START

9413479.1965

W0024-ITC-034

0045377

INTERNATIONAL TECHNOLOGY CORPORATION

MAY 1994 RECEIVED SDLA

May 31, 1994

OCT 1996 RECEIVED EDMC

Ms. Briana Colley
Westinghouse-Hanford
345 Hills Street
Richland, WA 99352

Dear Briana:

This letter is sent to inform you of an incorrect client ID number used throughout the high boiling petroleum hydrocarbons section of the chemical data package. The SDG number is W0024 and the SAF number is 94-065. The client ID is shown as BOBNK8 in the package and the correct number should be BOBKN8.

If you have any questions I can be reached at 375-3131.

Sincerely,

Van Pettey
Project Manager

Regional Office
2800 George Washington Way • Richland, Washington 99352-1613 • 509-375-3131 • FAX: 509-375-5590

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9613479.1966

INTERNATIONAL TECHNOLOGY CORPORATION

MAY 1994
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SDLA

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Dear J.A. Lerch

Thank you for purchasing analytical testing services from IT Corporation. It is our intention to supply our clients with data packages which not only meet the industry's highest standards for quality, but are also easy to use. Features which we point out are:

1. A Data Summary Packet which allows you to review your data without searching through the complete data package.

   Your Data Summary Packet contains the following items:

   - Case Narrative: listing of sample identifications, analyses performed, explanation of any problem associated with samples, corrective action taken.
   - Quality control sample identifications and analyses performed.
   - Data summary.

2. A data package which meets the specific requirements you requested and is easy to use as well. The package is organized in accordance with the Table of Contents which you will find at the beginning of each section. Sections are separated by color-coded tabs, making it easy to find individual analytical parameters which may be of particular interest to you. The data package is custody-sealed at the laboratory - your assurance that parts of the package are not missing.

We are constantly searching for ways to improve our service to you. This current product has many of the features which you have told us are important to you. Your suggestions regarding additional improvements will be appreciated.

Please contact me with any questions or suggestions.

Sincerely,

Sheree Schneider/SP

Sheree' Schneider
Project Manager

Regional Office
5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

IT Corporation is a wholly owned subsidiary of International Technology Corporation

6-5-96
MC

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

May 20, 1994

MAY 1994
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SDLA

Job Number: 308; 331; 338; 403

This is the Certificate of Analysis for the following samples:

SDG:	W0024
Client Project ID:	Westinghouse Hanford
Date Received by Lab:	April 6, 1994; April 8, 1994, April 12, 1994; April 16, 1994
Number of Samples:	Eleven (11)
Sample Type:	Soil

I. Introduction

On April 6, April 8, April 12 and April 16, 1994, eleven (11) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

RECORD COPY

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics (DRO) with a kerosene spike by gas chromatography/flame ionization detection (GC/FID) based on method 8015.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

The samples for work order #308 were digested on April 12 for ICP and GFAA. The CVAA analysis for mercury was performed on April 8, 1994; The GFAA analyses for arsenic, lead, selenium and thallium were performed on April 12, 1994; the remaining metals were analyzed by ICP on April 14, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBKM8. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses except for antimony by ICP analysis and thallium by GFAA analysis. The titanium concentration was greater than four times (4X) the spike added; spiking criteria did not apply for this analyte. Poor spike recovery for antimony is attributable to matrix interferences as indicated by the post digestion spike. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses.

The samples for work order #338 were digested on April 15, 1994 for GFAA. The CVAA analysis for mercury was performed on April 15, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed on April 18 and April 19, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #331 were digested on April 15, 1994 for GFAA and April 12, 1994 for GFAA. The CVAA analysis for mercury was performed on April 12, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from April 12 through May 17, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #403 were digested on May 2, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 2, 1994. All run QC was acceptable. Zinc was found in the method blank above the client required detection limit (CRDL). However, zinc concentration in the sample was ten times (10X) greater than the contamination and results are acceptable.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics by gas chromatography/flame ionization detection using an SPB-1 column on a Hewlett Packard GC. Matrix spike/matrix spike duplicate analyses were performed using sample number BOBNK8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for nitrate/nitrite using sample number BOBKM8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for anion analysis using sample number BOBKM8 with acceptable results.

Matrix spike/duplicate analyses were performed for cyanide analysis using sample number BOBKM8 with acceptable results.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
May 20, 1994

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA5444	404067-01	BOBKM8	SOIL	SVOC
AA5445	"	"	"	METALS
AA5446	"	"	"	ANIONS
AA5447	"	"	"	NO3NO2
AA5448	"	"	"	CN
AA5449	"	"	"	TPH
AA5470	404067-02	BOBNQ6	"	SVOC
AA5472	"	"	"	METALS
AA5475	"	"	"	ANIONS
AA5476	"	"	"	NO3NO2
AA5477	"	"	"	CN
AA5478	"	"	'	TPH
AA5483	404067-03	BOBNQ0	"	SVOC
AA5484	"	"	"	METALS
AA5486	"	"	"	ANIONS
AA5487	"	"	"	NO3NO2
AA5489	"	"	"	CN
AA5490	"	"	"	TPH
AA5492	404067-04	BOBNQ7	"	SVOC
AA5494	"	"	"	METALS
AA5496	"	"	"	ANIONS
AA5497	"	"	"	NO3NO2
AA5499	"	"	"	CN
AA5500	"	"	"	TPH

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. **Quality Control** (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA5501	404067-05	BOBNQ1	SOIL	SVOC
AA5503	"	"	"	METALS
AA5505	"	"	"	ANIONS
AA5506	"	"	"	NO3NO2
AA5508	"	"	"	CN
AA5509	"	"	"	TPH
AA5512	404067-06	BOBKP6	"	SVOC
AA5514	"	"	"	METALS
AA5515	"	"	"	ANIONS
AA5516	"	"	"	NO3NO2
AA5517	"	"	"	CN
AA5518	"	"	"	TPH
AA5519	404067-07	BOBNQ2	"	SVOC
AA5520	"	"	"	METALS
AA5521	"	"	"	ANIONS
AA5522	"	"	"	NO3NO2
AA5523	"	"	"	CN
AA5524	"	"	"	TPH
AA5835	404118-01 (A-F)	BOBKN7	"	SVOC
AA5836	"	"	"	METALS
AA5837	"	"	"	ANIONS
AA5838	"	"	"	NO3NO2
AA5839	"	"	"	CN
AA5840	"	"	"	TPH
AA5841	404118-02 (A-F)	BOBKN0	"	SVOC
AA5842	"	"	"	METALS
AA5843	"	"	"	ANIONS
AA5844	"	"	"	NO3NO2
AA5845	"	"	"	CN
AA5846	"	"	"	TPH

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA6046	404181-01 (A-F)	BOBNP9	SOIL	SVOC
AA6047	"	"	"	METALS
AA6048	"	"	"	ANIONS
AA6049	"	"	"	NO3NO2
AA6050	"	"	"	CN
AA6051	"	"	"	TPH
AA7083	404280-01 (A-F)	BOBKN8	"	SVOC
AA7084	"	"	"	METALS
AA7085	"	"	"	ANIONS
AA7086	"	"	"	NO3NO2
AA7087	"	"	"	CN
AA7088	"	"	"	TPH

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
May 20, 1994

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

IV. Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature:

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKP6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5512

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5512

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	340	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKP6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5512

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5512

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKP6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5512

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5512

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.42	10000	BAJN

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKM8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5444

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5444

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKM8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5444

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5444

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKM8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5444

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5444

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.47	12000	BAJN
2.	UNKNOWN	5.90	1700	J
3.	UNKNOWN	21.37	81	J
4.	UNKNOWN	21.88	73	J
5.	UNKNOWN	22.63	440	J
6.	UNKNOWN	24.35	230	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5841

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5841

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5841

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5841

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	83	BJ
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	37	BJ
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKN0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5841

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5841

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

Number TICs found: 13

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 638-04-0	CYCLOHEXANE, 1,3-DIMETHYL-,	2.02	98	BJN
2. 141-79-7	3-PENTENE-2-ONE-, 4-METHYL-	2.35	320	BAJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.20	7000	BAJN
4.	UNKNOWN	16.67	350	J
5.	UNKNOWN	20.83	460	J
6.	UNKNOWN	22.17	140	BJ
7.	UNKNOWN	23.42	430	J
8.	UNKNOWN	23.48	110	J
9.	UNKNOWN	24.33	84	J
10.	UNKNOWN	24.40	68	J
11.	UNKNOWN	24.63	520	J
12.	UNKNOWN	24.73	260	J
13.	UNKNOWN	26.10	74	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5835

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5835

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 43 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	2900	U
111-44-4	bis(2-Chloroethyl)Ether	2900	U
95-57-8	2-Chlorophenol	2900	U
541-73-1	1,3-Dichlorobenzene	2900	U
106-46-7	1,4-Dichlorobenzene	2900	U
95-50-1	1,2-Dichlorobenzene	2900	U
95-48-7	2-Methylphenol	2900	U
108-60-1	2,2'-oxybis(1-Chloropropane)	2900	U
106-44-5	4-Methylphenol	2900	U
621-64-7	N-Nitroso-Di-n-Propylamine	2900	U
67-72-1	Hexachloroethane	2900	U
98-95-3	Nitrobenzene	2900	U
78-59-1	Isophorone	2900	U
88-75-5	2-Nitrophenol	2900	U
105-67-9	2,4-Dimethylphenol	2900	U
111-91-1	bis(2-Chloroethoxy)Methane	2900	U
120-83-2	2,4-Dichlorophenol	2900	U
120-82-1	1,2,4-Trichlorobenzene	2900	U
91-20-3	Naphthalene	2900	U
106-47-8	4-Chloroaniline	2900	U
87-68-3	Hexachlorobutadiene	2900	U
59-50-7	4-Chloro-3-Methylphenol	2900	U
91-57-6	2-Methylnaphthalene	2900	U
77-47-4	Hexachlorocyclopentadiene	2900	U
88-06-2	2,4,6-Trichlorophenol	2900	U
95-95-4	2,4,5-Trichlorophenol	7000	U
91-58-7	2-Chloronaphthalene	2900	U
88-74-4	2-Nitroaniline	7000	U
131-11-3	Dimethylphthalate	2900	U
208-96-8	Acenaphthylene	2900	U
606-20-2	2,6-Dinitrotoluene	2900	U
99-09-2	3-Nitroaniline	7000	U
83-32-9	Acenaphthene	2900	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5835

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5835

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 43 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	7000	U
100-02-7	4-Nitrophenol	7000	U
132-64-9	Dibenzofuran	2900	U
121-14-2	2,4-Dinitrotoluene	2900	U
84-66-2	Diethylphthalate	2900	U
7005-72-3	4-Chlorophenyl-phenylether	2900	U
86-73-7	Fluorene	2900	U
100-01-6	4-Nitroaniline	7000	U
534-52-1	4,6-Dinitro-2-Methylphenol	7000	U
86-30-6	N-Nitrosodiphenylamine (1)	2900	U
101-55-3	4-Bromophenyl-phenylether	2900	U
118-74-1	Hexachlorobenzene	2900	U
87-86-5	Pentachlorophenol	7000	U
85-01-8	Phenanthrene	2900	U
120-12-7	Anthracene	2900	U
86-74-8	Carbazole	2900	U
84-74-2	Di-n-Butylphthalate	2900	U
206-44-0	Fluoranthene	2900	U
129-00-0	Pyrene	2900	U
85-68-7	Butylbenzylphthalate	2900	U
91-94-1	3,3'-Dichlorobenzidine	2900	U
56-55-3	Benzo(a)Anthracene	2900	U
218-01-9	Chrysene	2900	U
117-81-7	bis(2-Ethylhexyl)Phthalate	1800	BJ
117-84-0	Di-n-Octyl Phthalate	2900	U
205-99-2	Benzo(b)Fluoranthene	2900	U
207-08-9	Benzo(k)Fluoranthene	2900	U
50-32-8	Benzo(a)Pyrene	2900	U
193-39-5	Indeno(1,2,3-cd)Pyrene	2900	U
53-70-3	Dibenz(a,h)Anthracene	2900	U
191-24-2	Benzo(g,h,i)Perylene	2900	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKN7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5835

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5835

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 43 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.7

Number TICs found: 11

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.18	26000	ABJN
2.	UNKNOWN	14.37	1600	J
3.	UNKNOWN	15.37	1100	J
4.	UNKNOWN	15.67	1400	J
5.	UNKNOWN	16.07	900	J
6.	UNKNOWN	16.18	610	J
7.	UNKNOWN	16.73	790	J
8.	UNKNOWN	22.42	1500	J
9.	UNKNOWN	23.50	1300	J
10.	UNKNOWN	23.78	930	J
11.	UNKNOWN	24.82	960	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA7083

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA7083

Level: (low/med) LOW Date Received: 04/16/94

% Moisture: 4 decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	830	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	830	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	830	U
83-32-9	Acenaphthene	340	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA7083

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA7083

Level: (low/med) LOW Date Received: 04/16/94

% Moisture: 4 decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	830	U
100-02-7	4-Nitrophenol	830	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	830	U
534-52-1	4,6-Dinitro-2-Methylphenol	830	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	830	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	53	J
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	87	J
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKN8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA7083

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA7083

Level: (low/med) LOW Date Received: 04/16/94

% Moisture: 4 decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

Number TICs found: 15

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 638-04-0	CYCLOHEXANE, 1,3-DIMETHYL-,	2.03	97	BJN
2. 141-79-7	3-PENTEN-2-ONE, 4-METHYL-	2.38	400	BAJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.25	8000	BAJN
4.	UNKNOWN	17.02	83	J
5.	UNKNOWN	16.68	97	J
6.	UNKNOWN	17.78	72	J
7.	UNKNOWN	17.85	97	J
8.	UNKNOWN	19.42	190	BJ
9.	UNKNOWN	20.23	4900	J
10.	UNKNOWN	20.87	290	J
11.	UNKNOWN	22.20	120	J
12.	UNKNOWN	22.83	72	J
13.	UNKNOWN	23.45	220	J
14.	UNKNOWN	24.67	150	J
15.	UNKNOWN	24.78	120	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNP9

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6046

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6046

Level: (low/med) LOW Date Received: 04/12/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/14/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	820	U
83-32-9	Acenaphthene	340	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNP9

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6046

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6046

Level: (low/med) LOW Date Received: 04/12/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/14/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	820	U
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-Methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	820	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
BOBNP9

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6046

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6046

Level: (low/med) LOW Date Received: 04/12/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/14/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 589-90-2	CYCLOHEXANE, 1,4-DIMETHYL-	1.92	160	BJ
2. 141-79-7	3-PENTENE-2-ONE, 4-METHYL-	2.27	440	BAJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.13	11000	BAJN
4.	UNKNOWN	16.55	75	J
5.	UNKNOWN	20.72	78	J
6.	UNKNOWN	22.03	75	J
7.	UNKNOWN	23.28	180	J
8.	UNKNOWN	24.48	140	J
9.	UNKNOWN	24.60	85	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5483

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA5483

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5483

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA5483

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNQ0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5483

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA5483

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.45	11000	BAJN
2.	UNKNOWN	21.37	87	J
3.	UNKNOWN	22.63	560	J
4.	UNKNOWN	24.35	190	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ1

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5501

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5501

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	340	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
BOBNQ1

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WOO24

Matrix: (soil/water) SOIL Lab Sample ID: AA5501

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5501

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNQ1

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5501

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5501

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.47	9900	BAJN
2.	UNKNOWN	22.63	160	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5519

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5519

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	330	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5519

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5519

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5519

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5519

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.45	14000	BAJN

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5470

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5470

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5470

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5470

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-Methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNQ6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5470

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5470

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.47	12000	BAJN
2.	UNKNOWN	21.37	150	J
3.	UNKNOWN	22.63	630	J
4.	UNKNOWN	24.37	200	J

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5492

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5492

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	810	U
83-32-9	Acenaphthene	340	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5492

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5492

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNQ7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5492

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5492

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.45	12000	BAJN

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKM8

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE
Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5445
Level (low/med): LOW Date Received: 04/06/94
% Solids: 98.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7200			P
7440-36-0	Antimony	11.4	B	N	P
7440-38-2	Arsenic	2.3			F
7440-39-3	Barium	84.3			P
7440-41-7	Beryllium	0.49	B		P
7440-43-9	Cadmium	0.96	U		P
7440-70-2	Calcium	5010			P
7440-47-3	Chromium	9.1			P
7440-48-4	Cobalt	12.6			P
7440-50-8	Copper	11.5			P
7439-89-6	Iron	23500			P
7439-92-1	Lead	6.8		S	F
7439-95-4	Magnesium	4550			P
7439-96-5	Manganese	334			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	9.6			P
7440-09-7	Potassium	1580			P
7782-49-2	Selenium	0.40	U		F
7440-22-4	Silver	2.2			P
7440-23-5	Sodium	179	B		P
7440-28-0	Thallium	0.40	U	WN	F
7440-62-2	Vanadium	56.6			P
7440-66-6	Zinc	37.7			P
	Titanium	1800			P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
Lead- 1/2 dilution

FORM I - IN

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8
5/12/94

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKM8

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE
Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5448
Level (low/med): LOW Date Received: 04/06/94
% Solids: 98.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

FORM I - IN

ILM02.1
5/12/94

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKP6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD\WE

Lab Code: ITSTU_ Case No.: W0308 SAS No.: _____ SDG No.: W0024_

Matrix (soil/water): SOIL_ Lab Sample ID: AA5514

Level (low/med): LOW_ Date Received: 04/06/94

% Solids: _97.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6070			P
7440-36-0	Antimony	9.6	U	N	P
7440-38-2	Arsenic	2.5			F
7440-39-3	Barium	87.9			P
7440-41-7	Beryllium	0.49	B		P
7440-43-9	Cadmium	0.96	U		P
7440-70-2	Calcium	9860			P
7440-47-3	Chromium	7.9			P
7440-48-4	Cobalt	12.5			P
7440-50-8	Copper	11.7			P
7439-89-6	Iron	21300			P
7439-92-1	Lead	4.8			F
7439-95-4	Magnesium	4470			P
7439-96-5	Manganese	357			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	10.1			P
7440-09-7	Potassium	1150			P
7782-49-2	Selenium	0.40	U		F
7440-22-4	Silver	0.98	B		P
7440-23-5	Sodium	124	B		P
7440-28-0	Thallium	0.40	U	WN	F
7440-62-2	Vanadium	48.5			P
7440-66-6	Zinc	31.5			P
	Titanium	1520			P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

FORM I - IN

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8/5/12/94

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKP6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD\WE
Lab Code: ITSTU_ Case No.: W0308 SAS No.: _____ SDG No.: W0024_
Matrix (soil/water): SOIL_ Lab Sample ID: AA5517
Level (low/med): LOW__ Date Received: 04/06/94
% Solids: _97.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_				NR
7440-38-2	Arsenic__				NR
7440-39-3	Barium__				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium__				NR
7440-70-2	Calcium__				NR
7440-47-3	Chromium_				NR
7440-48-4	Cobalt___				NR
7440-50-8	Copper___				NR
7439-89-6	Iron____				NR
7439-92-1	Lead____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__				NR
7440-02-0	Nickel___				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-22-4	Silver___				NR
7440-23-5	Sodium___				NR
7440-28-0	Thallium_				NR
7440-62-2	Vanadium_				NR
7440-66-6	Zinc____				NR
	Titanium_				NR
5955-70-0_	Cyanide__	1.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE_ONLY._____

FORM I - IN

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8
5/12/94

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ0

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE
Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5484
Level (low/med): LOW Date Received: 04/06/94
% Solids: 99.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6780			P
7440-36-0	Antimony	9.9	U	N	P
7440-38-2	Arsenic	2.1			F
7440-39-3	Barium	79.4			P
7440-41-7	Beryllium	0.52	B		P
7440-43-9	Cadmium	0.99	U		P
7440-70-2	Calcium	3560			P
7440-47-3	Chromium	8.5			P
7440-48-4	Cobalt	13.2			P
7440-50-8	Copper	10.1			P
7439-89-6	Iron	21000			P
7439-92-1	Lead	5.1			F
7439-95-4	Magnesium	4180			P
7439-96-5	Manganese	337			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	9.1			P
7440-09-7	Potassium	1540			P
7782-49-2	Selenium	0.40	U		F
7440-22-4	Silver	1.9	B		P
7440-23-5	Sodium	132	B		P
7440-28-0	Thallium	0.40	U	WN	F
7440-62-2	Vanadium	47.5			P
7440-66-6	Zinc	36.1			P
	Titanium	1510			P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

ILM02.1
8
5/12/94

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ0

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE
Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5489
Level (low/med): LOW Date Received: 04/06/94
% Solids: 99.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

FORM I - IN

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8/14/94

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ1

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE

Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5503

Level (low/med): LOW Date Received: 04/06/94

% Solids: 98.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4390			P
7440-36-0	Antimony	9.4	U	N	P
7440-38-2	Arsenic	2.5			F
7440-39-3	Barium	68.5			P
7440-41-7	Beryllium	0.43	B		P
7440-43-9	Cadmium	0.94	U		P
7440-70-2	Calcium	6350			P
7440-47-3	Chromium	5.4			P
7440-48-4	Cobalt	10.6			P
7440-50-8	Copper	11.9			P
7439-89-6	Iron	18400			P
7439-92-1	Lead	5.0		S	F
7439-95-4	Magnesium	3880			P
7439-96-5	Manganese	331			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	8.1			P
7440-09-7	Potassium	997			P
7782-49-2	Selenium	0.38	U		F
7440-22-4	Silver	2.1			P
7440-23-5	Sodium	124	B		P
7440-28-0	Thallium	0.38	U	WN	F
7440-62-2	Vanadium	33.8			P
7440-66-6	Zinc	28.2			P
	Titanium	1160			P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

Lead - 1/2 dilution

FORM I - IN

ILM02.1

5/12/94

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ1

Lab Name: ITAS_KNOXVILLE Contract: HANFORD\WE
Lab Code: ITSTU Case No.: WO308 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5508
Level (low/med): LOW Date Received: 04/06/94
% Solids: 98.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE_ONLY.

