Cells	Wt. M&TE#: NA	Blank mean: 20.5
Avg. Std. Rec: 88.4	Temperature: 841	Run Time: 12	Review: DAR date: 12/2/92

	SAMPLE ID	WT (g)	DILUTION FACTOR (df) (1)	INJECTION (ul)	RESULTS (ng) (ug)	HALIDE CONTENT (2)	RPD (3)	CORRECTED HALIDE CONTENT (4)	
	92-08303 F1	.9067	1	10	(85)	Possible Contamination			
	F1				62	22.9		25.9	
	F1	↓			53	19.9	136	20.3	
	F2	1.0248			33	6.1		6.9	
	F2	↓			24	1.7	81.6	1.9	
	F3	Blank			11	(1)			
	F3	.9389			96	40.2		45.5	
8	F4	↓			100	42.3	5.2	47.9	
	92-08305* F1	1.0823			37	7.6		8.6	
	* F2	.9855			206	94.1		106.5	
	* F4	1.1186			470	200.9		227.3	
	* F4	↓			481	205.8	2.4	232.8	
	* F1	1.0823			33	5.8	19.6	6.6	
	* F2	.9855			215	98.7	4.8	111.6	
	92-08307 F3	Blank			11	(1)			
16	F1	.9581			33	6.5		7.4	
	F2	1.0397			26	2.6	85.7	3	
	F4	.9575	↓	↓	103	43.1		48.7	

COMMENTS: *see note on extraction prep sheet heterogeneous sample
(1) less than Ethyl Acetate Blank result

FORMULAS FOR CALCULATIONS: (1) 5ml final volume is assumed.

(2) $\frac{[(\text{Results-Blank}) \text{ in ug}][(\text{volume of extract}) \text{ in ul } (df)]}{[(\text{injection volume}) \text{ in ul}][(\text{sample weight}) \text{ in g}]}$

(3) RPD = $\frac{[R1-R2][100]}{\text{Avg. result (dups)}}$ (4) $\frac{\text{Halide Content(2)}}{\text{Standard Recovery}}$

mjs-eox-921119

EOX DATA SHEET
(Continutaion page)

Page 2 of 2

BATTELLE Pacific Northwest Laboratory ACL Organic Analysis Group File Location	PROJECT: SST TI:	DATE REC'D: DATE EXTRACTED: See pg 1 DATE ANALYZED: 11-18-92	PROCEDURES: See pg 1
325 Building, Room 701	WORK PKG: pg 1	MATRIX: Sludge	ANALYST: MJL

SAMPLE ID	WT (g)	DILUTION FACTOR	INJECTION (uL)	RESULTS (mg/L) (ug)	HALIDE CONTENT (2)	RPD (3)	CORRECTED HALIDE CONTENT (4)
92-08309 F3	Blank	1	10	20	(1)		
F1	1.21128			15	(1)		
F2	1.2510			30	3.8		4.3
F4	1.1248			68	21.1		23.9
92-08311 F1	1.1572			11	(1)		
F2	1.0399			12	(1)		
F4	1.3928			79	21.0		23.8
92-11296 F3	Blank			2	(1)		
F1	.9422			33	6.6		7.5
F2	.8753			34	7.7		8.7
F4	.8808			70	28.1		31.8
92-11297 F1	.9106			7	(1)		
F2	.8767			6	(1)		
92-11298 F1	1.0276			13	(1)		
F2	.9221			9	(1)		
F4	.9991			69	24.3		27.5
92-11299 F1	.8376			10	(1)		
F2	.9551	1	10	8	(1)		

