START

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

ENCLOSURE 3

Analytical Report

3820 159th Avenue NE • Redmond, WA 98052 • (206) 885-0083 • Fax (206) 867-2210

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

April 26, 1990

Steven Lockhaven
Advanced Nuclear Fuels Corp.
2101 Horn Rapids Road
Richland WA 99352

NARRATIVE FOR PNEL 2372
Submission from Pacific Northwest Environmental Laboratory

Enclosed are data summary sheets and supporting documentation for the eighteen samples received on April 11, 1990. The field identification numbers, corresponding lab identification numbers, and dates collected are listed below.

FIELD ID	LAB ID	DATE COLLECTED
1A	2372-01	04-11-90
1B	2372-02	04-11-90
2A	2372-03	04-11-90
2B	2372-04	04-11-90
9A	2372-05	04-11-90
13A	2372-06	04-11-90
14A	2372-07	04-11-90
15A	2372-08	04-11-90
16A	2372-09	04-11-90
9B	2372-10	04-11-90
13B	2372-11	04-11-90
14B	2372-12	04-11-90
15B	2372-13	04-11-90
16B	2372-14	04-11-90
Trip Blank 1	2372-15	04-11-90
15B	2372-16	04-11-90
9B	2372-17	04-11-90
Trip Blank 2	2372-18	04-11-90

Listed below are anomalies and narratives associated with the receipt and/or analysis of these samples.

SAMPLE RECEIVING

The samples 15B, 9B, and Trip Blank (2372-16, 17, and 18 respectively) were received at 10 degrees C upon sample arrival. Also, the Trip Blank (2372-18) had an airbubble in two of two voa vials. The samples are to be processed as originally requested using the vial with the smallest airbubble for analysis of the Trip Blank.

One of two voa vials for sample 9B (2372-10) had a broken lid upon sample receipt. The vial with the lid intact was to be used for analysis.

The samples 1B, 13B, and 14B for volatile analysis (2372-02, 11, 12 respectively) contained an air bubble in one of two voa vials. The vial without the airbubble was to be used for analysis.

Samples 14A and the Trip Blank (2372-07 and 15 respectively) contained an airbubble in two of two voa vials. The samples are to be analyzed as originally requested, using the vial with the smallest airbubble.

The chain of custody forms for these samples were not relinquished by the originator with a signature. The samples were processed as originally requested.

The above anomalies have been verbally reported to Steve Lockhaven upon sample receipt at PNEL. The corrective actions are as per Steve Lockhaven of Advanced Nuclear Fuels, Inc.

VOA 601

No anomalies were detected with this batch.

All samples except 2372-18 and 2372-06 required dilution.

VOA CLP

No anomalies were reported for this case.

BNA

No problems were encountered during the extraction and analysis of these samples and their associated QC.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Sincerely,

\NAR-0310.372
Enclosures

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

METHOD REFERENCE

Chlorinated Volatiles	Method 8010, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.
Analytical Methods for Volatiles	Environmental Protection Agency, Contract Laboratory Program, Organic Statement of Work, Exhibit-D, February 1988.
Gas Chromatograph/Mass Spectrometry for Semi-Volatile Organics: Capillary Column Technique	Method 8270, Test Methods for Evaluating Solid Waste, United States Environmental Protection Agency, SW-846, 3rd Ed., 1986.

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

DATA REPORTING QUALIFIERS

Some of these qualifiers may appear in this analytical data report. Soil samples are analyzed and reported on a dry weight basis unless otherwise noted.

ORGANICS QUALIFIERS

A - This flag indicates that a TIC is a suspected aldol-condensation product.

B - Indicates compound was found in the associated blank as well as in the sample.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a target compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

M - Indicates value is taken from a medium level analysis.

ND- Not detected. Detection limit shown in parentheses.

NQ- Not quantitated as...

U - Indicates compound was analyzed for but not detected at the given detection limit. The sample quantitation limit was corrected for dilution and for percent moisture, when applicable.

X - Other specific flags and footnotes may be required to properly define the results. If more than two qualifiers are required for a sample result, the "X" flag combines several flags, as needed. For instance, the "X" flag might combine the "A," "B," and "D" flags for some sample.

* - Indicates spiked compounds used for MS/MSD analysis.