FORM I - IN

ILM02.1
5/12/94

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ2

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD\WE
Lab Code: ITSTU_ Case No.: W0308 SAS No.: _____ SDG No.: W0024_
Matrix (soil/water): SOIL_ Lab Sample ID: AA5520
Level (low/med): LOW_ Date Received: 04/06/94
% Solids: _98.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6960			P
7440-36-0	Antimony	10.1	U	N	P
7440-38-2	Arsenic	3.0			F
7440-39-3	Barium	73.6			P
7440-41-7	Beryllium	0.63	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	9460			P
7440-47-3	Chromium	8.7			P
7440-48-4	Cobalt	13.5			P
7440-50-8	Copper	13.9			P
7439-89-6	Iron	24600			P
7439-92-1	Lead	4.4			F
7439-95-4	Magnesium	5140			P
7439-96-5	Manganese	341			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	11.5			P
7440-09-7	Potassium	1240			P
7782-49-2	Selenium	0.40	U		F
7440-22-4	Silver	1.2	B		P
7440-23-5	Sodium	196	B		P
7440-28-0	Thallium	0.40	U	WN	F
7440-62-2	Vanadium	57.1			P
7440-66-6	Zinc	38.6			P
	Titanium	1900			P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

FORM I - IN

ILM02.1
8
5/12/94

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ2

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE
Lab Code: ITSTU Case No.: WO308 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5523
Level (low/med): LOW Date Received: 04/06/94
% Solids: 98.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

FORM I - IN

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8
5/12/94

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ6

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE

Lab Code: ITSTU Case No.: W0308 SAS No.: _____ SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5472

Level (low/med): LOW Date Received: 04/06/94

% Solids: 98.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7230			P
7440-36-0	Antimony	10.1	U	N	P
7440-38-2	Arsenic	2.1			F
7440-39-3	Barium	78.5			P
7440-41-7	Beryllium	0.53	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	4310			P
7440-47-3	Chromium	9.6			P
7440-48-4	Cobalt	12.4			P
7440-50-8	Copper	10.5			P
7439-89-6	Iron	22400			P
7439-92-1	Lead	6.0		S	F
7439-95-4	Magnesium	4450			P
7439-96-5	Manganese	342			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	11.1			P
7440-09-7	Potassium	1580			P
7782-49-2	Selenium	0.41	U		F
7440-22-4	Silver	2.6			P
7440-23-5	Sodium	146	B		P
7440-28-0	Thallium	0.41	U	WN	F
7440-62-2	Vanadium	51.8			P
7440-66-6	Zinc	35.4			P
	Titanium	1640			P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

FORM I - IN

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8

5/12/94

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ6

Lab Name: ITAS_KNOXVILLE Contract: HANFORD\WE
Lab Code: ITSTU Case No.: WO308 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5477
Level (low/med): LOW Date Received: 04/06/94
% Solids: 98.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE_ONLY.

FORM I - IN

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5/4/94

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ7

Lab Name: ITAS_KNOXVILLE Contract: HANFORD\WE
Lab Code: ITSTU Case No.: WO308 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5494
Level (low/med): LOW Date Received: 04/06/94
% Solids: 97.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6350			P
7440-36-0	Antimony	10.0	U	N	P
7440-38-2	Arsenic	3.1			F
7440-39-3	Barium	84.7			P
7440-41-7	Beryllium	0.51	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	9010			P
7440-47-3	Chromium	9.4			P
7440-48-4	Cobalt	13.9			P
7440-50-8	Copper	15.0			P
7439-89-6	Iron	25100			P
7439-92-1	Lead	5.1			F
7439-95-4	Magnesium	5380			P
7439-96-5	Manganese	348			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	11.5			P
7440-09-7	Potassium	1180			P
7782-49-2	Selenium	0.40	U		F
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	155	B		P
7440-28-0	Thallium	0.40	U	WN	F
7440-62-2	Vanadium	55.5			P
7440-66-6	Zinc	37.6			P
	Titanium	1800			P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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8
5/12/94

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD\WE

Lab Code: ITSTU_ Case No.: W0308 SAS No.: _____ SDG No.: W0024_

Matrix (soil/water): SOIL_ Lab Sample ID: AA5499

Level (low/med): LOW__ Date Received: 04/06/94

% Solids: _97.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_				NR
7440-38-2	Arsenic__				NR
7440-39-3	Barium___				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium__				NR
7440-70-2	Calcium__				NR
7440-47-3	Chromium_				NR
7440-48-4	Cobalt___				NR
7440-50-8	Copper___				NR
7439-89-6	Iron____				NR
7439-92-1	Lead____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__				NR
7440-02-0	Nickel___				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-22-4	Silver___				NR
7440-23-5	Sodium___				NR
7440-28-0	Thallium_				NR
7440-62-2	Vanadium_				NR
7440-66-6	Zinc____				NR
	Titanium_				NR
5955-70-0_	Cyanide__	1.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

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5/12/94

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN0

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0331 SAS No.: _____ SDG No.: W0024_

Matrix (soil/water): SOIL_ Lab Sample ID: AA5842

Level (low/med): LOW_ Date Received: 04/08/94

% Solids: _97.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5990			P
7440-36-0	Antimony	10.2	U	N	P
7440-38-2	Arsenic	2.5			F
7440-39-3	Barium	78.5			P
7440-41-7	Beryllium	0.59	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	7490			P
7440-47-3	Chromium	8.4			P
7440-48-4	Cobalt	13.0			P
7440-50-8	Copper	13.5			P
7439-89-6	Iron	22200			P
7439-92-1	Lead	7.2			F
7439-95-4	Magnesium	4580			P
7439-96-5	Manganese	343			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	8.4			P
7440-09-7	Potassium	1670			P
7782-49-2	Selenium	0.40	U		F
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	150	B		P
7440-28-0	Thallium	0.40	U	WN	F
7440-62-2	Vanadium	48.0			P
7440-66-6	Zinc	58.0			P
	Titanium	1640			P
5955-70-0	Cyanide				NR

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

FORM I - IN

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8

5/16/94

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN0

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO331 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5845
Level (low/med): LOW Date Received: 04/08/94
% Solids: 97.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

FORM I - IN

ILM02.1
5/16/84

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN7

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0331 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5836

Level (low/med): LOW Date Received: 04/08/94

% Solids: 57.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	31500			P
7440-36-0	Antimony	17.3	U	N	P
7440-38-2	Arsenic	10.4		S	F
7440-39-3	Barium	306			P
7440-41-7	Beryllium	0.78	B		P
7440-43-9	Cadmium	4.6			P
7440-70-2	Calcium	49200			P
7440-47-3	Chromium	38.9			P
7440-48-4	Cobalt	13.0	B		P
7440-50-8	Copper	71.3			P
7439-89-6	Iron	23100			P
7439-92-1	Lead	68.9			F
7439-95-4	Magnesium	8050			P
7439-96-5	Manganese	1580			P
7439-97-6	Mercury	0.55			CV
7440-02-0	Nickel	18.5			P
7440-09-7	Potassium	1710	B		P
7782-49-2	Selenium	1.4	B		F
7440-22-4	Silver	1.8	B		P
7440-23-5	Sodium	476	B		P
7440-28-0	Thallium	0.69	U	N	F
7440-62-2	Vanadium	69.6			P
7440-66-6	Zinc	393			P
	Titanium	1470			P
5955-70-0	Cyanide				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

Lead- 1/10

FORM I - IN

ILM02.1

8/11/94

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN7

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0331 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5839
Level (low/med): LOW Date Received: 04/08/94
% Solids: 57.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.8	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE ONLY.

FORM I - IN

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8
5/16/84

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BCBNP9
~~0418101~~
J.C. 5/24/94

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0338 SAS No.: _____ SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA6047
Level (low/med): LOW Date Received: 04/12/94
% Solids: 97.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7730			P
7440-36-0	Antimony	10	U	N	P
7440-38-2	Arsenic	3.1			F
7440-39-3	Barium	86.3			P
7440-41-7	Beryllium	0.66	B		P
7440-43-9	Cadmium	1.00	U		P
7440-70-2	Calcium	8330			P
7440-47-3	Chromium	10.5			P
7440-48-4	Cobalt	15.8			P
7440-50-8	Copper	14.5			P
7439-89-6	Iron	28900			P
7439-92-1	Lead	5.0			F
7439-95-4	Magnesium	5480			P
7439-96-5	Manganese	391			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	10.5			P
7440-09-7	Potassium	1820			P
7782-49-2	Selenium	0.39	U		F
7440-22-4	Silver	1.4	B		P
7440-23-5	Sodium	197	B		P
7440-28-0	Thallium	0.39	U	WN	F
7440-62-2	Vanadium	71.2			P
7440-66-6	Zinc	49.5			P
	Titanium	2300			P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

FORM I - IN

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8
5/16/94

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNP9
~~0418101~~
J.C. 5/24/94

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0338 SAS No.: _____ SDG No.: W0024_

Matrix (soil/water): SOIL_ Lab Sample ID: AA6050

Level (low/med): LOW_ Date Received: 04/12/94

% Solids: _97.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

5/16/94

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN8

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO403 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA7084
Level (low/med): LOW Date Received: 04/16/94
% Solids: 96.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5300			P
7440-36-0	Antimony	10.3	U	N	P
7440-38-2	Arsenic	1.6	B		F
7440-39-3	Barium	101			P
7440-41-7	Beryllium	0.41	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	8950			P
7440-47-3	Chromium	8.4			P
7440-48-4	Cobalt	8.7	B		P
7440-50-8	Copper	24.5			P
7439-89-6	Iron	15800			P
7439-92-1	Lead	22.2			F
7439-95-4	Magnesium	3980			P
7439-96-5	Manganese	298			P
7439-97-6	Mercury	0.09	U		CV
7440-02-0	Nickel	26.1			P
7440-09-7	Potassium	1070			P
7782-49-2	Selenium	0.40	U		F
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	138	B		P
7440-28-0	Thallium	0.61	B	WN	F
7440-62-2	Vanadium	27.8			P
7440-66-6	Zinc	81.0			P
	Titanium	810			P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
LEAD-1/10 DILUTION.

FORM I - IN

ILM02.1

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN8

Lab Name: ITAS_KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO403 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA7087

Level (low/med): LOW Date Received: 04/16/94

% Solids: 96.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	5.2	U		AS

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: Clarity After: Artifacts:

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6153	2.5	U
BOBNQ6	AA5476	4.4	+
BOBNQ0	AA5487	3.3	+
BOBNQ1	AA5506	2.5	U
BOBNQ7	AA5497	2.5	U
BOBNQ2	AA5522	2.5	U
BOBKP6	AA5516	2.5	U
BOBKM8	AA5447	2.5	U

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	331
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6153	2.5	U
BOBKN0	AA5844	2.5	U
BOBKN7	AA5838	145	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	338
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6153	2.5	U
BOBNP9	AA6049	9.4	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	403
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/12/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6181	2.5	U
BOBKN8	AA7086	2.5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ6	Analysis Date:	04/28/94
Lab Sample ID:	AA5475	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	1.6	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ0	Analysis Date:	04/28/94
Lab Sample ID:	AA5486	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	+	0.4
sulfate	1.8	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ7	Analysis Date:	04/28/94
Lab Sample ID:	AA5496	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	1.5	U	1.5

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ1	Analysis Date:	04/28/94
Lab Sample ID:	AA5505	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	4.3	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBKP6	Analysis Date:	04/28/94
Lab Sample ID:	AA5515	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	1.6	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ2	Analysis Date:	04/28/94
Lab Sample ID:	AA5521	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	1.5	U	1.5

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBKM8	Analysis Date:	04/28/94
Lab Sample ID:	AA5446	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	1.5	U	1.5

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	331
Client Sample ID:	BOBKN0	Analysis Date:	04/28/94
Lab Sample ID:	AA5843	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.6	+	0.4
fluoride	0.5	+	0.4
sulfate	2.2	+	1.5

+ - Positive result.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	331
Client Sample ID:	BOBKN7	Analysis Date:	04/28/94
Lab Sample ID:	AA5837	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	23	+	3.2
sulfate	230	+	12

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	338
Client Sample ID:	BOBNP9	Analysis Date:	04/28/94
Lab Sample ID:	AA6048	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	10	+	0.8
sulfate	3.7	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	403
Client Sample ID:	BOBKN8	Analysis Date:	05/12/94
Lab Sample ID:	AA7085	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	3.6	+	0.4
sulfate	19	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

CYANIDE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	403
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	04/27/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	AA7420	1000	U
BOBKN8	AA7087	5000	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBKM8	Extraction Date:	04/08/94
Lab Sample ID:	AA5449	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9891
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5449	102	114

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ6	Extraction Date:	04/08/94
Lab Sample ID:	AA5478	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9854
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5478	89	98

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ0	Extraction Date:	04/08/94
Lab Sample ID:	AA5490	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9901
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5490	95	106

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ7	Extraction Date:	04/08/94
Lab Sample ID:	AA5500	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9794
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5500	105	113

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ1	Extraction Date:	04/08/94
Lab Sample ID:	AA5509	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9803
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5509	97	107

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBKP6	Extraction Date:	04/08/94
Lab Sample ID:	AA5518	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9772
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5518	105	115

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ2	Extraction Date:	04/08/94
Lab Sample ID:	AA5524	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9851
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5524	102	111

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	331
Client Sample ID:	BOBKN7	Extraction Date:	04/13/94
Lab Sample ID:	AA5840	Analysis Date:	04/28/94
Sample Matrix:	SOIL	Dryness Factor:	0.6270
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	76	D	32

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5840	130	136

D - Sample analyzed at secondary dilution of 1:2.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	331
Client Sample ID:	BOBKN0	Extraction Date:	04/13/94
Lab Sample ID:	AA5846	Analysis Date:	04/28/94
Sample Matrix:	SOIL	Dryness Factor:	0.9797
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5846	109	116

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	338
Client Sample ID:	BOBNP9	Extraction Date:	04/13/94
Lab Sample ID:	AA6051	Analysis Date:	04/28/94
Sample Matrix:	SOIL	Dryness Factor:	0.9743
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	21	M D	21

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA6051	104	121

D - Sample analyzed at a secondary dilution of 1:2.
M - Elevated detection limit due to matrix interference.

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	403
Client Sample ID:	BOBNK8	Extraction Date:	04/27/94
Lab Sample ID:	AA7088	Analysis Date:	04/27/94
Sample Matrix:	SOIL	Dryness Factor:	0.9622
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA7088	123	52

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

June 1, 1994

Attention: J.A.Lerch

SAF Number	:	94-065
Date SDG Closed	:	April 19, 1994
Number of Samples	:	Eleven (11)
Sample Type	:	Soil
SDG Number	:	W0024
Data Deliverable	:	Stand Alone

I. Introduction

On March 5, 7, 11, and 14, 1994, eleven soil samples were received by ITAS-Richland for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the WHC specific IDs:

ITAS-Richland ID	WHC ID	Matrix	Date of Receipt
404068-01A	B0BKM8	Soil	4/5/94
404068-02A	B0BNQ6	Soil	4/5/94
404068-03A	B0BNQ0	Soil	4/5/94
404068-04A	B0BNQ7	Soil	4/5/94
404068-05A	B0BNQ1	Soil	4/5/94
404068-06A	B0BKP6	Soil	4/5/94
404068-07A	B0BNQ2	Soil	4/5/94
404119-01A	B0BKN7	Soil	4/7/94
404119-02A	B0BKN0	Soil	4/7/94
404182-01A	B0BNP9	Soil	4/11/94
404281-01A	B0BKN8	Soil	4/14/94

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy
Americium-241, Curium-244 by method ITAS-RD-3302
Neptunium-237 by method ITAS-RD-3208
Plutonium-238, -239/40 by method ITAS-RD-3209
Uranium-234, -235, -238 by method ITAS-RD-3234
Gamma Spectroscopy
Gamma Scan by method ITAS-RD-3219
Iodine-129 by method ITAS-RD-3219
Gas Proportional Counting
Gross Alpha by method ITAS-RD-3222
Gross Beta by method ITAS-RD-3222
Strontium-90 by method ITAS-RD-3204
Liquid Scintillation Counting
Selenium-79 by method ITAS-RD-3253
Technetium-99 by method ITAS-IT-RS-0001
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0024 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate.

Quality control sample results are reported in the same units as sample results except for gross alpha and gross beta quality control sample results which are reported in pCi/sample.

IV. Comments

The initial radioactivity screening of the samples classified them as Category II.

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BKN7) results are within contractual requirements.

Neptunium-237 by method ITAS-RD-3208
Three matrix spikes were analyzed with the batch and their average yield is used for yield correction. The LCS is biased high (161.0%) after yield correction using the matrix spike yield average value of 61.5%. The high bias is attributed to the difference in the matrices of the matrix spike (soil) and the LCS (water). The batch blank result is acceptable. The sample and sample duplicate (duplicates of samples B0BNQ6 and B0BKN7) results are within the 3 sigma control limit.

Plutonium-238, 239/40 by method ITAS-RD-3209
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BKN7) results are within contractual requirements.

Uranium-234, 235, 238 by method ITAS-RD-3234
The initial LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BKN7) results were all within contractual requirements with the exceptions of samples B0BNQ6 and B0BNQ2 which were reanalyzed due to tracer yields less than 30%. The reanalysis tracer yields were less than 30% for the blank, LCS, sample B0BNQ2 and the duplicate of B0BNQ2. The reanalysis results for both samples are within 3 sigma of the original results and the duplicate of B0BNQ2 is within 3 sigma of sample B0BNQ2. The reanalysis shows the original data is acceptable with low yields. The original results are accepted and reported.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
Sample B0BKN7 has Eu-154 detected at levels that cause interference in other energy regions of the gamma spectrum. Specifically, Na-22, Co-57, and Zr-95 are detected by the Nuclear Data system, however, it is the Eu-154 secondary energy lines that cause those isotopes to be detected. A result for Na-22 was specifically requested on the Chain of Custody submitted with the sample, therefore, we are reporting the FALSE POSITIVE result for Na-22. Co-57 and Zr-95 are not reported although they are detected because they are FALSE POSITIVE results and are not specifically requested. The following samples did not meet the contract limit for Eu-155: B0BNQ7, the duplicate of B0BNQ7, B0BNQ2, B0BKN8, and B0BNP9. The Ottawa sand blank matrix material meets all contract limits for the requested isotopes, therefore the sample data are accepted. Sample B0BKM8 was recounted to confirm a suspected sample switch. The recount confirmed that an incorrect sample with a similar sample ID number was initially counted. The recount data is reported for the sample. The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BNQ7) are within contractual requirements, except as noted above.

