0049925

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

NOV 3 1998

98-EAP-588

NOV 1998
RECEIVED
EDMC

Mr. T. A. Wooley
Nuclear Waste Program
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336

Dear Mr. Wooley:

CLOSURE CERTIFICATION OF THE WASTE ENCAPSULATION AND STORAGE FACILITY (WESF) TANK 100 (TK-100) SYSTEM

References: (1) Ltr. Ted A. Wooley, Ecology, to James E. Rasmussen, RL, "Approval of the Waste Encapsulation and Storage Facility (WESF) Tank 100 System Closure Plan, Rev. dtd. September 3, 1998," dtd. September 15, 1998. 49617

(2) Ltr. J. E. Rasmussen, RL, to T. A. Wooley, Ecology, "Transmittal of the Waste Encapsulation and Storage Facility (WESF) Tank 100 System closure Plan," 98-EAP-494, dtd. September 3, 1998.

Enclosed are the Professional Engineer (PE) Certification of Closure and the Owner/Operator Certification of Closure for the WESF TK-100 System. These signatures certify that the closure of the TK-100 System was implemented in accordance with the specifications of the closure plan (References 1 and 2). These certifications are required by Washington Administrative Code (WAC) 173-303-610(6), and were prepared in accordance with Section 7.0 of the TK-100 System Closure Plan. Also included are the final analytical results of the piping rinsate as required by the TK-100 System Closure Plan.

The TK-100 System was used as a catch tank to transfer low-level radioactive liquid waste from WESF through B Plant to the Double-Shell Tank System. Although the TK-100 System has been managed as a low-level radioactive wastes storage system not subject to the requirements of the Resource Conservation and Recovery Act, it was recently determined that the system had been storing mixed waste. Therefore, the TK-100 System is being closed in accordance with the requirements of WAC 173-303-610.

Closure activities were completed in September 1998 and included sampling and analysis of the piping rinsate; removing the tank to a permitted treatment, storage, and disposal facility; and decontaminating and visually inspecting the vault. The results of these activities indicate that the unit can be clean closed.

Should you have any questions, please contact Ellen M. Mattlin, of my staff, on (509) 376-2385.

Sincerely,

for

James E. Rasmussen, Director
Environmental Assurance, Permits,
and Policy Division
DOE Richland Operations Office

EAP:EMM

William D. Adair

William D. Adair, Director
Environmental Protection
Responsible Party for
Fluor Daniel Hanford, Inc.

Enclosure:
TK-100 System Closure Certification
and Piping Rinsate Analysis Results

cc w/encl:
Administrative Record
J. R. Wilkinson, CTUIR
Donna L. Powaukee, NPT
R. C. Bowman, WMH
N. M. Menard, WMH
A. L. Prignano, WMH
Russell Jim, YIN

cc w/o encl:
W. D. Adair, FDH
E. H. Engelmann, WMH
J. R. Winterhalder, WMH

ENCLOSURE

Tank 100 System Closure
Certification Statements
And
Piping Rinsate Analysis Results

Consisting of 112 pages,
including cover page

CERTIFICATION OF CLOSURE FOR
THE WASTE ENCAPSULATION AND STORAGE FACILITY
TANK 100 SYSTEM
Hanford Site
U.S. Department of Energy, Richland Operation Office

We, the undersigned, hereby certify that, to the best of our knowledge and belief, all closure activities were performed in accordance with the specifications identified in the approved closure plan,

John D. Wagoner — 11/3/98

Owner/Operator
J. D. Wagoner, Manager
U. S. Department of Energy
Richland Operations Office

Date

9-29-98

Co-Operator
David B. Van Leuven, Vice President
Fluor Daniel Hanford, Inc.

Date

PROFESSIONAL ENGINEER'S CERTIFICATION STATEMENT

WASTE ENCAPSULATION AND STORAGE FACILITY
TANK 100 SYSTEM CLOSURE

The undersigned hereby certifies that closure activities for closure of the Tank 100 System at the Hanford Site Waste Encapsulation and Storage Facility (WESF) were performed in accordance with the technical specifications of *Tank 100 System Closure Plan* approved September 15, 1998 by the State of Washington Department of Ecology (Kennewick, Washington), as discussed in the attached Specifications and Limitations of Professional Engineer's Certification. This certification is based on my observation of the tank removal and of tank vault floor and sump cleaning activities, my inspection of the vault floor and sump, and my review of pertinent documents.

Marvin H. Hyman, P.E.
Washington #32900
Bechtel Hanford, Inc.

MARVIN H. HYMAN
STATE OF WASHINGTON
32900
REGISTERED
PROFESSIONAL ENGINEER

9-21-98

EXPIRES: 12/17/98

SPECIFICATIONS AND LIMITATIONS OF PROFESSIONAL ENGINEER'S CERTIFICATION

WASTE ENCAPSULATION AND STORAGE FACILITY TANK 100 SYSTEM CLOSURE

The Tank 100 System at the Waste Encapsulation and Storage Facility (WESF) was contaminated with 1,1,1-trichloroethane and was closed under the direction of B&W Hanford Company in accordance with the technical specifications of *Tank 100 System Closure Plan* approved September 15, 1998 by the State of Washington Department of Ecology. Said Closure Plan requires decontamination of piping to less than detectable levels of 1,1,1-trichloroethane in piping rinsate, removal of Tank 100, and decontamination of the tank vault to the "clean debris surface " standard as defined in 40 *Code of Federal Regulations* 268.45, Table 1. These activities were carried out with piping decontamination completed in July 1998, tank removal in August 1998, and vault decontamination completed in September 1998. Section 5.1 of the Closure Plan cites the Sampling and Analysis Plan (SAP) and analytical report that support appropriate decontamination of piping. Section 5.2 of the Closure Plan requires sealing of tank penetrations, wrapping of Tank 100 in plastic, removal of Tank 100 to a permitted TSD (B Plant Complex), loading of and transport of Tank 100 in a concrete box on a flatbed trailer. Section 5.3 of the Closure Plan requires that remaining waste or waste residues be removed from the vault by sweeping, vacuuming, hand-brushing, wet wiping, and or washing. Section 5.4 of the Closure Plan requires visual inspection of the vault floor and sump with documentation in a field logbook.

Observations, inspections, and documents reviews were conducted in accordance with WAC 173-303-610(6) to certify independently that the closure activities were performed in accordance with Sections 5.1, 5.2, 5.3 and 5.4 of the Closure Plan, and not to certify appropriateness of the closure requirements. Copies of all pages of the field logbook (field notebook), showing dates and approximate times of tank removal steps and vault floor and sump decontamination and inspection, with observations, are attached herewith.

Regarding piping decontamination per Section 5.1, the cited SAP was reviewed. The SAP calls for analysis according to SAS Laboratory quality assurance/quality control (QA/QC) requirements for 1,1,1-trichloroethane with Level D data validation. The SAS Laboratory report and data validation package were reviewed, and all piping rinsate samples had less than detectable levels of 1,1,1-trichloroethane and the QA/QC requirements were met.

Regarding tank removal per Section 5.2, the tank was wrapped in plastic as it was being removed in a manner that precluded observation whether tank penetrations had been sealed. Review of the B&W Hanford Company inspection plan indicated that the quality control officer verified and signed on August 6, 1998 that all penetrations into Tank 100 are sealed (blanked, plugged, or welded). The entire tank removal process on August 16, 1998 was observed, along with transport of the tank in an appropriate box on a flatbed

trailer to the tunnel leading into the B Plant canyon. According to Revision 5 of the B Plant Dangerous Waste Permit Application, the TSD I.D. Number is WA7890008967.

Regarding Section 5.3, prior to tank removal most of the vault walls had been sprayed with a white coating as a contaminant fixative. Initial decontamination of the floor and sump was observed on September 3, 1998. Sweeping with brooms and a shovel, hand brushing, and water washing of the floor were done after pumping liquid from the sump. However, some of the white coating had splashed on the floor, preventing inspection to ensure meeting the "clean debris surface" standard. The next day the white coating spots on the floor were removed with a hand-held powered wire brush that left some dark marks, but these marks did not interfere with inspection. Sludge was then removed by hand from the sump, and the sump walls and bottom were hand wiped.

Regarding Section 5.4, the vault floor and sump were inspected on September 4, 1998 and met the "clean debris surface" standard in that only slight streaks and minor discolorations were visible.

HALO
Laboratory Client Services

Memo

To: Fen Simmons

From: Sandra K Walls

CC:

Date: 08/31/98

Re: SDG# FR3-8040

FINAL COPY

SDG#: FR3-8040

SAF#: R98-055 Tank 100 - Drains

Sample Numbers: K0N378, K0N379, K0N380, K0N381, K0N382, K0N383, K0N384 & K0N385

NHC
Numatec
Hanford Corporation

An SGN/Cogema, Inc. Company

AUG 1998
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SDLA

Internal Memo

8C530-FAST-98-088

From: Special Analytical Support
Phone: 373-4771 S3-90
Date: August 24, 1998
Subject: ANALYTICAL REPORT FOR WASTE ENCAPSULATION & STORAGE FACILITY FLOOR DRAINS - FR3-8040

RECORD COPY

To: K. N. Pool T6-03

cc: G. A. Fies S3-90 GAF
R. S. Viswanath S3-90 RSV
Project File

Attached is the analytical report in support of Waste Encapsulation & Storage Facility (WESF), Floor Drains project.

If you have any questions regarding analysis, please contact Dr. R. S. Viswanath at 376-9223 or myself at 373-4771.

L. L. Lockrem, Manager
Special Analytical Support

sir

Attachments

8C530-FAST-98-088

Attachment

ANALYTICAL REPORT

for

SAS PROJECT FR3-8040
WESF FLOOR DRAINS

Consisting of
104 pages

8C530-FAST-98-088

ANALYTICAL REPORT

for

SAS PROJECT FR3-8040
WESF FLOOR DRAINS

RECORD COPY

prepared for

Waste Management Federal Services of Hanford
P.O. Box 700
Richland, Washington 99352

August, 1998

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Project Sampling and Analysis Case Narrative

RECORD COPY

INTRODUCTION

On July 15, 1998, Special Analytical Support (SAS) personnel received 8 samples from Sampling and Mobile Laboratory (SML) personnel. The samples were collected from the floor drains of the Waste Encapsulation and Storage Facility (WESF) to determine whether the floor drain piping and tank 100 sump were free from contamination with 1,1,1-trichloroethane (TCA). The samples were transported with chain of custody to the 622R facility for analysis.

SAMPLE COLLECTION

Sample collection was performed by SML according to Sampling and Analysis Plan (SAP) HNF-2698, Rev. 1, and Sampling Authorization Form (SAF) R98-055. The sampling logbook notes describe the sampling event, sample point, sampling method, and other sampling information.

ANALYSIS REQUESTED

SAS Sample ID	Customer ID	Date Sampled	Analysis Requested
FR3-8040-01	K0N378	7/14/98	VOA - 1,1,1-Trichloroethane
FR3-8040-02	K0N379	7/15/98	VOA - 1,1,1-Trichloroethane
FR3-8040-03	K0N380	7/15/98	VOA - 1,1,1-Trichloroethane
FR3-8040-04	K0N381	7/15/98	VOA - 1,1,1-Trichloroethane
FR3-8040-05	K0N382	7/15/98	VOA - 1,1,1-Trichloroethane
FR3-8040-06	K0N383	7/15/98	VOA - 1,1,1-Trichloroethane
FR3-8040-07	K0N384	7/15/98	VOA - 1,1,1-Trichloroethane
FR3-8040-08	K0N385	7/15/98	VOA - 1,1,1-Trichloroethane

RECORD COPY

8C530-FAST-98-088

ANALYTICAL RESULTS

SAS Sample ID	Customer ID	Date Sampled	Time Sampled	Analytical Result
FR3-8040-01	K0N378	7/14/98	2300	<5.0 ug/L
FR3-8040-02	K0N379	7/15/98	0300	<5.0 ug/L
FR3-8040-03	K0N380	7/15/98	0320	<5.0 ug/L
FR3-8040-04	K0N381	7/15/98	0350	<5.0 ug/L
FR3-8040-05	K0N382	7/15/98	0400	<5.0 ug/L
FR3-8040-06	K0N383	7/15/98	0420	<5.0 ug/L
FR3-8040-07	K0N384	7/15/98	0445	<5.0 ug/L
FR3-8040-08	K0N385	7/15/98	0445	<5.0 ug/L

ANALYSIS

Volatile organic analytes (VOAs) in liquid samples were determined by GC/MS following EPA SW-846 methods 8260B and 5030B. In this purge and trap technique, the samples were purged with helium gas, the analytes were trapped and concentrated on a multisorbent trap and then rapidly desorbed from the trap, and injected onto the GC column. The VOAs were separated on the column and detected by means of a mass-selective detector.

The instrumentation consisted of an OI Analytical 4460A sample concentrator, with a 16 position autosampler, connected to a Hewlett Packard 5890 Series II gas chromatograph (GC) with a 5971 mass-selective detector (MS). The concentrator had a multisorbent trap containing Tenax, silica gel, and charcoal. The concentrator improved the efficiency of the injection onto the GC column and allowed low detection limits to be achieved. An Rtx-502.2, 105 m length, 0.53 mm internal diameter, 3 um film thickness, capillary colum was used.

Eight water samples were analyzed for TCA using 5 ml aliquots. TCA was not detected above the quantification limit (<5.0 ug/L) in the samples.

Initial calibration of the instrument was established on July 16, 1998. The samples were analyzed on July 17 - 18, 1998. No anomalies occured during analysis.

Scientist Signature: Douglas B Barfoey Date: 8/24/98

QUALITY CONTROL

All quality control protocol established in the EPA methods and SAP were met. A discussion of the specific requirements follows:

Logbooks

Sample and standard preparation was documented in logbook HNF-N-91-1. Instrument maintenance and run log was documented in WHC-N-1025-4.

MS Tunes and BFB Spectral Scans

Before initial calibration of the instrument, the MS was tuned using a Standard Spectra AutoTune and BFB (4-bromofluorobenzene) Dynamic Target Tune. The tuning compound, BFB, was added to each standard, sample, blank, and matrix spike analyzed. The instrument tuning was checked each day of analysis by performing a spectral scan of the BFB peak and verifying the mass intensity criteria were met. All tunes are included in this report and the BFB acceptance criteria is shown on the BFB reports.

Initial Calibration of the Instrument

Certified calibration standards, containing approximately 60 target compounds, were purchased from a vendor and diluted to the required concentrations in the laboratory. A 5-point calibration curve was established at sample concentrations of 5, 10, 25, 50, and 100 ug/L for the target compound (TCA), system performance check compounds (SPCCs), calibration check compounds (CCCs), and surrogates. The average response factor method, based upon internal standards, was used to calculate the amount of analyte in the samples.

EPA method 8260B required the CCCs (1,1-dichloroethane, toluene, chloroform, ethylbenzene, 1,2-dichloropropane, and vinyl chloride) to have a relative standard deviation (RSD) $\leq$30% and target analytes to have an RSD $\leq$15%. An RSD of $\leq$7.78% was achieved for the CCCs and 4.06% was achieved for TCA. Initial calibration data is included in this report.

Method Detection Limit (MDL)

On May 22, 1998, the MDL for TCA was determined to be 0.48 ug/L.

System Performance Check

Method 8260B required the mean response factors of the system performance check compounds (SPCCs) to exceed a minimum value. The SPCCs and their required minimum response factors were chloromethane (0.10), 1,1-dichloroethane (0.10), bromoform (0.10), chlorobenzene (0.30), and 1,1,2,2-tetrachloroethane (0.30). The minimum response factor requirement was met for this sample set. This data is included in this report.

Calibration Verification

A calibration verification standard (CVS) was analyzed daily to check the validity of the initial calibration. Method 8260B required the response factors of the target analyte (TCA) and calibration check compounds (CCCs) to be within 20% of the average response factor obtained during initial calibration or the initial calibration is not valid. The CCCs required by method 8260B were 1,1-dichloroethene, toluene, chloroform, ethylbenzene, 1,2-dichloropropane, and vinyl chloride. TCA and the CCCs were within acceptable limits. This data is included in this report.

Method Blanks

A method blank was analyzed each day of analysis to ensure the analytical system was free of contamination. The concentrations of TCA detected in the method blanks were below the MDL established for TCA. This data is included in this report.

Matrix Spikes

A matrix spike and matrix spike duplicate were analyzed with this sample set. Five compounds and TCA were spiked into an aliquot of sample KON379 to add a concentration of 50 ug/L of each to the sample. The recoveries of the spiked compounds were within the 70 - 130% range required by method 8260B. The results are summarized in the Matrix Spike, Matrix Spike Duplicate, and Laboratory Control Sample Summary Table. The raw data is included in this report.

Laboratory Control Sample (LCS)

An LCS was analyzed with this sample set. An LCS is an aliquot of reagent water spiked with the same analytes and to the same concentration as the matrix spike. The recoveries of the spiked compounds were within the 70 - 130% range required by method 8260B. This analysis would be used to show the instrument was performing correctly if matrix interference was noted in the matrix spike analysis. The results are summarized in the Matrix Spike, Matrix Spike Duplicate, and Laboratory Control Sample Summary Table. The raw data is included in this report.

Surrogate Spikes

Four surrogate compounds were spiked into each sample, blank, and matrix spike just prior to analysis. The recoveries of the surrogate compounds were within the 70 - 130% range required by method 8260B. The results are summarized in the Surrogate Standards Summary Table. The raw data is included in this report.

Internal Standards

Three internal standard compounds were added to each standard, sample, blank, and matrix spike at a concentration of 50 ug/L. The response (EICP area) for each internal standard was required by method 8260B to be within 50 - 200% of the response of the daily CVS. Retention times for each compound were required to be +/-30 seconds from that in the daily CVS. The internal standards acceptance criteria was met for all the samples in this sample set. The results are summarized in the Internal Standards Summary Table. The raw data is included in this report.

REFERENCES

EPA, July 1992, *Test Methods for Evaluating Solid Waste (SW-846)*, Third Edition; U.S. Environmental Protection Agency, Washington, D.C.

Sampling and Analysis Plan (SAP)

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	F. M. Simmons	Date 7-1-98
Project Title/Work Order		EDT No. ~~620315~~
B PLANT/WESF PROJECT, HNF-2698, REV. 0, SAMPLING AND ANALYSIS PLAN (SAP) FOR WESF DRAINS AND TK-100 SUMP, Revision 1		ECN No. 139465

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
B&W Hanford Company					
T. G. Beam	S6-51				X
D. D. Beers	S6-81				X
L. D. Brist	S6-51				X
S. D. Godfrey	S4-49				X
E. D. Robbins	S6-60				X
P. T. Saueressig	S6-81				X
F. M. Simmons (2)	S6-60				X
ALA					
D. B. Bonfoey	S3-90				X
COGEMA Engineering Corporation					
J. Y. Smith	S3-90				X
R. S. Viswanath	S3-90				X
Fluor Daniel Hanford, Inc.					
G. W. Reddick, Jr.	N1-26				X
Numatec Hanford Corporation					
L. L. Lockrem	S3-90				X
Waste Management Federal Services of Hanford, Inc.					
B. M. Colley	H6-14				X
D. L. Edwards	H1-12				X
D. B. Hardy	T6-12				X
J. G. Hogan	H1-12				X
K. N. Pool	H6-14				X
S. M. Steele	H6-14				X
U.S. Department of Energy, Richland Operations Office					
D. T. Evans	R3-79				X
Washington State Department of Ecology					
T. A. Wooley	B5-18				X

S

ENGINEERING CHANGE NOTICE	Page 1 of 2	1. ECN 639465 Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [X] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	F. H. Simmons / 16E03 / 372-0413	[] Yes [X] No	7/1/98
	6. Project Title/No./Work Order No.	7. Bldg./Sys./Fac. No.	8. Approval Designator
	HNF-2698	WESF	NA
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) HNF-2698	10. Related ECN No(s).	11. Related PO No.
		N/A	N/A

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 12b) [X] No (NA Blks. 12b, 12c, 12d)	N/A	N/A Design Authority/Cog. Engineer Signature & Date	N/A Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [] Yes [X] No

Section 1.0

Remove "To prevent high exposure during sampling of the drains, TK-100 will be removed into B Plant canyon and a new tank will be placed in the pit before any floor drain samples are taken."

Change "TK-100 will be moved into B Plant." To "TK-100 will be removed from the vault."

No USQ was required on original sampling plan. A USQ and ECN will be done for the sampling work in pkg. 9C-98-00340/0.

14a. Justification (mark one)

Criteria Change	[]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[X]	Const. Error/Omission	[]	Design Error/Omission	[]

14b. Justification Details

Due to water intrusion in the TK-100, the source is now shielded and sampling can proceed prior to TK-100 removal. Also with B Plant closure, the TK-100 may not be removed into B Plant, so the wording is changed to "from the vault."

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

See attached distribution sheet

RELEASE STAMP

DATE: JUL 01 1998 HANFORD RELEASE STA: 4 ID: 2

A-7900-013-2 (05/96) GEF095

A-7900-013-1

ENGINEERING CHANGE NOTICE

Page 2 of 2

1. ECN (use no. from pg. 1): 639465

16. Design Verification Required	17. Cost Impact						18. Schedule Impact (days)	
	ENGINEERING			CONSTRUCTION				
[] Yes	Additional	[]	$ N/A	Additional	[]	$ N/A	Improvement	[]
[X] No	Savings	[]	$ N/A	Savings	[]	$ N/A	Delay	[] N/A

19. 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 13. Enter the affected document number in Block 20.