24

COMMENTS:

mjs-eox-921119

Core 3,

EOX SPIKE RECOVERY CALCULATION SHEET

% Ave. Std Rec. = 88.4

page 1 of 1

ALL NUMBERS ARE ON A PER INJECTION BASIS: INJECTION SIZE 10 ul

$\bar{X}$ Blank = 20.5

SAMPLE ID#	SAMPLE WEIGHT	INSTRUMENT HALIDE RESULTS (ng/ug)	HALIDE RESULTS-BLANK (1)	MEAN HALIDE (2)	MEAN HALIDE/ GRAM SAMPLE (3)	% SPIKE RECOVERY (4)
92-08303F1	.9067	62	41.5			
F1	↓	53	32.5	37	40.8	—
F2	1.0248	33	12.5			
F2	↓	24	3.5	8	7.8	—
F4	.9389	96	75.5			
F4	↓	100	79.5	77.5	—	62.8
92-8305F1	1.0823	37	16.5			
F1	↓	33	12.5	14.5	13.4	
F2	.9855	206	185.5			
F2	↓	215	194.5	190	192.8	
F4	1.1186	470	449.5			
F4	↓	481	460.5	455	—	389

FORMULAS FOR CALCULATIONS:

(1) Instrument Halide reading (ng/ug)/injection - Mean Blank Halide Value(ng/ug)/injection

(2) $\frac{\text{Sum of (1) per Sample}}{\text{\# values in Sum}}$ (3) $\frac{\text{(2)}}{\text{Wt. Sample in Grams}}$

Calculate Halide Contribution to Spiked Sample from Sample _____ =halide/injection

$\frac{\text{[Sum of all (3)(halide/injection/gram)]}}{\text{\# Values in Sum}}$ X Weight of Spiked Sample in Grams

(4) $\frac{\text{Mean Halide of Spiked Sample (2) - Halide content contributed from sample}}{\text{(\% Average Standard Recovery) (Theoretical value of spike/injection)}}$

Core 39

EOX SPIKE RECOVERY CALCULATION SHEET

page___of___
ALL NUMBERS ARE ON A PER INJECTION BASIS: INJECTION SIZE 10 ul % Blank = 20.5

SAMPLE ID#	SAMPLE WEIGHT	INSTRUMENT HALIDE RESULTS (ng/ug)	HALIDE RESULTS-BLANK (1)	MEAN HALIDE (2)	MEAN HALIDE/ GRAM SAMPLE (3)	% SPIKE RECOVERY (4)
92-08309 F1	1.2112 8	15	<0	NA	NA	
F2	1.2510	30	9.5	9.5	7.59	
F4	1.1248	68	47.5			44.5
92-08311 F1	1.1572	11	<0			
F2	1.0399	12	<0			
F4	1.3928	79	58.5			66.8

FORMULAS FOR CALCULATIONS:

(1) Instrument Halide reading (ng/ug)/injection - Mean Blank Halide Value(ng/ug)/injection

(2) $\frac{\text{Sum of (1) per Sample}}{\text{\# values in Sum}}$ (3) $\frac{\text{(2)}}{\text{Wt. Sample in Grams}}$

Calculate Halide Contribution to Spiked Sample from Sample_____=halide/injection
$\frac{\text{[Sum of all (3)(halide/injection/gram)]}}{\text{\# Values in Sum}}$ X Weight of Spiked Sample in Grams

(4) $\frac{\text{Mean Halide of Spiked Sample (2) - Halide content contributed from sample}}{\text{(\% Average Standard Recovery) (Theoretical value of spike/injection)}}$

CURRENT DATE: January 26, 1993

QUALITY CONTROL DATA REVIEW

I have reviewed the following data for completeness of the QC data and for compliance with project QC requirements as defined in the TPP 16021 and the QAPjP ALO-003.

Analyte - TOX/EOX

Data Package/Report - Core 38

ALO Numbers - 92-09437-F1 92-09437-F2 92-09437-F3 92-09437-F4
92-08307-F1 92-08307-F2 92-08307-F3 92-08307-F4

Kristine J. Kuhl-Klinger
PNL ACL Quality Representative

1/26/93
Date

ORGANIC HALIDE REPORT

SAMPLE ANALYSIS REPORTED

Analysis for the presence of Total Organic Halide (TOX) in one drainable liquid (sample number 92-09437) and Extractable Organic Halide (EOX) in one sludge (sample number 92-08307), both from Core 38, is the subject of this report.

SAMPLE DESCRIPTION

Sample (92-09437) was received on 10/07/92 from the Shielded Analytical Laboratory. It was a yellow drainable liquid.