Iodine-129 by method ITAS-RD-3219
The following samples did not meet the contract limit for I-129: B0BKM8, B0BKN7, B0BNP9, B0BKN8 and the duplicate of B0BKN8. The inability to meet contract limits is attributed to a matrix effect caused by elevated levels of Cs-137. The Cs-137 activity present in the samples is verified by the germanium gamma analysis results. Sample B0BKN8, analyzed in duplicate, indicates that the samples, if reanalyzed, would exhibit the same matrix interference due to the Cs-137. The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BKN8) results are accepted and reported.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BNQ6) results are within contractual requirements.

Gross Beta by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BNQ6) results are within contractual requirements.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BKN7) results are within contractual requirements.

Liquid Scintillation Counting

Selenium-79 by method ITAS-RD-3253
In our professional opinion, the reported results for samples B0BNQ7, B0BNQ2, and B0BKN8 are FALSE POSITIVE results. The raw LSC data indicates the activity attributed to Se-79 is likely caused by a nuclide other than Se-79. Three matrix spikes were analyzed and their average chemical yield is used for the batch yield corrections. The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNQ7 and B0BNP9) results are within contractual requirements.

Technetium-99 by method ITAS-IT-RS-0001
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNP9 and B0BKN7) results are within contractual requirements. Two matrix spikes were analyzed with the sample batch and their average chemical yield is used for the batch yield corrections.

Total Uranium

Total Uranium by method ITAS-RD-4200
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNQ0 and B0BKN0) results are within contractual requirements. Two matrix spikes were analyzed with the sample batch and their average chemical yield is used for the batch yield corrections.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Suzanne Gaines

Suzanne Gaines
Project Manager

9613479.2063

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406801
MATRIX: SOIL
WHC ID: BOBKM8
DATE RECEIVED 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	7.05E-01	1.34E-01	1.80E-01	0.571	RD3302
CM-242	-6.28E-04	1.26E-03	1.26E-03	0.571	RD3302
CM-244	5.37E-03	1.29E-02	1.29E-02	0.571	RD3302
NP-237	1.30E-02	1.92E-02	1.94E-02	0.615	RD3208
PU-238	0.00E+00	0.00E+00	3.53E-02	0.354	RD3209
PU239/40	2.71E-01	1.13E-01	1.24E-01	0.354	RD3209
U-234	5.37E-01	1.46E-01	1.68E-01	0.423	RD3234
U-235	8.26E-03	1.98E-02	1.98E-02	0.423	RD3234
U-238DA	7.65E-01	1.74E-01	2.11E-01	0.423	RD3234
K-40	1.41E+01	4.71E-01	1.48E+00	0	RD3219
CO-60	7.21E-03	1.06E-02	1.06E-02	0	RD3219
EU-152	-5.87E-04	5.16E-02	5.16E-02	0	RD3219
CS-137DA	5.01E+01	2.24E-01	5.01E+00	0	RD3219
CS-134	1.41E-03	2.06E-02	2.06E-02	0	RD3219
RU-106DA	-1.96E-01	2.11E-01	2.11E-01	0	RD3219
RA-224DA	7.80E-01	7.61E-02	1.09E-01	0	RD3219
NA-22	2.07E-02	1.24E-02	1.26E-02	0	RD3219
EU-155	-6.39E-04	7.08E-02	7.08E-02	0	RD3219
EU-154	5.67E-02	3.40E-02	3.45E-02	0	RD3219
RA-226DA	6.19E-01	8.90E-02	1.08E-01	0	RD3219
U-238DA	6.75E-01	9.75E-02	1.19E-01	0	RD3219
AC-228	8.32E-01	8.13E-02	1.16E-01	0	RD3219
BI-214	6.19E-01	8.90E-02	1.08E-01	0	RD3219
PB-212	7.44E-01	7.26E-02	1.04E-01	0	RD3219
PB-214	6.75E-01	9.75E-02	1.19E-01	0	RD3219
TH-232DA	8.32E-01	8.13E-02	1.16E-01	0	RD3219
RA-228DA	8.45E-01	8.26E-02	1.18E-01	0	RD3219
I-129LP	-3.52E+00	1.09E+00	1.14E+00	0	RD3219
ALPHA	2.07E+01	6.46E+00	6.84E+00	1	RD3222
BETA	8.11E+01	6.02E+00	8.05E+00	1	RD3222
TOTAL-SR	6.60E+00	3.14E-01	1.61E+00	0.747	RD3204
SE-79	2.40E+00	7.34E-01	2.15E+00	0.645	RD3253
TC-99	1.98E-02	3.61E-01	1.49E+00	0.682	ITAS-IT-RS-0001
URANIUM	0.00E+00	N/A	3.18E-01	0.931	RD4200

9613479.2064

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406802
MATRIX: SOIL
WHC ID: BOBNQ6
DATE RECEIVED 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	7.48E-01	1.18E-01	1.63E-01	0.784	RD3302
CM-242	0.00E+00	0.00E+00	1.71E-02	0.784	RD3302
CM-244	0.00E+00	0.00E+00	1.39E-02	0.784	RD3302
NP-237	6.23E-03	1.36E-02	1.36E-02	0.615	RD3208
PU-238	3.38E-02	4.21E-02	4.26E-02	0.345	RD3209
PU239/40	2.29E-01	1.05E-01	1.14E-01	0.345	RD3209
U-234	9.31E-01	2.34E-01	2.90E-01	0.285	RD3234
U-235	1.27E-01	8.77E-02	9.08E-02	0.285	RD3234
U-238DA	7.54E-01	2.11E-01	2.52E-01	0.285	RD3234
K-40	1.50E+01	4.89E-01	1.58E+00	N/A	RD3219
CO-60	8.64E-03	1.06E-02	1.07E-02	N/A	RD3219
EU-152	9.14E-02	4.67E-02	4.76E-02	N/A	RD3219
CS-137DA	3.62E+01	1.70E-01	3.63E+00	N/A	RD3219
CS-134	-2.40E-03	1.72E-02	1.72E-02	N/A	RD3219
RU-106DA	1.27E-03	1.83E-01	1.83E-01	N/A	RD3219
RA-224DA	7.46E-01	5.91E-02	9.51E-02	N/A	RD3219
NA-22	-1.21E-03	1.17E-02	1.17E-02	N/A	RD3219
EU-155	3.02E-02	6.69E-02	6.69E-02	N/A	RD3219
EU-154	-3.34E-03	3.21E-02	3.21E-02	N/A	RD3219
RA-226DA	5.33E-01	6.98E-02	8.78E-02	N/A	RD3219
U-238DA	7.11E-01	1.06E-01	1.28E-01	N/A	RD3219
AC-228	7.57E-01	7.73E-02	1.08E-01	N/A	RD3219
TL-208	2.32E-01	3.82E-02	4.47E-02	N/A	RD3219
BI-214	5.33E-01	6.98E-02	8.78E-02	N/A	RD3219
PB-212	7.15E-01	5.67E-02	9.12E-02	N/A	RD3219
PB-214	7.11E-01	1.06E-01	1.28E-01	N/A	RD3219
TH-232DA	7.57E-01	7.73E-02	1.08E-01	N/A	RD3219
RA-228DA	7.68E-01	7.84E-02	1.10E-01	N/A	RD3219
I-129LP	-2.04E+00	9.76E-01	9.97E-01	N/A	RD3219
ALPHA	1.53E+01	5.64E+00	5.88E+00	1	RD3222
BETA	7.21E+01	5.70E+00	7.42E+00	1	RD3222
TOTAL-SR	1.17E+00	1.38E-01	3.13E-01	0.762	RD3204
SE-79	1.85E+00	7.31E-01	2.10E+00	0.645	RD3253
TC-99	2.51E-01	3.61E-01	1.51E+00	0.682	ITAS-IT-RS-0001
URANIUM	2.72E+00	N/A	4.08E-01	0.931	RD4200

682A-6-93

9613479.2065

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406803
MATRIX: SOIL
WHC ID: BOBNQ0
DATE RECEIVED 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	8.03E-01	1.20E-01	1.71E-01	0.804	RD3302
CM-242	0.00E+00	0.00E+00	1.68E-02	0.804	RD3302
CM-244	0.00E+00	0.00E+00	1.36E-02	0.804	RD3302
NP-237	1.35E-02	1.92E-02	1.94E-02	0.615	RD3208
PU-238	1.74E-02	1.95E-02	1.97E-02	0.863	RD3209
PU239/40	2.42E-01	6.90E-02	7.66E-02	0.863	RD3209
U-234	6.29E-01	1.37E-01	1.64E-01	0.559	RD3234
U-235	2.17E-02	2.58E-02	2.60E-02	0.559	RD3234
U-238DA	9.21E-01	1.66E-01	2.11E-01	0.559	RD3234
K-40	1.46E+01	4.96E-01	1.54E+00	N/A	RD3219
CO-60	8.04E-03	1.11E-02	1.12E-02	N/A	RD3219
EU-152	8.79E-02	4.63E-02	4.72E-02	N/A	RD3219
CS-137DA	3.43E+01	1.66E-01	3.43E+00	N/A	RD3219
CS-134	-4.73E-03	1.77E-02	1.77E-02	N/A	RD3219
RU-106DA	-7.74E-02	1.83E-01	1.83E-01	N/A	RD3219
RA-224DA	7.68E-01	7.47E-02	1.07E-01	N/A	RD3219
NA-22	1.36E-02	1.19E-02	1.20E-02	N/A	RD3219
EU-155	9.23E-02	6.19E-02	6.26E-02	N/A	RD3219
EU-154	2.02E-02	3.38E-02	3.38E-02	N/A	RD3219
RA-226DA	5.93E-01	6.66E-02	8.92E-02	N/A	RD3219
U-238DA	6.56E-01	8.52E-02	1.08E-01	N/A	RD3219
AC-228	8.38E-01	9.14E-02	1.24E-01	N/A	RD3219
BI-212	5.80E-01	1.59E-01	1.69E-01	N/A	RD3219
BI-214	5.93E-01	6.66E-02	8.91E-02	N/A	RD3219
PB-212	7.36E-01	7.16E-02	1.03E-01	N/A	RD3219
PB-214	6.56E-01	8.52E-02	1.08E-01	N/A	RD3219
TH-232DA	8.38E-01	9.14E-02	1.24E-01	N/A	RD3219
RA-228DA	8.50E-01	9.27E-02	1.26E-01	N/A	RD3219
I-129LP	-6.52E-01	8.97E-01	9.00E-01	N/A	RD3219
ALPHA	1.37E+01	5.25E+00	5.46E+00	1	RD3222
BETA	7.84E+01	5.94E+00	7.87E+00	1	RD3222
TOTAL-SR	1.38E+00	1.61E-01	3.60E-01	0.653	RD3204
SE-79	1.01E+00	7.04E-01	2.00E+00	0.645	RD3253
TC-99	4.95E-01	3.65E-01	1.53E+00	0.682	ITAS-IT-RS-0001
URANIUM	2.26E+00	N/A	3.39E-01	0.931	RD4200

682A-6-93

9613479.2066

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406804
MATRIX: SOIL
WHC ID: BOBNQ7
DATE RECEIVED 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	8.42E-01	1.27E-01	1.81E-01	0.762	RD3302
CM-242	0.00E+00	0.00E+00	1.76E-02	0.762	RD3302
CM-244	-3.82E-04	7.65E-04	7.67E-04	0.762	RD3302
NP-237	2.03E-02	2.34E-02	2.38E-02	0.615	RD3208
PU-238	1.41E-02	2.82E-02	2.84E-02	0.295	RD3209
PU239/40	1.98E-01	1.06E-01	1.13E-01	0.295	RD3209
U-234	1.54E+00	2.59E-01	3.60E-01	0.383	RD3234
U-235	4.00E-02	4.36E-02	4.41E-02	0.383	RD3234
U-238DA	1.51E+00	2.56E-01	3.54E-01	0.383	RD3234
K-40	1.39E+01	4.36E-01	1.46E+00	N/A	RD3219
CO-60	-2.35E-03	9.66E-03	9.66E-03	N/A	RD3219
EU-152	7.85E-02	4.00E-02	4.07E-02	N/A	RD3219
CS-137DA	1.06E+02	2.06E-01	1.06E+01	N/A	RD3219
CS-134	-4.67E-03	2.65E-02	2.65E-02	N/A	RD3219
RU-106DA	2.39E-01	2.78E-01	2.79E-01	N/A	RD3219
RA-224DA	6.34E-01	8.81E-02	1.09E-01	N/A	RD3219
NA-22	4.31E-03	1.13E-02	1.13E-02	N/A	RD3219
EU-155	7.24E-02	1.03E-01	1.03E-01	N/A	RD3219
EU-154	3.73E-02	2.99E-02	3.01E-02	N/A	RD3219
RA-226DA	5.45E-01	9.02E-02	1.05E-01	N/A	RD3219
U-238DA	5.28E-01	1.04E-01	1.17E-01	N/A	RD3219
BI-214	5.45E-01	9.02E-02	1.05E-01	N/A	RD3219
PB-212	6.07E-01	8.44E-02	1.04E-01	N/A	RD3219
PB-214	5.28E-01	1.04E-01	1.17E-01	N/A	RD3219
TH-232DA	6.89E-01	7.40E-02	1.01E-01	N/A	RD3219
I-129LP	-4.33E+00	1.47E+00	1.53E+00	N/A	RD3219
ALPHA	1.22E+01	5.10E+00	5.27E+00	1	RD3222
BETA	2.84E+02	1.10E+01	2.17E+01	1	RD3222
TOTAL-SR	7.98E+00	3.40E-01	1.95E+00	0.778	RD3204
SE-79	5.31E+00	7.93E-01	2.46E+00	0.645	RD3253
TC-99	8.95E-01	3.72E-01	1.56E+00	0.682	ITAS-IT-RS-0001
URANIUM	5.24E+00	N/A	7.86E-01	0.931	RD4200

682A-6-93

9613479.2067

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406805
MATRIX: SOIL
WHC ID: BOBNQ1
DATE RECEIVED 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	6.84E-01	1.12E-01	1.53E-01	0.79	RD3302
CM-242	-4.55E-04	9.10E-04	9.13E-04	0.79	RD3302
CM-244	-3.70E-04	7.39E-04	7.41E-04	0.79	RD3302
NP-237	6.77E-03	1.36E-02	1.36E-02	0.615	RD3208
PU-238	1.31E-02	2.36E-02	2.37E-02	0.51	RD3209
PU239/40	3.26E-02	3.26E-02	3.31E-02	0.51	RD3209
U-234	5.84E-01	1.35E-01	1.58E-01	0.54	RD3234
U-235	2.13E-02	2.68E-02	2.70E-02	0.54	RD3234
U-238DA	5.47E-01	1.30E-01	1.52E-01	0.54	RD3234
K-40	1.32E+01	4.40E-01	1.39E+00	N/A	RD3219
CO-60	-1.08E-03	8.69E-03	8.69E-03	N/A	RD3219
EU-152	8.48E-02	3.99E-02	4.07E-02	N/A	RD3219
CS-137DA	1.22E-01	1.45E-02	1.89E-02	N/A	RD3219
CS-134	-2.07E-03	6.97E-03	6.97E-03	N/A	RD3219
RU-106DA	2.17E-02	6.84E-02	6.84E-02	N/A	RD3219
RA-224DA	6.83E-01	2.83E-02	7.39E-02	N/A	RD3219
NA-22	-1.13E-02	1.10E-02	1.11E-02	N/A	RD3219
EU-155	3.56E-02	2.70E-02	2.72E-02	N/A	RD3219
EU-154	-3.95E-02	3.12E-02	3.14E-02	N/A	RD3219
RA-226DA	5.57E-01	3.47E-02	6.56E-02	N/A	RD3219
TH-234	7.07E+00	5.19E+00	5.24E+00	N/A	RD3219
U-238DA	5.81E-01	3.56E-02	6.81E-02	N/A	RD3219
AC-228	7.00E-01	7.57E-02	1.03E-01	N/A	RD3219
TL-208	2.33E-01	2.11E-02	3.15E-02	N/A	RD3219
BI-214	5.57E-01	3.47E-02	6.56E-02	N/A	RD3219
PB-212	6.54E-01	2.71E-02	7.08E-02	N/A	RD3219
PB-214	5.81E-01	3.56E-02	6.81E-02	N/A	RD3219
TH-232DA	7.00E-01	7.57E-02	1.03E-01	N/A	RD3219
RA-228DA	7.10E-01	7.68E-02	1.05E-01	N/A	RD3219
I-129LP	4.22E-01	4.53E-01	4.55E-01	N/A	RD3219
ALPHA	1.11E+01	4.94E+00	5.09E+00	1	RD3222
BETA	2.47E+01	3.57E+00	3.92E+00	1	RD3222
TOTAL-SR	1.49E-01	1.01E-01	1.06E-01	0.445	RD3204
SE-79	7.24E-01	7.03E-01	1.97E+00	0.645	RD3253
TC-99	-1.98E-02	3.59E-01	1.49E+00	0.682	ITAS-IT-RS-0001
URANIUM	1.49E+00	N/A	2.23E-01	0.931	RD4200

682A-6-93

9613479.2068

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0024

LAB SAMPLE ID: 40406806 MATRIX: SOIL

WHC ID: BOBKP6 DATE RECEIVED 4/5/94

REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	6.79E-01	1.13E-01	1.53E-01	0.78	RD3302
CM-242	-4.60E-04	9.21E-04	9.23E-04	0.78	RD3302
CM-244	-1.12E-03	1.30E-03	1.31E-03	0.78	RD3302
NP-237	0.00E+00	0.00E+00	0.00E+00	0.615	RD3208
PU-238	-9.30E-04	1.86E-03	1.87E-03	0.896	RD3209
PU239/40	2.32E-02	2.08E-02	2.10E-02	0.896	RD3209
U-234	4.96E-01	1.25E-01	1.45E-01	0.527	RD3234
U-235	1.33E-02	2.25E-02	2.26E-02	0.527	RD3234
U-238DA	5.03E-01	1.26E-01	1.46E-01	0.527	RD3234
K-40	1.38E+01	4.43E-01	1.45E+00	N/A	RD3219
CO-60	-9.63E-03	9.72E-03	9.77E-03	N/A	RD3219
EU-152	6.79E-02	4.01E-02	4.07E-02	N/A	RD3219
CS-137DA	9.42E-05	8.07E-03	8.07E-03	N/A	RD3219
CS-134	-1.91E-03	7.09E-03	7.09E-03	N/A	RD3219
RU-106DA	-2.22E-02	7.20E-02	7.20E-02	N/A	RD3219
RA-224DA	7.69E-01	2.92E-02	8.23E-02	N/A	RD3219
NA-22	7.61E-04	1.01E-02	1.01E-02	N/A	RD3219
EU-155	3.98E-02	2.68E-02	2.70E-02	N/A	RD3219
EU-154	1.26E-03	2.78E-02	2.78E-02	N/A	RD3219
RA-226DA	5.58E-01	3.94E-02	6.83E-02	N/A	RD3219
U-238DA	6.16E-01	3.70E-02	7.19E-02	N/A	RD3219
AC-228	7.60E-01	7.22E-02	1.05E-01	N/A	RD3219
TL-208	2.32E-01	2.03E-02	3.08E-02	N/A	RD3219
BI-214	5.58E-01	3.94E-02	6.83E-02	N/A	RD3219
PB-212	7.37E-01	2.80E-02	7.88E-02	N/A	RD3219
PB-214	6.16E-01	3.70E-02	7.19E-02	N/A	RD3219
TH-232DA	7.60E-01	7.22E-02	1.05E-01	N/A	RD3219
RA-228DA	7.71E-01	7.32E-02	1.06E-01	N/A	RD3219
I-129LP	1.94E-01	4.59E-01	4.59E-01	N/A	RD3219
ALPHA	1.49E+01	5.48E+00	5.71E+00	1	RD3222
BETA	2.66E+01	3.67E+00	4.07E+00	1	RD3222
TOTAL-SR	8.36E-02	5.74E-02	6.09E-02	0.856	RD3204
SE-79	9.61E-01	7.06E-01	2.00E+00	0.645	RD3253
TC-99	-3.07E-01	3.51E-01	1.47E+00	0.682	ITAS-IT-RS-0001
URANIUM	1.38E+00	N/A	2.07E-01	0.931	RD4200