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	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]	None	[X]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

20. 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
N/A		

21. Approvals

	Signature	Date		Signature	Date
Design Authority	L. D. Brist Larry Brist	7/1/98	Design Agent	~~L. D. Brist~~	
Cog. Eng.	F. M. Simons	7/1/98	PE		
Cog. Mgr.	R. Hernandez Ray Hernandez	7/1/98	QA		
QA			Safety		
Safety			Design		
Environ.			Environ.		
Other			Other		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

A-7900-013-3 (05/96) GEFC96

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	F. M. Simmons	Date
Project Title/Work Order		EDT No. 622565
B PLANT/WESF PROJECT, HNF-2698, REV. 0, SAMPLING AND ANALYSIS PLAN (SAP) FOR WESF DRAINS AND TK-100 SUMP		ECN No.

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
B&W Hanford Company					
T. G. Beam	S6-51	X			
D. D. Beers	S6-81				
L. D. Brist	S6-51	X			
S. D. Godfrey	S4-49	X			
E. D. Robbins	S6-60	X			
P. T. Saueressig	S6-81	X			
F. M. Simmons (2)	S6-60	X			
ALA					
D. B. Bonfoey	S3-90	X			
COGEMA Engineering Corporation					
J. Y. Smith	S3-90	X			
R. S. Viswanath	S3-90	X			
Fluor Daniel Hanford, Inc.					
G. W. Reddick, Jr.	N1-26	X			
Waste Management Federal Services of Hanford, Inc.					
B. M. Colley	H6-14	X			
D. L. Edwards	H1-12	X			
D. B. Hardy	T6-12	X			
J. G. Hogan	H1-12	X			
K. N. Pool	H6-14	X			
S. M. Steele	H6-14	X			
U.S. Department of Energy, Richland Operations Office					
D. T. Evans	R3-79	X			
Washington State Department of Ecology					

S

MAY 1 4 1998
Sta. 4 58

ENGINEERING DATA TRANSMITTAL

Page 1 of 5
1. EDT 622565

2. To: (Receiving Organization) DISTRIBUTION	3. From: (Originating Organization) B PLANT/WESF PROJECT	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: B PLANT WESF PROJECT/LOW LEVEL WASTE ISOLATION/16E00	6. Design Authority/ Design Agent/Cog. Engr.: F. M. Simmons	7. Purchase Order No.: N/A
8. Originator Remarks: FOR RELEASE		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: WESF
11. Receiver Remarks: 11A. Design Baseline Document? [] Yes [X] No		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	HNF-2698		0	SAMPLING AND ANALYSIS PLAN (SAP) FOR WESF DRAINS AND TK-100 SUMP	E	1		

16. KEY

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E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment	4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

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1	1	Design Authority L. D. Brist	Lance Brist	5/13/98		1	1	Dan Edwards	See attached		
1		Design Agent N/A				1	1	Paul Saueressig	Paul Saueressig	4/14/98	
1	1	Cog.Eng. L. D. Brist	Lance Brist	5/13/98		1	1	Rampur S Viswanath	See attached		
1	1	Cog. Mgr. E. Dewey Robbins	[signature]	5-13-98		1	1	Karl N. Pool	See attached		
	1	QA				1	1	F. M. Simmons	[signature]	5/13/98	5:50
	1	Safety				1	1	T. A. Wooley	[signature]	5/13/98	
1	1	Env. T.G. Beam	[signature]	5/13/98		1	1	D. Hardy	See attached		

18. F. M. Simmons [signature] 5/13/98 Signature of EDT Originator Date	19. N/A Authorized Representative for Receiving Organization Date	20. ED Robbins [signature] 5-13-98 Design Authority/ Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl. No. [] Approved [] Approved w/comments [] Disapproved w/comments

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2. To: (Receiving Organization) DISTRIBUTION	3. From: (Originating Organization) B PLANT/WESF PROJECT	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: B PLANT WESF PROJECT/LOW LEVEL WASTE ISOLATION/16C06	6. Design Authority/ Design Agent/Cog. Engr.: F. M. Simmons	7. Purchase Order No.: N/A
8. Originator Remarks: FOR RELEASE		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: WESF
11. Receiver Remarks: 11A. Design Baseline Document? [ ] Yes [X] No		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

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1	HNF-2694		0	SAMPLING AND ANALYSIS PLAN (SAP) FOR WESF DRAINS AND TK-100 SUMP	E	1		

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1		Design Authority L. D. Reid				1		Dan Edwards			
1		Design Agent N/A				1		Paul Sauerzenig			
1		Cog. Eng. L. D. Reid				1		Rampur S Viswanath			
1	1	Cog. Mgr. E. Dewey Robbins				1		Karl N. Peet			
		QA				1	1	F. M. Simmons		5/14/98	
		Safety				1		T. A. Wesley			
1		Env. T.E. Beam									

18. F. M. Simmons 5/13/98 Signature of EDT Originator / Date	19. N/A Authorized Representative Date for Receiving Organization	20. L.D. Reid 5-13-98 Design Authority/ Cognizant Manager / Date	21. DOE APPROVAL (if required) Ctrl. No. [ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments

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8. Originator Remarks: FOR RELEASE		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: WESF
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1		Design Agent N/A				1		Paul Saueressig			
1		Cog.Eng. L. D. Brist				1		Ramptir S Viswanath			
1		Cog. Mgr. E. Dewey Robbins		5-12-98		1		Karl N. Pool			
		QA				1		F. M. Simmons		5/12/98	5-50
		Safety				1		T. A. Wooley		5/12	
1		Env. T.G. Beam									

18. Signature of EDT Originator Date 5/12/98	19. N/A Authorized Representative Date for Receiving Organization	20. ED Robbins 5-12-98 Design Authority/ Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl. No. [ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments

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05/13/98 14:07 ☎509 373 3193 SAS ☑003
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		10. System/Bldg./Facility: WESF
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1		Cog.Eng. L. D. Brist	1		Rampur S. Viswanath
1	1	Cog. Mgr. E. Dewey Robbins 5-12-98	1		Karl N. Pool 5-13-
		QA	1	1	F. M. Simmons 5/12/98
		Safety	1		T. A. Wooley 5/13/
1		Env. T.G. Beam	1		D. Hardy

18.	19.	20.	21. DOE APPROVAL (if required)
F. M. Simmons 5/12/98 Signature of EDT Originator Date	N/A Authorized Representative Date for Receiving Organization	E.D. Robbins 5-12-98 Design Authority/ Cognizant Manager Date	Ctrl. No. [ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments

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BD-7400-172-2 (05/96) GEF097

BD-7400-172-1

SAMPLING AND ANALYSIS PLAN (SAP) FOR WESF DRAINS AND TK-100 SUMP

F. H. Simmons, Author
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U.S. Department of Energy Contract DE-AC06-96RL13200

EOT/ECN: 621141 UC: 502
Org Code: 16E00 Charge Code: KN0E0
B&R Code: EW7002010 Total Pages: 14 5/14/98

Key Words: Tk-100 sump, WESF floor drains, characterization, sampling, analysis

Abstract: The intent of this plan is to define the responsibilities of the various organizations involved in sampling and analyzing the WESF floor drains and Tk-100 sump.

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Release Approval 5/14/98 Date

DATE STA 4 HANFORD RELEASE ID: 58 MAY 14 1998

Release Stamp

Approved for Public Release

A-6400-073 (01/97) GEF321

SAMPLING AND ANALYSIS PLAN FOR WESF DRAINS AND TK-100 SUMP

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1.0 INTRODUCTION.

Tk-100 is currently used as a catch tank to transfer low level liquid waste from WESF to Tank Farms via B Plant. This system is being modified as part of the WESF decoupling since B Plant is being deactivated. As a result of the 1,1,1-trichloroethane (TCA) discovery in Tk-100, the associated WESF floor drains and the pit sump need to be sampled. Breakdown constituents have been reviewed and found to be non-hazardous. There are 29 floor drains that tie into a common header leading into the tank. To prevent high exposure during sampling of the drains, Tk-100 will be removed into the B Plant canyon and a new tank will be placed in the pit before any floor drain samples are taken. The sump will be sampled prior to Tk-100 removal. A sample of the sludge and any liquid in the sump will be taken and analyzed for TCA and polychlorinated biphenyl (PCB). After the sump has been sampled, the vault floor will be flushed. The flush will be transferred from the sump into Tk-100. Tk-100 will be moved into B Plant. The vault will then be cleaned of debris and visually inspected. If there is no visual indication of TCA or PCB staining, the vault will be painted and a new tank installed. If there is an indication of TCA or PCB from laboratory analysis or staining, further negotiations will be required to determine a path forward. A total of 8 sets of (3) 40ml samples will be required for all of the floor drains and sump. The sump set will include one 125ml solid sample. The only analysis required will be for TCA in liquids. PCBs will be checked in sump solids only.

The Sampling and Analysis Plan (SAP) is written to provide direction for the sampling and analytical activities of the 29 WESF floor drains and the Tk-100 sump. Analytical activities will meet the requirements of SW-846 (see Section 6.0, References).

1.1 Purpose and Scope.

The intent of this project is to determine whether the 29 Waste Encapsulation and Storage Facility (WESF) floor drain piping and the Tk-100 sump are free from contamination with TCA. The purpose of samples is to show the TCA has been effectively removed from the drain lines through about 10 years of use since discontinuation of TCA use in the plant. A total of 8 sets of (3) 40 ml samples will be taken for analysis. The floor drains will be grouped according to location, thereby minimizing the number of samples required.

This SAP defines the responsibilities and requirements of each organization involved. The responsibilities include proper documentation. Requirements are the Quality Assurance/Quality Control (QA/QC) controls as required by the SW846.

This SAP describes activities associated with collecting samples from 29 WESF floor drains and Tk-100 sump and transferring the samples to the Special Analytical Support (SAS) Laboratory/222S for analysis. The activities associated with collecting the samples include:

1. Pre-sampling activities
2. Sample collection
3. Sample transport to SAS Laboratory/222S
4. Analysis requirements

Eight separate sets of three samples will be obtained. Each sample will be analyzed for TCA and/or PCB as shown in Table 1.

2.0 DESCRIPTION

Eight sets of (3) 40ml samples will be taken. Seven of these sets of samples will be taken from the floor drains that will be grouped according to use and location. One sample set will be taken from the Tk-100 sump. Since the floor drains all tie into a common header, they will be sampled at the sample port upstream of Tk-100. Floor drains will be grouped as follows and each grouping will represent 1 sample set:

Area:	Grouping:
Crane Maintenance Area	One floor drain
Canyon	Four floor drains
HMS, CMS/Decon Sink/Shower	Five floor drains
Service Gallery and A Cell Airlock	Two floor drains
Truck Port/Pool Cell/G Cell Airlock	Three floor drains
AMU/Transmitter rooms/Mezzanine	Eleven floor drains
Operating Gallery	Three floor drains

Rank logic is based on use.

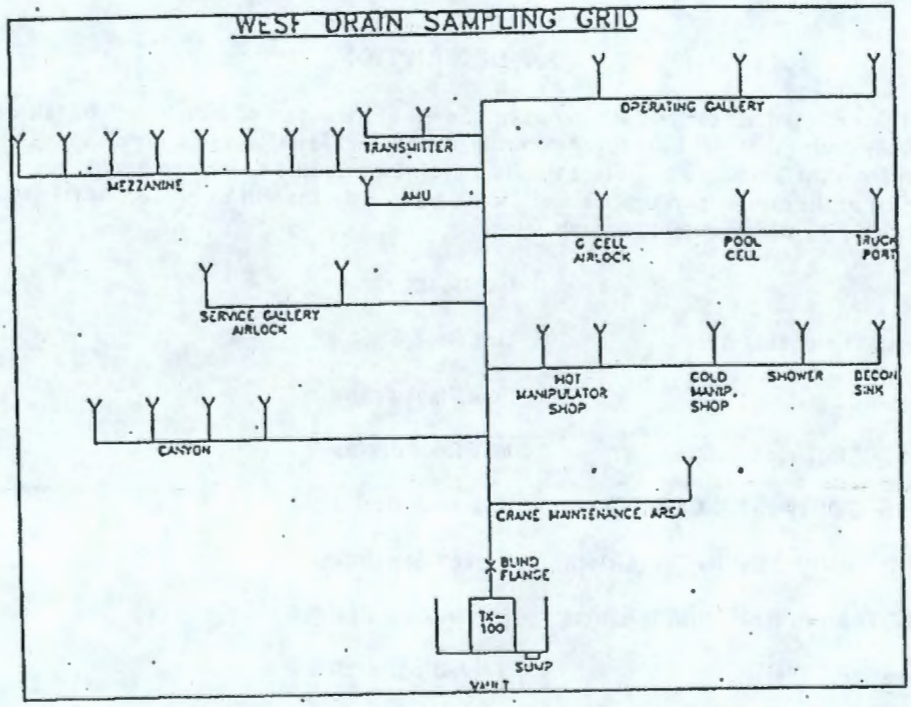

Figure 1 – WESF Drain Sampling Grid

3.0 ORGANIZATIONAL RESPONSIBILITIES

The responsibilities and descriptions below are related to activities required by the different organizations.

3.1 WESF Technical Support

- Issue SAP and coordinate sampling requirements.

3.2 WESF Facility Support

- Nuclear Process Operators will provide support to the sampling team by controlling water flow down each drain.
- Nuclear Process Operators will provide support to obtain the sample analysis according to the SAP, Sample Authorization Form, and the SAS Laboratory Quality Assurance Plan.
- Radiation Control Technicians will provide radiological surveys associated with sampling activities and shipping.

3.3 Special Analytical Support Laboratory (SAS)

- The SAS Laboratory will conduct the sample analysis according to this SAP, Sample Authorization Form, and the SAS Laboratory Quality Assurance Plan.
- The SAS Laboratory will submit a standalone data package to Analytical Support -Waste Management Hanford for validation.

3.4 Analytical Services - Waste Management Hanford

- Arrange and coordinate laboratory analysis of the samples.
- Maintain documentation for each sample.
- Transmit the complete data package to the Administrative Record and B&W Hanford Company.
- Validate data to a Level D.

3.5 Sampling and Mobile Laboratories

This team is responsible for taking the samples per SW-846 protocol and transporting the samples to the SAS Laboratory and initiating Chain of Custody (COC). Sampling and Mobile Laboratories (SML) is responsible for a trip blank with each sample set.

3.6 222S Laboratory

- Responsible for PCB analysis in Table 1 and QA/QC requirements in Table 2.
- The 222S Laboratory will submit a standalone data package to Analytical Support-Waste Management Hanford for validation.

4.0 SAMPLING

All sampling will be performed per SW-846 protocol and in accordance with WESF Radiological Control requirements. Requirements for personal protective equipment to be worn during sampling will be identified in the Radiation Work Permit.

4.1 Sample Locations

Samples will be taken from the sample port at the top of Tk-100 and from the sump in the Tk-100 pit.

Less than 10 gallons of deionized water will be drained down each floor drain to obtain a sample at the sample port.

4.2 Sample Identification

A sample number will be obtained from the Sample and Data Tracking System. The following information will be shipped with the sample:

- Identification (signature or initials) of the person collecting the sample
- Sample number
- Date and time the sample was collected
- The analyses to be performed on the sample.
- Sample location and bottle specifications (volume, preservation, etc.).

4.3 Sampling Equipment

Sampling equipment will be provided by the SML. The sampling equipment will be cleaned per ES-SSPM-001 2.5.

4.4 Sample Collection

Samples will be collected with zero head space in (3) 40 ml containers for each sampling event or in 125 ml container for PCB.

4.5 Sample Handling

A COC and any radiological documentation will be filled out at the time of sampling and will accompany each sample set.

5.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

5.1 Field Logbook

All sampling activities will be documented in logbooks maintained by the SML.

5.2 QA-QC

5.2.1 Samples

Analysis will be completed according to SAS laboratory QA/QC requirements for TCA. Analysis will be completed according to 222S laboratory QA/QC requirements for PCB.

5.2.2 Data Reporting and Validation

Each laboratory will issue a full data report including all QC within 45 days. A final validated data package is due to Ecology from Analytical Services within 90 days of when the sample is received in the laboratory.

The laboratory complete data package will contain:

1. All COC and laboratory forms
2. Analytical data
3. Case narrative from sample analysis (signed by a laboratory representative) to identify any anomalies and the corresponding corrective action
4. A reference table indicating which field sample number corresponds to the laboratory sample number
5. All QC analyses performed on the samples. All information required in WMH-CM-5-4, Sec 3.2, "Technical Verification of Analytical Laboratory Data Packages" for applicable method checklists

Data validation to Level D will be required for all samples.

5.2.3 Quality Assurance

Method-specific quality control calibrations are found in the analytical procedures. Sample quality requirements are identified in Table 2. The WESF Technical Support team will be notified prior to data reporting, should the quality control data not conform with the data requirements specified.

If the QA/QC requirements are not met, the samples are to be rerun. If the sample quantity does not allow a rerun, the data should be flagged as not meeting the limits.

6.0 REFERENCES

ES-SSPM-001, 2.5, *Cleaning of RCRA/CERCLA Sampling Equipment.*

EPA, *Test Methods for Evaluating Solid Waste*, 3rd Edition, SW-846 EPA/Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C., (latest revision).

HNF-SD-CP-QAPP-016, Rev. 2, *222S Laboratory Quality Assurance Plan*

HNF-SD-WM-QAPP-034, Rev. 2, *Special Analytical Support Quality Assurance Program Plan.*

LA-523-138, *Soxhlet Extraction of Solid Samples for Semivolatile and/or Pesticide and/or PCB Analysis*

Washington State Department of Ecology.

WHC-SD-EN-SPP-002, Rev. 2, *Data Validation Procedures for Chemical Analyses.*

WHC-SD-EN-SPP-001, Rev. 1, *Data Validation Procedures for Radiochemical Analyses.*

WMH-CM-5-4, *Laboratory Administration*, Section 3.20, "Technical Verification of Analytical Laboratory Data Packages"

7.0 LIST OF ACRONYMS

1,1,1-trichloroethane (TCA)

Chain Of Custody (COC)

Matrix Spike (MS)

Matrix Spike Duplicate (MSD)

Polychlorinated biphenyl (PCB)

Quality Assurance/Quality Control (QA/QC)

Sampling Authorization Form (SAF)

Sampling and Mobile Laboratory (SML)

Sampling and Analysis Plan (SAP)

Special Analytical Support (SAS)

State of Washington, Department of Ecology (Ecology)

Waste Encapsulation and Storage Facility (WESF)

TABLE 1. WESF ANALYSIS REQUIREMENTS

Analyte	Dangerous Waste Designation Threshold (mg/L)	Quantification limit	Analysis
1,1,1-trichloroethane	Detectable	<5μg/L	VOA 8260B complete
PCB	2ppm	<200μg/kg	LA-523-138

TABLE 2. QA/QC REQUIREMENTS

Parameter/ Analysis	Reference Method	Container/ Volume	VolReq	Preservation	Holding Time
VOA/TCA	EPA8260B	Glass/40ml	3x40ml VOA	Cool 4°C	14 days
PCB	EPA8081	Glass/125ml	1x125ml vials per sample	None	40 days

QC samples will include a matrix spike (MS), matrix spike duplicate (MSD), Laboratory Control Sample, and a Blank. Recovery for MS and MSD are 70-130%.