Aliquots from sample (92-08307) were prepared in the Shielded Analytical Laboratory. The sample aliquots, 92-08307-F1, 92-08307-F2 and 92-08307-F4, plus a blank (92-08307-F3) were received on 10/12/92 from the Shielded Analytical Laboratory. The sample was reddish and was very wet. It appeared to be homogeneous.

SAMPLE PREPARATION

Three aliquots from 92-09437 of approximately 1000 ul each were weighed. They were identified as 92-09437-F1 (sample), 92-09347-F2 (sample dupe) and 92-09437-F4 (spike). Twenty-five milliliters of reagent water was added to each as well as to 92-09437-F3 (method blank). Two microliters of 2,4,6 Trichlorophenol (1 ug/ul in methanol) was added to the spike (92-09437-F4). The entire 25 ml aliquot was subsequently adsorbed on granular activated charcoal and analyzed for TOX.

Each aliquot associated with sample, 92-08307, was extracted into 5 ml of Ethyl Acetate prior to analysis. Fifty microliters of 1,2,4 Trichlorobenzene (990 ng/ul in ethyl acetate) was used to spike 92-08307-F4 prior to extraction. The extracts were subsequently injected onto cerafelt in a quartz boat and analyzed for EOX.

ANALYSIS METHOD

Procedures:	PNL-ALO-321 for Total Organic Halide PNL-ALO-320.2 for Extractable Organic Halide
Instrumentation:	Property control number WA94539 -Dohrmann Adsorption module and Dohrmann microcoulometric-titration system
Location:	Lab 701, 325 Building

QUALITY CONTROL

Quality control procedures for this method were followed.

DATA

A hard copy is kept on file in the ALO data management office.

Lab data is also maintained in the Organic Analysis Group's file located in room 934 of 325 building.

RESULTS

Sample ALO Number	Sample Description	Halide Conc.
92-09437-F1	CORE-38 Sample	920 ppb
92-09437-F2	CORE-38 Sample Duplicate	860 ppb
92-09437-F3	CORE-38 Method Blank	ND
92-09437-F4	CORE-38 Matrix Spike	72% Recovery
92-08307-F1	CORE-38 Sample	7 ug/g (J)
92-08307-F2	CORE-38 Sample Duplicate	3 ug/g (J)
92-08307-F3	CORE-38 Method Blank	ND
92-08307-F4	CORE-38 Matrix Spike	84% Recovery

J Indicates the value is below the method detection limit(MDL).

Due to the limited quantity of sample, a small aliquot was prepared for sample analysis in each case.

The drainable liquid (92-09437) had a pH of 10.42 and was acidified prior to adsorption. The TOX concentration found in the drainable liquid sample (92-09437) is higher than the estimated quantitation limit of 0.5 ug which corresponds to 500 ppb for these samples. The results are still low, but the reproducibility is good (RPD 6.7). The Spike recovery of 73 percent indicates minimal Matrix effect.

The sludge (92-08307) had a pH of 10.02 and required adjustment to near neutral prior to extraction. The EOX concentration found in the sludge (92-08307) is below the MDL of 10 ug/g. The spike recovery of 84 percent indicates no significant matrix effect.

ANALYST M. J. Stutz DATE 12-22-92

REVIEW [illegible] DATE 12/29/92

A:TOX.RPT

TOX SAMPLE PREP WORKSHEET

date: 10-22-92 STANDARD

Compound Trichlorophenol/MEOH Solvent Methanol ID# 52838-35-2

Concentration 1000 ug/ml Quantity added 2 ul Total added 2 ug

Sample ID#	Weight ~~Sample + Vial~~ Vial	Weight Vial+Sample	Weight Sample	(ml) Vol. Water	Vol. Std.
92-09437 F1	24.66114	25.71521	1.0541	25	2
92-09437 F2	24.72790	25.80894	1.0810	~~25~~	
92-09437 F3	24.55199	25.63333	1.0813 ①	25	
92-09437 F4	24.54303	25.62218	1.0792	25	2

BALANCE: M & TE#: WB60304 WEIGHTS: 20.00106 g 20.00004 ACTUAL g.