INORGANICS QUALIFIERS

NA- Relative percent difference calculation is not applicable to analytes when not detected.

NC- Not calculated when analyte is not detected.

NS- Not calculated when sample concentration of analyte exceeds spike level by a factor of four or more.

U - Indicates that analyte was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

INORGANICS METHOD QUALIFIERS

CV- Manual Cold Vapor AA

F - FURNACE AA

P - ICP

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Client Number: 63-900310

VOLATILE ORGANICS ANALYSIS

Client Sample ID.	Blank	1A	1B	2A
PNEL Sample ID.	2372-MB	2372-01	2372-02	2372-03
Matrix	Water	Water	Water	Water
Date Received	NA	04-12-90	04-12-90	04-12-90
Date Analyzed	04-23-90	04-23-90	04-23-90	04-23-90
Units	ug/L	ug/L	ug/L	ug/L
Compound				
1,1,1-Trichloroethane	ND(0.5)	7.2	7.6	ND(5.0)
Carbon tetrachloride	ND(0.5)	ND(5.0)	ND(5.0)	ND(5.0)
Trichloroethylene	ND(0.5)	40	40	56
Surrogate				
% Bromochloromethane	101	93	94	98
% 4-Bromofluorobenzene	118	113	112	115

\601-0310.372

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Client Number: 63-900310

VOLATILE ORGANICS ANALYSIS

Client Sample ID.	Blank	2B	9A	13A
PNEL Sample ID.	2372-MB	2372-04	2372-05	2372-06
Matrix	Water	Water	Water	Water
Date Received	NA	04-12-90	04-12-90	04-12-90
Date Analyzed	04-23-90	04-23-90	04-23-90	04-23-90
Units	ug/L	ug/L	ug/L	ug/L
Compound				
1,1,1-Trichloroethane	ND(0.5)	ND(5.0)	ND(5.0)	ND(0.5)
Carbon tetrachloride	ND(0.5)	ND(5.0)	ND(5.0)	ND(0.5)
Trichloroethylene	ND(0.5)	59	22	ND(0.5)
Surrogate				
% Bromochloromethane	101	90	90	89
% 4-Bromofluorobenzene	118	116	116	98

\601-0310.372

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Client Number: 63-900310

VOLATILE ORGANICS ANALYSIS

Client Sample ID.	Blank	14A	15A	16A
PNEL Sample ID.	2372-MB	2372-07	2372-08	2372-09
Matrix	Water	Water	Water	Water
Date Received	NA	04-12-90	04-12-90	04-12-90
Date Analyzed	04-23-90	04-23-90	04-23-90	04-23-90
Units	ug/L	ug/L	ug/L	ug/L
Compound				
1,1,1-Trichloroethane	ND(0.5)	8.6	6.8	ND(5.0)
Carbon tetrachloride	ND(0.5)	ND(5.0)	ND(5.0)	ND(5.0)
Trichloroethylene	ND(0.5)	33	72	30
Surrogate				
% Bromochloromethane	101	91	93	95
% 4-Bromofluorobenzene	118	102	108	103

\601-0310.372

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Client Number: 63-900310

VOLATILE ORGANICS ANALYSIS

Client Sample ID.	Blank	Trip Blank
PNEL Sample ID.	2372-MB	2372-18
Matrix	Water	Water
Date Received	NA	04-12-90
Date Analyzed	04-23-90	04-23-90
Units	ug/L	ug/L
Compound		
1,1,1-Trichloroethane	ND(0.5)	ND(0.5)
Carbon tetrachloride	ND(0.5)	ND(0.5)
Trichloroethylene	ND(0.5)	ND(0.5)
Surrogate		
% Bromochloromethane	101	99
% 4-Bromofluorobenzene	118	118

\601-0310.372

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

PNEL Sample ID.:	2379-01	**Client No.:**	NA
Client Sample ID.:	NA	**Sample Matrix:**	Water
Date Sample Received:	NA	**Date Sample Analyzed:**	04-22-90