Sampling Authorization Form (SAF)

Waste Management Hanford
SAMPLING AUTHORIZATION FORM

SAF Number: R98-055 SMS 7/7/98 Rev: 1

Program Type Other

Project ID WESF

Project Type Other

Operable Unit N/A

Task ID 0

Round Number 0

SAF Title. Tank 100 - Drains

Task Manager Simmons, F

Requester Simmons, F

Charge Codes-

Sample Management KNCE0

Project Coordinator Pool, KN

Estimated Start Date 05/13/98

Estimated Completion Date 06/15/98

SampleArea 200 East

Estimated Number of Samples 8

Sampling Organizations

WMNW

Laboratory/Turnaround/Data Deliverable

Matrix Water

Primary: Special Analytical Support/ 45 Days/StandAlone

COC Comments

Stand Alone Deliverable due 45 days from receipt - Submit to Sandy Walls

Post-it® Fax Note 7671	Date 7/7/98	# of pages ▸ 2
To Jay Smith	From Sharon Steele	
Co./Dept. SAF R98-055 Rev	Co.	
Phone #	Phone #	
Fax # 373-3193	Fax #	

Date 07/07/98

SAF Status: Revision Issued

7/7/98 11:00:00 AM

Waste Management Hanford

Field Sampling Requirements

Laboratory Analysis

Laboratory: Special Analytical Support

SMS 7/1/98

Matrix: Water

Parameter / Analysis	Reference Method	Container / Volume	VolReq	Preservation	Holding Times
VOA - 8260A - Complete 1,1,1-Trichloroethane	EPA8260A	Gs* 3x40 ml	Full QC	HCl or H2SO4 to pH <2 Cool 4C	14 Days
Activity Scan No CAS	ACTIVITYSCAN	G 40 ml	Full QC	None	ASAP

Key to Container Types

G = Glass
Gs = Glass w/ septum cap
Gs* = Glass w/septum cap-no head space in container
P = Plastic (Polyethylene)
aG = Amber Glass
aGs = Amber Glass w/ septum cap
aGs* = Amber Glass w/septum cap-no head space in container

FSR Comment:

SAF Number: R98-055 Rev: 1 Page 1 SAF Status: Revision Issued 7/7/98 11:00:00 AM

BHI-EE-001 (12/94)

Sampling Logbook Notes

PROJ: TANK 100 - Drains

Notebook No. WMP-SAL-H5
Continued From Page NONE

S.A.F.#: SS-097, SS-113/R93-055, SS-114/R93-059 Sample Date: 7-15-98
PROJECT TITLE: Tank 100 - Drains Shipment Date: 7-15-98
CHARGE CODE: 772030 / 40-057-001
TYPE OF PROTOCOL: Sampling done to RCRA Protocol
CUSTOMER: Fen M. Simmons 372-0413
FIELD CONTACTS: Paul T. Saueressig PIC
PERSONNEL: K.B. Hulse SML Sampling Tech.
J.G Hogan SML Sampling Tech.
Ken J. Young SML Scientist
James E. Wibaunsee Ops (in tent)
Wilbur S. Judycki (Butch) HPT (in tent)
Star L. Jacobsen-Archer HPT (outside of tent)
Gary W. Johnson Ops (outside tent)
Jessie R. Weathers HPT (inside building)
Vicki R. Benson-McCurry HPT (inside building)
Lindy L. Lanman Ops (inside building)
Linda J. Phillips Ops (inside building)
William B. Cook Ops (inside building)
Fen M. Simmons Eng. (Customer)

PURPOSE: To determine whether the 29 Waste Encapsulation and Storage Facility (WESF) floor drain piping and the TK-100 sump are free from contamination with TCA.

LOCATION: Tk-100 / WESF / 200 East Area

REFERENCE DOCUMENTS: Work Package No.: 2C-98-00342/0, Sampling and Analysis Plan for WESF Drains and TK-100 Sump

SAMPLE EVENT: A prejob was held in the WESF lunch room. The sampling process was covered, the hazards and job assignments were discussed. Two teams of operators and HPTs were staged to pour the ASTM Type II water down the drains. The sampling team enter the tent. The flanges on the sample ports were opened. The tank was sampled first. The sample tubing was put in place for the drain sampling. One gallon of water was poured into G Cell Operating Gallery drain. Seven minuets passed and no water entered the tank. More water was added with none showing up at the tank. After pouring a total of 10 gallons and a 21 minute waite with no water coming to the tank water was poured into the other drains in the Operating Gallery and in a few minuets water was entering the tank. The water from the G Cell drain did not appear to come to the tank. After the Operating Gallery the other systems were done in the order directed by the sampling plan.

SAMPLE POINT: Sample WESF071593 came from Tank 100 through sample port #2. Sample KON378 was a trip blank that was filled with ASTM Type II at 6269 building and accompanied the samples. Samples KON379 and KON386 came from the Operating Gallery. Sample KON380 and KON387 came from the Mezzanine, Transmitter, and AHU. Sample KON381 and KON388 came from G Cell Airlock, Pool Cell, and Truck Port. Sample KON382 and KON389 came from the Service Gallery Airlock. Sample KON383 and KON390 came from the Hot Manipulator shop, Cold Manipulator Shop, Shower and Decon Sink. Sample KON384 and KON391 came from the Canyon. Sample KON385 and KON392 came from the Crane Maintenance Area. All the drain samples came from the port on the drain line going into Tank 100.

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PROJECT: TANK 100 - DRAINS.

Notebook No. VIM-SML-115
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SAMPLING METHOD: All samples were taken by pumping the liquid into a composite vendor certified clean glass two liter jar. The sample media was then poured into the vendor certified clean sample bottles.

For sampling of the tank a piece of stainless steel as a weight was attached to C-Flex tubing. The tubing was marked at one foot intervals. The tubing was lowered into the tank until it touched the liquid surface. The level was noted and the sample pump activated and the tubing was lowered twenty inches into the liquid and then raised back up. The tubing went up and down three times to obtain a representative sample of the tank without getting into the solids on the bottom.

For sampling of the drains a peristaltic pump was used to pull the sample media through a cleaned stainless steel tubing positioned in the drain pipe attached to C-Flex tubing and into the composite jar. The pump was activated at first sign of water and run until the water flow decreased to a trickle. The sample bottles were filled and the excess pumped into the tank. The C-Flex and stainless steel tubing were than back flushed with ASTM Type II water. The sampling process was repeated for each identified drain system with a new composite sample jar.

PPE: The sampling occurred under RWP WESF-063 which required one complete set of Anti-C including a hood, coveralls, shoe covers, rubber boots, and two layers of gloves. Because entry was required into other parts of the building others worked under different RWPs, WESF-452 and WESF-043.

WEATHER CONDITIONS: Clear and sunny, 75°F, no wind. Samples taken inside the tent where the temperature was slightly higher and no wind.

RADIATIONS READINGS: General area during the sampling was 1.5 to 3 mrem/h. The samples from the tank had as high as 9 thousand counts through the bottle with a GM. The drain samples only had 300 counts as the highest on any one bottle with the GM.

COMMENTS: As the water came from the Service Gallery Airlock an oil smell was noted.

SHIPPING INFORMATION:

DESTINATION: SAS
C.O.C. # R98-055-1
SAMPLE # KON378, KON379, KON380, KON381, KON382, KON383, KON384, KON385
TRANSPORTATION Government Vehicle
COOLER # SML-#11
Date shipped 7-15-98

DESTINATION: 222-S
C.O.C. # R98-059-1, 101085
SAMPLE # KON386, KON387, KON388, KON389, KON390, KON391, KON392, WESF071558-1,-2,-3
TRANSPORTATION Government Vehicle
COOLER # SML-#11
Date shipped 7-15-98

PHOTOS ATTACHED ON PAGE 71 OF THIS LOG BOOK
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PROJECT TANK 100 DRAINS

Notebook No. WM-SAL-HS 17

PROJECT

KBH 7-31-98

Sample Point: Trip Blank

Lead Sampler: HULSE, K. B. Sample Matrix: WATER

Sample ID	Date Collected / Time Collected	Analysis	Preservative	Container	Lot #	Laboratory Code
[illegible]	[illegible] / [illegible]	[illegible]	None	[illegible]	N/A	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	VOA + [illegible] + Carbon [illegible]	HCl	[illegible]	[illegible]	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	VOA + [illegible] + Carbon [illegible]	HCl	[illegible]	[illegible]	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	VOA + [illegible] + Carbon [illegible]	HCl	[illegible]	[illegible]	S.A.S. [illegible]

Sample Point: Operating Gallery

Lead Sampler: HULSE, K. B. Sample Matrix: WATER

Sample ID	Date Collected / Time Collected	Analysis	Preservative	Container	Lot #	Laboratory Code
[illegible]	[illegible] / [illegible]	[illegible]	None	[illegible]	N/A	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	VOA + [illegible] + Carbon [illegible]	HCl	[illegible]	[illegible]	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	VOA + [illegible] + Carbon [illegible]	HCl	[illegible]	[illegible]	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	VOA + [illegible] + Carbon [illegible]	HCl	[illegible]	[illegible]	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	Gross Alpha (Sr)	None	[illegible]	[illegible]	[illegible] [illegible]
[illegible]	[illegible] / [illegible]	Gross Beta, Gamma Spectroscopy, Am-241, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ra-226, Ra-228				[illegible] [illegible]
[illegible]	[illegible] / [illegible]	Gross Alpha (Sr)	None	[illegible]	[illegible]	[illegible] [illegible]
[illegible]	[illegible] / [illegible]	Gross Beta, Gamma Spectroscopy, Am-241, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ra-226, Ra-228				[illegible] [illegible]

Sample Point: Mezzanine, Transmitter, AHU

Lead Sampler: HULSE, K. B. Sample Matrix: WATER

Sample ID	Date Collected / Time Collected	Analysis	Preservative	Container	Lot #	Laboratory Code
[illegible]	[illegible] / [illegible]	[illegible]	None	[illegible]	N/A	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	VOA + [illegible] + Carbon [illegible]	HCl	[illegible]	[illegible]	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	VOA + [illegible] + Carbon [illegible]	HCl	[illegible]	[illegible]	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	VOA + [illegible] + Carbon [illegible]	HCl	[illegible]	[illegible]	S.A.S. [illegible]
[illegible]	[illegible] / [illegible]	Gross Alpha (Sr)	None	[illegible]	[illegible]	[illegible] [illegible]
[illegible]	[illegible] / [illegible]	Gross Beta, Gamma Spectroscopy, Am-241, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ra-226, Ra-228				[illegible] [illegible]
[illegible]	[illegible] / [illegible]	Gross Alpha (Sr)	None	[illegible]	[illegible]	[illegible] [illegible]
[illegible]	[illegible] / [illegible]	Gross Beta, Gamma Spectroscopy, Am-241, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ra-226, Ra-228				[illegible] [illegible]

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PROJECT TANK 100 DRAINS

No. WM-SML-H15

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Sample Point: G Cell Airlock, Pool Cell, Truck Port

Lead Sampler: NULSE, K. B. Sample Matrix: WATER

Sample ID	Date Collected / Time Collected	Analysis	Preservative	Container	Lab #	Laboratory Code
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Sample Point: Service Gallery Airlock

Lead Sampler: NULSE, K. B. Sample Matrix: WATER

Sample ID	Date Collected / Time Collected	Analysis	Preservative	Container	Lab #	Laboratory Code
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Sample Point: Hot & Cold Manipulator Shop, Shower, Decon S

Lead Sampler: NULSE, K. B. Sample Matrix: WATER

Sample ID	Date Collected / Time Collected	Analysis	Preservative	Container	Lab #	Laboratory Code
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	S A S
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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PROJ: TANK 100 DRAINS.

Notebook No. WIN-SAL-HT

Continued From Page 69

PROJECT

Sample Point: Canyon

Lead Sampler: HULSE, K. B. Sample Matrix: WATER

Sample ID	Date Collected / Time Collected	Analysis	Preservative(s)	Container	Lot #	Laboratory / COC#
40N304	7-18-98	Gross Alpha (GA)	None	1 Gal. P	[illegible]	[illegible]
	0445	Gross Beta, Gamma Spectrometry, Am-241, Co-137, Co-60, Eu-152, Eu-154, Eu-155, Ra-226, Ra-228, Sr-89 Sr-90				[illegible]
40N304	7-18-98	Gross Alpha (GA)	None	1 Gal. P	[illegible]	[illegible]
	0445	Gross Beta, Gamma Spectrometry, Am-241, Co-137, Co-60, Eu-152, Eu-154, Eu-155, Ra-226, Ra-228, Sr-89 Sr-90				[illegible]
40N304	7-18-98	Activity Scan (Gas Spec/G)	None	32 mL P	N/A	SAS
	0445					[illegible]
40N304	7-18-98	VOA - 8260 - Complete	HCl	40 mL Vial	[illegible]	SAS
	0445	1,1,1-Trichloroethane				[illegible]
40N304	7-18-98	VOA - 8260 - Complete	HCl	40 mL Vial	[illegible]	SAS
	0445	1,1,1-Trichloroethane				[illegible]
40N304	7-18-98	VOA - 8260 - Complete	HCl	40 mL Vial	[illegible]	SAS
	0445	1,1,1-Trichloroethane				[illegible]

Sample Point: Crane Maintenance Area

Lead Sampler: HULSE, K. B. Sample Matrix: WATER

Sample ID	Date Collected / Time Collected	Analysis	Preservative(s)	Container	Lot #	Laboratory / COC#
40N305	7-18-98	Activity Scan (Gas Spec/G)	None	32 mL P	N/A	SAS
	0445					[illegible]
40N305	7-18-98	VOA - 8260 - Complete	HCl	40 mL Vial	[illegible]	SAS
	0445	1,1,1-Trichloroethane				[illegible]
40N305	7-18-98	VOA - 8260 - Complete	HCl	40 mL Vial	[illegible]	SAS
	0445	1,1,1-Trichloroethane				[illegible]
40N305	7-18-98	VOA - 8260 - Complete	HCl	40 mL Vial	[illegible]	SAS
	0445	1,1,1-Trichloroethane				[illegible]
40N302	7-18-98	Gross Alpha (GA)	None	1 Gal. P	[illegible]	[illegible]
	0445	Gross Beta, Gamma Spectrometry, Am-241, Co-137, Co-60, Eu-152, Eu-154, Eu-155, Ra-226, Ra-228, Sr-89 Sr-90				[illegible]
40N302	7-18-98	Gross Alpha (GA)	None	1 Gal. P	[illegible]	[illegible]
	0445	Gross Beta, Gamma Spectrometry, Am-241, Co-137, Co-60, Eu-152, Eu-154, Eu-155, Ra-226, Ra-228, Sr-89 Sr-90				[illegible]

Sample Point: Tank 100

Lead Sampler: HULSE, K. B. Sample Matrix: WATER

Sample ID	Date Collected / Time Collected	Analysis	Preservative(s)	Container	Lot #	Laboratory / COC#
WEBF01 -3	7-18-98	TOC pH	[illegible]	250 mL P	[illegible]	[illegible]
	0210	Volatile Organic Compounds				[illegible]
WEBF01 -1	7-18-98	TOC	[illegible]	250 mL Vial	[illegible]	[illegible]
	0210					[illegible]
WEBF01 -2	7-18-98	Total Alpha / Beta Gas Spec(G)	HNO3	500 mL P	[illegible]	[illegible]
	0210					[illegible]

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PROJECT TANK 100 DRAINS

WM-SMC-HS
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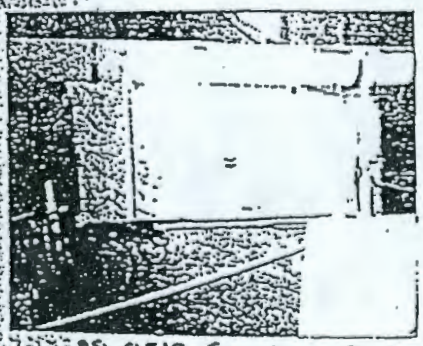
7-15-98 0200 Looking Down on TK-100, Line #1 4" Flange on 8" Line, Sampling Flow Drains Group #1
K.J. Young

7-15-98 0210 TK-100 looking down. K.J. Young Riser #2



7-15-98 0210 Greenhouse over TK-100
K.J. Young

THREE PHOTOS ATTACHED ON THIS PAGE

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7-31-98

Chain of Custody

Waste Management Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	R98-055-1	Page 1 of 2

Collector K.D. Hulse	Company Contact Karl N. Pool	Telephone No. 372-2557	Project Coordinator Pool, KN	Data Turnaround 45 Days
Project Designation Tank 100 - Drains	Sampling Location WESF		SAF No. R98-055	
Ice Chest No. SMLL #1	Field Logbook No. WM-SML-1115		Method of Shipment Gov. Vehicle	
Shipped To Special Analytical Support	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A	

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POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	HCl to pH<2 Cool 4C									
Type of Container	P	aGr*									
No. of Container(s)	1	3									
Volume	40ml	40ml									
SAMPLE ANALYSIS	Activity Scan	VOA - 8260A - Complete (1,1,1-Trichloroethane)									

Sample No.	Matrix *	Sample Date	Sample Time										
K0N378	Water	7-14-98	2300	X	X								
K0N379	Water	7-15-98	0300	X	X								
K0N380	Water	7-15-98	0320	X	X								
K0N381	Water	7-15-98	0350	X	X								
K0N382	Water	7-15-98	0400	X	X								
K0N383	Water	7-15-98	0420	X	X								
K0N384	Water	7-15-98	0445	X	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
[signature]	7-15-98 0710	[signature]	7-15-98 710
[signature]	7-15-98 1300	[signature]	07-15-98/1300

SPECIAL INSTRUCTIONS
Stand Alone Deliverable due 45 days from receipt - Submit to Sandy Walls

Matrix *
S = Soil
SE = Sediment
SO = Solid
SL = Sludge
W = Water
O = Oil
A = Air
DS = Drum Solids
DL = Drum Liquids
T = Tissue
WI = Wipe
L = Liquid
V = Vegetation
X = Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

8C530-FAST-98-088

Waste Management Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

R98-055-1

Collector: K.R. Hulse	Company Contact: Karl N. Pool	Telephone No.: 372-2557	Project Coordinator: Pool, KN
Data Turnaround: 45 Days			
Project Designation: Tank 100 - Drains	Sampling Location: WESF		SAF No.: R98-055
Ice Chest No.: SML - # 11	Field Logbook No.: WM-SML-1115		Method of Shipment: Gov. Vehicle
Shipped To: Special Analytical Support	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

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POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS

Preservation	None	HCl to pH<2 Cool 4C											
Type of Container	P	VGC*											
No. of Container(s)	1	3											
Volume	40ml	40ml											
	Activity Scan	VOA - 8260A - Complete 1,1,1-Trichloroethane											

Sample No.	Matrix *	Sample Date	Sample Time										
K0N385	Water	7-15-98	0445	X	X								

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: [signature]	Date/Time: 7-15-98 0710	Received By: K.J. [signature] / [signature] Date/Time: 0710 7-15-98
Relinquished By: [signature]	Date/Time: 7-15-98 1300	Received By: [signature] Date/Time: 07-15-98/1300
Relinquished By:	Date/Time:	Received By: Date/Time:
Relinquished By:	Date/Time:	Received By: Date/Time:

SPECIAL INSTRUCTIONS
Stand Alone Deliverable due 45 days from receipt - Submit to Sandy Walls

Matrix *
S = Soil
SE = Sediment
SO = Solid
SL = Sludge
W = Water
O = Oil
A = Air
DS = Drum Solids
DL = Drum Liquids
T = Tissue
WI = Wipe
L = Liquid
V = Vegetation
X = Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

8C530-FAST-98-088

Quality Control Summary Tables

Matrix Spike, Matrix Spike Duplicate, and Laboratory Control Sample Summary Table

	Matrix Spike	Matrix Spike Duplicate	Lab Control Sample
Data File:	V8071613.D	V8071614.D	V8071607.D

Compounds:	%Recovery	%Recovery	%Recovery
1,1-Dichloroethene	99	107	111
1,1,1-Trichloroethane	107	120	107
Benzene	96	110	103
Trichloroethene	100	113	102
Toluene	101	114	104
Chlorobenzene	99	111	105

Acceptance Limit = 70 - 130 %Recovery

Surrogate Standards Summary Table

Sample Name	Data File	Dibromofluoromethane %Recovery	1,2-Dichloroethane-d4 %Recovery	Toluene-d8 %Recovery	4-BFB %Recovery
Method Blank	V8071601.D	98	93	103	95
Lab Control Sample	V8071607.D	101	97	99	92
Cal. Check	V8071608.D	104	96	103	95
Method Blank	V8071610.D	103	91	100	95
CVS	V8071611.D	96	89	99	97
KON379	V8071612.D	102	89	100	94
Matrix Spike	V8071613.D	99	92	100	95
Matrix Spike Dup.	V8071614.D	99	93	101	95
KON378	V8071615.D	106	99	103	95
KON380	V8071616.D	105	99	103	97
KON382	V8071618.D	108	103	102	97
CVS	V8071619.D	98	88	101	95
Method Blank	V8071620.D	107	95	100	94
KON381	V8071621.D	107	95	101	96
KON383	V8071622.D	107	95	101	96
KON384	V8071623.D	108	99	102	98
KON385	V8071624.D	109	100	105	99

Acceptance Limit = 70 - 130 %Recovery

Internal Standards Summary Table

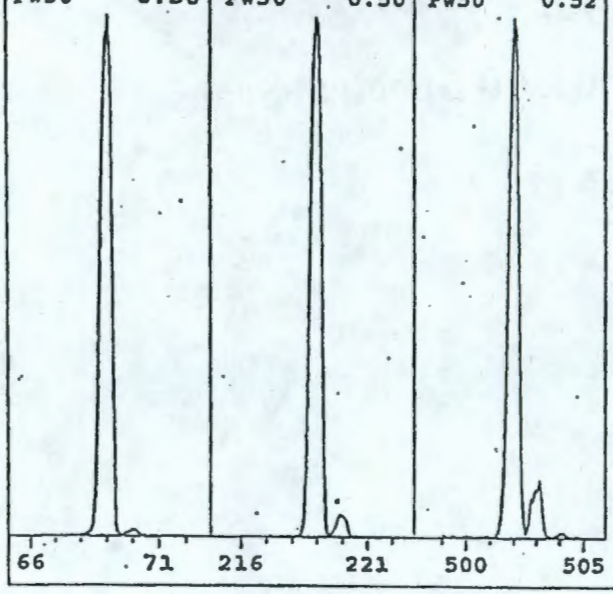
		Flourobenzene			Chlorobenzene-d5			1,4-Dichlorobenzene-d4		
Sample Name	Data File	Response (EICP Area)	% of Midpoint Cal. Standard	Retention Time	Response (EICP Area)	% of Midpoint Cal. Standard	Retention Time	Response (EICP Area)	% of Midpoint Cal. Standard	Retention Time
CVS	V8071611.D	11124057	100%	27.06	8676579	100%	38.00	5100072	100%	46.73
Method Blank	V8071610.D	9248164	83%	27.04	7024804	81%	37.98	4479087	73%	46.73
KON379	V8071612.D	10136443	91%	27.06	7725764	89%	38.01	4936012	81%	46.75
Matrix Spike	V8071613.D	10431082	94%	27.08	8289690	96%	38.03	5371545	88%	46.77
Matrix Spike Dup.	V8071614.D	9539097	86%	27.09	7614628	88%	38.04	4934196	81%	46.78
KON378	V8071615.D	8751535	79%	27.12	7009976	81%	38.07	4437384	73%	46.81
KON380	V8071616.D	9576924	86%	27.13	7693729	89%	38.08	5099558	84%	46.82
KON382	V8071618.D	8116198	73%	27.14	6396327	74%	38.09	4069544	67%	46.82
CVS	V8071619.D	9932484	100%	27.05	7947243	100%	38.01	5426819	100%	46.74
Method Blank	V8071620.D	8967160	90%	27.07	6948238	87%	38.01	4301425	79%	46.76
KON381	V8071621.D	8493375	86%	27.08	6618905	83%	38.02	4190344	77%	46.76
KON383	V8071622.D	8561762	86%	27.08	6736018	85%	38.03	4279922	79%	46.77
KON384	V8071623.D	8689855	87%	27.10	6852119	86%	38.06	4486857	83%	46.80
KON385	V8071624.D	8411940	85%	27.10	6794358	85%	38.04	4421705	81%	46.78

Acceptance Limits = Response (EICP area) must be within 50 - 200% of the response obtained in the daily CVS. Retention times must be +/-30 seconds from that in the daily CVS.