CALIB DATE: 11-7-92 (due 1-25-93 mjs) CALIB DATE: 3-5-95 (due 1-25-93 mjs)

COMMENTS: slightly less than 1000 ul transfered to a new vial did not remeasure only reweigh ① did not use replaced with empty vial for a blank 12-9-92 mjs

mj Steele

1-25-93

1602

E05-018

HALIDE ANALYZER PERFORMANCE DATA SHEET

Page 1 of 3

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	PROJECT: SST TI: 165,172,173	DATE: 12-9-92	PROCEDURES: PNL-AKO-321
325 Building, Room 701	~~M90483, M90448~~ Work Pkg: M91094	Matrix: Water	Analyst: MJL

TITRATION CELL PERFORMANCE CHECK: Std: NH_4Cl ID# 52838-35-2 Conc: 454.4 ng/ul
Inject 1-80 (nominal is 2-5) ug chloride directly into titration cell electrolyte. Acceptable recovery is + 2% of amount injected. Integrate 2 injections in ng and 2 in ug.

Inj. (ul)	Expected (ng Cl^-) (1)	Results (ng Cl^-)	% Rec (2)	Accept (Y/N)	Inj. (ul)(2)	Expected (ng Cl^-) (1)	Results (ng Cl^-)	% Rec	Accept (Y/N)
5	2422	2462	102	Y	5	2.42	2.46	102	Y
5	2422	2426	100	Y	5	2.42	2.42	100	Y

SYSTEM BLANK CHECK: Solvent: Lot#: Nitrate Wash Blanks

Injection (ul)	~~Cl~~ ng/ug X^-	COMMENTS:
NA	645	
	562	
	721	
↓	682	

SYSTEM PERFORMANCE CHECK: Total system performance verification. See applicable procedure for analysis explanation.
STANDARD: 2,4,6 Trichlorophenol in Methanol ID#: 52838-35-2 CONC: 1 ug/ul

Injection (ul)	Expected (ng/ug) X^-	Results (ng/ug) X^-	Results-blk. (ng/ug) X^-	%Recovery	Accept (Y/N)	After Sample#
5	5000	5710	5064	101	Y	
		5626	4980	99.6	Y	
		5622	4976	99.5	Y	
		5513	4861	97.2	Y	3
		5562	4910	98.2	Y	7
		5492	4840	96.8	Y	11

Acceptable % Recovery Range 97-103	Acceptable Deviation RPD(5)	Inst. ID# WA94539	Blank Mean 622.5
Mean %Std Rec 98.7	RPD(3) # Determinations NA	RSD(4) # Determinations 6	
# Determinations	Analyst: MJ Steele	Review: [illegible]	Date: 12/29/92

FORMULAS FOR CALCULATIONS: (1) Volume Injected X Concentration (2) % Rec Std = Standard Results X 100 / Vol Std X Conc.

(3) RPD = (R1-R2) (100) / Avg. result (dups) 4) RSD = Standard Deviation X 100 / Avg % Recovery

mjs-eox-921119

TOX ANALYSIS DATA SHEET

(continuation page for halide analysis)

PROJECT: SST	MATRIX: Water/liquid	DATE: 12-9-92	BATTELLE PNL ACL
WORK PKG: M90483/ M90418 M51094	UNITS: ng	ANALYST: MJS	325 Bldg, rm 701

SAMPLE ID	Sample Volume(ml)	RESULTS COLUMN 1	RESULTS COLUMN 2	RESULTS (1) (ng/µg) X⁻	(ng/µg) X⁻ SAMPLE MEAN	X⁻ CONTENT (ppb) (2)	RPD (DUPS) (3)	CORRECTED (4) X⁻ CONTEN
1) Blank		579	465	ND		ND	—	
2) 92-01326 F3	5	693	373	40.5		8.1	200	8.2
3) 92-01327 F3		609	397	ND		ND	—	
* 4) 92-01372		652	382	ND		ND	—	
5) 92-01372		721	592	68.5		13.7	200	13.9
6) 92-01326F1		784	557	131.5		26.3	—	26.6
7) 92-01326F2		871	517	218.5		43.7	49.7	44.3
* + 8) 92-01327F1		682	454	29.5		5.9	—	5.9
9) 92-01327 F2		757	489	104.5		20.9	112	21.3
10) 92-09437F3	~~1.0813~~	606	447	ND		ND		
* 11) 92-09437F1	1.0541	1449	808	796.5 + 155.5 =		~~755.6~~ 903		~~765.6~~
12) 92-09437 F2	1.0810	1565	610	912.5		844.1	~~13.6~~	855.2
13) 92-09437 F4	1.0786	2948	713	~~2295.5~~		~~2127.0~~		~~2155~~
14)				2356		2183		2211.9
15)								
16)								
17)								
18)								