Compound	SPIKE ADDED (ug/L)	SAMPLE CONC. (ug/L)	MS CONC. (ug/L)	MS % REC#	QC LIMITS REC
1,1-Dichloroethene	20.0	ND	18.8	94	61-145
Trichloroethene	20.0	ND	21.3	106	71-120
Benzene	20.0	ND	18.2	91	76-127
Toluene	20.0	ND	18.7	94	76-125
Chlorobenzene	20.0	ND	25.8	129	75-130

Compound	SPIKE ADDED (ug/L)	MSD CONC. (ug/L)	MSD % REC#	% RPD#	QC LIMITS RPD	QC LIMITS REC
1,1-Dichloroethene	20.0	18.1	90	4.3	14	61-145
Trichloroethene	20.0	20.7	104	1.9	14	71-120
Benzene	20.0	17.7	88	3.4	11	76-127
Toluene	20.0	17.8	89	5.5	13	76-125
Chlorobenzene	20.0	25.2	126	2.4	13	75-130

\# Column to be used to flag recovery and RPD (Relative % Difference) values with an asterisk.

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

\VMS-0310.372

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY REPORT

Matrix Spike - LAB Sample No.: 2357-04

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	2500	0	2500	100	61-145
Trichloroethene	2500	620	3100	99	71-120
Benzene	2500	0	2500	100	76-127
Toluene	2500	0	2500	100	76-125
Chlorobenzene	2500	0	2500	100	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	2500	2500	100	0	14	61-145
Trichloroethene	2500	3100	99	0	14	71-120
Benzene	2500	2500	100	0	11	76-127
Toluene	2500	2400	96	4	13	76-125
Chlorobenzene	2500	2500	100	0	13	75-130

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

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

_____

F32357

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

WATER VOLATILE SURROGATE RECOVERY REPORT

	LAB SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#		TOT OUT
01	VBLKA1	103	101	96		0
02	2372-10	99	97	91		0
03	2372-11	104	101	97		0
04	2372-12	98	102	96		0
05	2372-13	101	99	99		0
06	2372-14	100	98	98		0
07	2372-10DL	103	97	101		0
08	2372-15	100	98	97		0
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

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

Column to be used to flag recovery values

D Surrogates diluted out

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: VBLKA1
Sample Matrix: WATER
Concentration: LOW
Sample Volume: 5.0mL
Percent Moisture: NA
Date Extracted: NA
Date Analyzed: 4/12/90
Instrument ID: VOA #1

Customer Sample No: NA
Sample Description: METHOD BLANK
Date Collected: NA
Time Collected: NA
Date Received: NA
Date Release Authorized:

C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
133-02-7	Xylene (total)	5	U

* See footnote page for data qualifiers (Q)

FA4126

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-10
Sample Matrix: WATER
Concentration: LOW
Sample Volume: 5.0mL
Percent Moisture: NA
Date Extracted: NA
Date Analyzed: 4/12/90
Instrument ID: VOA #1

Customer Sample No: 9B
Sample Description: TEST WELL #9
Date Collected: 4/11/90
Time Collected: 12:35
Date Received: 4/12/90
Data Release Authorized:

C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	800	D
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	7	
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	51	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-02-7	Xylene (total)	5	U

* See footnote page for data qualifiers (Q)

FA4227

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-11
Sample Matrix: WATER
Concentration: LOW
Sample Volume: 5.0mL
Percent Moisture: NA
Date Extracted: NA
Date Analyzed: 4/12/90
Instrument ID: VOA #1

Customer Sample No: 138
Sample Description: TEST WELL #13
Date Collected: 4/11/90
Time Collected: 13:52
Date Received: 4/12/90
Data Release Authorized:

C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
133-02-7	Xylene (total)	5	U

* See footnote page for data qualifiers (Q)

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-12
Sample Matrix: WATER
Concentration: LOW
Sample Volume: 5.0mL
Percent Moisture: NA
Date Extracted: NA
Date Analyzed: 4/12/90
Instrument ID: VOA #1

Customer Sample No: 14B
Sample Description: TEST WELL #14
Date Collected: 4/11/90
Time Collected: 11:55
Date Received: 4/12/90
Data Release Authorized:

C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	7	
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	39	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	3	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	3	U
100-42-5	Styrene	5	U
133-02-7	Xylene (total)	5	U

* See footnote page for data qualifiers (Q)