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406807
MATRIX: SOIL
WHC ID: BOBNQ2
DATE RECEIVED 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	6.50E-01	1.09E-01	1.47E-01	0.791	RD3302
CM-242	0.00E+00	0.00E+00	1.70E-02	0.791	RD3302
CM-244	0.00E+00	0.00E+00	1.38E-02	0.791	RD3302
NP-237	2.70E-02	2.70E-02	2.77E-02	0.615	RD3208
PU-238	5.92E-03	1.51E-02	1.51E-02	0.562	RD3209
PU239/40	7.54E-02	4.94E-02	5.08E-02	0.562	RD3209
U-234	1.29E+00	2.73E-01	3.59E-01	0.291	RD3234
U-235	3.83E-02	4.97E-02	5.02E-02	0.291	RD3234
U-238DA	9.56E-01	2.34E-01	2.90E-01	0.291	RD3234
K-40	1.30E+01	4.29E-01	1.37E+00	N/A	RD3219
CO-60	4.65E-03	8.88E-03	8.89E-03	N/A	RD3219
EU-152	5.77E-02	4.34E-02	4.38E-02	N/A	RD3219
CS-137DA	1.46E+02	3.42E-01	1.46E+01	N/A	RD3219
CS-134	1.99E-02	3.01E-02	3.02E-02	N/A	RD3219
RU-106DA	-5.56E-02	2.88E-01	2.88E-01	N/A	RD3219
RA-224DA	5.84E-01	9.53E-02	1.12E-01	N/A	RD3219
NA-22	-8.27E-03	1.16E-02	1.16E-02	N/A	RD3219
EU-155	1.17E-01	1.11E-01	1.12E-01	N/A	RD3219
EU-154	-3.05E-02	3.29E-02	3.30E-02	N/A	RD3219
RA-226DA	4.89E-01	9.55E-02	1.07E-01	N/A	RD3219
U-238DA	4.44E-01	1.26E-01	1.33E-01	N/A	RD3219
AC-228	6.11E-01	7.72E-02	9.85E-02	N/A	RD3219
BI-214	4.89E-01	9.55E-02	1.07E-01	N/A	RD3219
PB-212	5.94E-01	9.69E-02	1.14E-01	N/A	RD3219
PB-214	4.44E-01	1.26E-01	1.33E-01	N/A	RD3219
TH-232DA	6.11E-01	7.72E-02	9.85E-02	N/A	RD3219
RA-228DA	6.08E-01	7.68E-02	9.79E-02	N/A	RD3219
I-129LP	-8.58E+00	1.96E+00	2.14E+00	N/A	RD3219
ALPHA	1.85E+01	6.13E+00	6.45E+00	1	RD3222
BETA	5.05E+02	1.46E+01	3.64E+01	1	RD3222
TOTAL-SR	1.22E+01	4.09E-01	2.97E+00	0.803	RD3204
SE-79	5.41E+00	7.98E-01	2.47E+00	0.645	RD3253
TC-99	7.83E-01	3.77E-01	1.55E+00	0.682	ITAS-IT-RS-0001
URANIUM	5.45E+00	N/A	8.18E-01	0.931	RD4200

9613479.2070

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40411901
MATRIX: SOIL
WHC ID: BOBKN7
DATE RECEIVED 4/7/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	4.31E+00	2.88E-01	7.23E-01	0.755	RD3302
CM-242	-4.66E-04	9.32E-04	9.34E-04	0.755	RD3302
CM-244	3.30E-02	2.56E-02	2.61E-02	0.755	RD3302
NP-237	3.33E-02	3.03E-02	3.11E-02	0.615	RD3208
PU-238	6.50E-01	1.50E-01	1.86E-01	0.48	RD3209
PU239/40	5.16E+00	4.23E-01	9.72E-01	0.48	RD3209
U-234	3.29E+01	1.26E+00	5.68E+00	0.347	RD3234
U-235	1.05E+00	2.25E-01	2.86E-01	0.347	RD3234
U-238DA	1.12E+01	7.33E-01	2.03E+00	0.347	RD3234
K-40	9.67E+00	6.52E-01	1.17E+00	N/A	RD3219
CO-60	4.47E+01	3.28E-01	4.48E+00	N/A	RD3219
EU-152	6.42E-01	1.67E-01	1.79E-01	N/A	RD3219
CS-137DA	2.09E+02	6.47E-01	2.09E+01	N/A	RD3219
CS-134	4.98E-02	7.42E-02	7.43E-02	N/A	RD3219
RU-106DA	7.90E-02	7.78E-01	7.78E-01	N/A	RD3219
NA-22	8.23E+00	1.65E-01	8.39E-01	N/A	RD3219
EU-155	5.43E+00	3.16E-01	6.28E-01	N/A	RD3219
EU-154	2.27E+01	4.49E-01	2.31E+00	N/A	RD3219
RA-226DA	9.00E-01	2.23E-01	2.40E-01	N/A	RD3219
TH-234	6.98E+01	1.10E+02	1.10E+02	N/A	RD3219
U-235	1.34E+00	4.08E-01	4.30E-01	N/A	RD3219
U-238DA	6.83E-01	2.09E-01	2.20E-01	N/A	RD3219
PB-212	6.25E-01	1.55E-01	1.68E-01	N/A	RD3219
PB-214	6.83E-01	2.09E-01	2.20E-01	N/A	RD3219
I-129LP	-1.86E+01	2.87E+00	3.42E+00	N/A	RD3219
ALPHA	6.02E+01	1.05E+01	1.24E+01	1	RD3222
BETA	2.17E+02	9.65E+00	1.73E+01	1	RD3222
TOTAL-SR	3.27E+01	8.28E-01	7.34E+00	0.492	RD3204
SE-79	3.55E+00	7.61E-01	2.28E+00	0.645	RD3253
TC-99	2.75E+00	4.29E-01	1.72E+00	0.682	ITAS-IT-RS-0001
URANIUM	3.18E+01	N/A	4.77E+00	0.931	RD4200

682A-6-93

9613479.2071

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0024

LAB SAMPLE ID: 40411902 MATRIX: SOIL

WHC ID: BOBKN0 DATE RECEIVED 4/7/94

REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	7.16E-01	1.14E-01	1.57E-01	0.805	RD3302
CM-242	0.00E+00	0.00E+00	1.64E-02	0.805	RD3302
CM-244	-3.62E-04	7.25E-04	7.27E-04	0.805	RD3302
NP-237	6.77E-03	1.35E-02	1.36E-02	0.615	RD3208
PU-238	7.55E-03	2.61E-02	2.62E-02	0.331	RD3209
PU239/40	1.48E-01	8.72E-02	9.19E-02	0.331	RD3209
U-234	4.17E-01	1.07E-01	1.21E-01	0.615	RD3234
U-235	1.81E-02	2.35E-02	2.37E-02	0.615	RD3234
U-238DA	5.12E-01	1.18E-01	1.37E-01	0.615	RD3234
K-40	1.39E+01	4.76E-01	1.47E+00	N/A	RD3219
CO-60	-4.74E-03	1.03E-02	1.03E-02	N/A	RD3219
EU-152	4.61E-02	4.90E-02	4.92E-02	N/A	RD3219
CS-137DA	1.35E+01	1.14E-01	1.36E+00	N/A	RD3219
CS-134	-5.36E-03	1.21E-02	1.22E-02	N/A	RD3219
RU-106DA	2.15E-02	1.26E-01	1.26E-01	N/A	RD3219
SB-125	3.93E-02	5.94E-02	5.95E-02	N/A	RD3219
RA-224DA	7.62E-01	4.78E-02	9.00E-02	N/A	RD3219
NA-22	1.45E-02	1.12E-02	1.13E-02	N/A	RD3219
EU-155	8.84E-02	4.62E-02	4.71E-02	N/A	RD3219
EU-154	3.99E-02	3.10E-02	3.13E-02	N/A	RD3219
RA-226DA	6.42E-01	6.08E-02	8.84E-02	N/A	RD3219
TH-234	5.04E+00	5.05E+00	5.07E+00	N/A	RD3219
U-238DA	6.50E-01	6.14E-02	8.94E-02	N/A	RD3219
AC-228	8.04E-01	7.72E-02	1.11E-01	N/A	RD3219
TL-208	2.83E-01	2.78E-02	3.97E-02	N/A	RD3219
BI-214	6.42E-01	6.08E-02	8.84E-02	N/A	RD3219
PB-212	7.33E-01	4.60E-02	8.65E-02	N/A	RD3219
PB-214	6.50E-01	6.14E-02	8.94E-02	N/A	RD3219
TH-232DA	8.04E-01	7.72E-02	1.11E-01	N/A	RD3219
RA-228DA	8.14E-01	7.82E-02	1.13E-01	N/A	RD3219
I-129LP	-1.15E+00	7.27E-01	7.36E-01	N/A	RD3219
ALPHA	1.32E+01	5.17E+00	5.36E+00	1	RD3222
BETA	4.41E+01	4.57E+00	5.42E+00	1	RD3222
TOTAL-SR	3.78E+00	2.30E-01	9.44E-01	0.809	RD3204
SE-79	2.77E+00	7.46E-01	2.19E+00	0.645	RD3253
TC-99	-3.60E-01	3.50E-01	1.46E+00	0.682	ITAS-IT-RS-0001
URANIUM	1.87E+00	N/A	2.81E-01	0.931	RD4200

682A-6-93

9613479.2072

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40418201
MATRIX: SOIL
WHC ID: BOBNP9
DATE RECEIVED 4/11/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	6.27E-01	1.25E-01	1.64E-01	0.583	RD3302
CM-242	-1.23E-03	1.74E-03	1.75E-03	0.583	RD3302
CM-244	0.00E+00	0.00E+00	1.87E-02	0.583	RD3302
NP-237	0.00E+00	0.00E+00	0.00E+00	0.615	RD3208
PU-238	0.00E+00	0.00E+00	2.20E-02	0.567	RD3209
PU239/40	2.94E-02	2.94E-02	2.97E-02	0.567	RD3209
U-234	6.89E-01	1.46E-01	1.76E-01	0.542	RD3234
U-235	1.23E-02	2.19E-02	2.20E-02	0.542	RD3234
U-238DA	4.68E-01	1.20E-01	1.37E-01	0.542	RD3234
K-40	1.31E+01	3.91E-01	1.37E+00	N/A	RD3219
CO-60	-1.24E-03	8.67E-03	8.67E-03	N/A	RD3219
EU-152	6.59E-02	3.85E-02	3.91E-02	N/A	RD3219
CS-137DA	1.81E+02	5.39E-01	1.82E+01	N/A	RD3219
CS-134	1.13E-02	3.45E-02	3.45E-02	N/A	RD3219
RU-106DA	-3.40E-01	3.58E-01	3.60E-01	N/A	RD3219
RA-224DA	7.42E-01	1.10E-01	1.32E-01	N/A	RD3219
NA-22	-3.22E-03	1.07E-02	1.07E-02	N/A	RD3219
EU-155	8.57E-02	1.31E-01	1.31E-01	N/A	RD3219
EU-154	5.06E-03	2.88E-02	2.88E-02	N/A	RD3219
RA-226DA	5.13E-01	1.20E-01	1.31E-01	N/A	RD3219
U-238DA	5.50E-01	1.35E-01	1.46E-01	N/A	RD3219
BI-214	5.13E-01	1.20E-01	1.31E-01	N/A	RD3219
PB-212	7.10E-01	1.05E-01	1.27E-01	N/A	RD3219
PB-214	5.50E-01	1.35E-01	1.46E-01	N/A	RD3219
TH-232DA	7.55E-01	7.84E-02	1.09E-01	N/A	RD3219
I-129LP	-7.77E+00	1.84E+00	1.99E+00	N/A	RD3219
ALPHA	9.96E+00	4.69E+00	4.81E+00	1	RD3222
BETA	1.97E+02	9.21E+00	1.59E+01	1	RD3222
TOTAL-SR	4.75E+00	2.52E-01	1.18E+00	0.818	RD3204
SE-79	4.03E+00	7.72E-01	2.33E+00	0.645	RD3253
TC-99	-1.65E-02	3.58E-01	1.49E+00	0.682	ITAS-IT-RS-0001
URANIUM	1.89E+00	N/A	2.83E-01	0.931	RD4200

682A-6-93

9613479.2073

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0024

LAB SAMPLE ID: 40428101 MATRIX: SOIL

WHC ID: BOBKN8 DATE RECEIVED 4/14/94

REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	9.33E-01	1.54E-01	2.22E-01	0.567	RD3302
CM-242	0.00E+00	0.00E+00	2.32E-02	0.567	RD3302
CM-244	0.00E+00	0.00E+00	1.93E-02	0.567	RD3302
NP-237	1.35E-02	1.91E-02	1.93E-02	0.615	RD3208
PU-238	3.71E-02	2.80E-02	2.85E-02	0.786	RD3209
PU239/40	1.22E+00	1.60E-01	2.36E-01	0.786	RD3209
U-234	1.17E+00	2.07E-01	2.73E-01	0.455	RD3234
U-235	6.10E-02	4.84E-02	4.93E-02	0.455	RD3234
U-238DA	1.12E+00	2.03E-01	2.65E-01	0.455	RD3234
K-40	1.30E+01	4.47E-01	1.37E+00	N/A	RD3219
CO-60	1.78E-01	2.35E-02	2.95E-02	N/A	RD3219
EU-152	1.83E-01	5.84E-02	6.12E-02	N/A	RD3219
CS-137DA	1.23E+03	1.23E+02	1.23E+02	N/A	RD3219
CS-134	-5.02E-02	9.43E-02	9.44E-02	N/A	RD3219
RU-106DA	-8.12E-01	9.64E-01	9.67E-01	N/A	RD3219
NA-22	4.70E-02	2.47E-02	2.52E-02	N/A	RD3219
EU-155	-5.29E-02	3.40E-01	3.40E-01	N/A	RD3219
EU-154	1.30E-01	6.82E-02	6.94E-02	N/A	RD3219
BI-214	3.10E-01	2.29E-01	2.31E-01	N/A	RD3219
PB-212	5.31E-01	2.17E-01	2.23E-01	N/A	RD3219
I-129LP	-7.01E+01	4.98E+00	8.60E+00	N/A	RD3219
ALPHA	1.57E+01	5.72E+00	5.96E+00	1	RD3222
BETA	7.01E+02	1.72E+01	4.93E+01	1	RD3222
TOTAL-SR	4.51E+00	2.49E-01	1.12E+00	0.809	RD3204
SE-79	1.74E+01	1.01E+00	3.79E+00	0.645	RD3253
TC-99	5.65E-01	3.69E-01	1.53E+00	0.682	ITAS-IT-RS-0001
URANIUM	2.04E+00	N/A	3.06E-01	0.931	RD4200

682A-8-93

0000035

WO #308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006455

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. WS 020
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216 U-8 Vitrified Clay Pipeline~~ 200 UP 2 RPA 3.30.94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 41/42 Tile Field RPA 3-30-94
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKM8	S	3-31-94	1535	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKM8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKM8	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKM8	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKM8	S			(1) 125ml G	Cyanide	CPL	
F	BOBKM8	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKM8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RPA 3-31-94	9060	
	BOBKM8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

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Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle RT Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	[illegible] 4-5-94 10:30

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2074

WO#308

0000036

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006266

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. GW5020
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation 200-UP-2
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations 216-U-11 Trench
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKP6	S	3-31-94	1425	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKP6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKP6	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKP6	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKP6	S			(1) 125ml G	Cyanide	CPL	
F	BOBKP6	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKP6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ [illegible] 3-31-94	9060	
	BOBKP6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

404106806
404106806

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
[signature] R.T. Sickle	4-4-94	0830	[signature]
[signature]	4-5-94	0815	[signature] TTS 10:30 4-5-94

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2075

WO#308

0000037

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006258

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ0	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ0	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ0	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ0	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ0	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
	BOBNQ0	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

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404068 03

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	Heidelberg OT 4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2076

0000038

WP #308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006259

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. G605120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ1	S	3-31-94	1005	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ1	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ1	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ1	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ1	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ1	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ1~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
	BOBNQ1	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

1104106705

1104106805

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R T Sickle	4-4-94	0830	David L. Edwards
David L. Edwards	4-5-94	0815	Heidelberg IT 4/5/94 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9413479.2027

9413479.2027

WBF#308

0000039

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006260

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. G05009
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ2	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNQ2	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBNQ2	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNQ2	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNQ2	S			(1) 125ml G	Cyanide	CPL	
F	BOBNQ2	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNQ2~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
	BOBNQ2	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

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Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	[illegible]
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2078

WO#308

0000040

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006264

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. G05120
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation 200-UP-2
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations 216-U-10 Pond
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ6	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ6	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ6	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ6	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ6	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
	BOBNQ6	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

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Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	Heidelberg 4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2079

0000041

W0#308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006265

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5009
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to TMA
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ7	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNQ7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Hercury	CPL	
C	BOBNQ7	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNQ7	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNQ7	S			(1) 125ml G	Cyanide	CPL	
F	BOBNQ7	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNQ7~~	~~S~~			~~(1) 250ml aGs~~	~~TOC~~ 4-4-94	9060	
	BOBNQ7	S			(1) 1000ml Poly (1) 500ml Poly	Gross Alpha/Beta EP-060,070,170; Gamma Spec. Cs-134/137, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 EP-060,070,100; Total Uranium EP-060,070,044,928; U-235/234/238 EP-060,070,901; Np-237 EP-060,070,930; Pu-238/239/240 EP-060,070,940; I-129 EP-024,560; Sr-90 EP-060,070,500,519,520; Tc-99 EP-020,540; Am-241, Cm-244 EP-060,070,960; Se-79 Lab Specific;		

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Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	[illegible] 4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2080

W0#331

0000042

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006457

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. 5002 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS Standard Delivery
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN0	S	4-5-94	0815	(1) 250ml aG	Semi-VOA CLP	cap
B	BOBKN0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CRL	cap
C	BOBKN0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN0	S			(1) 125ml G	Cyanide CPL	cap 4-6-94
F	BOBKN0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 9060	
	BOBKN0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

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Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Technician

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2081

0000043

WO #331

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006464

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 ~~Vitrified Clay Pipeline~~
Sampling Locations ~~216-U-8 Crib~~
Ice Chest No. SMZ 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool
SPECIAL INSTRUCTIONS STANDALONE Deliverable

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN7	S	4-5-94	0930	(1) 250ml aG	Semi-VOA CLP	CAD
B	BOBKN7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL	CAD
C	BOBKN7	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN7	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN7	S			(1) 125ml G	Cyanide CPL	CAD
F	BOBKN7	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN7~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-5-94 9060	
	BOBKN7	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

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Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Tomblinson

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2082

0000044

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#338	Page 1 of 1
		006257

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STANDALONE Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
01A	BOBNP9	S	3-31-94	0845	(1) 250ml aG	Semi-VOA CLP	
B	BOBNP9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury PA CPL CLP	4-6-94
C	BOBNP9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBNP9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBNP9	S			(1) 125ml G	Cyanide PA ~~EPL~~ CLP	4-6-94
F	BOBNP9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBNP9~~	S			~~(1) 125ml aGs~~	~~TOC~~ RE 3-31-94 9060	
104182 01	BOBNP9	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

104181

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4/11/94	0800	D.L. Edwards
D.L. Edwards	4/11/94	1140	J.G. Hogan JG HOGAN
J.G. Hogan JG HOGAN	4/11/94	1418	ITAS Tom Gilmore

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2093

0000045

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#403	Page 1 of 1 006465

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 PRE 3-30-94
Sampling Locations ~~216-U-8 Crib~~ 207 U BASIN PRE 3-30-94
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STANDALONE Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404280 01A BOBKN8	S	4-5-94	0950	(1) 250ml aG	Semi-VOA CLP	
B BOBKN8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury PRE CPL 5/12	4-6-94
C BOBKN8	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D BOBKN8	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E BOBKN8	S			(1) 125ml G	Cyanide PRE CPL 5/12	4-6-94
F BOBKN8	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ PRE 4-5-94 9060	
40428101 BOBKN8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. SICKLE	4-14-94	1500	Karen Stitelinger IT 4-14-94 15:00

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2084

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
WESTINGHOUSE HANFORD		W94-0-0369-48

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Processing & Analytical Lab	Analytical Chemistry	Sampling & Mobile Lab

The following items are to be shipped from [X] Contractor [ ] Vendor

Routing GOVERNMENT VEHICLE [ ] Prepaid [ ] Collect

Shipped to
Company IT ANALYTICAL
Address 2800 George Washington Way
City Richland State WA Zip Code 99352
Country

Off-site Custodian: Tami Heidelberg

On-site Custodian: Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
3		POLYCOOLER. SAMPLES PACKED IN PLASTIC BAGS AND STORED ON WET ICE WEIGHT 59 lbs COOLER # GW5009 ← BOBNQ7, BOBNQ2, BOBNQ3 WEIGHT 55 lbs COOLER # GW5020 ← BOBKM8, BOBNQ8, BOBKP6 WEIGHT 50 lbs COOLER # GW5120 ← BOBNQ0, BOBNQ6, BOBNQ1	

[ ] Classified [X] Unclassified [ ] Shipped Under DOE Contract [ ] Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

[X] Required for Project Work. List Project No. SAF #94-065 COC #006265 SAMPLE #BOBNQ7 ✓✓
006267 BOBNQ8
006264 BOBNQ6 ✓
006261 BOBNQ3 ✓
006260 BOBNQ2 ✓
006259 BOBNQ1 ✓✓
006258 BOBNQ0
006266 BOBKP6
006455 BOBKM8 ✓

[ ] Business Trip
[ ] Off-site Assignment
[ ] Shipment to Subcontractor. List Subcontract No.
[ ] Other (Please specify)

Samples require analysis that are not presently a vailable at this site.