MS Tunes and BFB Spectral Scans

HP5971 Standard Spectra AutoTune
Instrument: 5971 - VOA
Wed May 20 10:13:57 1998 C:\HPCHEM\1\5971\ATUNE.U

Mass	69.05	Mass	219.00	Mass	502.10
Ab	296602	Ab	225597	Ab	15018
Pw50	0.50	Pw50	0.50	Pw50	0.52

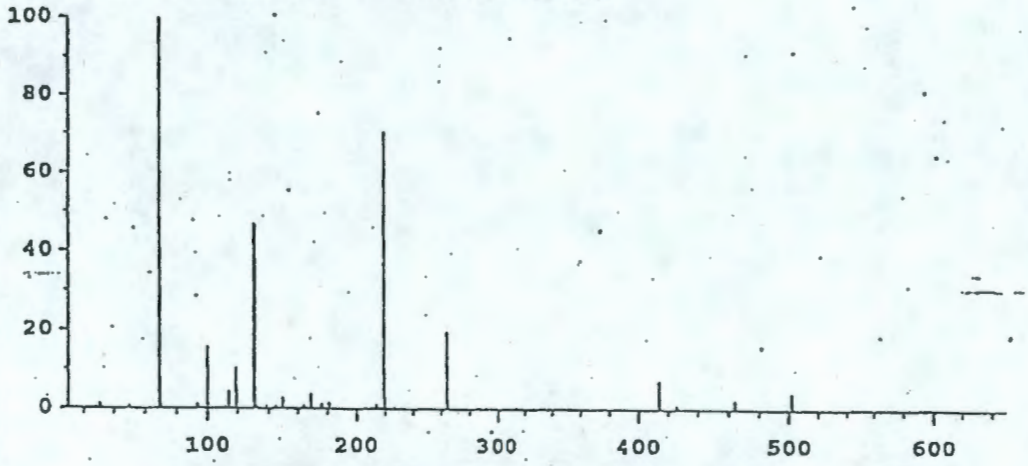


EMVolts	2388	AmuGain	322
Xray	89.8	AmuOffs	67
Emission	ON	Wid219	-0.048
MS Temp	151	TTI	OFF
Vacuum	83	DC Pol	NEG
Samples	16	Repeller	14.99
Averages	1	IonFocus	31.0
StepSize	0.10	EntLens	27.11
MassGain	-495	EntOffs	3.51
MassOffs	-3	Filament	1

PFTBA OPEN

05/20/98

Scan: 10.00 - 650.00 Samples: 16 Thresh: 150 Step: 0.10
106 peaks Base: 69.00 Abundance: 246016

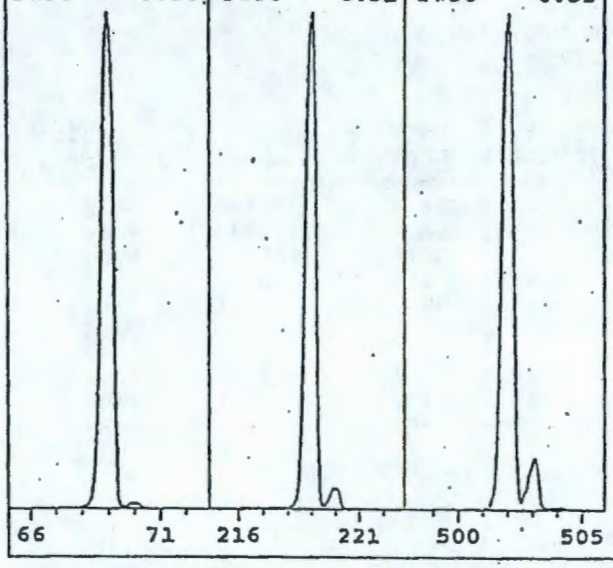


Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	246016	100.00	70.00	3035	1.23
219.00	173888	70.68	219.95	6852	3.94
502.05	10834	4.40	503.00	1210	11.17

HP5971 BFB Dynamic Target Tune

Wed May 20 10:32:15 1998 C:\HPCHEM\1\5971\BFB.U

Mass	68.95	Mass	219.05	Mass	502.05
Ab	878780	Ab	278688	Ab	7324
Pw50	0.50	Pw50	0.51	Pw50	0.52

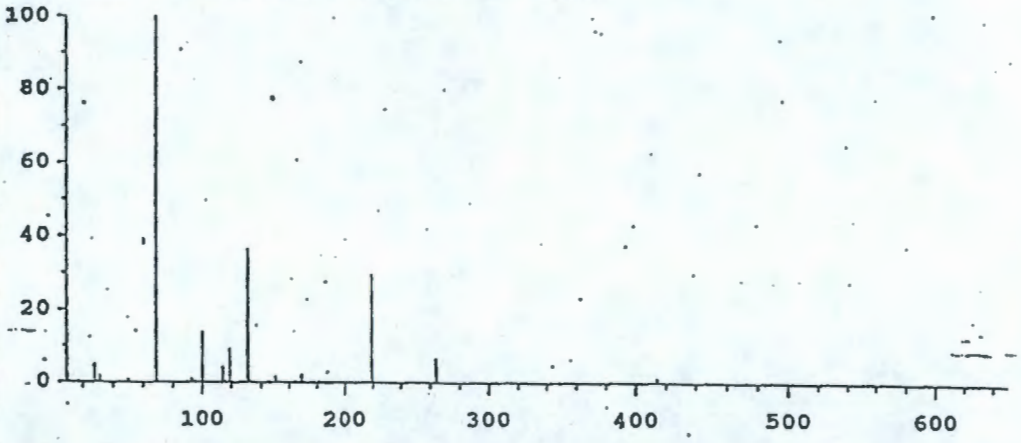


EMVolts	2106	AmuGain	323
Xray	81.2	AmuOffs	70
Emission	ON	Wid219	-0.028
MS Temp	150	TTI	OFF
Vacuum	85	DC Pol	NEG
Samples	16	Repeller	19.56
Averages	1	IonFocus	30.0
StepSize	0.10	EntLens	0.00
MassGain	-498	EntOffs	VAR
MassOffs	-3	Filament	1

PFTBA OPEN

05/20/98

Scan: 10.00 - 650.00 Samples: 16 Thresh: 150 Step: 0.10
109 peaks Base: 68.95 Abundance: 751040



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
68.95	751040	100.00	69.95	8001	1.07
219.00	223744	29.79	220.00	9546	4.27
502.05	5379	0.72	503.05	635	11.81

TARGET MASS:	69	131	219	502
DYNAMIC ENT OFFSET:	11.0	12.0	12.5	13.8
TARGET ABUND(%):	100.0	35.0	30.0	0.8
ACTUAL TUNE ABUND(%):	100.0	36.5	29.8	0.7

BFB

Data File : C:\HPCHEM\1\DATA\V80716\V8071605.D
Acq On : 16 Jul 98 7:01 pm
Sample : N-91-1-16.07 ; 50 ug/L CAL4
Misc :

Vial: 5
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap

Scan Number 7106

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	22.9	217193	PASS
75	95	30	60	46.0	436212	PASS
95	95	100	100	100.0	948468	PASS
96	95	5	9	6.4	60484	PASS
173	174	0	2	0.0	0	PASS
174	95	50	100	83.9	795590	PASS
175	174	5	9	7.2	57383	PASS
176	174	95	101	97.4	774516	PASS
177	176	5	9	6.3	48890	PASS

V8071605.D V80717.M Fri Jul 17 10:05:22 1998

BFB

Data File : C:\HPCHEM\1\DATA\V80716\V8071609.D
Acq On : 17 Jul 98 9:48 am
Sample : N-91-1-16.11 ; 50 ug/L CAL4
Misc :

Vial: 5
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap

Scan Number 7084

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	25.2	204234	PASS
75	95	30	60	49.1	397839	PASS
95	95	100	100	100.0	810442	PASS
96	95	5	9	6.4	52062	PASS
173	174	0	2	0.0	0	PASS
174	95	50	100	82.6	669829	PASS
175	174	5	9	7.6	50605	PASS
176	174	95	101	97.8	655232	PASS
177	176	5	9	6.5	42574	PASS

V8071609.D V80717.M Fri Jul 17 10:48:57 1998

BFB

Data File : C:\HPCHEM\1\DATA\V80716\V8071619.D
Acq On : 18 Jul 98 11:00 am
Sample : N-91-1-16.21 ; 50 ug/L CAL4
Misc :

Vial: 1
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap

Scan Number 7098

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	25.5	192567	PASS
75	95	30	60	50.0	377189	PASS
95	95	100	100	100.0	754491	PASS
96	95	5	9	6.4	48212	PASS
173	174	0	2	0.0	0	PASS
174	95	50	100	81.6	615383	PASS
175	174	5	9	7.5	46139	PASS
176	174	95	101	98.4	605829	PASS
177	176	5	9	6.4	38844	PASS

V8071619.D V80717.M Sat Jul 18 12:18:53 1998

Initial Calibration Data

Response Factor Report 5971 - VO

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Initial Calibration

Calibration Files
50 =V8071605.D 5 =V8071602.D 10 =V8071603.D
25 =V8071604.D 100 =V8071606.D

		Compound	50	5	10	25	100	Avg	%RSD
1)	IS	Fluorobenzene	----------ISTD----------						
2)	P	Chloromethane	0.159	0.217	0.163	0.134	0.185	0.171	18.18
3)	C	Vinyl Chloride	0.279	0.291	0.292	0.267	0.290	0.284	3.85
4)	C/L	1,1-Dichloroethene	0.267	0.242	0.252	0.238	0.269	0.254	5.55
5)	P	1,1-Dichloroethane	0.543	0.495	0.528	0.500	0.558	0.525	5.19
6)	C	Chloroform	0.812	0.724	0.794	0.751	0.813	0.779	5.13
7)	SS	Dibromofluoromethane	0.472	0.426	0.586	0.449	0.488	0.484	12.75
8)	T	1,1,1-Trichloroethane	0.692	0.655	0.708	0.645	0.695	0.679	4.06
9)	SS	1,2-Dichloroethane-d4	0.063	0.055	0.077	0.060	0.063	0.064	12.40
10)	L	Benzene	0.874	0.759	0.821	0.790	0.923	0.833	7.88
11)	L	Trichloroethene	0.367	0.317	0.354	0.333	0.364	0.347	6.20
12)	C	1,2-Dichloropropane	0.243	0.205	0.224	0.222	0.248	0.228	7.72
13)	SS	Toluene-d8	0.869	0.702	1.020	0.795	0.918	0.861	14.00
14)	C/L	Toluene	0.605	0.517	0.576	0.554	0.633	0.577	7.78
15)	IS	Chlorobenzene-d5	----------ISTD----------						
16)	P/L	Chlorobenzene	1.012	0.920	0.986	0.936	1.053	0.982	5.57
17)	C	Ethylbenzene	1.741	1.459	1.654	1.577	1.742	1.635	7.33
18)	SS	4-BFB	0.620	0.562	0.791	0.598	0.634	0.641	13.76
19)	IS	1,4-Dichlorobenzene-d	----------ISTD----------						
20)	P	Bromoform	0.736	0.575	0.669	0.655	0.754	0.678	10.55
21)	P	1,1,2,2-Tetrachloroet	0.789	0.637	0.708	0.713	0.802	0.730	9.20

(#) = Out of Range

V80717.M Mon Aug 03 14:30:58 1998

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071601.D
Acq On : 16 Jul 98 2:22 pm
Sample : N-91-1-16.03 ; METHOD BLANK
Misc :
Quant Time: Aug 3 14:42 1998

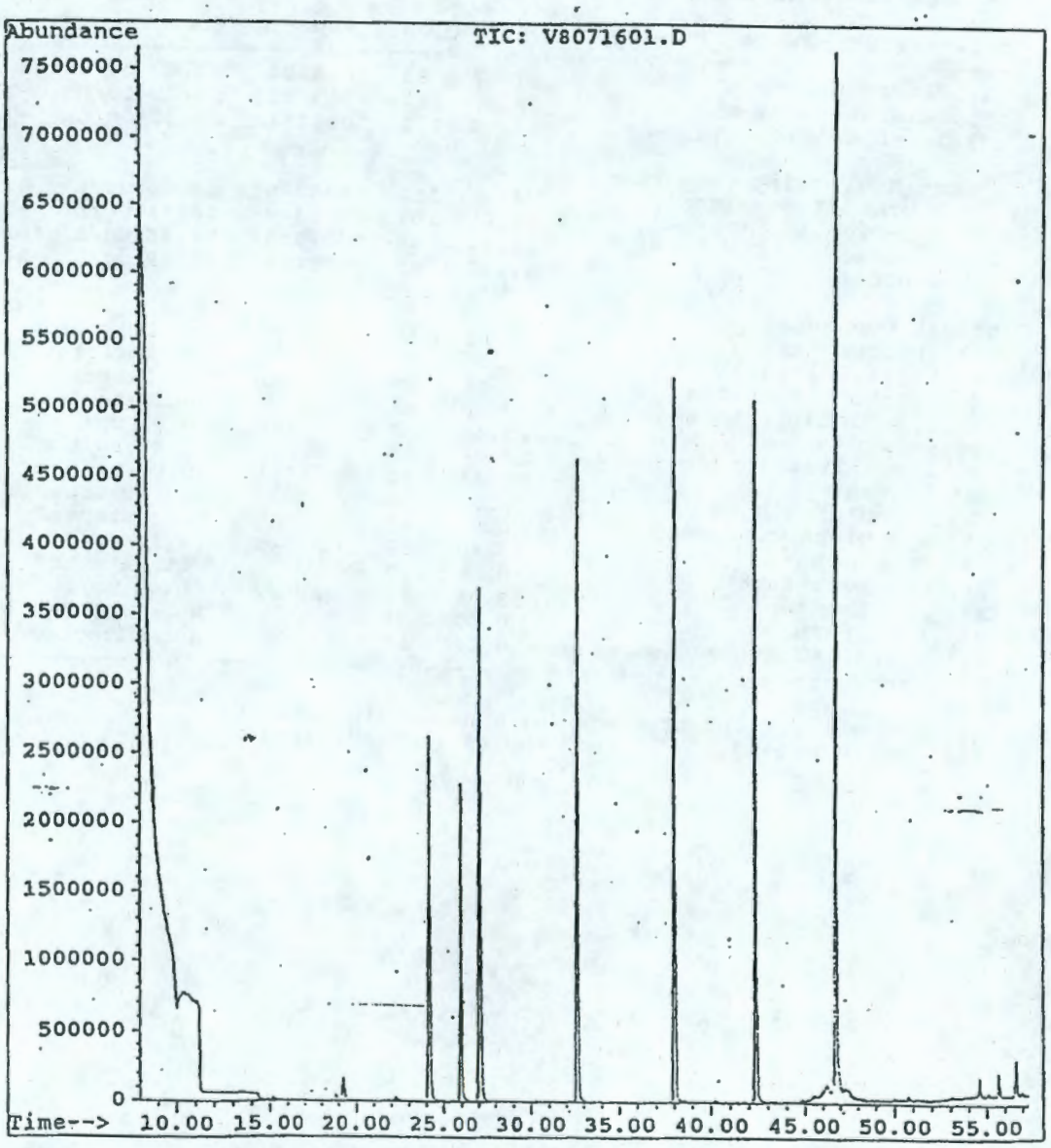
Vial: 1
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.07	96	12018898	50.00 ug/L	-0.07
15) Chlorobenzene-d5	38.02	117	9533631	50.00 ug/L	-0.07
19) 1,4-Dichlorobenzene-d4	46.75	152	7094582	50.00 ug/L	-0.07
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.20	113	5693635	48.94 ug/L	97.88%
9) 1,2-Dichloroethane-d4	25.95	102	711747	46.44 ug/L	92.88%
13) Toluene-d8	32.64	98	10609756	51.26 ug/L	102.53%
18) 4-BFB	42.36	95	5779084	47.29 ug/L	94.59%
Target Compounds					Qvalue
2) Chloromethane	0.00	50		Not Detected	
3) Vinyl Chloride	0.00	62		Not Detected	
4) 1,1-Dichloroethene	0.00	96		Not Detected	
5) 1,1-Dichloroethane	0.00	63		Not Detected	
6) Chloroform	23.46	83	994	0.01 ug/L	90
8) 1,1,1-Trichloroethane	24.88	97	11961	0.07 ug/L m	24
10) Benzene	26.47	78	1861	0.01 ug/L	100
11) Trichloroethene	0.00	95		Not Detected	
12) 1,2-Dichloropropane	0.00	63		Not Detected	
14) Toluene	32.90	92	22841	0.16 ug/L	1
16) Chlorobenzene	0.00	112		Not Detected	
17) Ethylbenzene	38.54	91	29482	0.09 ug/L	91
20) Bromoform	0.00	173		Not Detected	
21) 1,1,2,2-Tetrachloroethane	0.00	83		Not Detected	

(#) = qualifier out of range (m) = manual integration
V8071601.D V80717,M Mon Aug 03 14:42:57 1998

File : C:\HPCHEM\1\DATA\V80716\V8071601.D
Operator : Fies/Bonfoey
Acquired : 16 Jul 98 2:22 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.03 ; METHOD BLANK
Misc Info :
Vial Number: 1



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071602.D
Acq On : 16 Jul 98 3:30 pm
Sample : N-91-1-16.04 ; 5 ug/L CAL1
Misc :
Quant Time: Aug 3 14:50 1998