PROCEDURE PNL-ALO-321	INSTRUMENT ID#: WA94539	LRB# BNW 53772	pages 113	Mean 652.5 *

AVG STD REC: 98.7	COMMENTS: * run standards, o change cell solution
TEMPERATURE: 848°C ①	+ lost small amount due to leakage
RUN TIME:	① temp check BNW 53772 pg 113

set at 848°C should achieve 800°C ± 10°C well within Organic Halide range - not inorganic ② did not use this was a blank run

(1) Results (ng/ug)X⁻ = (C1 - Blank) + (C2 - Blank) if C2 < Blank then (C1 - Blank) only is used

(2) ugX⁻/L = ng/ml = ppb X⁻ = $\frac{\text{Sample Mean}}{\text{Volume(ml)/1000}}$

(3) RPD = $\frac{|R1 - R2| \times 100}{\text{avg result (dups)}}$ (4) corrected content = $\frac{X^- \text{ content (units)}}{\text{std recovery}}$

* Nitrate Wash Blank mean

ANALYST/DATE: MJ Steele 12-9-92 REVIEWED BY/DATE: [illegible]

pg 3 of 3

TOX SPIKE RECOVERY DATA SHEET
(continuation page for halide analysis)

PROJECT: SST		DATE: 12-9-92	BATTELLE PNL ACL
WORK PKG: M90483	MATRIX: liquid	ANALYST: MJ	325 Bldg. Rm 701

SPIKE INFORMATION:

STD: Trichlorophenol in methanol ID#: 52838-35-2 Conc. 1 mg/ml

SAMPLE ID	VOL.STD ~~(ul)~~ g	ngX⁻ (1) spiked	dilution factor	final conc. (2) ( )
92-09437 F4	1.0792	2000	NA	NA

SPIKE ANALYSIS DATA: See analysis data sheet for complete analysis data.

SAMPLE ID	Volume ~~(ml)~~ g	Spiked sample ng X⁻	Sample ng X⁻ (4)	Spike ng X⁻ (5)	% Spike Rec. (6)
		2386	942.7		
92-09437 F4	1.0792	~~2295.5~~	~~863.2~~	2000	
Corrected for Recovery	1.0792	~~2325.7~~	~~874.6~~	2000	72.6
		2387	955.2		71.6

CALCULATIONS: (3) from results (1) page 2

(4) $\left(\frac{\frac{952}{1.0541} + \frac{912.5}{1.0810}}{2}\right) 1.0792 = (799.85)(1.0792) = 863.2$

873.55 1-25-93 mg/l 942.7 mg/l 1-25-93

COMMENTS: $\left(\frac{\frac{952}{1.0541} + \frac{912.5}{1.0810}}{2}\right) 1.0792 = 942.7$ 873.55

873.55

(1) Volume injected x Concentration (2) Final Conc. = $\frac{\text{ngX}^- \text{ spiked}}{\text{dilution factor}}$ (3) ng X⁻ = ng X⁻ sample - ng X⁻ blank

(4) ng X⁻ Sample =(Mean of the ng X⁻/g sample) X (weight of spiked sample)

(5) ng X⁻ Spike = 3-4 (6) % Spike Recovery = $\frac{3-4}{(2) \times (\text{Volume})}$

REPORT PREPARED BY MJ Steele DATE: 12-22-93

REVIEWED BY EA Ross DATE: 12/23/92

ORGANICS ANALYSIS BENCH SHEET

Battelle Memorial Institute Pacific Northwest Laboratories	EXTRACTION METHOD	DATE	EXTRACTION ANALYST	ANALYSIS METHOD	ANALYST
JOB NAME: pH - SST	PUL-A40-200	11-5-92	MJL		
MATRIX: Solid / Liquid					