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
W Bindon	C-167659	4-5-94

Location of and Contact for Property (Name/Phone No./Bldg./Area)
2200 WEST/202-S C. D. Hayes / 373-7074 / 6269 / 600

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
04/05/94	PT2WA/Org Code: 12910	N/A

Originated By / Relinquished by:	Date & time	Authorized By	Date
D. L. Edwards		Jeannette E. Hyatt	4 Apr 94

Property Management Approval	Date
[signature]	4/5/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

Karen Heidelberg TAS 4-5-94

0085

54-3000-479 (05/93)

XIX CYEROMIEST

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
WESTINGHOUSE HANFORD		W94-0 0442-4

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Processing & Analytical Lab	Analytical Chemistry	Sampling & Mobile Lab

The following items are to be shipped from [X] Contractor [ ] Vendor

Routing DOE VEHICLE [X] Prepaid [ ] Collect

Shipped to	Off-site Custodian
Company IT ANALYTICAL	Tami Heidelberg
Address 2800 George Washington Way	On-site Custodian / Payroll No.
City Richland State WA Zip Code 99352	
Country	

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1		POLYCOOLER. SAMPLES PACKED IN PLASTIC BAGS AND STORED ON WET ICE WEIGHT 62 lb COOLER # SAL 413	

[ ] Classified [X] Unclassified [ ] Shipped Under DOE Contract [ ] Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

[X] Required for Project Work. List Project No. SAF #94-065 COC #6457 6464 SAMPLE #BOBKN0 BOBKN7

[ ] Business Trip

[ ] Off-site Assignment

[ ] Shipment to Subcontractor. List Subcontract No. _____

[ ] Other (Please specify) _____

Samples require analysis that are not presently available at this site.

BILL OF LADING # N/A

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
[illegible]	[illegible]	4-7-94

Location of and Contact for Property (Name/Phone No./Bldg./Area)

200 WEST/202-S C. D. Hayes / 373-7074/ 6269 / 600

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
04/07/94	PT2WA/Org Code: 12910	N/A

Originated By / Relinquished By:	Date & Time	Authorized By	Date
[illegible]	4-7-94 1120	Jeannette E. Hyatt	04/07/94

Property Management Approval	Date
	4/7/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

Rec'd [illegible] ITTS 4/7/94 1050

54-3000-479 (05/93)

EMERGENCY CONTACT (509) 373-3800 ERG #61 Attached

OFFSITE RADIOACTIVE SHIPMENT RECORD

- EXTERIOR INSPECTION PERMITTED -

19742

SHIPPING INST.

SHIP TO:
Company: IT Analytical
Address: 2800 George Washington Way
City, State, Zip: Richland, WA 99352
Attention: TAMI HEIDELBERG

Contractor: ☐ PNL ☐ KEH ☒ WHC
Site Carrier: JG HOGAN
PR No. 57783 Veh. No. 6B34630

Ship: ☐ Prepaid ☐ Collect Via:
☐ Motor-Rail ☐ Air Psgr.
☐ Excl. Use ☐ Air Cargo
☐ DOE Veh. ☐ Mail
☐ UPS Sur. ☒ Government Vehicle

SHIPMENT DESCRIPTION AND CERTIFICATION

Proper Shipping Name — UN Number

Radioactive Material, Excepted Package
1. Empty Packages ☐ UN 2908
2. Low Specific Activity, n.o.s ☐ UN 2912
3. Limited quantity, n.o.s. ☐ UN 2910
4. N.O.S. ☐ UN 2982
5. Fissile n.o.s. ☐ UN 2918
6. Special Form, n.o.s. ☐ UN 2974
7. Instruments & Articles ☐ UN 2911
8. Limited Quantity of Material ☒ UN 2910

Material Form: ☐ Special (A1) ☒ Normal (A2)

Labels Applied: ☐ Empty ☐ Radioactive LSA ☐ White I ☐ Yellow II ☐ Yellow III ☒ None ☐ Danger (Air Cargo) ☐ Secondary

Material Category: ☐ Empty ☐ Low Specific Act. (LSA) ☒ Limited Quantity ☐ Type A Quantity ☐ Type B Quantity ☐ Highway Route Controlled Quantity

For Normal Form Identify:
Physical Form: ☒ Solid ☐ Liquid ☐ Gas
Chemical Form: ☐ Metal ☐ Oxide ☒ Elemental ☐ Nitrate
Other

TYPE PACKAGE: ☒ Strong Tight ☐ Type A ☐ Type B ☐ Type B (U) ☐ Type B (M)

CONSTRUCTION: ☐ Box, FB ☐ Wood ☐ Steel ☐ Drum ☐ Cask ☒ Other Poly Cooler

FISSILE CLASS: ☒ Non Fissile ☐ Fissile Exempt ☐ Fissile I ☐ Fissile II ☐ Fissile III
Grams Fissile

SNM: ☒ No ☐ Yes ☐ <1 gr ☐ Category I ☐ Category II ☐ Category III

ACCOUNTABILITY/SECURITY CONTROL: ☐ Classified ☒ Unclassified
Consignee authorized to receive this qty ☒
Sig. Security Svc. Reg. ☐ NA ☒
Pu, EU > 1 g ☐ NA NU, DU > 1 Kg ☐ NA
Security Escorts Req. ☐ Not. Req. ☒
External Cask Temperature N/A ☒
(Max. 122°F LTL, 180°F Ex. Use) °F

Packaging conforms to appropriate packaging procedure ☐ N/A ☒ Yes
Complies with D. O. T. packaging marking and labeling requirements ☐ N/A ☒ Yes
Container acceptability documented (incl. 7A cert.) ☒ N/A ☐ Yes

Container examined: No evidence of deterioration or damage ☒ Yes
QA Inspection Current ☐ Yes ☒ N/A Seals required ☒ No ☐ Yes
Shipping Doc. 49CFR173.421 Authorization No. N/A

No. Pkgs.	Model Package	COC/Spec. No.	Serial No.	Seal No.	Isotopes	Curies/Pkg	T. I.	Gr. Wt.
1	Poly Cooler	NA	B1-100	Tape Applied	Cs-137, Sr-90	277.9 uci	N/A	50 LBS
	(Strong Tight)							
	* Ltd. Qty	Statement in	cooler *					
	SAF: 94-065	COC #'s:	006449,	006257	Cooler contains:			
	(4) 250 uL bottles,	(9) 250 mL bottles		(2) 1000 mL	Poly			
(Shipper may describe package in detail on one of unused lines above)					TOTAL	277.9 uci	N/A	50 LBS

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable federal, state, local and international regulations for the transportation of hazardous materials.

Certifier's Signature: JG Hogan Date: 4-11-94 Organization: FIELD ANALYTICAL SERVICES Complete Cost Code (inc. end function): 12900

AREA MONITOR

Surface Dose Rate of Package: ☑ ≤0.5 or ___ mrem/hr (N + βγ)
Dose Rate at 1 Meter from Surface of Package: ☑ ≤0.5 or ___ mrem/hr (N + βγ)
Smears of Outer Container: ☑ ≤22 dpm βγ/cm² ☑ ≤2.2 dpm α/cm²
TRUCK LOAD OR EXCLUSIVE USE: Surface: ☑ ≤ 200 mrem/hr (N + βγ) @6 feet: ☑ ≤10 mrem/hr (N + βγ) @Cab or Sleeper ☑ ≤2.0 mrem/hr (N + βγ)

Additional Data and Instructions (inc. Readings on Internal Packaging)

Signature - Radiation Monitoring: [signature] Bldg. 202-S Survey No. 516768 9 Date 4/11/94

AUTHORIZATION FOR SHIPMENT

APPROVAL

AIR TRANSPORT CERTIFICATION ▶ Cargo Only: ☐ Danger Labels Applied
Passenger: ☐ 1. Ltd. Qty. ☐ 2. ≤3 T.I ☐ 3. Research or Medical Diagnosis ☐ 4. Human Medical Research
Pkg. Dimensions: NA

Traffic has inspected and verified preshipment compliance to DOT regulations.

Authorized Signature ▶ [signature] Printed Name ▶ M.A. SAMS Date ▶ 4-11-94

APPROVED FOR OFFSITE SHIPMENT

TRAFFIC

B. L. No. RMW-8581 Date Shipped 4-11-94 E. T. A. 4-11-94 Routing WHC VEHICLE ☐ N/A Placards ☐ Yes ☒ No
Surveyed By ___ Date ___ Approved for Shipment Westinghouse Hanford Company [signature] Date 4-11-94 Route Plan ☐ Yes ☒ No

*U.S. GPO: 1992-791-064/80001 54-6000-088 (10/88)

Received [signature] ITAS 4/11/94 1418

0076

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001402*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

WO#300 * RL#414

Reference Document No. 340363
Page 1 of ___

Project Name/No. [1] SAF 94-065
Sample Team Members [2]
Profit Center No. [3] 4632
Project Manager [4] VAN PETTEY
Purchase Order No. [6]
Required Report Date [11]

Samples Shipment Date [7] 4-5-94
Lab Destination [8] Middlebrook
Lab Contact [9]
Project Contact/Phone [12]
Carrier/Waybill No. [13] 395 3944 321

Bill to: [5] IT Richland
Report to: [10] IT Richland

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Pre-servative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
40406701A	BOBKM8 / Soil	3/31 1535	glass	250ml	Cool 40	Semi-voa	3°C KAK 4-6-94	
B			poly	↓		GFAA Metals, Hg, Tl	FOR LAB USE ONLY	
C			glass	125ml		EPA 300.0		
D						EPA 353.2		
E						Cyanide	FOR LAB USE ONLY	
F						TPH Diesel Range		
40406702 A	BOBNQ6 / Soil	3/31 0940	glass	250ml		Semi Voa		
B			poly	↓		GFAA Metals Hg Tl		

Special Instructions: [23] As per WHC Contract

Possible Hazard Identification: [24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: [25]
Return to Client ☒ Disposal by Lab ☐ Archive ____ (mos.)

Turnaround Time Required: [26]
Normal ☒ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0021

1. Relinquished by [28] (Signature/Affiliation) Heidelberg	Date: 4-5-94 Time: 16:00	1. Received by [28] (Signature/Affiliation) Kenny A. Klemm ITAS-KN	Date: 04-06-94 Time: 08:45
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]

MCA 3/15/91

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

0000049

9613479.2088

INTERNATIONAL TECHNOLOGY CORPORATION

COC No 1402

WO #308
RL# 414

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] _____
Page____of ____

Project Name _____ Project No. _____ Samples Shipment Date _____

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
40406702 C	BOBNQ6 / Soil	3/31 0940	glass	125ml	Cool 4°	EPA 300.0	3°C KAM 4-6-94	
D						EPA 353.2	FOR LAB	
E						Cyanide	USE ONLY	
F						TPH Diesel Range		
40406703 A	BOBNQ0 / Soil	3/31 0940	glass	250ml		Semi Voa	FOR LAB	
B			poly			GFAA Metals Hg Ti	USE ONLY	
C			glass	125ml		EPA 300.0	FOR LAB	
D						EPA 353.2	USE ONLY	
E						Cyanide		
F						TPH Diesel Range		
40406704 A	BOBNQ7 / Soil	3/31 1140	glass	250ml		Semi-VOA		
B			poly			GFAA Metals, Hg Ti		
C			glass	125ml		EPA 300.0	USE ONLY	
D						EPA 353.2		
E						Cyanide	FOR LAB	
F						TPH Diesel Range	USE ONLY	
40406705 A	BOBNQ1 / Soil	3/31 1005	glass	250ml		Semi-Voa	FOR LAB	
B			poly			GFAA Metals Hg Ti	USE ONLY	
C			glass	125ml		EPA 300.0		
D						EPA 353.2		

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

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9613479.2089

INTERNATIONAL TECHNOLOGY CORPORATION

COC No. 1402

WO#308
RL#414

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] _____
Page____of ____

Project Name | Project No. | Samples Shipment Date

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
40406705 E	BOBNQ1 / soil	3/31 1005	glass	125ml	cool 4°	Cyanide	3°C KAC 4.6.94	
↓ F	↓	↓	↓	↓		TPH Diesel Range	FOR LAB USE ONLY	
40406706 A	BOBKP6 / soil	3/31 1425	glass	250ml		Semi VOA		
B			poly	↓		GFAA Metals, Hg, Ti		
C			glass	125ml		EPA 300.0		
D						EPA 353.2		
E						Cyanide		
F						TPH Diesel Range		
40406707 A	BOBNQ2 / soil	3/31 1140	glass	250ml		Semi VOA		
B			poly	↓		GFAA Metals, Hg, Ti		
C			glass	125ml		EPA 300.0		
D						EPA 353.2		
E						Cyanide		
F						TPH Diesel Range		
	JH 4/5/94							

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 3/15/91

0000051

9613479.2090

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001427*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO #331 RL #439

Reference Document No. 340364
Page 1 of 2

Project Name/No.[1] SAF 94-065
Sample Team Members[2]
Profit Center No.[3] 4632
Project Manager[4] Van Petty
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 4-7-94
Lab Destination[8] Middlebrook
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13] Fed Ex 3954837092

Bill to:[5] IT Richland
Report to:[10] IT Richland

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
40411801 A	BOBKN7 / Soil	4/5 0930	glass	250ml	Cool 4°	Semi voa	2°C BJB 4/08/94	
B			Poly			Metals, Hg, Ti	FOR LAB USE ONLY	
C			glass	125ml		EPA 300.0		
D						EPA 353.2		
E						Cyanide	FOR LAB USE ONLY	
F						TPH Diesel Range		
40411802 A	BOBKN0 / Soil	4/5 0825		250ml		Semi voa		
B			Poly			Metals Hg Ti		

Special Instructions:[23] As per WHC Contract

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal:[25] Return to Client ☒ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0024

1. Relinquished by[28] (Signature/Affiliation) Heidelberg IT	Date: 4-7-94 Time: 16:00	1. Received by[28] (Signature/Affiliation) Bryan Blomquist ITASKN	Date: 4/08/94 Time: 8:55
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

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9613479.2091

COC No. 1427

WO# 331
RL# 439

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 340364
Page 2 of 2

Project Name SAF 94-005

Project No. SDL W0024

Samples Shipment Date 4-7-94

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
40411802C	BOBKNO / Soil	4/5 0825	glass	125ml	Cool 4°	EPA 300.0	2°C SB 4/08/94	
D						EPA 353.2		FOR LAB USE ONLY
E						Cyanide		
F						TPH Diesel Range		
								FOR LAB USE ONLY
								FOR LAB USE ONLY
								FOR LAB USE ONLY
	JH 4/7 PM							FOR LAB USE ONLY
								FOR LAB USE ONLY
								FOR LAB USE ONLY

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

MCA 3/15/91

0000053

96134792002

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001436*

WU# 328 RL#446

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 340365
Page 1 of 1

Project Name/No. 1: 94-065
Sample Team Members 2:
Profit Center No. 3: 4632
Project Manager 4: Von Pettey
Purchase Order No. 6:
Required Report Date 11:

Samples Shipment Date 7: 4/11/94
Lab Destination 8: Middlebrook
Lab Contact 9:
Project Contact/Phone 12:
Carrier/Waybill No. 13: 395 5831 923

Bill to: 5 ITAS Richland
Report to: 10 ITAS Richland

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
W0418101A	BOBNPG / soil	3/31/94 0845	Glass	250ml	4°C	Semi Voa	2°C KKK 4/12/94	
B			Poly			TAL Metals + Hg, Ti	FOR LAB USE ONLY	
C			Glass	125ml		300.0		
D						353.2		
E						CN	FOR LAB USE ONLY	
F						TPH 8015		
4/11/94								

Special Instructions: 23

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25
Return to Client ☒ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: 26
Normal ☒ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG# 0024

1. Relinquished by 28 (Signature/Affiliation) [signature] ITAS — Date: 4/11/94 Time: 1600
1. Received by 28 (Signature/Affiliation) Byron Blomquist ITASKN — Date: 4/12/94 Time: 9:50
2. Relinquished by (Signature/Affiliation) — Date: Time:
2. Received by (Signature/Affiliation) — Date: Time:
3. Relinquished by (Signature/Affiliation) — Date: Time:
3. Received by (Signature/Affiliation) — Date: Time:

Comments: 29

MCA 3/15/91

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

0000054

9613479.2093

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001501*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO #403 RL # 516

Reference Document No. 340378

Page 1 of 1

Project Name/No. [1] SAF 94-065

Sample Team Members [2]

Profit Center No. [3] 4632

Project Manager [4] VAN PETTEY

Purchase Order No. [6]

Required Report Date [11]

Samples Shipment Date [7] 4-15-94

Lab Destination [8] Middlebrook

Lab Contact [9]

Project Contact/Phone [12]

Carrier/Waybill No. [13]

Bill to: [5] IT Richland

Report to: [10] IT Richland

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Pre-servative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
40428001A	BOBKNB/soil	4/5 0950	glass	250ml	Cool 4°	Semi voa		
B			poly			Metals, Tl, Hg	FOR LAB USE ONLY	
C			glass	125ml		EPA 300.0		
D						EPA 353.2		
E						Cyanide		
F						8015	FOR LAB USE ONLY	
	JH 4/15/94							

Special Instructions: [23] As per WHC Contract

Possible Hazard Identification: [24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: [25] Return to Client ☒ Disposal by Lab ☐ Archive _____ (mos.)