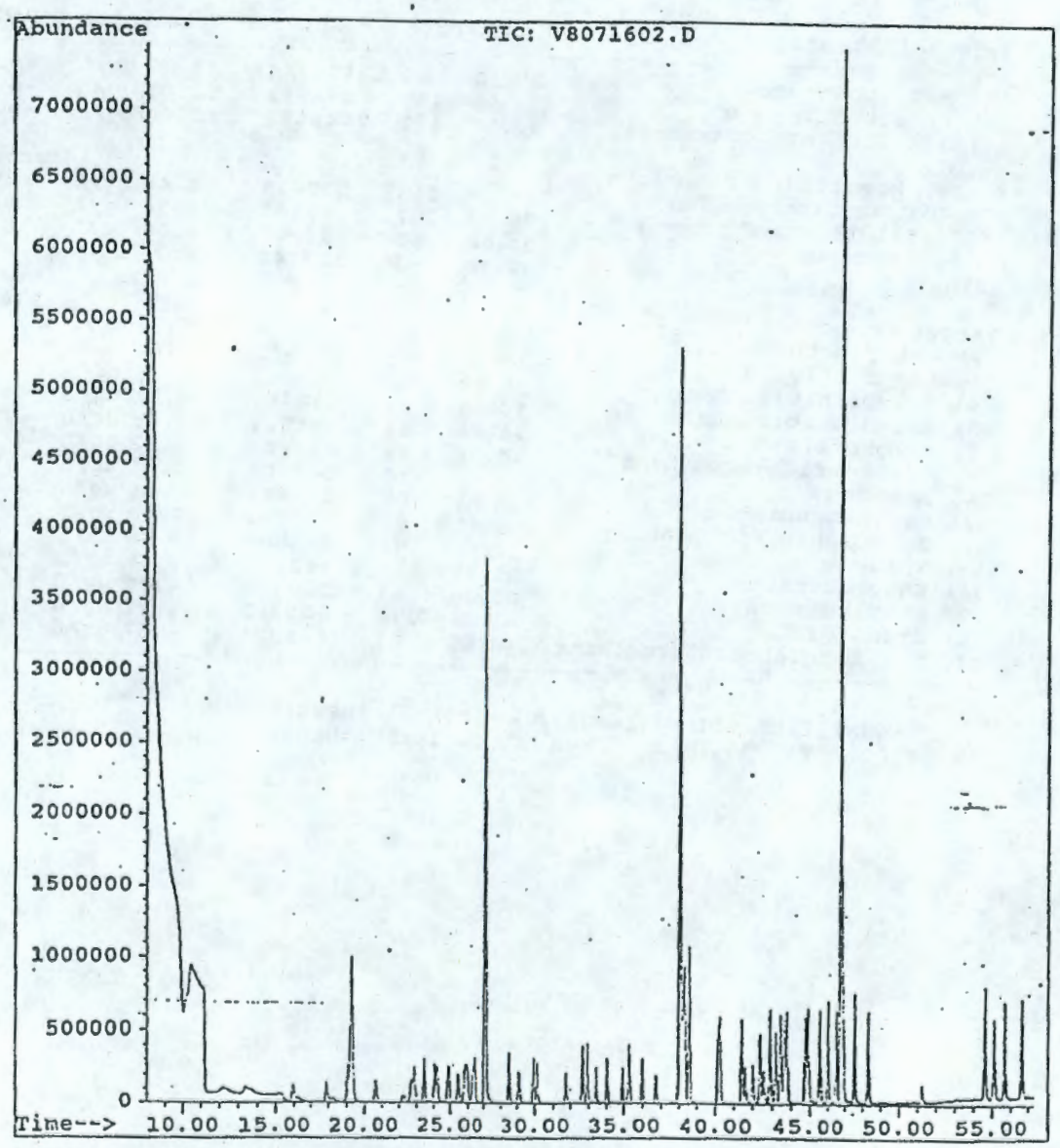
Vial: 2
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.10	96	12498744	50.00 ug/L	-0.04
15) Chlorobenzene-d5	38.05	117	9591882	50.00 ug/L	-0.04
19) 1,4-Dichlorobenzene-d4	46.78	152	7045582	50.00 ug/L	-0.04
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24:22	113	532075	4.40 ug/L	8.80%
9) 1,2-Dichloroethane-d4	25.97	102	69202	4.34 ug/L	8.68%
13) Toluene-d8	32.66	98	877977	4.08 ug/L	8.16%
18) 4-BFB	42.38	95	538942	4.38 ug/L	8.77%
Target Compounds					Qvalue
2) Chloromethane	9.69	50	288268	6.72 ug/L m	45
3) Vinyl Chloride	10.43	62	355961	5.02 ug/L m	43
4) 1,1-Dichloroethene	15.98	96	301485	4.76 ug/L m	1
5) 1,1-Dichloroethane	20.65	63	618361	4.71 ug/L	100
6) Chloroform	23.44	83	904528	4.65 ug/L	98
8) 1,1,1-Trichloroethane	24.92	97	818206	4.82 ug/L	99
10) Benzene	26.41	78	949103	4.56 ug/L	100
11) Trichloroethene	28.51	95	395837	4.56 ug/L	100
12) 1,2-Dichloropropane	29.12	63	255691	4.48 ug/L	95
14) Toluene	32.95	92	645889	4.48 ug/L	97
16) Chlorobenzene	38.19	112	882556	4.69 ug/L	84
17) Ethylbenzene	38.30	91	1399402	4.46 ug/L	97
20) Bromoform	41.61	173	405093	4.24 ug/L	99
21) 1,1,2,2-Tetrachloroethane	42.00	83	448905	4.37 ug/L	98

(#) = qualifier out of range (m) = manual integration
V8071602.D V80717.M Mon Aug 03 14:50:50 1998

File : C:\HPCHEM\1\DATA\V80716\V8071602.D
Operator : Fies/Bonfoey
Acquired : 16 Jul 98 3:30 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.04 ; 5 ug/L CAL1
Misc Info :
Vial Number: 2



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071603.D
Acq On : 16 Jul 98 4:41 pm
Sample : N-91-1-16.05 ; 10 ug/L CAL2
Misc :
Quant Time: Aug 3 14:55 1998

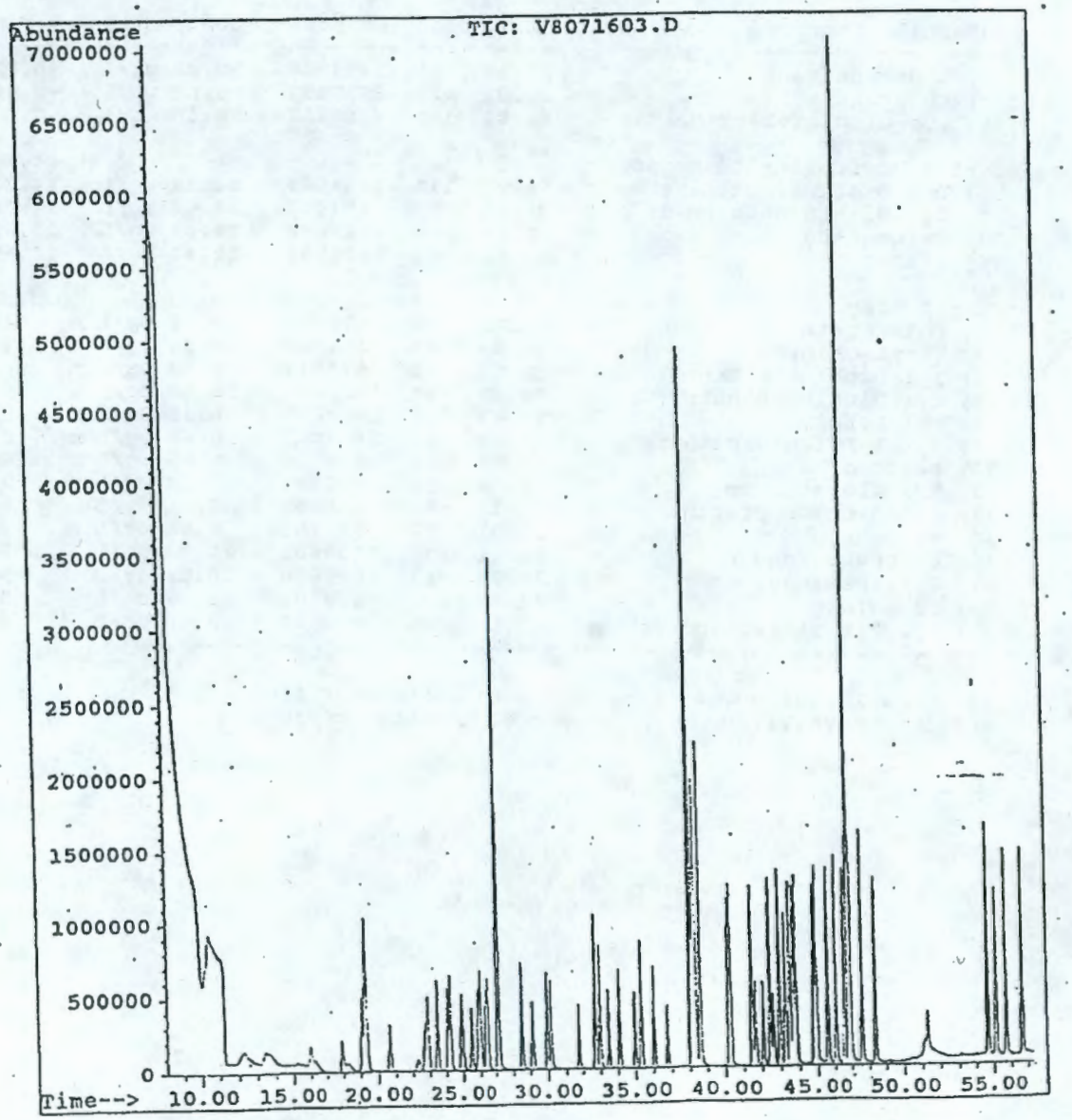
Vial: 3
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.12	96	11389048	50.00 ug/L	-0.02
15) Chlorobenzene-d5	38.07	117	8909233	50.00 ug/L	-0.02
19) 1,4-Dichlorobenzene-d4	46.81	152	6562381	50.00 ug/L	-0.01
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.23	113	1334986	12.11 ug/L	24.22%
9) 1,2-Dichloroethane-d4	26.00	102	174623	12.02 ug/L	24.05%
13) Toluene-d8	32.69	98	2323030	11.85 ug/L	23.69%
18) 4-BFB	42.41	95	1409185	12.34 ug/L	24.68%
Target Compounds					Qvalue
2) Chloromethane	9.73	50	374778	9.59 ug/L m	45
3) Vinyl Chloride	10.39	62	651804	10.09 ug/L m	43
4) 1,1-Dichloroethene	15.96	96	575844	9.97 ug/L m	1
5) 1,1-Dichloroethane	20.67	63	1202624	10.06 ug/L m	99
6) Chloroform	23.47	83	1808093	10.19 ug/L m	99
8) 1,1,1-Trichloroethane	24.92	97	1613601	10.43 ug/L m	99
10) Benzene	26.43	78	1870344	9.85 ug/L m	100
11) Trichloroethene	28.53	95	806334	10.20 ug/L m	99
12) 1,2-Dichloropropane	29.13	63	510753	9.81 ug/L m	92
14) Toluene	32.97	92	1311781	9.98 ug/L m	98
16) Chlorobenzene	38.21	112	1756601	10.04 ug/L	83
17) Ethylbenzene	38.32	91	2947999	10.12 ug/L	98
20) Bromoform	41.64	173	878180	9.87 ug/L	98
21) 1,1,2,2-Tetrachloroethane	42.04	83	928579	9.70 ug/L	98

(#) = qualifier out of range (m) = manual integration
V8071603.D V80717.M Mon Aug 03 14:56:04 1998

File : C:\HPCHEM\1\DATA\V80716\V8071603.D
Operator : Fies/Bonfoey
Acquired : 16 Jul 98 4:41 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.05 ; 10 ug/L CAL2
Misc Info :
Vial Number: 3



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071604.D
Acq On : 16 Jul 98 5:52 pm
Sample : N-91-1-16.06 ; 25 ug/L CAL3
Misc :
Quant Time: Aug 3 15:42 1998

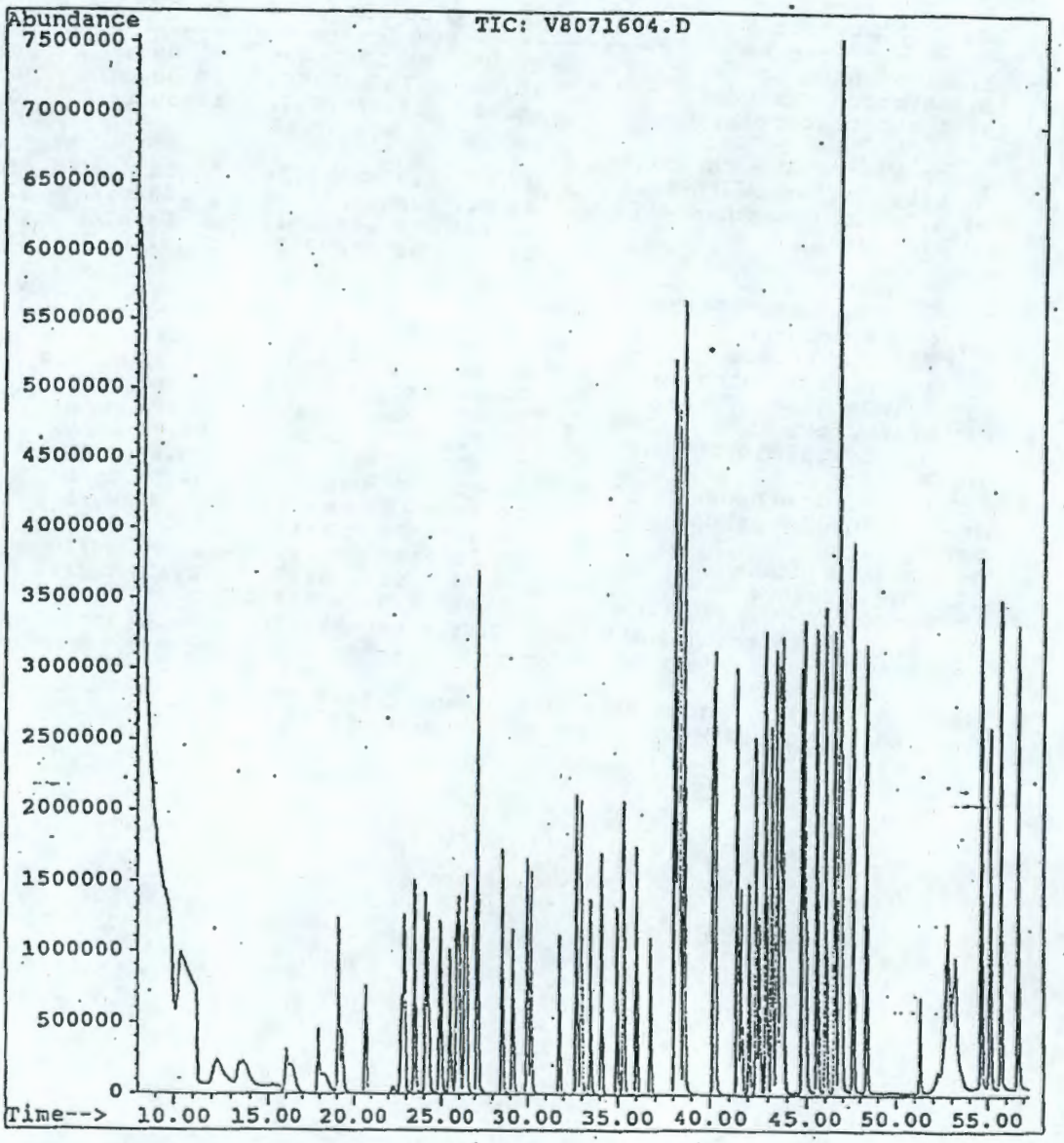
Vial: 4
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.14	96	12026238	50.00 ug/L	0.00
15) Chlorobenzene-d5	38.09	117	9613903	50.00 ug/L	0.00
19) 1,4-Dichlorobenzene-d4	46.82	152	7076602	50.00 ug/L	0.00
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.25	113	2698436	23.18 ug/L	46.36%
9) 1,2-Dichloroethane-d4	26.01	102	362348	23.63 ug/L	47.26%
13) Toluene-d8	32.70	98	4780516	23.08 ug/L	46.17%
18) 4-BFB	42.43	95	2873585	23.32 ug/L	46.64%
Target Compounds					Qvalue
2) Chloromethane	9.69	50	850660	20.62 ug/L m	88
3) Vinyl Chloride	10.36	62	1703527	24.98 ug/L m	43
4) 1,1-Dichloroethene	16.02	96	1434726	23.52 ug/L m	78
5) 1,1-Dichloroethane	20.69	63	3004904	23.81 ug/L	86
6) Chloroform	23.49	83	4512856	24.09 ug/L	99
8) 1,1,1-Trichloroethane	24.95	97	3879297	23.75 ug/L	99
10) Benzene	26.46	78	4748882	23.69 ug/L	100
11) Trichloroethene	28.55	95	2003459	24.01 ug/L	100
12) 1,2-Dichloropropane	29.14	63	1335367	24.30 ug/L	100
14) Toluene	32.98	92	3331892	24.01 ug/L	98
16) Chlorobenzene	38.23	112	4500082	23.84 ug/L	84
17) Ethylbenzene	38.34	91	7578729	24.11 ug/L	99
20) Bromoform	41.66	173	2315834	24.14 ug/L	99
21) 1,1,2,2-Tetrachloroethane	42.05	83	2524467	24.44 ug/L	99

(#) = qualifier out of range (m) = manual integration
V8071604.D V80717.M Mon Aug 03 15:43:01 1998

File : C:\HPCHEM\1\DATA\V80716\V8071604.D
Operator : Fies/Bonfoey
Acquired : 16 Jul 98 5:52 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.06 ; 25 ug/L CAL3
Misc Info :
Vial Number: 4



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071605.D
Acq On : 16 Jul 98 7:01 pm
Sample : N-91-1-16.07 ; 50 ug/L CAL4
Misc :
Quant Time: Aug 3 15:54 1998

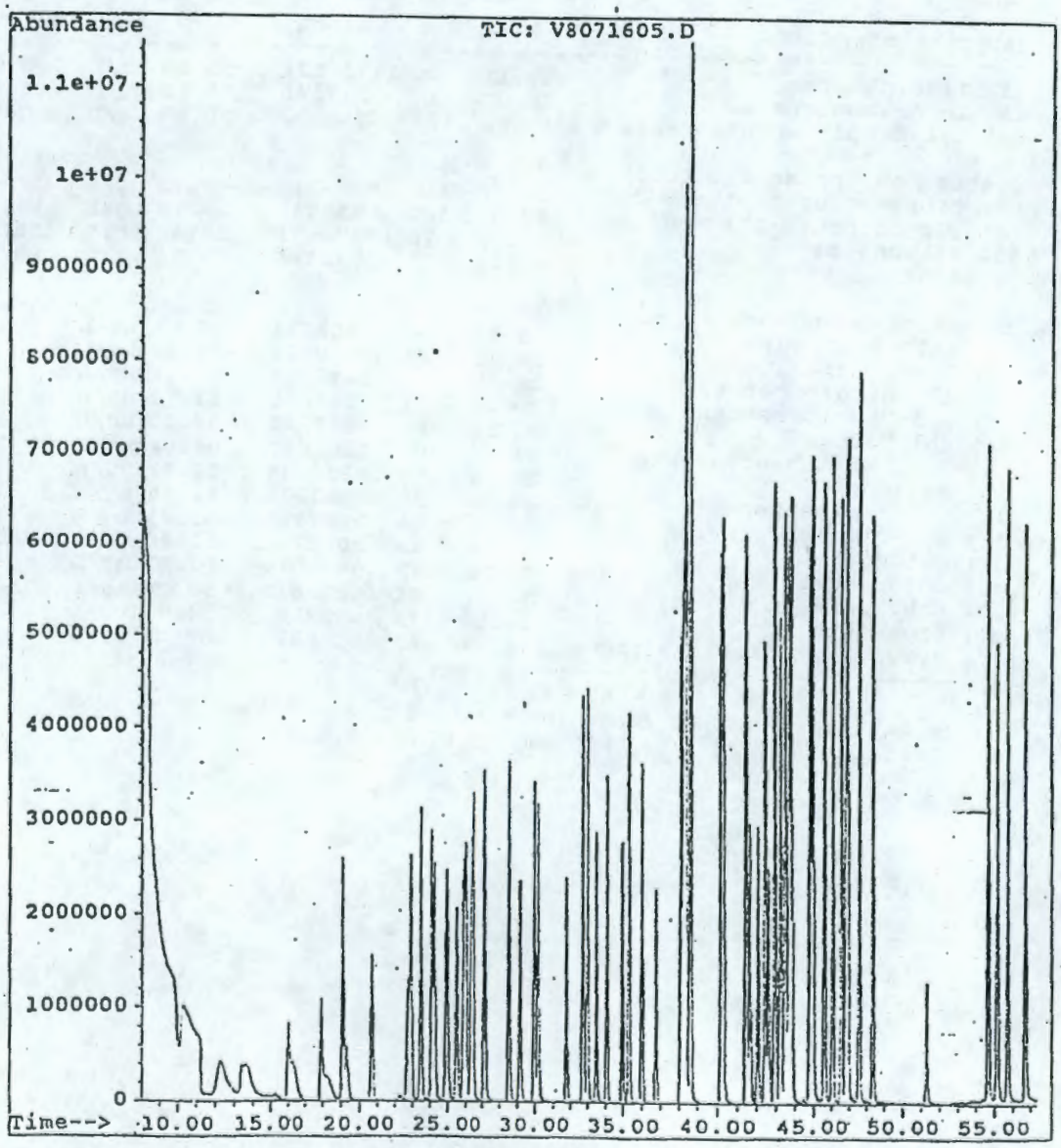
Vial: 5
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.14	96	11710826	50.00 ug/L	0.00
15) Chlorobenzene-d5	38.09	117	9313540	50.00 ug/L	0.00
19) 1,4-Dichlorobenzene-d4	46.83	152	6564383	50.00 ug/L	0.00
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.27	113	5522350	48.72 ug/L	97.44%
9) 1,2-Dichloroethane-d4	26.01	102	738016	49.42 ug/L	98.84%
13) Toluene-d8	32.70	98	10178488	50.47 ug/L	100.95%
18) 4-BFB	42.42	95	5770809	48.34 ug/L	96.68%
Target Compounds					Qvalue
2) Chloromethane	9.74	50	1866314	46.46 ug/L m	45
3) Vinyl Chloride	10.38	62	3262729	49.13 ug/L m	43
4) 1,1-Dichloroethene	16.03	96	3117345	52.49 ug/L m	85
5) 1,1-Dichloroethane	20.70	63	6364670	51.79 ug/L	100
6) Chloroform	23.50	83	9512221	52.15 ug/L	100
8) 1,1,1-Trichloroethane	24.96	97	8103097	50.94 ug/L	100
10) Benzene	26.46	78	10234134	52.43 ug/L	100
11) Trichloroethene	28.56	95	4303628	52.96 ug/L	100
12) 1,2-Dichloropropane	29.15	63	2847468	53.21 ug/L	99
14) Toluene	32.99	92	7086310	52.44 ug/L	100
16) Chlorobenzene	38.23	112	9428674	51.57 ug/L	85
17) Ethylbenzene	38.34	91	16215615	53.26 ug/L	100
20) Bromoform	41.66	173	4832881	54.31 ug/L	100
21) 1,1,2,2-Tetrachloroethane	42.06	83	5179313	54.06 ug/L	100