SAMPLE NUMBER	WEIGHT VOLUME	Temp	pH	H_2SO_4 1:10	pH	~~FINAL SOLVENT~~	FINAL VOLUME
92-8303-pH	.9917		10.54	125 ul	7.01		
92-8305-E3	1.0030		10.25	160	7.03		
8307-pH	.9719		10.02	85 ul	7.01		
8309-pH	1.1094		10.49	150 ul	6.93		
8311-pH	1.0509		10.57	140 ul	6.88		
11296-E1	.9418		9.64	70 ul	6.90		
11297-E1	1.0152		9.54	70 ul	6.45		
11298-E1	.9822		9.62	73 ul	6.87		
11299-E1	1.0037		9.61	63 ul	7.07		
12-21-92 MJL							
92-8312 ~~9437~~ - primary sample			7.08	0	7.08		
MJL 12-21-92 added 5 ml DIW each except 9437							
92-9437 ~~9347~~ - primary sample			10.42	0	10.42		

SURROGATE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)	SPIKE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)
—							

COMMENTS:

pH - meter 16:44 52-92 pH 10 Buffer 882108 exp 9-6-93
12 point 7 4 Calib pH 2 9.92
(7) #31148 5/93
(4) #558108 8-11-93

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL

ORGANICS ANALYSIS BENCH SHEET

page 1 of 2

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	EXTRACTION PROCEDURES: PNL-ALO-320	TEST INSTRUCTIONS: 164, 165, 166, 170, 171	ANALYSIS PROCEDURES: PNL-ALO-320
WORK PKG: M9C843	EXTRACTION ANALYST: [illegible]		ANALYST: MJL
MATRIX: Sludge	DATE: 11-17-92		DATE: 11-18-92

SAMPLE NUMBER	WEIGHT (g) ~~VOLUME~~	1.10 H_2SO_4		(2) Spike		FINAL SOLVENT	FINAL VOLUME
92-0303F1	.9067	147				Ethyl	5 ml
F2	1.0248	160				Hexane	
F3	0	0					
F4	.9384	147		50			
92-0305F1	1.0823	173					
F2	.9855	167					
F4	1.1186	178		50			
92-0307F1	.9551	84					
F2	1.0397	90					
F3	0	0					
F4	.9575	84		50			
92-0309F1	1.2128	153					
F2	1.2510	158					
F4	1.1248	142		50			
92-0311F1	1.1572	162					
F2	1.0399	146					
F4	1.3925	195		50			
92-0313F3	0						

SURROGATE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)	SPIKE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)
1,2,4 TCB	50	52838-34-6	990 mg/ml				

COMMENTS: all recd 3g Sodium Sulfate due to wet nature & amount of H_2SO_4 added
* Mark Checks - various amps

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL
PNL-ALO-320	0730	Spent	11-18-92	201		
	11-17-92					

ORGANICS ANALYSIS BENCH SHEET

page 2 of 2

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	EXTRACTION PROCEDURES: PNL-ALO-320	TEST INSTRUCTIONS: 164, 165, 166, 170, 171	ANALYSIS PROCEDURES: PNL-ALO-320
WORK PKG: M90848	EXTRACTION ANALYST: MJL		ANALYST: MJL
MATRIX: Sludge	DATE: 11-17-92		DATE: 11-18-92

SAMPLE NUMBER	WEIGHT (g) ~~VOLUME~~	~~Spike~~	1.70 H2SO4	(ml) Spike		FINAL SOLVENT	FINAL VOLUME
92-1296 F1	.9422		70			Ethyl	5 ml
F2	.8753		65			Acetate	
F3	0		0				
F4	.8808		66	50			
92-1297 F1	.9106		63				
F2	.8767		61				
92-1298 F1	1.0276		76				
F2	.9221		69				
4	.9991		74	50			
92-1299 F1	.8376		53				
F2	.9551		60				