Turnaround Time Required: [26] Normal ☒ Rush ☐

QC Level: [27] I. ☐ II. ☐ III. ☐ Project Specific (specify): SDL W0024

1. Relinquished by [28] (Signature/Affiliation) J Heidelberg II — Date: 4-15-94 Time: 16:00	1. Received by [28] (Signature/Affiliation) Bryan Blomquist ITASKN — Date: 4/16/94 Time: 9:30
2. Relinquished by (Signature/Affiliation) — Date: Time:	2. Received by (Signature/Affiliation) — Date: Time:
3. Relinquished by (Signature/Affiliation) — Date: Time:	3. Received by (Signature/Affiliation) — Date: Time:

Comments: [29]
#1 = 8°C, #2 = 3°C

MCA 3/15/91

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

0000055

9613479.2094

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

B0BNQ3 is Category I.
All others are Category II.
JKM 5 Apr 94

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC	40594		40594		405	10	20	213	240

Customer ID WHC/SOIL	pH <2 Rcvd/Relq	RESIDUE Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
✓ B0BNQ8		96.1	96	1200.0	35	4	65	0.32	5.61	3.0E+00	1.4E+01	1.7E-02	7.8E-02	2.3E-05	2.3E-05	1.4E+01	6.5E+01	No	7.1E+02	1.5E+03
✓ B0BNQ3		94.2	94	1500.0	36	2	63	0.12	5.41	9.0E-01	1.3E+01	6.5E-03	9.7E-02	1.7E-05	2.9E-05	4.3E+00	6.5E+01	Yes	2.3E+03	1.5E+03
B0BKM8		79.8	80	1350.0	37	3	76	0.22	6.71	1.7E+00	1.6E+01	1.3E-02	1.2E-01	2.2E-05	3.0E-04	9.4E+00	9.2E+01	No	1.1E+03	1.1E+03
B0BNQ6		90.9	91	1150.0	38	3	70	0.22	6.11	1.9E+00	1.5E+01	1.1E-02	8.6E-02	1.8E-05	1.8E-04	9.2E+00	7.5E+01	No	1.1E+03	1.3E+03
B0BNQ0		77.6	78	1250.0	39	2	74	0.12	6.51	7.3E-01	1.6E+01	5.3E-03	1.1E-01	1.5E-05	6.2E-04	4.2E+00	9.1E+01	No	2.4E+03	1.1E+03
B0BNQ7		85.3	85	1400.0	40	6	199	0.52	19.01	4.0E+00	4.7E+01	3.0E-02	3.5E-01	3.6E-05	6.0E-04	2.1E+01	2.5E+02	No	4.7E+02	4.0E+02
B0BNQ1		84.8	85	1350.0	41	3	27	0.22	1.81	2.0E+00	4.3E+00	1.4E-02	3.1E-02	2.2E-05	3.3E-05	1.1E+01	2.3E+01	No	9.4E+02	4.4E+03
B0BKP6		82.6	83	1200.0	42	3	33	0.22	2.41	1.9E+00	5.7E+00	1.3E-02	3.7E-02	1.9E-05	4.8E-05	1.1E+01	3.1E+01	No	9.5E+02	3.2E+03
B0BNQ2		76.3	76	1350.0	43	5	185	0.42	17.61	2.9E+00	4.3E+01	2.3E-02	3.4E-01	3.2E-05	7.8E-04	1.7E+01	2.5E+02	No	5.9E+02	4.0E+02
TOTAL	uCi							-0.08	-0.89	-3E-01	-2E+00	1.3E-01	1.3E+00	ERR	ERR	ERR	ERR	No	ERR	ERR

WO# 308

0000056

9613479.2095

WO#331

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Soth category II
JKn 7 Apr 94

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			40794		407	20	8	219	240

Customer ID WHC/SOIL	pH <2 Rcvd/Relq	Plncht Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
B0BKN7		78.3	78	750.0	35	22	298	1.07	13.89	9.1E+00	3.3E+01	4.0E-02	1.4E-01	2.2E-05	2.2E-05	5.3E+01	1.9E+02	No	1.9E+02	5.3E+02
B0BKN0		95.4	95	1500.0	36	4	106	0.17	4.39	1.5E+00	1.1E+01	1.1E-02	7.7E-02	1.5E-05	1.9E-05	7.1E+00	5.2E+01	No	1.4E+03	1.9E+03
TOTAL	uCi							-0.03	-0.91	-1E-01	-2E+00	5.0E-02	2.2E-01	ERR	ERR	ERR	ERR	No	ERR	ERR

0000057

9613479.2096

WO#338

BOBKM2 is Category III.
BOBNP9 is Cat. II.
JRN 11 April 1994

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			41194		411	10	23	236	240

Customer ID WHC/SOIL	pH <2 Rcvd/Reiq	RESIDUE Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Counts Alpha	Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
B0BKM2		84.6	85	1250.0	49	23	612	2.20	60.22	1.8E+01	1.5E+02	1.2E-01	9.8E-01	7.2E-05	1.1E-04	9.6E+01	7.6E+02	No	1.0E+02	1.3E+02
B0BNP9		81.1	81	1350.0	50	3	109	0.20	9.92	1.4E+00	2.4E+01	1.0E-02	1.8E-01	2.1E-05	4.2E-05	7.8E+00	1.3E+02	No	1.3E+03	7.4E+02
TOTAL	uCi							-0.10	-0.98	-3E-01	-2E+00	1.3E-01	1.2E+00	ERR	ERR	ERR	ERR	No	ERR	ERR

0000058

9613479.2097

WO-90-

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Oils are Category I.
B0BKN8 and B0BP33 are cat. II.
B0BP32 is Cat. III. JRN 25 apr 94

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			41494		414	10	7	59	60

	Customer ID WHC/SOIL	pH <2 Rcvd/Reiq	Pinch Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliquot Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
I	B0BKN8		97.3	97	1300.0	50	11	517	0.98	50.72	7.5E+00	1.3E+02	4.5E-02	7.7E-01	4.4E-05	8.9E-05	3.5E+01	5.9E+02	No	2.9E+02	1.7E+02
	WHC/VEG												0.0E+00	0.0E+00							
III	B0BP32		76.6	77	1000.0	51	8	786	0.68	77.82	2.2E+00	1.9E+02	1.3E-02	1.1E+00	2.9E-05	7.0E-03	1.3E+01	1.1E+03	No	7.9E+02	9.0E+01
II	B0BP33		95.4	95	1050.0	52	5	471	0.38	46.12	1.4E+00	1.2E+02	6.9E-03	5.8E-01	2.1E-05	4.5E-03	6.6E+00	5.5E+02	No	1.5E+03	1.8E+02
	WHC/OIL												0.0E+00	0.0E+00							
I	94158-01.D12		6.5	7	200.0	53	0	12	-0.12	0.22	-5E-01	5.5E-01	-7E-03	7.6E-03	-1E-05	9.9E-06	-4E+01	3.8E+01	Yes	-3E+02	2.6E+03
I	94158-02.D12		8.9	9	200.0	54	3	10	0.16	0.02	8.2E-01	-9E-02	8.3E-03	-9E-04	1.3E-05	-3E-07	4.1E+01	-5E+00	Yes	2.4E+02	-2E+04
	TOTAL	uCi							-0.12	-0.98	-4E-01	-2E+00	6.6E-02	2.5E+00	ERR	ERR	ERR	ERR	No	ERR	ERR

0000059

9613479.2098

WO#308

SAMPLE STATUS REPORT FOR E 5875. E-BLANK B0BKM8 TIME: 4/ 1/94 8:40
DISPATCHED: 3/28/94 14:26 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 1/94 8:20

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

WO#308

SAMPLE STATUS REPORT FOR E 5994. E-BLANK BOBKP6 TIME: 4/ 1/94 8:40
DISPATCHED: 3/30/94 11:32 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 1/94 8:20

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

WO#308

SAMPLE STATUS REPORT FOR E 5996. E-BLANK BOBNQ0 TIME: 4/ 1/94 8:40
DISPATCHED: 3/30/94 11:33 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 1/94 8:19

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

W O #308

SAMPLE STATUS REPORT FOR E 5997. E-BLANK BOBNQ1 TIME: 4/ 1/94 8:40
DISPATCHED: 3/30/94 11:34 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 1/94 8:20

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

WO#308

SAMPLE STATUS REPORT FOR E 5998. E-BLANK BOBNQ2 TIME: 4/ 1/94 8:49
DISPATCHED: 3/30/94 11:34 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 1/94 8:20

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

WO#308

SAMPLE STATUS REPORT FOR E 6002. E-BLANK BOBNQ6 TIME: 4/ 1/94 8:40
DISPATCHED: 3/30/94 11:37 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 1/94 8:19

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

WO#308

SAMPLE STATUS REPORT FOR E 6003. E-BLANK BOBNQ7 TIME: 4/ 1/94 8:40
DISPATCHED: 3/30/94 11:38 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 1/94 8:20

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

WO#331

SAMPLE STATUS REPORT FOR E 5877. E-BLANK BOBKNO TIME: 4/ 6/94 8: 9
DISPATCHED: 3/28/94 14:28 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 6/94 7:47

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

WO#331

SAMPLE STATUS REPORT FOR E 5895. E-BLANK BOBKN7 TIME: 4/ 6/94 8: 9
DISPATCHED: 3/29/94 8:44 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 6/94 7:47

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

04/06/94 07:47 ☎373 3176 222S 3B 002

WO#338

BOBNP9 date 4/11/94

SAMPLE STATUS REPORT FOR E 5995. E-BLANK BOBKP9 TIME: 4/ 6/94 8:19
DISPATCHED: 3/30/94 11:33 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 1/94 8:19

EXT.	DETER.	RESULTS OR STATUS		OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********		***	***	******
1210	TB MISC	5.66000E 03 pCi/G		N	Y	VOGEL
1211	AT MISC	5.56000E 01 pCi/G		N	Y	VOGEL
2183	GEA-MISC	1.36000E 04 pCi/G	Cs-137	N	Y	VOGEL
4271	TOT-ACT	5.84000E 02 pCi/G		N	Y	VOGEL

END OF REPORT

2125 x 1.6 = 3400 grams total

Beta (Sr-90)

5660 pCi/g x 3400g = 18904000 pCi

$A_Z = .4$ $A_Z/1000 = .0004 Ci = 400000000 pCi$

$$\frac{18904000}{400000000} = .04726$$

Unity = .04726 + .09452 + .0046

= .14638

Alpha

55.6 pCi/g x 3400g = 189040 pCi

$A_Z = .002 Ci$ $A_Z/1000 = .000002 Ci = 2000000 pCi$

$$\frac{189040}{2000000} = .09452$$

Cs-137

13600 pCi/g x 3400g = 46240000 pCi

$A_Z = 10$ $A_Z/1000 = .01 Ci = 10000000000 pCi$

$$\frac{46240000}{10000000000} = .0046$$

9613479.2109

SAMPLE STATUS REPORT FOR E 5896. E-BLANK BOBKN8 TIME: 4/11/94 10:53
DISPATCHED: 3/29/94 8:44 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 6/94 7:47

EXT.	DETER.	RESULTS OR STATUS		OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********		***	***	******
1210	TB MISC	1.89000E 04 pCi/G		N	Y	J12UP
1211	AT MISC	9.35000E 00 pCi/G		N	Y	J12UP
2183	GEA-MISC	1.02000E 04 pCi/G	Cs-137	N	Y	J12UP
4271	TOT-ACT	1.68570E 02 pCi/G		N	Y	VOGEL

END OF REPORT

Soil 2000 mL x 1.6 = 3200g

0.4 mr/hr contact, metals & rad
0.25 mr/hr contact, semi-VOA, CLP
0.15 mr/hr contact, other containers
QRN 14 Apr 94

Beta Sr-90

18900 pCi/g x 3200g = 60480000 pCi

A2 = .4 A2/1000 = .0004 Ci = 400000000 pCi

$\frac{60480000}{400000000} = .1512$

60.48 µCi
.029 µCi
32.65 µCi
93.14 µCi

Alpha

9.35 pCi/g x 3200 = 29920 pCi

A2 = .002 A2/1000 = .000002 Ci = 2000000 pCi

$\frac{29920}{2000000} = .01496$

Cs-137

10200 pCi/g x 3200g = 32640000 pCi

A2 = 10 Ci A2/1000 = .01 Ci = 10000000000 pCi

$\frac{32640000}{10000000000} = .00326$

Unity = .1512 + .01496 + .00326 = .1694Z

9613479.2110

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404068, 4119, 4192, 4231

Lab Sample Numbers or SDG: W0024

Method/Test/Parameter: RD3234 Uio

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1	**Sample Analysis** Are the sample Yields within acceptance criteria?	✓	✓		✓
2.	Were all sample holding times met?	✓			✓
C. 1	**QC Samples** Is the Blank Yield within acceptance criteria?	✓			✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?	✓			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

tr yld on 406902 + 07 were < 30% reruns were within 3σ of original.

Analyst: M Mellon Date: 5-27-94

Second Level Review: Suzy Bailey Date: 5/30/94

Form No: LS-038, 3/94, Rev 2

OK to transfer 5-27-94 MMM

0038

9613479.2111

352

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): MMK 5-20-94

PARAMETER(S): UV2

SAMPLE NUMBER(S) AFFECTED: 4040602, 07 W0024

MATRIX: soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY
☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2 ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): tr, d < 30%
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Haines 5/30/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613479.2112

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☐ **ROOT CAUSE:** INITIALS/DATE MMM 5-20-94

Tr yd < 20%

☐ **CORRECTIVE ACTION:** INITIALS/DATE MMM 5-20-94

Rerun

Rerun data is within 3σ of the original results. Report original (Report original because the rerun spike failed due to low tracer yield)

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO

☐ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: M Kellogg DATE: 5-20-94

RESPONSIBLE MANAGER: J McKillen DATE: 5/31/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: Jodie Cor DATE: 5/31/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cor DATE: 5/31/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0040

9613479.2113

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404068, 404119, 404182, 404281

Lab Sample Numbers or SDG: SDG W0024

Method/Test/Parameter: Gamma

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			✓	
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	
2.	Were all sample holding times met?	✓			
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	
5.	Is the LCS result within acceptance criteria?	✓			
6.	Is the LCS yield within acceptance criteria?			✓	
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?			✓	
8.	MS/MSD results and yield meet acceptance criteria?			✓	
9.	Duplicate sample results and yield meet acceptance criteria?	✓			
D. 1.	**Other** Are all nonconformances included and noted?	✓			
2.	Are all required forms filled out?	✓			
3.	Correct methodology used?	✓			
4.	Transcription checked?	✓			
5.	Were all calculations checked at a minimum frequency?	✓			
6.	Units checked?	✓			

Comments on any "No" response: 3 NCM's #1 - 40406801 - recount sample ID mixup
#2 several samples MDA not met Eu 155
#3 40411901 - Eu 154 detected at a level causing positive results for Na22 Co57 Zr 95 when examining data do not exist at the levels reported detected

Analyst: Jack Kempema Date: 5-19-94

Second Level Review: Sally Davies Date: 5/23/94

Form No: LS-038, 3/94, Rev 2

Report Recount result for 40406801

9613479.2114

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

0336

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Joe ITKemperma 5-20-94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: 40411901 W0024

MATRIX: Soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY
☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☒ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis: no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): Results for Na 22, Co 57, Zr 95 detected but are unreliable
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davies 5/23/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613479.2115

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE JTK 5-20-94

Eu 154 present at a level that its lines are interfering with the listed isotopes.
Na22 @ 1274 KEV Co57 @ 122-123 KEV Zr 95 @ 723-724 KEV

☒ CORRECTIVE ACTION: INITIALS/DATE JTK 5-20-94

Data accepted, results reported - discussed in case narrative.

Report Na22 but not Co57 or Zr 95

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: Fred Kemsema DATE: 5-20-94

RESPONSIBLE MANAGER: W Mackellar DATE: 5/23/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: DATE: 5/24/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: DATE: 5/24/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

0043

9613479.2116

0141

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Joel T Kempema 5-19-94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: 40406804, F0406804, 40406807, 40428101, 40418200, W0024

MATRIX: Soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☒ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): MDA > CL for ~~[illegible]~~ 17K 5-19-94 Eu155 isotope in each listed sample
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Guy Dames 5/23/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613479.2117

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE TK 5-19-94

Matrix effects

☒ CORRECTIVE ACTION: INITIALS/DATE TK 5-19-94

Ottawa Sand blank matrix material counted at same time and MDA for blank meets all contract limits for requested isotopes.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: Joel Kempenen DATE: 5-19-94

RESPONSIBLE MANAGER: W MacKellar DATE: 5/23/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: DATE: 5/24/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: DATE: 5/24/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

9613479.2118

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-0152 page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Joel T Kempema 5-17-94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: 40406801 W0024

MATRIX: Soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☒ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)

9. ☒ Other (specify): Counting room counted wrong sample

10. ☒ Comments/Explanation: Sample & days did not agree - looking for a possible switch and other sample was found with a somewhat similar ID

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davies 5/23/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613479.2119

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE MK 5-17-94

Misreading ID # on sample container

☒ CORRECTIVE ACTION: INITIALS/DATE MK 5-17-94

Recount

Recount data Accepted MK 5-20-94

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE WM 5/23/94

The associate who recorded the sample was instructed to pay closer attention to the assigned task.

FIRST LEVEL SUPERVISOR: Joel Kemmerer DATE: 5-20-94

RESPONSIBLE MANAGER: W McKellar DATE: 5/23/94

QC REVIEW

☒ NONCONFORMANCE ☐ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: DATE: 5/24/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: DATE: 5/24/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

9613479.2120

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404068 404119 404182 404281

Lab Sample Numbers or SDG: L040681B - L040681S W0024

Method/Test/Parameter: I129

	Review item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	✓
2.	Were all sample holding times met?	✓			✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?			✓	✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1.	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

NCM issued for samples 40406807, ~~4046~~ JK 5-19-94
40411901, 40418201, 40428101, FD428101

Analyst: Joel Kempson Date: 5-19-94

Second Level Review: Sally Davies Date: 5/20/94

Form No: LS-038, 3/94, Rev 2

Transfer ~~all~~ JK 5-19-94 results for all samples including L040681X matrix blank. JK 5-19-94

0048

9613479.2121

0152

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Joel T Kempema 5-18-94

PARAMETER(S): I/129 by Gamma Laps

SAMPLE NUMBER(S) AFFECTED: 4041068C7 4041190I 4041820I 4042810I, F041281C

MATRIX: Soil

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ QA/QC:
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ CONFIRMATION:
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ DILUTION:
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☒ OTHER: (see #10)
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): MDA > CL
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sergio Dueñas 5/20/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0049A

9613479.2122

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE MK 5-19-94

Matrix interference caused by high Cs 137 in each of the samples verified by the duplicate sample. Additionally the gamma analysis results from the germanium detectors verify high Cs137 in these samples.

☒ CORRECTIVE ACTION: INITIALS/DATE MK 5-19-94

Ottawa Sand Matrix blank counted for same time (100 min). Matrix blank meets Contract Detection Limit therefore it is determined that it is a matrix effect. Report results but note in case narrative.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: Joel T Kempema DATE: 5-19-94

RESPONSIBLE MANAGER: W J McKelle DATE: 5/23/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: DATE: 5/24/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: DATE: 5/24/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

354

9613479.2123

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-84-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC W0024

NCM INITIATED BY (Name/Date): Marshall Lane 5/24/94

PARAMETER(S): Se-79

SAMPLE NUMBER(S) AFFECTED: 40406904, 40406807, ~~4023~~ 5/24/94 40423101

MATRIX: SOIL

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): False positive Se-79
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☒ Client notified by (name and date): SSG
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☒ Other (explain) case narrative
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Jones 5/28/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0049G

9613479.2124

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ **ROOT CAUSE:** INITIALS/DATE NI 5/24/94

Raw LSC Data indicates Activity Attributed to Se-79 may be From Another Nuclide.

☒ **CORRECTIVE ACTION:** INITIALS/DATE NI 5/24/94

Report Results. Note in Case Narrative.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☒ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE NI 5/24/94

Monitor For trends –

FIRST LEVEL SUPERVISOR: [signature] DATE: 5/24/94

RESPONSIBLE MANAGER: [signature] DATE: 5/31/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: [signature] DATE: 5/31/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/31/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

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350
DS 5/27/94

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): MMM 5-25-94

PARAMETER(S): NP

SAMPLE NUMBER(S) AFFECTED: L0406425 W0024

MATRIX: Soil

AREA: ☐ SHIP/REC ☐ RADIOCHEM ☐ COUNTING ☐ BIOASSAY
☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): reagent spike recovery at 161%
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Daines 5/27/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0049K

9613479.2126

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☐ **ROOT CAUSE:** INITIALS/DATE MMM 5-25-94

The reagent spike is 161% of expected after correcting for average matrix spike recovery.

☐ **CORRECTIVE ACTION:** INITIALS/DATE MMM 5-25-94

The reagent spike would be within acceptable limit without matrix spike correction.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: M Kelly DATE: 5-25-94

RESPONSIBLE MANAGER: Mark Kadey DATE: 5-27-94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: Jodie Cr DATE: 5/27/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cr DATE: 5/27/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

9613479.2127

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5-20

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Uiso

NAME/DATE mmn / 5-20-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0024

MATRIX Soil

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 40406802	ESI 15942	tvd < 30%
2) 07	15943	
3) F0406807	15944	
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK ESU5941 L0406803

ITAS ID - SPIKE EQIE085 L0406805

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED 5/23/94 Bm

SAMPLE REMAINDER RETURNED TO SCG ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

R03221 5/23/94 Bm

SEPARATION LAB 5/24/94 Eme

COUNTING/MEASUREMENT Ohl 26May94

DATA REVIEWED mmn 5-27-94

ANALYTICAL PREP STORED mmn 5-27-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

Ext 5-25-94 CMS

Do not use 5/27/94

0102

RC-048 12/92 REV 2

9613479.2128

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/20/94

REANALYSIS / RECOUNT
CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Y

CUSTOMER WHC

MATRIX Soil

NAME/DATE MK / 5-17-94

SAMPLE DELIVERY GROUP W0024

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 11040680 1		200 min
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

MK 5-21-94

REANALYSIS

REFERENCED QC

ITAS ID - BLANK

ITAS ID - SPIKE

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED

SAMPLE REMAINDER RETURNED TO SCG ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT 5/17/94

DATA REVIEWED MK 5-19-94

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

RC-018 12/92 REV 2

9613479.2129

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/20/94

JTK 5-18-94

~~REANALYSIS~~ / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS I129

NAME/DATE JTK / 5-18-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP SDGW0024

MATRIX Soil

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) L0406811X		100 min
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

JTK 5-18-94

REANALYSIS

REFERENCED QC

ITAS ID - BLANK

ITAS ID - SPIKE

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED

SAMPLE REMAINDER RETURNED TO SCG ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT OD 07/18/94

DATA REVIEWED JTK 5-19-94

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

0114

RC-048 12/92 REV 2

9613479.2130

MEMORANDUM

JUN 1994
RECEIVED
TQO

TO: 200-UP-2 Project QA Record June 16, 1994

FR: Susan Winter, Golder Associates Inc.