(#) = qualifier out of range (m) = manual integration
V8071605.D V80717.M Mon Aug 03 15:55:29 1998

File : C:\HPCHEM\1\DATA\V80716\V8071605.D
Operator : Fies/Bonfoey
Acquired. : 16 Jul 98 7:01 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.07 ; 50 ug/L CAL4
Misc Info :
Vial Number: 5



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071606.D
Acq On : 16 Jul 98 8:09 pm
Sample : N-91-1-16.08 ; 100 ug/L CAL5
Misc :
Quant Time: Aug 3 15:57 1998

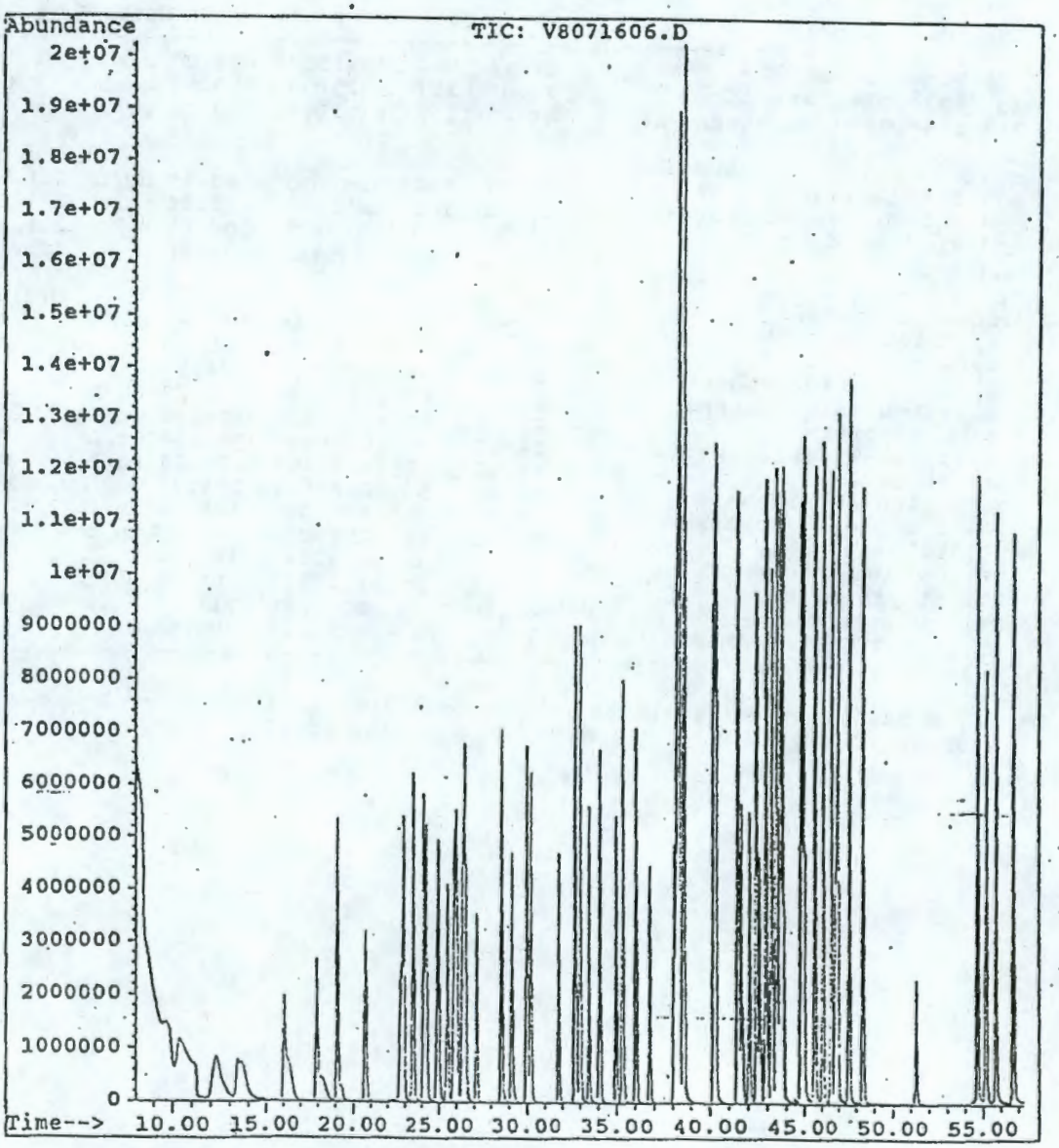
Vial: 6
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.14	96	11625557	50.00 ug/L	0.00
15) Chlorobenzene-d5	38.09	117	9023039	50.00 ug/L	0.00
19) 1,4-Dichlorobenzene-d4	46.82	152	6123094	50.00 ug/L	0.00
System Monitoring Compounds					**%Recovery**
7) Dibromofluoromethane	24.27	113	11340095	100.78 ug/L	201.55%
9) 1,2-Dichloroethane-d4	26.02	102	1475934	99.56 ug/L	199.12%
13) Toluene-d8	32.71	98	21355033	106.67 ug/L	213.35%
18) 4-BFB	42.42	95	11445347	98.96 ug/L	197.93%
Target Compounds					**Qvalue**
2) Chloromethane	9.75	50	4573044	114.69 ug/L m	45
3) Vinyl Chloride	10.37	62	6935523	105.20 ug/L m	43
4) 1,1-Dichloroethene	16.04	96	6291506	106.71 ug/L m	99
5) 1,1-Dichloroethane	20.71	63	12966170	106.28 ug/L	99
6) Chloroform	23.50	83	18913829	104.46 ug/L	100
8) 1,1,1-Trichloroethane	24.96	97	16169697	102.40 ug/L	99
10) Benzene	26.47	78	21465286	110.77 ug/L	100
11) Trichloroethene	28.55	95	8452373	104.77 ug/L	100
12) 1,2-Dichloropropane	29.15	63	5776563	108.73 ug/L	99
14) Toluene	32.99	92	14711925	109.67 ug/L	100
16) Chlorobenzene	38.23	112	19007427	107.31 ug/L	87
17) Ethylbenzene	38.34	91	31432991	106.56 ug/L	98
20) Bromoform	41.65	173	9236635	111.28 ug/L	99
21) 1,1,2,2-Tetrachloroethane	42.05	83	9817240	109.85 ug/L	100

(#) = qualifier out of range (m) = manual integration
V8071606.D V80717.M Mon Aug 03 15:58:41 1998

File : C:\HPCHEM\1\DATA\V80716\V8071606.D
Operator : Fies/Bonfoey
Acquired : 16 Jul 98 8:09 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.08 ; 100 ug/L CAL5
Misc Info :
Vial Number: 6



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071607.D
Acq On : 16 Jul 98 9:15 pm
Sample : N-91-1-16.09 ; 50 ug/L LCS
Misc :
Quant Time: Aug 3 16:10 1998

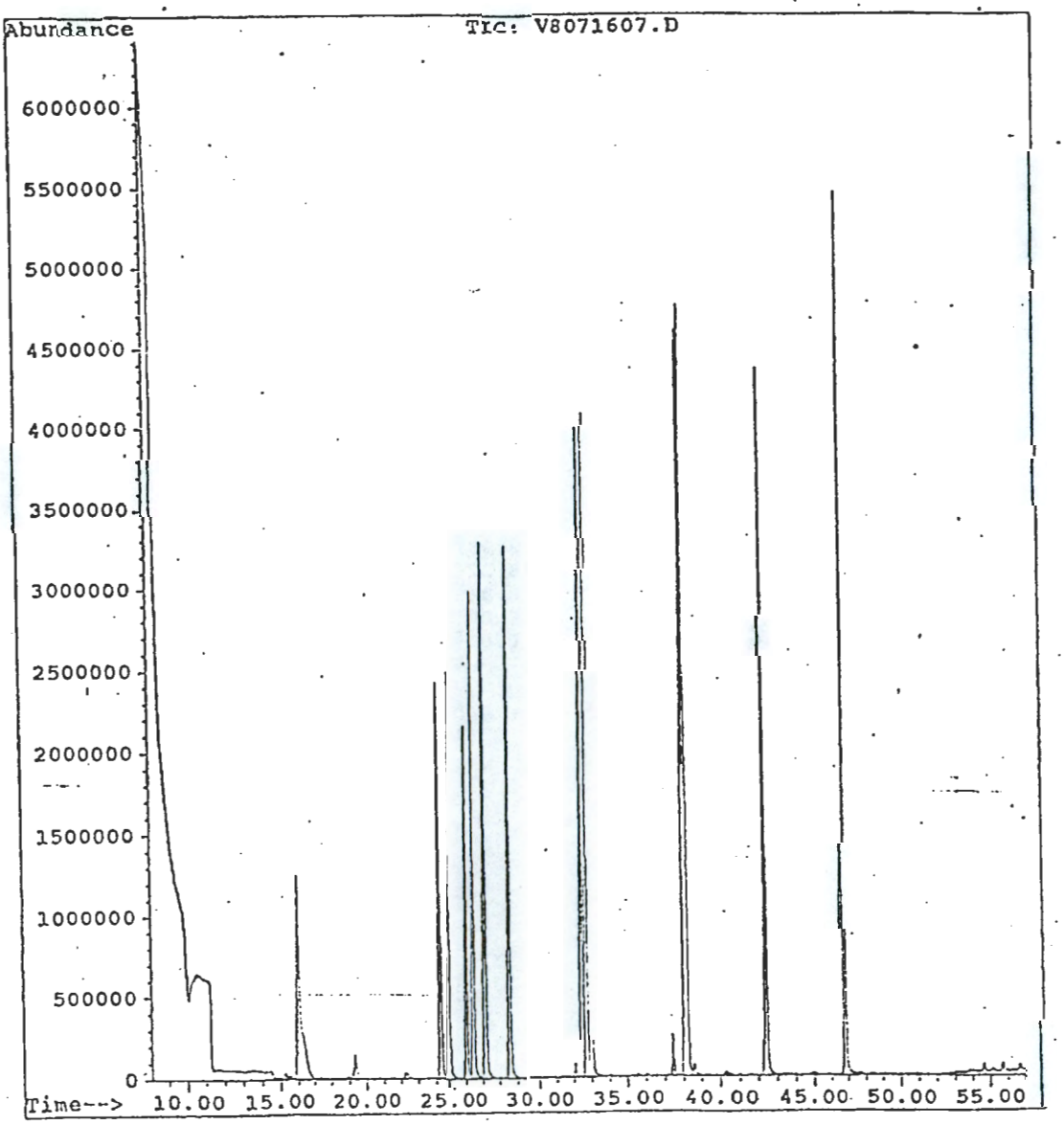
Vial: 7
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.14	96	10928908	50.00 ug/L	0.00
15) Chlorobenzene-d5	38.08	117	8375754	50.00 ug/L	0.00
19) 1,4-Dichlorobenzene-d4	46.82	152	5022692	50.00 ug/L	0.00
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.27	113	5319318	50.28 ug/L	100.57%
9) 1,2-Dichloroethane-d4	26.01	102	673458	48.32 ug/L	96.65%
13) Toluene-d8	32.70	98	9303393	49.44 ug/L	98.87%
18) 4-BFB	42.42	95	4953750	46.14 ug/L	92.29%
Target Compounds					Qvalue
2) Chloromethane	0.00	50		Not Detected	
3) Vinyl Chloride	0.00	62		Not Detected	
4) 1,1-Dichloroethene	16.04	96	3064332	55.29 ug/L m	89
5) 1,1-Dichloroethane	0.00	63		Not Detected	
6) Chloroform	23.51	83	6981	0.04 ug/L m	1
8) 1,1,1-Trichloroethane	24.95	97	7966312	53.67 ug/L	53
10) Benzene	26.47	78	9413877	51.67 ug/L	100
11) Trichloroethene	28.55	95	3866180	50.98 ug/L	100
12) 1,2-Dichloropropane	0.00	63		Not Detected	
14) Toluene	32.98	92	6566995	52.08 ug/L	99
16) Chlorobenzene	38.22	112	8655923	52.64 ug/L	98
17) Ethylbenzene	38.34	91	23232	0.08 ug/L	72
20) Bromoform	0.00	173		Not Detected	
21) 1,1,2,2-Tetrachloroethane	0.00	83		Not Detected	

(#) = qualifier out of range (m) = manual integration
V8071607.D V80717.M Mon Aug 03 16:11:06 1998

File : C:\HPCHEM\1\DATA\V80716\V8071607.D
Operator : Fies/Bonfoey
Acquired : 16 Jul 98 9:15 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.09 ; 50 ug/L LCS
Misc Info :
Vial Number: 7



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071608.D
Acq On : 16 Jul 98 10:21 pm
Sample : N-91-1-16.10 ; 50 ug/L CAL CHECK
Misc :
Quant Time: Aug 3 16:16 1998

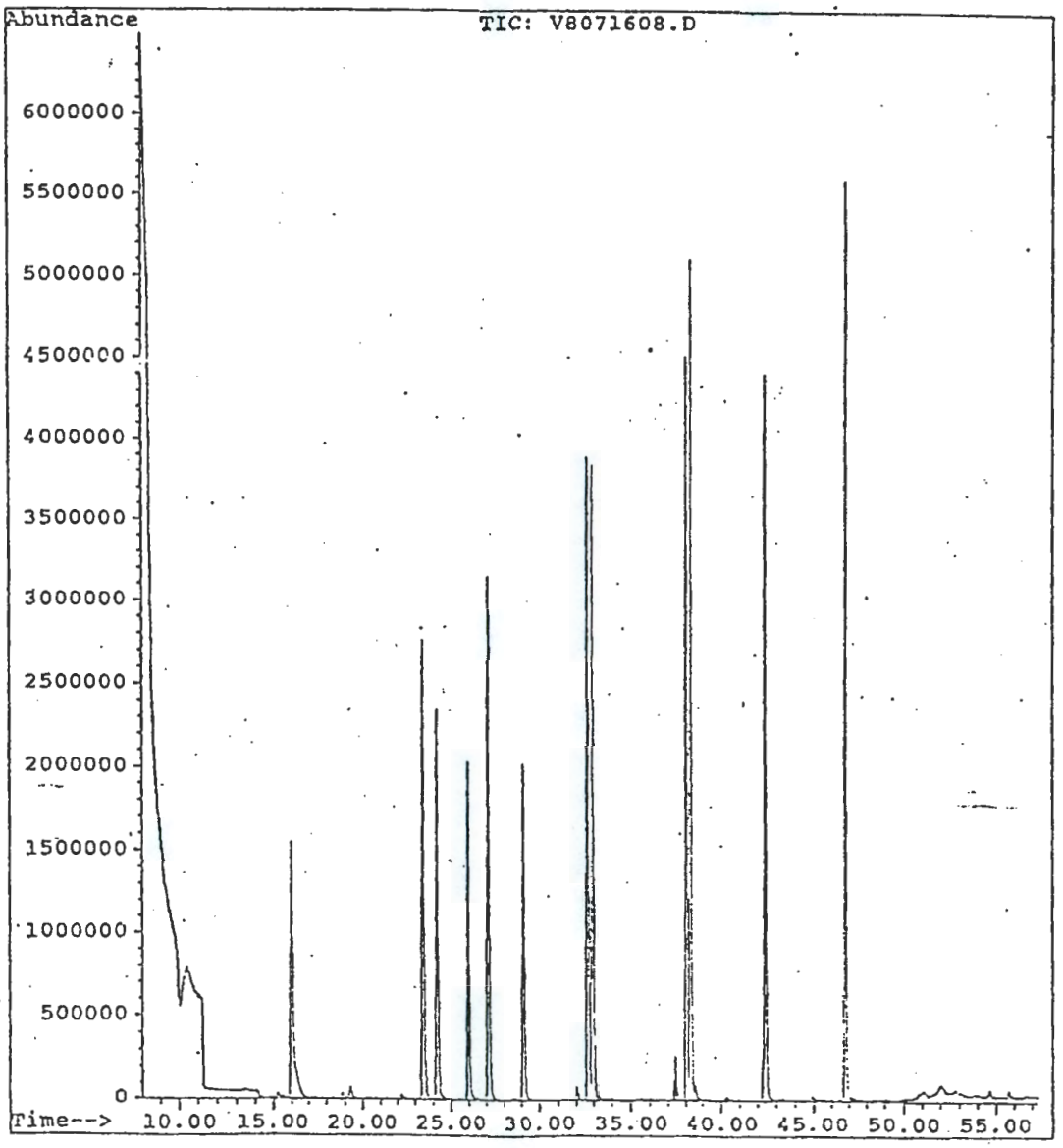
Vial: 8
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.13	96	9985051	50.00 ug/L	0.00
15) Chlorobenzene-d5	38.07	117	8134500	50.00 ug/L	-0.02
19) 1,4-Dichlorobenzene-d4	46.79	152	5049791	50.00 ug/L	-0.03
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.25	113	5046588	52.22 ug/L	104.43%
9) 1,2-Dichloroethane-d4	26.00	102	609295	47.85 ug/L	95.71%
13) Toluene-d8	32.68	98	8844042	51.44 ug/L	102.87%
18) 4-BFB	42.40	95	4960372	47.58 ug/L	95.15%
Target Compounds					Qvalue
2) Chloromethane	0.00	50		Not Detected	
3) Vinyl Chloride	10.33	62	3381370	59.72 ug/L m	0
4) 1,1-Dichloroethene	16.04	96	2879986	56.87 ug/L m	88
5) 1,1-Dichloroethane	0.00	63		Not Detected	
6) Chloroform	23.49	83	8261690	53.12 ug/L	100
8) 1,1,1-Trichloroethane	24.98	97	5660	0.04 ug/L	66
10) Benzene	26.47	78	13529	0.08 ug/L	100
11) Trichloroethene	28.51	95	1584	0.02 ug/L	10
12) 1,2-Dichloropropane	29.13	63	2288889	50.16 ug/L	100
14) Toluene	32.96	92	6063087	52.63 ug/L	99
16) Chlorobenzene	0.00	112		Not Detected	
17) Ethylbenzene	38.31	91	13890589	52.23 ug/L	99
20) Bromoform	41.61	173	640	0.01 ug/L	29
21) 1,1,2,2-Tetrachloroethane	0.00	83		Not Detected	

(#) = qualifier out of range (m) = manual integration
V8071608.D V80717.M Mon Aug 03 16:16:28 1998

File : C:\HPCHEM\1\DATA\V80716\V8071608.D
Operator : Fies/Bonfoey
Acquired : 16 Jul 98 10:21 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.10 ; 50 ug/L CAL CHECK
Misc Info :
Vial Number: 8



Sample Analysis Data

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071610.D
Acq On : 17 Jul 98 10:54 am
Sample : N-91-1-16.12 ; METHOD BLANK
Misc :
Quant Time: Aug 3 16:26 1998