SURROGATE NAME	VOLUME (ul)	ID NUMBER	CONC. ~~(ug/ml)~~	SPIKE NAME	VOLUME (ul)	ID NUMBER	CONC. (ug/ml)
1,2,4 TCB	50	528-94-6	990 ug/ml				

COMMENTS: all rec'd 3g Sodium Sulfate due to amount of H_2SO_4 added + Wetness of the sample

CHAIN OF CUSTODY

FRACTION & METHOD	SAMPLE TIME OUT DATE/INITIAL	SAMPLE TIME IN DATE/INITIAL	RESIDUE TIME OUT DATE	RESIDUE LOCATION REFRIG. #	ANALYSIS TIME OUT DATE	ANALYSIS TIME IN INITIAL
PNL-ALO-320	0730 11-17-92 MJL	Spent	11-18-92	701		

EOX ANALYSIS DATA SHEET

Page 1 of 2

BATTELLE Pacific Northwest Laboratory ACL, Organic Analysis Group File Location:	PROJECT: SST TI: 164+165	DATE REC'D: 10-12-92 EXTRACTED: 11-17-92 ANALYZED: 11-18-92	PROCEDURES: PNL-ALO-120 PNL-ALO-225 PNL-ALO-320
325 Building, Room 701	Work Pkg: M9N153/2088	Matrix: Sludge	Analyst: MJL
Instrument ID#: WA94537	Balance H&TE#: Hot Cell	Wt. H&TE#: NA	Blank mean: 20.5
Avg. Std. Rec: 88.4	Temperature: 84	Run Time: 12	Review: date:

	SAMPLE ID	WT (g)	DILUTION FACTOR (df) (1)	INJECTION (ul)	RESULTS (mg) (ug)	HALIDE CONTENT (2) (mg/kg)	RPD (3)	CORRECTED HALIDE CONTENT(4) (mg/kg)	
	92-08303 F1	.9067	1	10	(85)	Possible Contam.			
	F1				62	22.9		25.9	
	F1	↓			53	17.9		20.3	T 13.75
	F2	1.0248			33	6.1		6.9	
	F2	↓			24	1.7		1.9	
	F3	Blank			11	(1)			
	F4	.9389			96	40.2		45.5	T 46
8	↓ F4	↓			100	42.3	5.2	47.9	
	92-08305* F1	1.0823			37	7.6		8.6	
	* F2	.9855			206	94.1		106.5	
	* F4	1.1186			470	200.9		227.3	
	* F4	↓			481	205.8	2.4	232.8	
	* F1	1.0823			33	5.8	19.6	6.6	
	* F2	.9855			215	98.7	4.8	111.6	
	92-08307 F3	Blank			11	(1)			
16	F1	.9581			33	6.5		7.4	T 5.5
	F2	1.0397			26	2.6		3	
	F4	.9575	↓	↓	103	43.1		48.7	

COMMENTS: *see note on extraction prep sheet heterogeneous sample
(1) less than Ethyl Acetate Blank result

FORMULAS FOR CALCULATIONS: (1) 5ml final volume is assumed.

(2) $\frac{[(\text{Results-Blank}) \text{ in ug}][(\text{volume of extract}) \text{ in ul (df)}]}{[(\text{injection volume}) \text{ in ul}][(\text{sample weight}) \text{ in g}]}$

(3) RPD = $\frac{[R1-R2][100]}{\text{Avg. result (dups)}}$ (4) $\frac{\text{Halide Content(2)}}{\text{Standard Recovery}}$

mjs-eox-921119

EOX DATA SHEET
(Continutaion page)

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BATTELLE Pacific Northwest Laboratory ACL Organic Analysis Group File Location	PROJECT: SST TI: 164 & 165	DATE REC'D: DATE EXTRACTED: see pg 1 DATE ANALYZED: 11-18-92	PROCEDURES: see pg 1
325 Building, Room 701	WORK PKG: pg 1	MATRIX: Sludge	ANALYST: MJd