RE: METALS DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0024-ITC-034 (923-E418, Filename W0024M.UP2)

INTRODUCTION

This memo presents the results of data validation on data package W0024-ITC-034 prepared by the International Technology Corporation (ITC) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B0BKM8	03/31/94	SOIL	SEE NOTE 1
B0BKN0	04/05/94	SOIL	
B0BKN7	04/05/94	SOIL	
B0BKN8	04/05/94	SOIL	
B0BKP6	03/31/94	SOIL	
B0BNP9	03/31/94	SOIL	
B0BNQ0	03/31/94	SOIL	
B0BNQ1	03/31/94	SOIL	
B0BNQ2	03/31/94	SOIL	
B0BNQ6	03/31/94	SOIL	
B0BNQ7	03/31/94	SOIL	

RECEIVED
JUN 20 1994
VALIDATION DOCUMENTATION
SDLA

Note 1. All samples were analyzed for CLP TAL metals, cyanide, and titanium.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met with the exception of the deficiencies identified below.

001

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of eleven samples were validated in this data package with a total of 275 determinations reported, of which 272 were deemed valid. This results in a completeness of 99 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

The following major deficiencies were identified during data validation which required qualification of data as unusable.

Laboratory Blanks

- Cyanide was detected in the calibration and preparation blanks at negative concentrations greater than the contract required detection limit. Attachments 2 and 5 provide a summary of the affected samples, qualifications applied and supporting documentation.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data as estimated.

Holding Times

- The required holding time for cyanide was exceeded. Attachments 2 and 5 provide a summary of the affected samples, qualifications applied and supporting documentation.

Laboratory Blanks

- Sodium was detected in the associated preparation blank at a positive concentration. Attachments 2 and 5 provide a summary of the affected samples, qualifications applied and supporting documentation.

Matrix Spikes

- Matrix spike percent recoveries for antimony and thallium were unacceptable. Attachments 2 and 5 provide a summary of the affected samples, qualifications applied and supporting documentation.

GFAA Analytical Spikes

- GFAA analytical spike recoveries for selenium and thallium were unacceptable. Attachments 2 and 5 provide a summary of the data qualifications applied and supporting documentation.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9615479.2133

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY

SDG: W0024-ITC-034	VALIDATOR:	DATE: June 15, 1994	PAGE 1 OF 1
COMMENTS: METALS			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
CYANIDE	UJ	B0BKN8	ANALYZED OUT OF THE REQUIRED HOLDING TIME
SODIUM	U	B0BKP6 B0BNQ1 B0BKN8	PRESENT IN PREP. BLANK AT A POSITIVE CONCENTRATION
ANTIMONY	UJ	B0BKP6 B0BNQ0 B0BNQ1 B0BNQ2 B0BNQ6 B0BNQ7 B0BKN0 B0BKN7 B0BNP9 B0BKN8	MS %R < 75% BUT > 30%
ANTIMONY	BJ	B0BKM8	MS %R < 75% BUT > 30%
THALLIUM	UJ	B0BKM8 B0BKP6 B0BNQ0 B0BNQ1 B0BNQ2 B0BNQ6 B0BNQ7 B0BKN0 B0BKN7 B0BNP9	MS %R < 75% BUT > 30%
THALLIUM	BJ	B0BKN8	MS %R < 75% BUT > 30%
CYANIDE	UR	B0BKN0 B0BKN7 B0BNP9	PRESENT IN ICB, CCB, AND PREP. BLANK AT A NEGATIVE CONCENTRATIONS > CRDL
THALLIUM	UJ	B0BKM8 B0BNQ6 B0BNQ0 B0BNQ1 B0BKP6 B0BNQ2 B0BNQ7 B0BNP9	GFAA ANALYTICAL SPIKE %R < 85% BUT > 40%
SELENIUM	UJ	B0BKN8	GFAA ANALYTICAL SPIKE %R < 85% BUT > 40%
THALLIUM	BJ	B0BKN8	GFAA ANALYTICAL SPIKE %R < 85% BUT > 40%

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	BOBKM8		BOBKN0		BOBKN7		BOBKN8		BOBKP6		BOBNP9	
	Date	3-31-94		4-5-94		4-5-94		4-5-94		3-31-94		3-31-94	
	Location	U1/U2 TILE FIELD		U1/U2 TILE FIELD		207-U BASIN		207-U BASIN		216-U-11		216-U-10	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	MG/KG	7200.000		5990.000		31500.000		5300.000		6070.000		7730.000	
ANTIMONY	MG/KG	11.400	BJ	10.200	UJ	17.300	UJ	10.300	UJ	9.600	UJ	10.000	UJ
ARSENIC	MG/KG	2.300		2.500		10.400		1.600	B	2.500		3.100	
BARIUM	MG/KG	84.300		78.500		306.000		101.000		87.900		86.300	
BERYLLIUM	MG/KG	0.490	B	0.590	B	0.780	B	0.410	B	0.490	B	0.660	B
CADMIUM	MG/KG	0.960	U	1.000	U	4.600		1.000	U	0.960	U	1.000	U
CALCIUM	MG/KG	5010.000		7490.000		49200.000		8950.000		9860.000		8330.000	
CHROMIUM	MG/KG	9.100		8.400		38.900		8.400		7.900		10.500	
COBALT	MG/KG	12.600		13.000		13.000	B	8.700	B	12.500		15.800	
COPPER	MG/KG	11.500		13.500		71.300		24.500		11.700		14.500	
IRON	MG/KG	23500.000		22200.000		23100.000		15800.000		21300.000		28900.000	
LEAD	MG/KG	6.800		7.200		68.900		22.200		4.800		5.000	
MAGNESIUM	MG/KG	4550.000		4580.000		8050.000		3980.000		4470.000		5480.000	
MANGANESE	MG/KG	334.000		343.000		1580.000		298.000		357.000		391.000	
MERCURY	MG/KG	0.100	U	0.090	U	0.550		0.090	U	0.100	U	0.100	U
NICKEL	MG/KG	9.600		8.400		18.500		26.100		10.100		10.500	
POTASSIUM	MG/KG	1580.000		1670.000		1710.000	B	1070.000		1150.000		1820.000	
SELENIUM	MG/KG	0.400	U	0.400	U	1.400	B	0.400	UJ	0.400	U	0.390	U
SILVER	MG/KG	2.200		1.100	B	1.800	B	1.100	B	0.980	B	1.400	B
SODIUM	MG/KG	179.000	B	150.000	B	476.000	B	138.000	U	124.000	U	197.000	B
THALLIUM	MG/KG	0.400	UJ	0.400	UJ	0.690	UJ	0.610	BJ	0.400	UJ	0.390	UJ
VANADIUM	MG/KG	56.600		48.000		69.600		27.800		48.500		71.200	
ZINC	MG/KG	37.700		58.000		393.000		81.000		31.500		49.500	
TITANIUM	MG/KG	1800.000		1640.000		1470.000		810.000		1520.000		2300.000	
CYANIDE	MG/KG	1.000	U	1.000	UR	1.800	UR	5.200	UJ	1.000	U	1.000	UR

Verified
6/16/94

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Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	B0BNQ0		B0BNQ1		B0BNQ2		B0BNQ6		B0BNQ7	
	Date	3-31-94		3-31-94		3-31-94		3-31-94		3-31-94	
	Location	216-U-10		216-U-10		216-U-10		216-U-10		216-U-10	
	Depth	---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	MG/KG	6780.000		4390.000		6960.000		7230.000		6350.000	
ANTIMONY	MG/KG	9.900	UJ	9.400	UJ	10.100	UJ	10.100	UJ	10.000	UJ
ARSENIC	MG/KG	2.100		2.500		3.000		2.100		3.100	
BARIUM	MG/KG	79.400		68.500		73.600		78.500		84.700	
BERYLLIUM	MG/KG	0.520	B	0.430	B	0.630	B	0.530	B	0.510	B
CADMIUM	MG/KG	0.990	U	0.940	U	1.000	U	1.000	U	1.000	U
CALCIUM	MG/KG	3560.000		6350.000		9460.000		4310.000		9010.000	
CHROMIUM	MG/KG	8.500		5.400		8.700		9.600		9.400	
COBALT	MG/KG	13.200		10.600		13.500		12.400		13.900	
COPPER	MG/KG	10.100		11.900		13.900		10.500		15.000	
IRON	MG/KG	21000.000		18400.000		24600.000		22400.000		25100.000	
LEAD	MG/KG	5.100		5.000		4.400		6.000		5.100	
MAGNESIUM	MG/KG	4180.000		3880.000		5140.000		4450.000		5380.000	
MANGANESE	MG/KG	337.000		331.000		341.000		342.000		348.000	
MERCURY	MG/KG	0.100	U	0.100	U	0.100	U	0.100	U	0.100	U
NICKEL	MG/KG	9.100		8.100		11.500		11.100		11.500	
POTASSIUM	MG/KG	1540.000		997.000		1240.000		1580.000		1180.000	
SELENIUM	MG/KG	0.400	U	0.380	U	0.400	U	0.410	U	0.400	U
SILVER	MG/KG	1.900	B	2.100		1.200	B	2.600		1.500	B
SODIUM	MG/KG	132.000	B	124.000	U	196.000	B	146.000	B	155.000	B
THALLIUM	MG/KG	0.400	UJ	0.380	UJ	0.400	UJ	0.410	UJ	0.400	UJ
VANADIUM	MG/KG	47.500		33.800		57.100		51.800		55.500	
ZINC	MG/KG	36.100		28.200		38.600		35.400		37.600	
TITANIUM	MG/KG	1510.000		1160.000		1900.000		1640.000		1800.000	
CYANIDE	MG/KG	1.000	U	1.000	U	1.000	U	1.000	U	1.000	U

Verified

6/16/94

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U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKM8

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD\WE

Lab Code: ITSTU_ Case No.: WO308 SAS No.: _____ SDG No.: W0024_

Matrix (soil/water): SOIL_ Lab Sample ID: AA5445

Level (low/med): LOW_ Date Received: 04/06/94

% Solids: _98.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	7200			P	
7440-36-0	Antimony	11.4	~~B~~	N	P	BJ
7440-38-2	Arsenic	2.3			F	
7440-39-3	Barium	84.3			P	
7440-41-7	Beryllium	0.49	B		P	
7440-43-9	Cadmium	0.96	U		P	
7440-70-2	Calcium	5010			P	
7440-47-3	Chromium	9.1			P	
7440-48-4	Cobalt	12.6			P	
7440-50-8	Copper	11.5			P	
7439-89-6	Iron	23500			P	
7439-92-1	Lead	6.8		S	F	
7439-95-4	Magnesium	4550			P	
7439-96-5	Manganese	334			P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	9.6			P	
7440-09-7	Potassium	1580			P	
7782-49-2	Selenium	0.40	U		F	
7440-22-4	Silver	2.2			P	
7440-23-5	Sodium	179	B		P	
7440-28-0	Thallium	0.40	~~U~~	WN	F	UJ
7440-62-2	Vanadium	56.6			P	
7440-66-6	Zinc	37.7			P	
	Titanium	1800			P	
5955-70-0	Cyanide				NR	

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

Lead- 1/2 dilution

Verified

[signature] 6/14/94

FORM I - IN

ILM02.1

8 5/12/94

011

9613479.2141

0000619

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKM8

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE

Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5448

Level (low/med): LOW Date Received: 04/06/94

% Solids: 98.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

CYANIDE ONLY.

Verified

6/14/94

FORM I - IN

ILM02.1

5/12/94

9613479.2142

~~0000197~~

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN0

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0331 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5842

Level (low/med): LOW Date Received: 04/08/94

% Solids: 97.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	5990			P	
7440-36-0	Antimony	10.2	~~U~~	N	P	US
7440-38-2	Arsenic	2.5			F	
7440-39-3	Barium	78.5			P	
7440-41-7	Beryllium	0.59	B		P	
7440-43-9	Cadmium	1.0	U		P	
7440-70-2	Calcium	7490			P	
7440-47-3	Chromium	8.4			P	
7440-48-4	Cobalt	13.0			P	
7440-50-8	Copper	13.5			P	
7439-89-6	Iron	22200			P	
7439-92-1	Lead	7.2			F	
7439-95-4	Magnesium	4580			P	
7439-96-5	Manganese	343			P	
7439-97-6	Mercury	0.09	U		CV	
7440-02-0	Nickel	8.4			P	
7440-09-7	Potassium	1670			P	
7782-49-2	Selenium	0.40	U		F	
7440-22-4	Silver	1.1	B		P	
7440-23-5	Sodium	150	B		P	
7440-28-0	Thallium	0.40	~~U~~	WN	F	US
7440-62-2	Vanadium	48.0			P	
7440-66-6	Zinc	58.0			P	
	Titanium	1640			P	
5955-70-0	Cyanide				NR	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

Verified

6/15/94

FORM I - IN

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5/16/94

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN0

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0331 SAS No.: _____ SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5845

Level (low/med): LOW Date Received: 04/08/94

% Solids: 97.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum				NR	
7440-36-0	Antimony				NR	
7440-38-2	Arsenic				NR	
7440-39-3	Barium				NR	
7440-41-7	Beryllium				NR	
7440-43-9	Cadmium				NR	
7440-70-2	Calcium				NR	
7440-47-3	Chromium				NR	
7440-48-4	Cobalt				NR	
7440-50-8	Copper				NR	
7439-89-6	Iron				NR	
7439-92-1	Lead				NR	
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7439-97-6	Mercury				NR	
7440-02-0	Nickel				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium				NR	
7440-22-4	Silver				NR	
7440-23-5	Sodium				NR	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium				NR	
7440-66-6	Zinc				NR	
	Titanium				NR	
5955-70-0	Cyanide	1.0	~~U~~		AS	UR

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY. Verified

6/15/94

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN7

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0331 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5836

Level (low/med): LOW Date Received: 04/08/94

% Solids: 57.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	31500			P	
7440-36-0	Antimony	17.3	~~U~~	N	P	US
7440-38-2	Arsenic	10.4		S	F	
7440-39-3	Barium	306			P	
7440-41-7	Beryllium	0.78	B		P	
7440-43-9	Cadmium	4.6			P	
7440-70-2	Calcium	49200			P	
7440-47-3	Chromium	38.9			P	
7440-48-4	Cobalt	13.0	B		P	
7440-50-8	Copper	71.3			P	
7439-89-6	Iron	23100			P	
7439-92-1	Lead	68.9			F	
7439-95-4	Magnesium	8050			P	
7439-96-5	Manganese	1580			P	
7439-97-6	Mercury	0.55			CV	
7440-02-0	Nickel	18.5			P	
7440-09-7	Potassium	1710	B		P	
7782-49-2	Selenium	1.4	B		F	
7440-22-4	Silver	1.8	B		P	
7440-23-5	Sodium	476	B		P	
7440-28-0	Thallium	0.69	~~U~~	N	F	US
7440-62-2	Vanadium	69.6			P	
7440-66-6	Zinc	393			P	
	Titanium	1470			P	
5955-70-0	Cyanide				NR	

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

Lead - 1/10 Verified

6/15/94

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN7

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO331 SAS No.: _____ SDG No.: W0024_

Matrix (soil/water): SOIL_ Lab Sample ID: AA5839

Level (low/med): LOW_ Date Received: 04/08/94

% Solids: _57.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum				NR	
7440-36-0	Antimony				NR	
7440-38-2	Arsenic				NR	
7440-39-3	Barium				NR	
7440-41-7	Beryllium				NR	
7440-43-9	Cadmium				NR	
7440-70-2	Calcium				NR	
7440-47-3	Chromium				NR	
7440-48-4	Cobalt				NR	
7440-50-8	Copper				NR	
7439-89-6	Iron				NR	
7439-92-1	Lead				NR	
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7439-97-6	Mercury				NR	
7440-02-0	Nickel				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium				NR	
7440-22-4	Silver				NR	
7440-23-5	Sodium				NR	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium				NR	
7440-66-6	Zinc				NR	
	Titanium				NR	
5955-70-0	Cyanide	1.8	~~U~~		AS	UR

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY. Verified

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN8

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO403 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA7084

Level (low/med): LOW Date Received: 04/16/94

% Solids: 96.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	5300			P	
7440-36-0	Antimony	10.3	U	N	P	UJ
7440-38-2	Arsenic	1.6	B		F	
7440-39-3	Barium	101			P	
7440-41-7	Beryllium	0.41	B		P	
7440-43-9	Cadmium	1.0	U		P	
7440-70-2	Calcium	8950			P	
7440-47-3	Chromium	8.4			P	
7440-48-4	Cobalt	8.7	B		P	
7440-50-8	Copper	24.5			P	
7439-89-6	Iron	15800			P	
7439-92-1	Lead	22.2			F	
7439-95-4	Magnesium	3980			P	
7439-96-5	Manganese	298			P	
7439-97-6	Mercury	0.09	U		CV	
7440-02-0	Nickel	26.1			P	
7440-09-7	Potassium	1070			P	
7782-49-2	Selenium	0.40	U		F	UJ
7440-22-4	Silver	1.1	B		P	
7440-23-5	Sodium	138	B		P	U
7440-28-0	Thallium	0.61	B	WN	F	BJ
7440-62-2	Vanadium	27.8			P	
7440-66-6	Zinc	81.0			P	
	Titanium	810			P	
5955-70-0	Cyanide				NR	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKN8

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO403 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA7087

Level (low/med): LOW Date Received: 04/16/94

% Solids: 96.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum				NR	
7440-36-0	Antimony				NR	
7440-38-2	Arsenic				NR	
7440-39-3	Barium				NR	
7440-41-7	Beryllium				NR	
7440-43-9	Cadmium				NR	
7440-70-2	Calcium				NR	
7440-47-3	Chromium				NR	
7440-48-4	Cobalt				NR	
7440-50-8	Copper				NR	
7439-89-6	Iron				NR	
7439-92-1	Lead				NR	
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7439-97-6	Mercury				NR	
7440-02-0	Nickel				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium				NR	
7440-22-4	Silver				NR	
7440-23-5	Sodium				NR	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium				NR	
7440-66-6	Zinc				NR	
	Titanium				NR	
5955-70-0	Cyanide	5.2	~~U~~		AS	

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: Clarity After: Artifacts:

Comments:

CYANIDE_ONLY.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKP6

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE

Lab Code: ITSTU Case No.: W0308 SAS No.: _____ SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5514

Level (low/med): LOW Date Received: 04/06/94

% Solids: 97.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	6070			P	
7440-36-0	Antimony	9.6	~~U~~	N	P	US
7440-38-2	Arsenic	2.5			F	
7440-39-3	Barium	87.9			P	
7440-41-7	Beryllium	0.49	B		P	
7440-43-9	Cadmium	0.96	U		P	
7440-70-2	Calcium	9860			P	
7440-47-3	Chromium	7.9			P	
7440-48-4	Cobalt	12.5			P	
7440-50-8	Copper	11.7			P	
7439-89-6	Iron	21300			P	
7439-92-1	Lead	4.8			F	
7439-95-4	Magnesium	4470			P	
7439-96-5	Manganese	357			P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	10.1			P	
7440-09-7	Potassium	1150			P	
7782-49-2	Selenium	0.40	U		F	
7440-22-4	Silver	0.98	B		P	
7440-23-5	Sodium	124	~~B~~		P	US
7440-28-0	Thallium	0.40	~~U~~	WN	F	US
7440-62-2	Vanadium	48.5			P	
7440-66-6	Zinc	31.5			P	
	Titanium	1520			P	
5955-70-0	Cyanide				NR	

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKP6

Lab Name: ITAS_KNOXVILLE Contract: HANFORD\WE
Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5517
Level (low/med): LOW Date Received: 04/06/94
% Solids: 97.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:
CYANIDE_ONLY.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNP9
~~0418101~~
J.C. 5/24/94

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0338 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA6047
Level (low/med): LOW Date Received: 04/12/94
% Solids: 97.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	7730			P	
7440-36-0	Antimony	10	~~U~~	N	P	WS
7440-38-2	Arsenic	3.1			F	
7440-39-3	Barium	86.3			P	
7440-41-7	Beryllium	0.66	B		P	
7440-43-9	Cadmium	1.00	U		P	
7440-70-2	Calcium	8330			P	
7440-47-3	Chromium	10.5			P	
7440-48-4	Cobalt	15.8			P	
7440-50-8	Copper	14.5			P	
7439-89-6	Iron	28900			P	
7439-92-1	Lead	5.0			F	
7439-95-4	Magnesium	5480			P	
7439-96-5	Manganese	391			P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	10.5			P	
7440-09-7	Potassium	1820			P	
7782-49-2	Selenium	0.39	U		F	
7440-22-4	Silver	1.4	B		P	
7440-23-5	Sodium	197	B		P	
7440-28-0	Thallium	0.39	~~U~~	WN	F	WS
7440-62-2	Vanadium	71.2			P	
7440-66-6	Zinc	49.5			P	
	Titanium	2300			P	
5955-70-0	Cyanide				NR	

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BORNP9
~~0418101~~
J.C 5/24/94

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0338 SAS No.: _____ SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA6050

Level (low/med): LOW Date Received: 04/12/94

% Solids: 97.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum				NR	
7440-36-0	Antimony				NR	
7440-38-2	Arsenic				NR	
7440-39-3	Barium				NR	
7440-41-7	Beryllium				NR	
7440-43-9	Cadmium				NR	
7440-70-2	Calcium				NR	
7440-47-3	Chromium				NR	
7440-48-4	Cobalt				NR	
7440-50-8	Copper				NR	
7439-89-6	Iron				NR	
7439-92-1	Lead				NR	
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7439-97-6	Mercury				NR	
7440-02-0	Nickel				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium				NR	
7440-22-4	Silver				NR	
7440-23-5	Sodium				NR	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium				NR	
7440-66-6	Zinc				NR	
	Titanium				NR	
5955-70-0	Cyanide	1.0	~~U~~		AS	UR

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE ONLY.