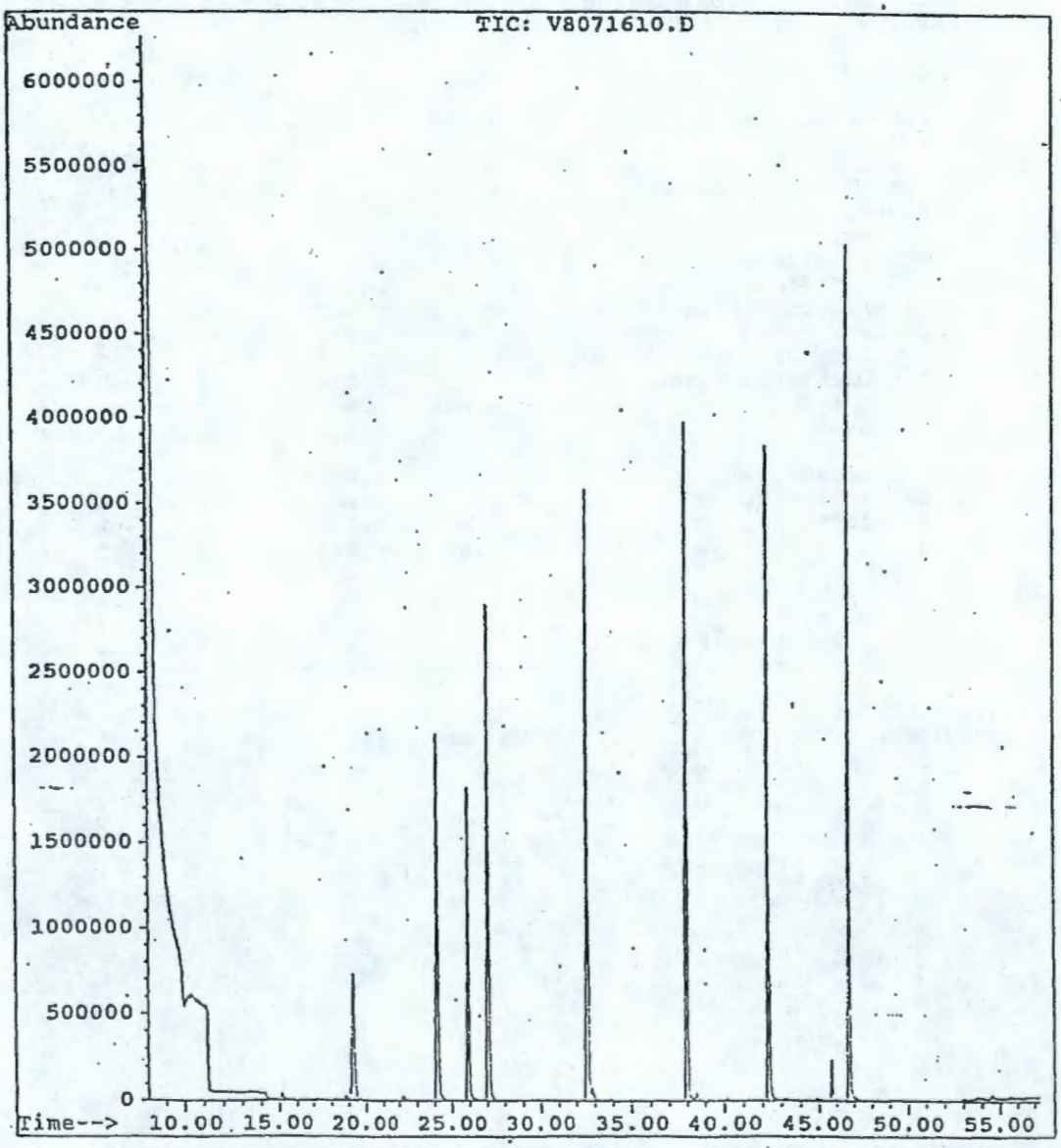
Vial: 1
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.04	96	9248164	50.00 ug/L	-0.10
15) Chlorobenzene-d5	37.98	117	7024804	50.00 ug/L	-0.10
19) 1,4-Dichlorobenzene-d4	46.73	152	4479087	50.00 ug/L	-0.10
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.17	113	4602546	51.42 ug/L	102.83%
9) 1,2-Dichloroethane-d4	25.91	102	537584	45.59 ug/L	91.17%
13) Toluene-d8	32.60	98	7930285	49.80 ug/L	99.59%
18) 4-BFB	42.32	95	4294197	47.69 ug/L	95.38%
Target Compounds					Qvalue
2) Chloromethane	0.00	50		Not Detected	
3) Vinyl Chloride	0.00	62		Not Detected	
4) 1,1-Dichloroethene	0.00	96		Not Detected	
5) 1,1-Dichloroethane	0.00	63		Not Detected	
6) Chloroform	0.00	83		Not Detected	
8) 1,1,1-Trichloroethane	24.88	97	12647	0.10 ug/L m	43
10) Benzene	0.00	78		Not Detected	
11) Trichloroethene	0.00	95		Not Detected	
12) 1,2-Dichloropropane	0.00	63		Not Detected	
14) Toluene	32.89	92	104834	0.98 ug/L	96
16) Chlorobenzene	0.00	112		Not Detected	
17) Ethylbenzene	38.25	91	26212	0.11 ug/L m	75
20) Bromoform	0.00	173		Not Detected	
21) 1,1,2,2-Tetrachloroethane	0.00	83		Not Detected	

(#) = qualifier out of range (m) = manual integration
V8071610.D V80717.M Mon Aug 03 16:27:52 1998

File : C:\HPCHEM\1\DATA\V80716\V8071610.D
Operator : Fies/Bonfoey
Acquired : 17 Jul 98 10:54 am using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.12 ; METHOD BLANK
Misc Info :
Vial Number: 1



Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071611.D
Acq On : 17 Jul 98 12:00 pm
Sample : N-91-1-16.13 ; 50 ug/L CAL4
Misc :

Vial: 1
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IS	Fluorobenzene	1.000	1.000	0.0	95	-0.08
2	P	Chloromethane	0.171	0.300	-74.7#	179#	-0.09
3	C	Vinyl Chloride	0.284	0.290	-2.4	99	-0.15
4	C/L	1,1-Dichloroethene	0.254	0.257	-1.4	92	-0.07
5	P	1,1-Dichloroethane	0.525	0.536	-2.1	94	-0.08
6	C	Chloroform	0.779	0.811	-4.1	95	-0.09
7	SS	Dibromofluoromethane	0.484	0.463	4.2	93	-0.08
8	T	1,1,1-Trichloroethane	0.679	0.743	-9.5	102	-0.09
9	SS	1,2-Dichloroethane-d4	0.064	0.057	11.2	85	-0.08
10	L	Benzene	0.833	0.842	-1.1	92	-0.08
11	L	Trichloroethene	0.347	0.366	-5.5	95	-0.08
12	C	1,2-Dichloropropane	0.228	0.235	-3.0	92	-0.09
13	SS	Toluene-d8	0.861	0.853	0.9	93	-0.09
14	C/L	Toluene	0.577	0.616	-6.8	97	-0.09
15	IS	Chlorobenzene-d5	1.000	1.000	0.0	93	-0.08
16	P/L	Chlorobenzene	0.982	1.016	-3.5	93	-0.09
17	C	Ethylbenzene	1.635	1.795	-9.8	96	-0.09
18	SS	4-BFB	0.641	0.620	3.3	93	-0.08
19	IS	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	93	-0.09
20	P	Bromoform	0.678	0.618	8.9	78	-0.09
21	P	1,1,2,2-Tetrachloroethane	0.730	0.629	13.8	74	-0.09

(#) = Out of Range SPCC's out = 0 CCC's out = 0
V8071605.D V80717.M Tue Aug 04 11:51:43 1998

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071611.D
Acq On : 17 Jul 98 12:00 pm
Sample : N-91-1-16.13 ; 50 ug/L CAL4
Misc :
Quant Time: Aug 4 11:49 1998

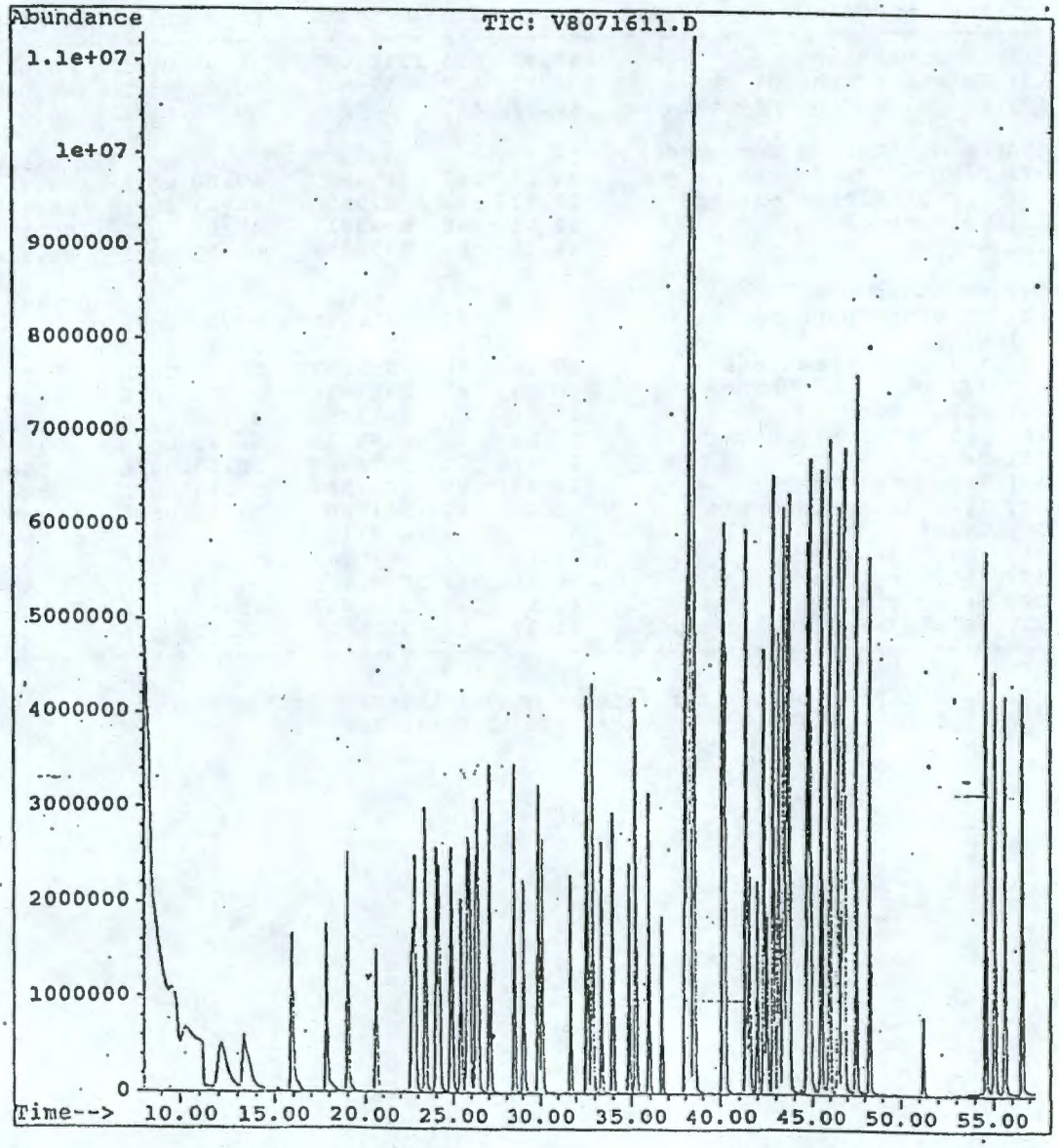
Vial: 1
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.06	96	11124057	50.00 ug/L	-0.08
15) Chlorobenzene-d5	38.00	117	8676579	50.00 ug/L	-0.08
19) 1,4-Dichlorobenzene-d4	46.73	152	6100872	50.00 ug/L	-0.09
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.18	113	5155529	47.88 ug/L	95.76%
9) 1,2-Dichloroethane-d4	25.93	102	629930	44.41 ug/L	88.82%
13) Toluene-d8	32.62	98	9493817	49.56 ug/L	99.12%
18) 4-BFB	42.34	95	5378807	48.37 ug/L	96.73%
Target Compounds					Qvalue
2) Chloromethane	9.65	50	3332695	87.35 ug/L m	45
3) Vinyl Chloride	10.23	62	3229935	51.20 ug/L m	43
4) 1,1-Dichloroethene	15.95	96	2859497	50.69 ug/L m	83
5) 1,1-Dichloroethane	20.62	63	5961036	51.06 ug/L	100
6) Chloroform	23.41	83	9017463	52.05 ug/L	99
8) 1,1,1-Trichloroethane	24.87	97	8268718	54.73 ug/L	100
10) Benzene	26.39	78	9370089	50.53 ug/L	100
11) Trichloroethene	28.48	95	4071383	52.74 ug/L	100
12) 1,2-Dichloropropane	29.06	63	2618803	51.51 ug/L	100
14) Toluene	32.90	92	6851226	53.38 ug/L	99
16) Chlorobenzene	38.14	112	8815443	51.76 ug/L	84
17) Ethylbenzene	38.25	91	15571716	54.90 ug/L	99
20) Bromoform	41.57	173	3768667	45.57 ug/L m	99
21) 1,1,2,2-Tetrachloroethane	41.97	83	3839735	43.12 ug/L	99

(#) = qualifier out of range (m) = manual integration
V8071611.D V80717.M Tue Aug 04 11:50:45 1998

File : C:\HPCHEM\1\DATA\V80716\V8071611.D
Operator : Fies/Bonfoey
Acquired : 17 Jul 98 12:00 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.13 ; 50 ug/L CAL4
Misc Info :
Vial Number: 1



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071612.D
Acq On : 17 Jul 98 1:24 pm
Sample : N-91-1-16.14; KON379
Misc : 5 ml sample size
Quant Time: Aug 4 12:01 1998

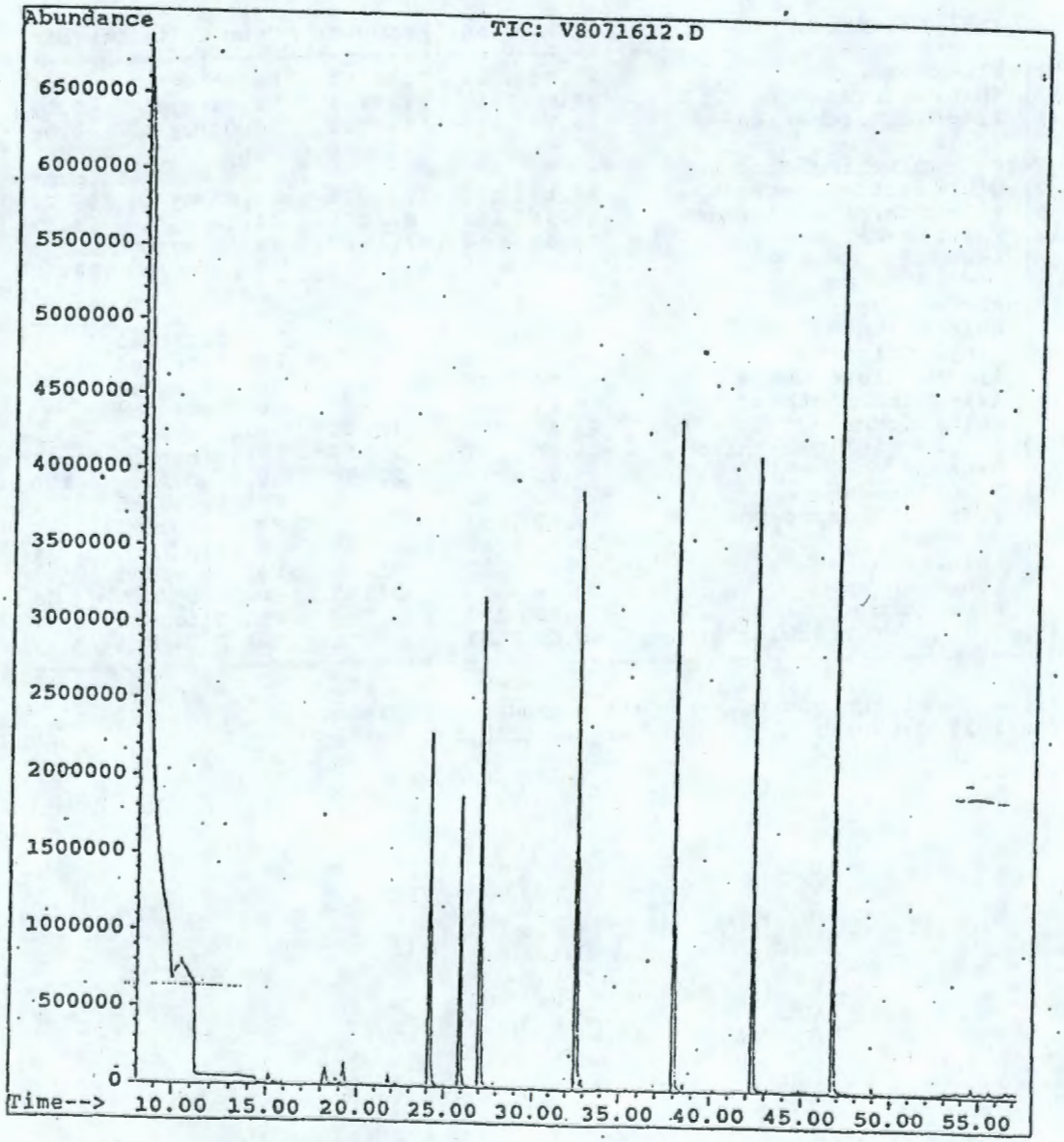
Vial: 2
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.06	96	10136443	50.00 ug/L	-0.08
15) Chlorobenzene-d5	38.01	117	7725764	50.00 ug/L	-0.07
19) 1,4-Dichlorobenzene-d4	46.75	152	4936012	50.00 ug/L	-0.08
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.19	113	4991049	50.87 ug/L	101.74%
9) 1,2-Dichloroethane-d4	25.94	102	573071	44.34 ug/L	88.67%
13) Toluene-d8	32.63	98	8714829	49.93 ug/L	99.86%
18) 4-BFB	42.35	95	4669907	47.16 ug/L	94.32%
Target Compounds					Qvalue
2) Chloromethane	0.00	50		Not Detected	
3) Vinyl Chloride	0.00	62		Not Detected	
4) 1,1-Dichloroethene	0.00	96		Not Detected	
5) 1,1-Dichloroethane	0.00	63		Not Detected	
6) Chloroform	23.45	83	10209	0.06 ug/L m	65
8) 1,1,1-Trichloroethane	24.90	97	21506	0.16 ug/L m	62
10) Benzene	26.39	78	22698	0.13 ug/L	100
11) Trichloroethene	0.00	95		Not Detected	
12) 1,2-Dichloropropane	0.00	63		Not Detected	
14) Toluene	32.92	92	110021	0.94 ug/L	94
16) Chlorobenzene	0.00	112		Not Detected	
17) Ethylbenzene	38.26	91	34185	0.14 ug/L m	50
20) Bromoform	0.00	173		Not Detected	
21) 1,1,2,2-Tetrachloroethane	0.00	83		Not Detected	

(#) = qualifier out of range (m) = manual integration
V8071612.D V80717.M Tue Aug 04 12:01:48 1998

File : C:\HPCHEM\1\DATA\V80716\V8071612.D
Operator : Fies/Bonfoey
Acquired : 17 Jul 98 1:24 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.14; KON379
Misc Info : 5 ml sample size
Vial Number: 2



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071613.D
Acq On : 17 Jul 98 2:37 pm
Sample : N-91-1-16.15; KON379MS
Misc : 5 ml sample size
Quant Time: Aug 4 12:09 1998

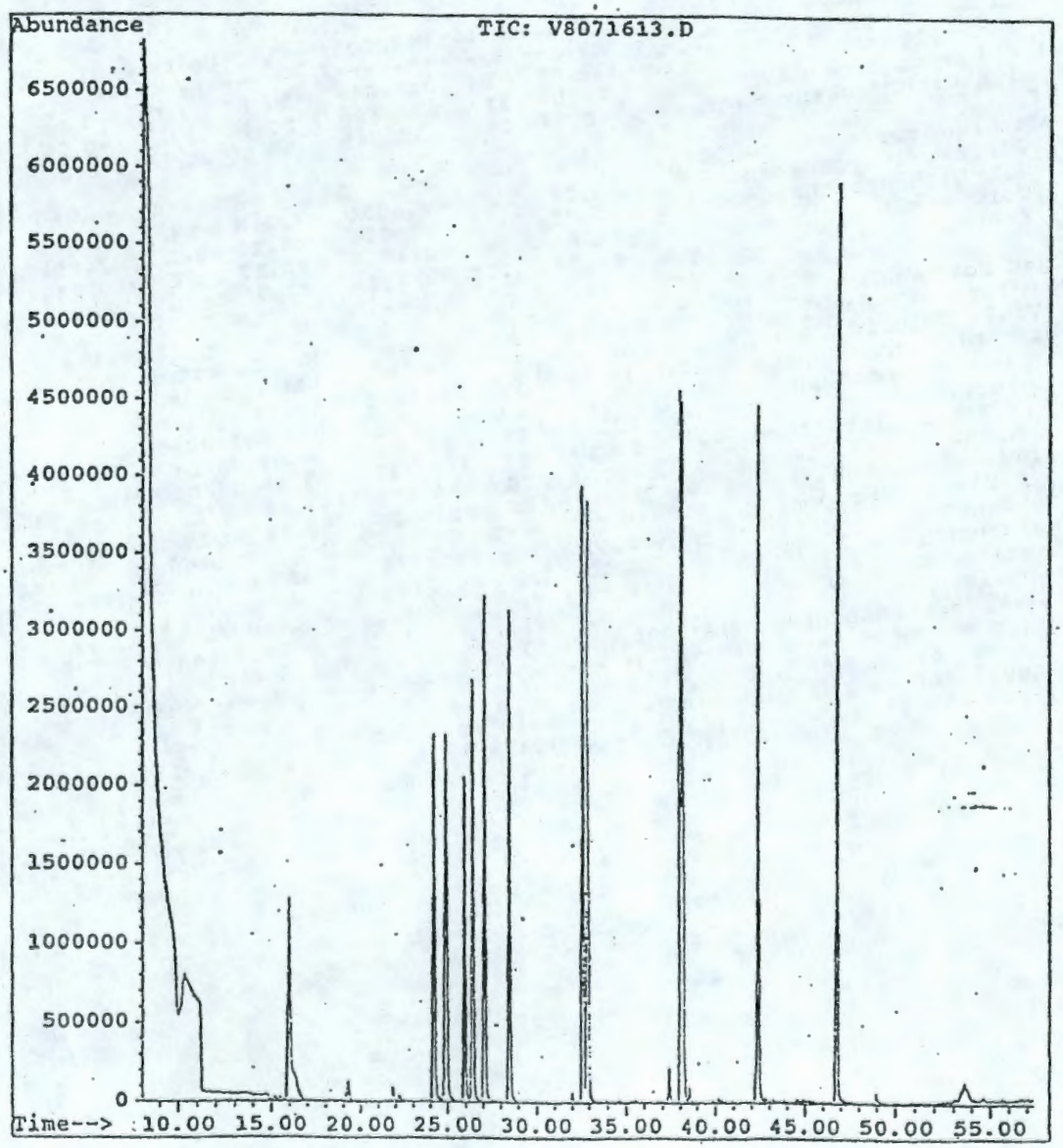
Vial: 2
Operator: Fies/Bonfoey
Inst : 5971 - Vo
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.08	96	10431082	50.00 ug/L	-0.06
15) Chlorobenzene-d5	38.03	117	8289690	50.00 ug/L	-0.06
19) 1,4-Dichlorobenzene-d4	46.77	152	5371545	50.00 ug/L	-0.06
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.19	113	4996954	49.49 ug/L	98.98%
9) 1,2-Dichloroethane-d4	25.95	102	613820	46.15 ug/L	92.29%
13) Toluene-d8	32.64	98	9011400	50.17 ug/L	100.34%
18) 4-BFB	42.36	95	5073183	47.75 ug/L	95.49%
Target Compounds					Qvalue
2) Chloromethane	0.00	50		Not Detected	
3) Vinyl Chloride	0.00	62		Not Detected	
4) 1,1-Dichloroethene	15.98	96	2615378	49.44 ug/L m	84
5) 1,1-Dichloroethane	0.00	63		Not Detected	
6) Chloroform	23.43	83	13094	0.08 ug/L	56
8) 1,1,1-Trichloroethane	24.88	97	7573447	53.46 ug/L	84
10) Benzene	26.40	78	8340128	47.96 ug/L	100
11) Trichloroethene	28.49	95	3635558	50.22 ug/L	99
12) 1,2-Dichloropropane	0.00	63		Not Detected	
14) Toluene	32.92	92	6078971	50.51 ug/L	100
16) Chlorobenzene	38.17	112	8049367	49.46 ug/L	97
17) Ethylbenzene	38.27	91	46541	0.17 ug/L	75
20) Bromoform	0.00	173		Not Detected	
21) 1,1,2,2-Tetrachloroethane	0.00	83		Not Detected	