P44229

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-13
Sample Matrix: WATER
Concentration: LOW
Sample Volume: 5.0mL
Percent Moisture: NA
Date Extracted: NA
Date Analyzed: 4/12/90
Instrument ID: VOA #1

Customer Sample No: 158
Sample Description: TEST WELL #15
Date Collected: 4/11/90
Time Collected: 12:15
Date Received: 4/12/90
Data Release Authorized:

C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	76	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
133-02-7	Xylene (total)	5	U

* See footnote page for data qualifiers (Q)

FH4230

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-14
Sample Matrix: WATER
Concentration: LOW
Sample Volume: 5.0mL
Percent Moisture: NA
Date Extracted: NA
Date Analyzed: 4/12/90
Instrument ID: VOA #1

Customer Sample No: 16B
Sample Description: TEST WELL #16
Date Collected: 4/11/90
Time Collected: 12:23
Date Received: 4/12/90
Data Release Authorized:

C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	1	J
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	23	
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
133-02-7	Xylene (total)	5	U

* See footnote page for data qualifiers (Q)

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-15
Sample Matrix: WATER
Concentration: LOW
Sample Volume: 5.0mL
Percent Moisture: NA
Date Extracted: NA
Date Analyzed: 4/12/90
Instrument ID: VOA #1

Customer Sample No: TRIP BLANK
Sample Description: TRIP BLANK
Date Collected: 4/02/90
Time Collected: NA
Date Received: 4/12/90
Data Release Authorized:

C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
133-02-7	Xylene (total)	5	U

* See footnote page for data qualifiers (Q).

FA4233

2C

WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Pacific Northwest Environmental Laboratory

	LAB SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	OTHER	TOT OUT
01	2372-MB	59	66	87	67	56	68		0
02	2372-16	93	95	95	66	58	90		0
03	2372-17	68	80	88	65	57	66		0
04	2372-17MS	58	67	87	49	43	60		0
05	2372-17MSD	67	72	75	58	48	75		0
06									
07									
08									
09									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

	QC LIMITS
S1 (NBZ) = Nitrobenzene-d5	(35-114)
S2 (FBP) = 2-Fluorobiphenyl	(43-116)
S3 (TPH) = Terphenyl-d14	(33-141)
S4 (PHL) = Phenol-d5	(10-94)
S5 (2FP) = 2-Fluorophenol	(21-100)
S6 (TBP) = 2,4,6-Tribromophenol	(10-123)

Column to be used to flag recovery values

* Values outside of contract required QC limits

NA Surrogates not analyzed for

3C

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Pacific Northwest Environmental Laboratory

Matrix Spike - Sample No.: 2372-17 Batch No.: BW-08

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
Phenol	200	0	110	55	12- 89
2-Chlorophenol	200	0	88.9	44	27-123
1,4-Dichlorobenzene	100	0	47.9	48	36- 97
N-Nitroso-di-n-prop.(1)	100	0	46.2	46	41-116
1,2,4-Trichlorobenzene	100	0	56.6	57	39- 98
4-Chloro-3-methylphenol	200	0	80.5	40	23- 97
Acenaphthene	100	0	57.0	57	46-118
4-Nitrophenol	200	0	27.0	14	10- 80
2,4-Dinitrotoluene	100	0	38.4	38	24- 96
Pentachlorophenol	200	0	233	116*	9-103
Pyrene	100	0	71.3	71	26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	200	131.0	66	18	42	12- 89
2-Chlorophenol	200	109	54	20	40	27-123
1,4-Dichlorobenzene	100	58.9	59	21	28	36- 97
N-Nitroso-di-n-prop.(1)	100	58.1	58	23	38	41-116
1,2,4-Trichlorobenzene	100	66.8	67	16	28	39- 98
4-Chloro-3-methylphenol	200	122	61	42	42	23- 97
Acenaphthene	100	66.7	33	53*	31	46-118
4-Nitrophenol	200	39.9	20	35	50	10- 80
2,4-Dinitrotoluene	100	48.7	49	25	38	24- 96
Pentachlorophenol	200	349	174*	40	50	9-103
Pyrene	100	62.6	63	12	31	26-127