SAMPLE ID	WT (g)	DILUTION FACTOR	INJECTION (ul)	RESULTS (ng) (ug)	HALIDE CONTENT (2)	RPD (3)	CORRECTED HALIDE CONTENT (4)
92-08309 F3	Blank	1	10	20	(1)		
F1	1.21128			15	(1)		
F2	1.2510			30	3.8		4.3
F4	1.1248			68	21.1		23.9
92-08311 F1	1.1572			11	(1)		
F2	1.0399			12	(1)		
F4	1.3928			79	21.0		23.8
92-11296 F3	Blank			2	(1)		
F1	.9422			33	6.6		7.5
F2	.8753			34	7.7		8.7
F4	.8808			70	28.1		31.8
92-11297 F1	.9106			7	(1)		
F2	.8767			6	(1)		
92-11298 F1	1.0276			13	(1)		
F2	.9221			9	(1)		
F4	.9991			69	24.3		27.5
92-11299 F1	.8376	↓	↓	10	(1)		
F2	.9551	1	10	8	(1)		

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COMMENTS:

mjs-eox-921119

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

92-08312-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) WATER Lab Sample ID: C110222SHCBLANK

Sample wt/vol: 5 (g/mL) mL Lab File ID: >V1504

Level: (low/med) LOW Date Received: 10/07/92

% Moisture: not dec.---- Date Analyzed: 10/15/92

Column: (pack/cap) CAP 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	5.	U
67-64-1	Acetone	10.	U
75-15-0	Carbon Disulfide	5.	U
75-35-4	1,1-Dichloroethene	5.	U
75-34-3	1,1-Dichloroethane	5.	U
540-59-0	1,2-Dichloroethene (total)	5.	U
67-66-3	Chloroform	5.	U
107-02-2	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	5.	U
124-48-1	Dibromochloromethane	5.	U
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	5.	U
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	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
133-02-7	Xylene (total)	5.	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
92-08312-M1

Lab Name: BATTELLE-PNL Contract: ------

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

Matrix: (soil/water) WATER Lab Sample ID: C110222SHCBLANK

Sample wt/vol: 5. (g/mL) mL Lab File ID: >V1504

Level: (low/med) LOW Date Received: 10/07/92

% Moisture: not dec.--- Date Analyzed: 10/15/92

Column: CAP Dilution Factor: 1.00

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

FORM I VOA-TIC 1/87 Rev.

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EOX SPIKE RECOVERY CALCULATION SHEET

page 1 of 1
ALL NUMBERS ARE ON A PER INJECTION BASIS: INJECTION SIZE 10 ul $\bar{X}$ Blank = 20.5

SAMPLE ID#	SAMPLE WEIGHT	INSTRUMENT HALIDE RESULTS (ng/ug)	HALIDE RESULTS-BLANK (1)	MEAN HALIDE (2)	MEAN HALIDE/ GRAM SAMPLE (3)	% SPIKE RECOVERY (4)
92-8307 F1	.9581	33	12.5	NA	~~12~~ 13	
F2	1.0397	26	5.5	~~NA~~ NA	5.3	
F4	.9575	103	82.5			84.3

FORMULAS FOR CALCULATIONS:

(1) Instrument Halide reading (ng/ug)/injection - Mean Blank Halide Value(ng/ug)/injection

(2) $\frac{\text{Sum of (1) per Sample}}{\text{\# values in Sum}}$ (3) $\frac{\text{(2)}}{\text{Wt. Sample in Grams}}$

Calculate Halide Contribution to Spiked Sample from Sample_____=halide/injection
$\frac{\text{[Sum of all (3)(halide/injection/gram)]}}{\text{\# Values in Sum}}$ X Weight of Spiked Sample in Grams

(4) $\frac{\text{Mean Halide of Spiked Sample (2) - Halide content contributed from sample}}{\text{(\% Average Standard Recovery) (Theoretical value of spike/injection)}}$

~~103 - 9~~ = 25.93 mgd
~~99~~

$$\left(\frac{\left(\frac{12.5}{.9581}\right)+\left(\frac{5.5}{1.0397}\right)}{2}\right) .9575 = (9.1683)(.95)$$

$$93.32 - 9.95$$

$$\frac{82.5 - 8.8}{(.884)(99)} = 8.7787$$