(#) = qualifier out of range (m) = manual integration
V8071613.D V80717.M Tue Aug 04 12:09:29 1998

File : C:\HPCHEM\1\DATA\V80716\V8071613.D
Operator : Fies/Bonfoey
Acquired : 17 Jul 98 2:37 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.15; KON379MS
Misc Info : 5 ml sample size
Vial Number: 2



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071614.D
Acq On : 17 Jul 98 3:45 pm
Sample : N-91-1-16.16; KON379MSD
Misc : 5 ml sample size
Quant Time: Aug 4 12:17 1998

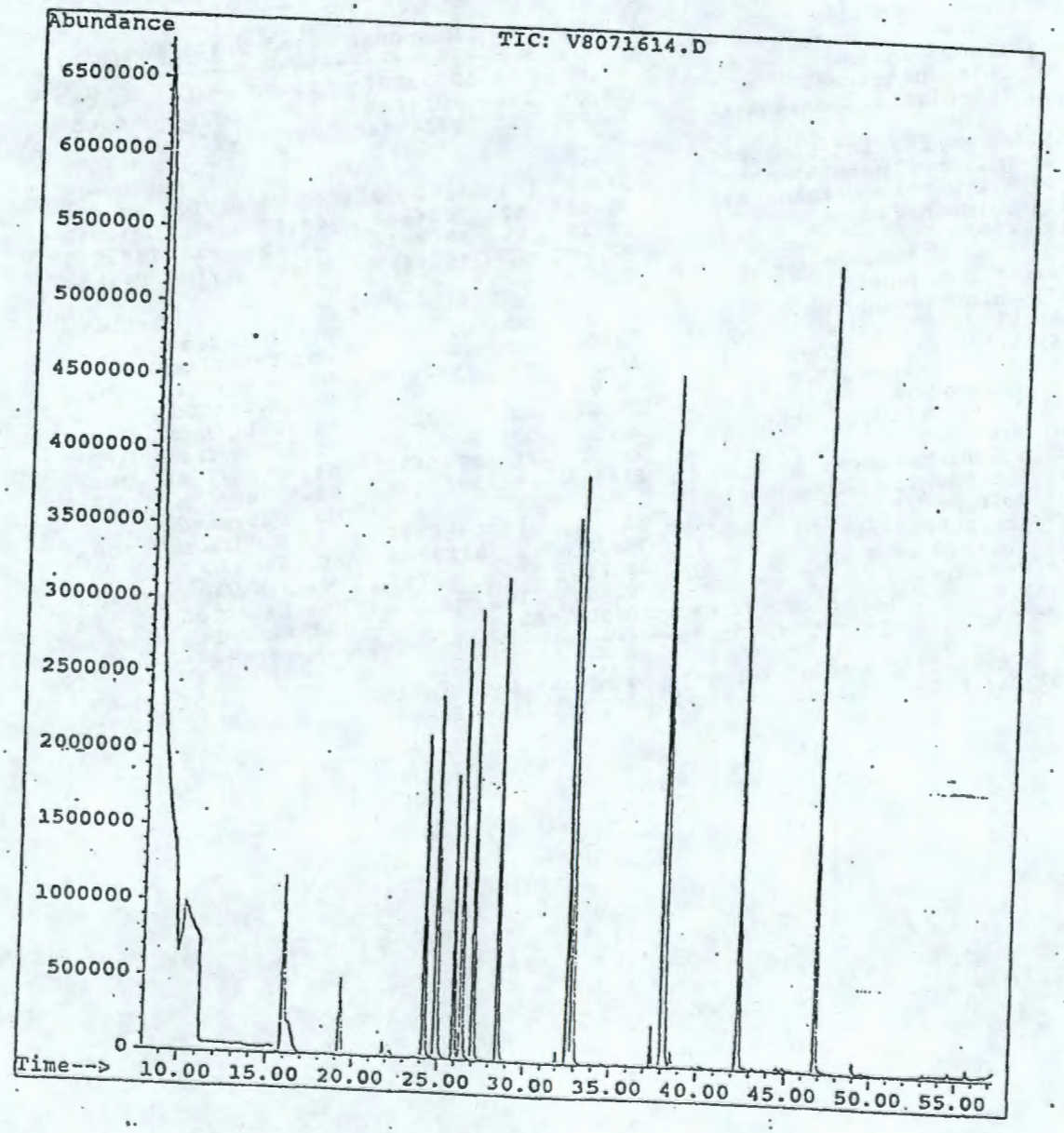
Vial: 3
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.09	96	9539097	50.00 ug/L	-0.05
15) Chlorobenzene-d5	38.04	117	7614628	50.00 ug/L	-0.05
19) 1,4-Dichlorobenzene-d4	46.78	152	4934196	50.00 ug/L	-0.04
System Monitoring Compounds					**%Recovery**
7) Dibromofluoromethane	24.22	113	4592087	49.73 ug/L	99.47%
9) 1,2-Dichloroethane-d4	25.97	102	566866	46.60 ug/L	93.21%
13) Toluene-d8	32.66	98	8287644	50.45 ug/L	100.91%
18) 4-BFB	42.38	95	4628489	47.42 ug/L	94.85%
Target Compounds					**Qvalue**
2) Chloromethane	0.00	50		Not Detected	
3) Vinyl Chloride	0.00	62		Not Detected	
4) 1,1-Dichloroethene	15.97	96	2582984	53.39 ug/L m	93
5) 1,1-Dichloroethane	0.00	63		Not Detected	
6) Chloroform	23.47	83	13101	0.09 ug/L m	88
8) 1,1,1-Trichloroethane	24.91	97	7757268	59.87 ug/L m	100
10) Benzene	26.41	78	8710611	54.78 ug/L m	100
11) Trichloroethene	28.51	95	3744474	56.57 ug/L m	99
12) 1,2-Dichloropropane	0.00	63		Not Detected	
14) Toluene	32.95	92	6258326	56.86 ug/L m	100
16) Chlorobenzene	38.18	112	8289989	55.46 ug/L	97
17) Ethylbenzene	38.28	91	42797	0.17 ug/L	75
20) Bromoform	0.00	173		Not Detected	
21) 1,1,2,2-Tetrachloroethane	0.00	83		Not Detected	

(#) = qualifier out of range (m) = manual integration
V8071614.D V80717.M Tue Aug 04 12:17:16 1998

File : C:\HPCHEM\1\DATA\V80716\V8071614.D
Operator : Fies/Bonfoey
Acquired : 17 Jul 98 3:45 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.16; KON379MSD
Misc Info : 5 ml sample size
Vial Number: 3



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071615.D
Acq On : 17 Jul 98 4:56 pm
Sample : N-91-1-16.17; KON378
Misc : 5 ml sample size
Quant Time: Aug 4 12:23 1998

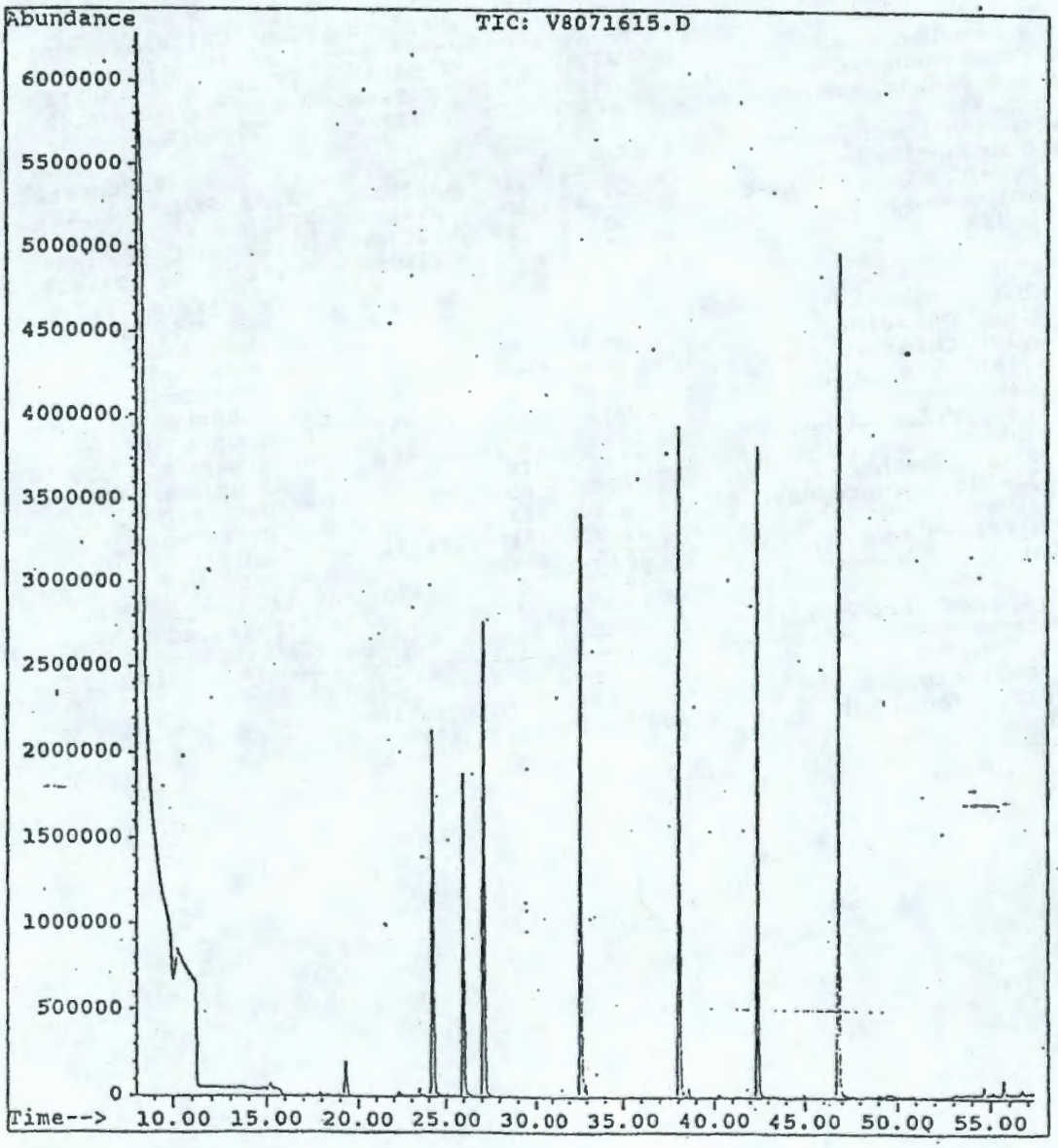
Vial: 4
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.12	96	8751535	50.00 ug/L	-0.02
15) Chlorobenzene-d5	38.07	117	7009976	50.00 ug/L	-0.02
19) 1,4-Dichlorobenzene-d4	46.81	152	4437384	50.00 ug/L	-0.02
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.24	113	4497059	53.09 ug/L	106.18%
9) 1,2-Dichloroethane-d4	25.98	102	554614	49.70 ug/L	99.40%
13) Toluene-d8	32.67	98	7794381	51.72 ug/L	103.44%
18) 4-BFB	42.40	95	4259658	47.41 ug/L	94.82%
Target Compounds					Qvalue
2) Chloromethane	0.00	50		Not Detected	
3) Vinyl Chloride	0.00	62		Not Detected	
4) 1,1-Dichloroethene	0.00	96		Not Detected	
5) 1,1-Dichloroethane	0.00	63		Not Detected	
6) Chloroform	23.48	83	134235	0.98 ug/L	99
8) 1,1,1-Trichloroethane	24.95	97	13188	0.11 ug/L m	72
10) Benzene	26.42	78	24779	0.17 ug/L m	100
11) Trichloroethene	0.00	95		Not Detected	
12) 1,2-Dichloropropane	0.00	63		Not Detected	
14) Toluene	32.96	92	107631	1.07 ug/L	94
16) Chlorobenzene	0.00	112		Not Detected	
17) Ethylbenzene	38.31	91	31820	0.14 ug/L	86
20) Bromoform	0.00	173		Not Detected	
21) 1,1,2,2-Tetrachloroethane	42.06	83	6708	0.10 ug/L m	25

(#) = qualifier out of range (m) = manual integration
V8071615.D V80717.M Tue Aug 04 12:23:39 1998

File : C:\HPCHEM\1\DATA\V80716\V8071615.D
Operator : Fies/Bonfoey
Acquired : 17 Jul 98 4:56 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.17; KON378
Misc Info : 5 ml sample size
Vial Number: 4



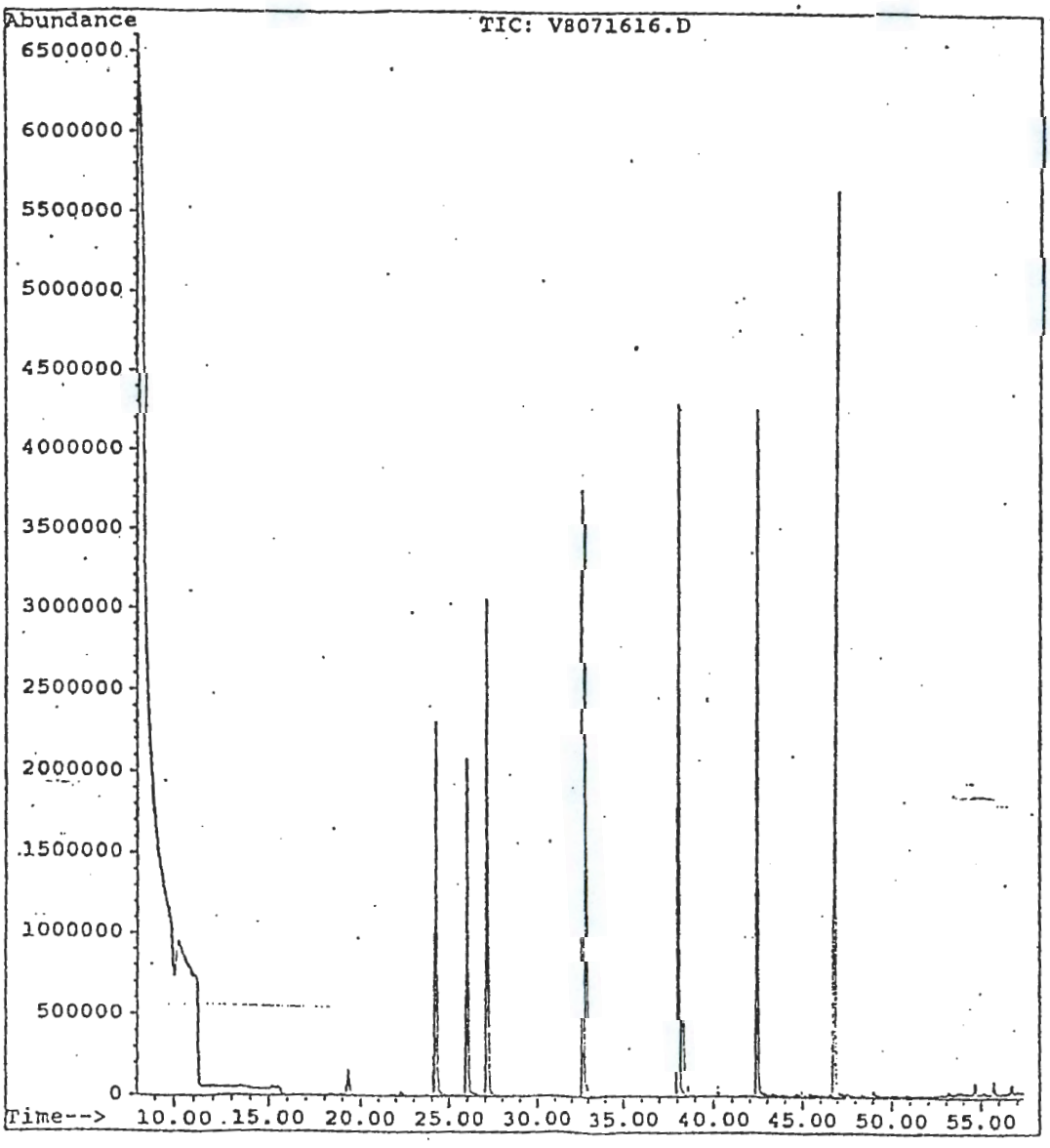
Quantitation Report

Data File : C:\HPCHEM\1\DATA\V80716\V8071616.D
Acq On : 17 Jul 98 6:06 pm
Sample : N-91-1-16.18; KON380
Misc : 5 ml sample size
Quant Time: Aug 4 12:32 1998

Vial: 5
Operator: Fies/Bonfoey
Inst : 5971 - VO
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\V80717.M
Title : VOA's by Purge and Trap
Last Update : Mon Aug 03 14:30:01 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	27.13	96	9576924	50.00 ug/L	0.00
15) Chlorobenzene-d5	38.08	117	7693729	50.00 ug/L	0.00
19) 1,4-Dichlorobenzene-d4	46.82	152	5099558	50.00 ug/L	-0.01
System Monitoring Compounds					%Recovery
7) Dibromofluoromethane	24.25	113	4870961	52.55 ug/L	105.09%
9) 1,2-Dichloroethane-d4	26.00	102	605755	49.60 ug/L	99.21%
13) Toluene-d8	32.69	98	8532259	51.74 ug/L	103.48%
18) 4-BFB	42.42	95	4787288	48.55 ug/L	97.09%
Target Compounds					Qvalue
2) Chloromethane	0.00	50		Not Detected	
3) Vinyl Chloride	0.00	62		Not Detected	
4) 1,1-Dichloroethene	0.00	96		Not Detected	
5) 1,1-Dichloroethane	0.00	63		Not Detected	
6) Chloroform	23.48	83	10082	0.07 ug/L m	93
8) 1,1,1-Trichloroethane	24.93	97	20855	0.16 ug/L m	56
10) Benzene	26.44	78	25390	0.16 ug/L	100
11) Trichloroethene	28.55	95	6812	0.10 ug/L m	1
12) 1,2-Dichloropropane	0.00	63		Not Detected	
14) Toluene	32.97	92	105662	0.96 ug/L	96
16) Chlorobenzene	0.00	112		Not Detected	
17) Ethylbenzene	38.31	91	40730	0.16 ug/L	50
20) Bromoform	0.00	173		Not Detected	
21) 1,1,2,2-Tetrachloroethane	42.04	83	11387	0.15 ug/L m	53

(#) = qualifier out of range (m) = manual integration
V8071616.D V80717.M Tue Aug 04 12:32:51 1998

File : C:\HPCHEM\1\DATA\V80716\V8071616.D
Operator : Fies/Bonfoey
Acquired : 17 Jul 98 6:06 pm using AcqMethod V80520AQ
Instrument : 5971 - VO
Sample Name: N-91-1-16.18; KON380
Misc Info : 5 ml sample size
Vial Number: 5