(1) N-Nitroso-di-n-propylamine

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

RPD: 1 out of 11 outside limits
Spike Recovery: 2 out of 22 outside limits

SEMI VOLATILE
ORGANICS ANALYSIS DATA SHEET

Laboratory Name: Pacific Northwest Environmental Lab.
Project Number: 63-900310-109
Sample Matrix: Water
Concentration: Low Dilution Factor: 1
Sample wt/vol: 1000 mL
Date Extracted: 4/17/90
Date Analyzed: 4/25/90

Lab Sample: 2372-MB
Customer Sample: Method Blank
Sample Description: Method Blank
Date Collected: NA
Time Collected: NA
Date Received: NA
Data Release Authorized:

C.A.S. Number		ug/L	
112-40-3	n-Dodecane	10	U
126-73-8	Tributyl Phosphate	10	U

SEMI VOLATILE
ORGANICS ANALYSIS DATA SHEET

Laboratory Name: Pacific Northwest Environmental Lab.
Project Number: 63-900310-109
Sample Matrix: Water
Concentration: Low Dilution Factor: 1
Sample wt/vol: 1000 mL
Date Extracted: 4/17/90
Date Analyzed: 4/25/90

Lab Sample: 2372-16
Customer Sample: 15B
Sample Description: Test Well #15
Date Collected: 4/11/90
Time Collected: 12:10
Date Received: 4/12/90
Data Release Authorized:

C.A.S. Number		ug/L
112-40-3	n-Dodecane	10 U
126-73-8	Tributyl Phosphate	10 U

SEMI VOLATILE
ORGANICS ANALYSIS DATA SHEET

Laboratory Name: Pacific Northwest Environmental Lab.
Project Number: 63-900310-109
Sample Matrix: Water
Concentration: Low Dilution Factor: 1
Sample wt/vol: 1000 mL
Date Extracted: 4/17/90
Date Analyzed: 4/25/90

Lab Sample: 2372-17
Customer Sample: 98
Sample Description: Test Well #9
Date Collected: 4/11/90
Time Collected: 12:35
Date Received: 4/12/90
Data Release Authorized:

C.A.S. Number		ug/L
112-40-3	n-Dodecane	10 U
126-73-8	Tributyl Phosphate	15

SEMI VOLATILE
ORGANICS ANALYSIS DATA SHEET

Laboratory Name: Pacific Northwest Environmental Lab.
Project Number: 63-900310-109
Sample Matrix: Water
Concentration: Low Dilution Factor: 1
Sample wt/vol: 500 mL
Date Extracted: 4/17/90
Date Analyzed: 4/25/90

Lab Sample: 2372-17MS
Customer Sample: 98
Sample Description: Test Well #9
Date Collected: 4/11/90
Time Collected: 12:35
Date Received: 4/12/90
Data Release Authorized:

C.A.S. Number		ug/L
112-40-3	n-Dodecane	10 U
126-73-8	Tributyl Phosphate	15

SEMI VOLATILE
ORGANICS ANALYSIS DATA SHEET

Laboratory Name: Pacific Northwest Environmental Lab.
Project Number: 63-900310-109
Sample Matrix: Water
Concentration: Low Dilution Factor: 1
Sample wt/vol: 500 mL
Date Extracted: 4/17/90
Date Analyzed: 4/25/90

Lab Sample: 2372-17MSD
Customer Sample: 9B
Sample Description: Test Well #9
Date Collected: 4/11/90
Time Collected: 12:35
Date Received: 4/12/90
Data Release Authorized:

C.A.S. Number		ug/L
112-40-3	n-Dodecane	10 U
126-73-8	Tributyl Phosphate	16

PNELI

CHAIN-OF-CUSTODY / REQUEST FOR ANALYSIS

Control No.

Client Name: Advanced Nuclear Fuels

Client Number:

Bill To: Advanced Nuclear Fuels
3101 Horn Rapids Rd.
Richland, WA. 99352

PO No.: P- 24530

Carrier No.:

Laboratory Contact: Susan Winter

Send Lab Report To: Steve Lockhaven
Advanced Nuclear Fuels
3101 Horn Rapids Rd Richland, WA. 99352

Date Report Required:

Client Contact: Steve Lockhaven

Client Contact Phone: (509) 375-8228

2372

Sample Number	Sample Location and Description	Date Collected	Time Collected	Sample Matrix	Number of Containers	Analysis and Container: VOA-601						Comments
1A	Test well # 1	11-11-90	12:46	water	2	✓						Sample ok
1B	" # 1	"	12:57	water	2	✓						small air bubble in 1 of 2
2A	" # 2	"	13:08	water	2	✓						Sample ok
2B	" # 2	"	13:21	water	2	✓						↓
9A	" # 9	"	12:29	water	2	✓						
13A	" # 13	"	13:42	water	2	✓						
14A	" #14	"	11:55	water	2	✓						small air bubble in 2 of 2
15A	" #15	"	12:05	water	2	✓						Sample ok
16A	" # 16	"	12:18	water	2	✓						↓

Special Instructions: _____ Possible Sample Hazards: none

Was Preservative Used? No ☒ Yes ☐ What Kind? _____ What Analysis? _____

1. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____
2. Relinquished By Airborne Date 04/12/90 Time 1000 Received By [signature] Date 04/12/90 Time 1000
3. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____
4. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____

PNELI

CHAIN-OF-CUSTODY / REQUEST FOR ANALYSIS

Control No.

Client Name: Advanced Nuclear Fuels
Client Number:
Bill To: Advanced Nuclear Fuels, 3101 Horn Rapids Rd., Richland, WA. 99352
PO No.: K-24530
Carrier No.:

Laboratory Contact: Susan Winter
Send Lab Report To: Steve Lockhaven, Advanced Nuclear Fuels, 3101 Horn Rapids Rd. Richland, WA. 99352
Date Report Required:
Client Contact: Steve Lockhaven
Client Contact Phone: (509) 375-8228

PNEL 2372

Sample Number	Sample Location and Description	Date Collected	Time Collected	Sample Matrix	Number of Containers	Analysis and Container: VOA-624						Comments
9B	Test Well #9	4-11-90	12:35	water	2	✓						broken vile lid in 1 of 2.
13B	Test well #13	"	13:52	water	2	✓						Small air bubble in 1 of 2
14B	test well #14	"	11:55	water	2	✓						↓
15B	test well #15	"	12:15	water	2	✓						Sample ok
16B	test well #16	"	13:33	water	2	✓						↓
Trip Blank	Trip BLANK (PNEL)	04-02-90		water	2	✓						1/4" air bubble in 1 Small air bubble in 1

Special Instructions: _____ Possible Sample Hazards: None

Was Preservative Used? No [X] Yes [ ] What Kind? _____ What Analysis? _____

1. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____
2. Relinquished By Airborne Date 04/12/90 Time 1000 Received By [illegible] Date 04/12/90 Time 1000
3. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____
4. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____

PNELI

CHAIN-OF-CUSTODY / REQUEST FOR ANALYSIS

Control No.

Laboratory Contact: Susan winter

Client Name: Advanced Nuclear Fuels (ANF)

Send Lab Report To: Steve LocKhaven
Advanced Nuclear Fuels
2101 Horn Rapids Rd. Richland, WA. 99352

Client Number:

Bill To: Advanced Nuclear Fuels
2101 Horn Rapids Road
Richland, WA 99352

Date Report Required:

Client Contact: Steve LocKhaven

PO No.: R-24530

Client Contact Phone: (509) 375-8228

Carrier No.:

PNEL 2372

Sample Number	Sample Location and Description	Date Collected	Time Collected	Sample Matrix	Number of Containers	Analysis and Container: Tri n-butyl phosphate + Dodecane						Comments
15B	Test well #15	4-11-90	12:10	water	1	✓						1 Sample
15B	Test well #15	4-11-90	12:10	water	1	✓						
9B	Test well #9	4-11-90	12:35	water	1	✓						1 Sample
9B	Test well #9	4-11-90	12:35	water	1	✓						
Trip Blank (PNEL)		3-30-90	4:30 pm	water	2							1 small air bubble 1 larger air bubble

Special Instructions: _____ Possible Sample Hazards: none

Was Preservative Used? No ☒ Yes ☐ What Kind? _____ What Analysis? _____

1. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____
2. Relinquished By Airborne Date 04/12/90 Time 1000 Received By Phil Bedkland/PNL Date 04/12/90 Time 1000
3. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____
4. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____