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FORM I - IN

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ0

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE

Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5484

Level (low/med): LOW Date Received: 04/06/94

% Solids: 99.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	6780			P	
7440-36-0	Antimony	9.9	U	N	P	US
7440-38-2	Arsenic	2.1			F	
7440-39-3	Barium	79.4			P	
7440-41-7	Beryllium	0.52	B		P	
7440-43-9	Cadmium	0.99	U		P	
7440-70-2	Calcium	3560			P	
7440-47-3	Chromium	8.5			P	
7440-48-4	Cobalt	13.2			P	
7440-50-8	Copper	10.1			P	
7439-89-6	Iron	21000			P	
7439-92-1	Lead	5.1			F	
7439-95-4	Magnesium	4180			P	
7439-96-5	Manganese	337			P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	9.1			P	
7440-09-7	Potassium	1540			P	
7782-49-2	Selenium	0.40	U		F	
7440-22-4	Silver	1.9	B		P	
7440-23-5	Sodium	132	B		P	
7440-28-0	Thallium	0.40	U	WN	F	US
7440-62-2	Vanadium	47.5			P	
7440-66-6	Zinc	36.1			P	
	Titanium	1510			P	
5955-70-0	Cyanide				NR	

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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FORM I - IN

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ0

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD\WE
Lab Code: ITSTU_ Case No.: WO308 SAS No.: _____ SDG No.: W0024_
Matrix (soil/water): SOIL_ Lab Sample ID: AA5489
Level (low/med): LOW_ Date Received: 04/06/94
% Solids: _99.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE_ONLY.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ1

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE

Lab Code: ITSTU Case No.: W0308 SAS No.: _____ SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5503

Level (low/med): LOW Date Received: 04/06/94

% Solids: 98.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	4390			P	
7440-36-0	Antimony	9.4	~~U~~	N	P	WS
7440-38-2	Arsenic	2.5			F	
7440-39-3	Barium	68.5			P	
7440-41-7	Beryllium	0.43	B		P	
7440-43-9	Cadmium	0.94	U		P	
7440-70-2	Calcium	6350			P	
7440-47-3	Chromium	5.4			P	
7440-48-4	Cobalt	10.6			P	
7440-50-8	Copper	11.9			P	
7439-89-6	Iron	18400			P	
7439-92-1	Lead	5.0		S	F	
7439-95-4	Magnesium	3880			P	
7439-96-5	Manganese	331			P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	8.1			P	
7440-09-7	Potassium	997			P	
7782-49-2	Selenium	0.38	U		F	
7440-22-4	Silver	2.1			P	
7440-23-5	Sodium	124	~~B~~		P	u
7440-28-0	Thallium	0.38	~~U~~	WN	F	WS
7440-62-2	Vanadium	33.8			P	
7440-66-6	Zinc	28.2			P	
	Titanium	1160			P	
5955-70-0	Cyanide				NR	

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

Lead - 1/2 dilution

Verified

6/14/94

FORM I - IN

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5/12/94

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ1

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE

Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5508

Level (low/med): LOW Date Received: 04/06/94

% Solids: 98.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

CYANIDE ONLY.

Verified

6/14/94

FORM I - IN

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ2

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD\WE

Lab Code: ITSTU_ Case No.: WO308 SAS No.: _____ SDG No.: W0024_

Matrix (soil/water): SOIL_ Lab Sample ID: AA5520

Level (low/med): LOW_ Date Received: 04/06/94

% Solids: _98.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	6960			P	
7440-36-0	Antimony	10.1	~~U~~	N	P	WS
7440-38-2	Arsenic	3.0			F	
7440-39-3	Barium	73.6			P	
7440-41-7	Beryllium	0.63	B		P	
7440-43-9	Cadmium	1.0	U		P	
7440-70-2	Calcium	9460			P	
7440-47-3	Chromium	8.7			P	
7440-48-4	Cobalt	13.5			P	
7440-50-8	Copper	13.9			P	
7439-89-6	Iron	24600			P	
7439-92-1	Lead	4.4			F	
7439-95-4	Magnesium	5140			P	
7439-96-5	Manganese	341			P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	11.5			P	
7440-09-7	Potassium	1240			P	
7782-49-2	Selenium	0.40	U		F	
7440-22-4	Silver	1.2	B		P	
7440-23-5	Sodium	196	B		P	
7440-28-0	Thallium	0.40	~~U~~	WN	F	WS
7440-62-2	Vanadium	57.1			P	
7440-66-6	Zinc	38.6			P	
	Titanium	1900			P	
5955-70-0	Cyanide				NR	

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

Verified

6/14/94

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ2

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD\WE
Lab Code: ITSTU_ Case No.: WO308 SAS No.: _____ SDG No.: W0024_
Matrix (soil/water): SOIL_ Lab Sample ID: AA5523
Level (low/med): LOW__ Date Received: 04/06/94
% Solids: _98.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-36-0	Antimony_				NR
7440-38-2	Arsenic__				NR
7440-39-3	Barium__				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium__				NR
7440-70-2	Calcium__				NR
7440-47-3	Chromium_				NR
7440-48-4	Cobalt___				NR
7440-50-8	Copper___				NR
7439-89-6	Iron____				NR
7439-92-1	Lead____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury__				NR
7440-02-0	Nickel___				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-22-4	Silver___				NR
7440-23-5	Sodium___				NR
7440-28-0	Thallium_				NR
7440-62-2	Vanadium_				NR
7440-66-6	Zinc____				NR
	Titanium_				NR
5955-70-0_	Cyanide__	1.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____
Color After: _____ Clarity After: _____ Artifacts: _____

Comments:
CYANIDE_ONLY. Verified
6/14/94

FORM I - IN

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ6

Lab Name: ITAS_KNOXVILLE Contract: HANFORD\WE

Lab Code: ITSTU Case No.: W0308 SAS No.: _____ SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5472

Level (low/med): LOW Date Received: 04/06/94

% Solids: 98.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	Q
7429-90-5	Aluminum	7230			P	
7440-36-0	Antimony	10.1	~~U~~	N	P	us
7440-38-2	Arsenic	2.1			F	
7440-39-3	Barium	78.5			P	
7440-41-7	Beryllium	0.53	B		P	
7440-43-9	Cadmium	1.0	U		P	
7440-70-2	Calcium	4310			P	
7440-47-3	Chromium	9.6			P	
7440-48-4	Cobalt	12.4			P	
7440-50-8	Copper	10.5			P	
7439-89-6	Iron	22400			P	
7439-92-1	Lead	6.0		S	F	
7439-95-4	Magnesium	4450			P	
7439-96-5	Manganese	342			P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	11.1			P	
7440-09-7	Potassium	1580			P	
7782-49-2	Selenium	0.41	U		F	
7440-22-4	Silver	2.6			P	
7440-23-5	Sodium	146	B		P	
7440-28-0	Thallium	0.41	~~U~~	WN	F	us
7440-62-2	Vanadium	51.8			P	
7440-66-6	Zinc	35.4			P	
	Titanium	1640			P	
5955-70-0	Cyanide				NR	

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments:

Verified

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FORM I - IN

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ6

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD\WE

Lab Code: ITSTU_ Case No.: WO308 SAS No.: _____ SDG No.: W0024_

Matrix (soil/water): SOIL_ Lab Sample ID: AA5477

Level (low/med): LOW_ Date Received: 04/06/94

% Solids: _98.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY. Verified

6/14/94

FORM I - IN

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U.S. EPA - CLP

1.
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ7

Lab Name: ITAS KNOXVILLE Contract: HANFORD\WE
Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024
Matrix (soil/water): SOIL Lab Sample ID: AA5494
Level (low/med): LOW Date Received: 04/06/94
% Solids: 97.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6350			P
7440-36-0	Antimony	10.0	U	N	P
7440-38-2	Arsenic	3.1			F
7440-39-3	Barium	84.7			P
7440-41-7	Beryllium	0.51	B		P
7440-43-9	Cadmium	1.0	U		P
7440-70-2	Calcium	9010			P
7440-47-3	Chromium	9.4			P
7440-48-4	Cobalt	13.9			P
7440-50-8	Copper	15.0			P
7439-89-6	Iron	25100			P
7439-92-1	Lead	5.1			F
7439-95-4	Magnesium	5380			P
7439-96-5	Manganese	348			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	11.5			P
7440-09-7	Potassium	1180			P
7782-49-2	Selenium	0.40	U		F
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	155	B		P
7440-28-0	Thallium	0.40	U	WN	F
7440-62-2	Vanadium	55.5			P
7440-66-6	Zinc	37.6			P
	Titanium	1800			P
5955-70-0	Cyanide				NR

Color Before: BROWN Clarity Before: N/A Texture: MEDIUM
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

Verified

6/14/94

FORM I - IN

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5/12/94

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNQ7

Lab Name: ITAS_KNOXVILLE Contract: HANFORD\WE

Lab Code: ITSTU Case No.: W0308 SAS No.: SDG No.: W0024

Matrix (soil/water): SOIL Lab Sample ID: AA5499

Level (low/med): LOW Date Received: 04/06/94

% Solids: 97.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide	1.0	U		AS

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

CYANIDE_ONLY.

Verified

6/14/94

FORM I - IN

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ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

May 20, 1994

MAY 1994
RECEIVED
SDLA

Job Number: 308; 331; 338; 403

This is the Certificate of Analysis for the following samples:

SDG:	W0024
Client Project ID:	Westinghouse Hanford
Date Received by Lab:	April 6, 1994; April 8, 1994, April 12, 1994; April 16, 1994
Number of Samples:	Eleven (11)
Sample Type:	Soil

I. Introduction

On April 6, April 8, April 12 and April 16, 1994, eleven (11) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

RECORD COPY

034

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics (DRO) with a kerosene spike by gas chromatography/flame ionization detection (GC/FID) based on method 8015.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

The samples for work order #308 were digested on April 12 for ICP and GFAA. The CVAA analysis for mercury was performed on April 8, 1994; The GFAA analyses for arsenic, lead, selenium and thallium were performed on April 12, 1994; the remaining metals were analyzed by ICP on April 14, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBKM8. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses except for antimony by ICP analysis and thallium by GFAA analysis. The titanium concentration was greater than four times (4X) the spike added; spiking criteria did not apply for this analyte. Poor spike recovery for antimony is attributable to matrix interferences as indicated by the post digestion spike. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses.

The samples for work order #338 were digested on April 15, 1994 for GFAA. The CVAA analysis for mercury was performed on April 15, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed on April 18 and April 19, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #331 were digested on April 15, 1994 for GFAA and April 12, 1994 for GFAA. The CVAA analysis for mercury was performed on April 12, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from April 12 through May 17, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #403 were digested on May 2, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 2, 1994. All run QC was acceptable. Zinc was found in the method blank above the client required detection limit (CRDL). However, zinc concentration in the sample was ten times (10X) greater than the contamination and results are acceptable.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics by gas chromatography/flame ionization detection using an SPB-1 column on a Hewlett Packard GC. Matrix spike/matrix spike duplicate analyses were performed using sample number BOBNK8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for nitrate/nitrite using sample number BOBKM8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for anion analysis using sample number BOBKM8 with acceptable results.

Matrix spike/duplicate analyses were performed for cyanide analysis using sample number BOBKM8 with acceptable results.

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. **Quality Control** (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA5444	404067-01	BOBKM8	SOIL	SVOC
AA5445	"	"	"	METALS
AA5446	"	"	"	ANIONS
AA5447	"	"	"	NO3NO2
AA5448	"	"	"	CN
AA5449	"	"	"	TPH
AA5470	404067-02	BOBNQ6	"	SVOC
AA5472	"	"	"	METALS
AA5475	"	"	"	ANIONS
AA5476	"	"	"	NO3NO2
AA5477	"	"	"	CN
AA5478	"	"	"	TPH
AA5483	404067-03	BOBNQ0	"	SVOC
AA5484	"	"	"	METALS
AA5486	"	"	"	ANIONS
AA5487	"	"	"	NO3NO2
AA5489	"	"	"	CN
AA5490	"	"	"	TPH
AA5492	404067-04	BOBNQ7	"	SVOC
AA5494	"	"	"	METALS
AA5496	"	"	"	ANIONS
AA5497	"	"	"	NO3NO2
AA5499	"	"	"	CN
AA5500	"	"	"	TPH

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. **Quality Control** (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA5501	404067-05	BOBNQ1	SOIL	SVOC
AA5503	"	"	"	METALS
AA5505	"	"	"	ANIONS
AA5506	"	"	"	NO3NO2
AA5508	"	"	"	CN
AA5509	"	"	"	TPH
AA5512	404067-06	BOBKP6	"	SVOC
AA5514	"	"	"	METALS
AA5515	"	"	"	ANIONS
AA5516	"	"	"	NO3NO2
AA5517	"	"	"	CN
AA5518	"	"	"	TPH
AA5519	404067-07	BOBNQ2	"	SVOC
AA5520	"	"	"	METALS
AA5521	"	"	"	ANIONS
AA5522	"	"	"	NO3NO2
AA5523	"	"	"	CN
AA5524	"	"	"	TPH
AA5835	404118-01 (A-F)	BOBKN7	"	SVOC
AA5836	"	"	"	METALS
AA5837	"	"	"	ANIONS
AA5838	"	"	"	NO3NO2
AA5839	"	"	"	CN
AA5840	"	"	"	TPH
AA5841	404118-02 (A-F)	BOBKN0	"	SVOC
AA5842	"	"	"	METALS
AA5843	"	"	"	ANIONS
AA5844	"	"	"	NO3NO2
AA5845	"	"	"	CN
AA5846	"	"	"	TPH

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA6046	404181-01 (A-F)	BOBNP9	SOIL	SVOC
AA6047	"	"	"	METALS
AA6048	"	"	"	ANIONS
AA6049	"	"	"	NO3NO2
AA6050	"	"	"	CN
AA6051	"	"	"	TPH
AA7083	404280-01 (A-F)	BOBKN8	"	SVOC
AA7084	"	"	"	METALS
AA7085	"	"	"	ANIONS
AA7086	"	"	"	NO3NO2
AA7087	"	"	"	CN
AA7088	"	"	"	TPH

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

IV. Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature:

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

WO#308

~~000035~~

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006455

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. WS 020
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 RJ 3-30-94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 41/42 Tile Field RJ 3-30-94
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKM8	S	3-31-94	1530	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKM8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKM8	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.D	
D	BOBKM8	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKM8	S			(1) 125ml G	Cyanide	CPL	
F	BOBKM8	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKM8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RJ 3-31-94	9060	
	BOBKM8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

404106801

404106801

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
RT Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	[illegible] 4-5-94 10:30

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

042

9413479.2171

W0#331

0000042

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006457

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. 5002 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS Standard Delivery
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN0	S	4-5-94	0815	(1) 250ml aG	Semi-VOA ELP	cool
B	BOBKN0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CRL	cool
C	BOBKN0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN0	S			(1) 125ml G	Cyanide CPL	cool 4-6-94
F	BOBKN0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
	BOBKN0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411802

40411902

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
[illegible] R.T. Sickle	4-7-94	1045	[illegible] ITAS Technician

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2172

043

WO #331

~~0000043~~

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006464

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8-Vitrified ~~Clay~~ ~~Pipeline~~
Sampling Locations ~~216-U-8-Crib~~
Ice Chest No. SMZ 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS STANDALONE Deliverable

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN7	S	4-5-94	0930	(1) 250ml aG	Semi-VOA GEP	CLP
B	BOBKN7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL	CLP
C	BOBKN7	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN7	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN7	S			(1) 125ml G	Cyanide CPL	CLP
F	BOBKN7	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN7~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-5-94 9060	
40411901	BOBKN7	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411801

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Tom Gilmore

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

044

9613479.2173

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#403	Page 1 of 1 006465

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 — 3-30-94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 207 U BASIN 3-30-94
Offsite Property No.
Field Logbook No.
SPECIAL INSTRUCTIONS STANDALONE Deliverable

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404280 01A BOBKN8	S	4-5-94	0950	(1) 250ml aG	Semi-VOA CLP	
B BOBKN8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL	4-6-94
C BOBKN8	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D BOBKN8	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E BOBKN8	S			(1) 125ml G	Cyanide CPL	4-6-94
F BOBKN8	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 9060 4-5-94	
BOBKN8 40428101	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. SICKLE	4-14-94	1500	Karen Stebbins IAS 4-14-94 15:00

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9413479.2174

045

S4000000

WO#308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006266

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-11 Trench
Ice Chest No. GW5020
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKP6	S	3-31-94	1425	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKP6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKP6	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKP6	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKP6	S			(1) 125ml G	Cyanide	CPL	
F	BOBKP6	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKP6~~	~~S~~			~~(1) 125ml aGs~~	~~Ice~~ RJH 3-31-94	9060	
	BOBKP6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-D001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

40406806
40406804

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	[illegible]
[illegible]	4-5-94	0815	[illegible] 10:30

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2175

046

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#338	Page 1 of 1
		006257

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STANDALONE Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
01A	BOBNP9	S	3-31-94	0845	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNP9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	~~CPL~~ CLP	4-6-94
C	BOBNP9	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNP9	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNP9	S			(1) 125ml G	Cyanide	~~CPL~~ CLP	4-6-94
F	BOBNP9	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNP9~~	S			~~(1) 125ml aGs~~	~~TOC~~ RIE 3-31-94	9060	
104182 01	BOBNP9	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

404181

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4/11/94	0800	D.L. Edwards
D.L. Edwards	4/11/94	1140	J.G. Hogan JG HOGAN
J.G. Hogan JG HOGAN	4/11/94	1418	ITAS Tom Gilmore

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2176

047

WO#308

0000037

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006258

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ0	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ0	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ0	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ0	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ0	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ [illegible] 3-31-94	9060	
	BOBNQ0	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

404068 03

404068 03

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	Heidelberg IT
			4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

048

9613479.2177

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006259

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. G05120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
BOBNQ1	S	3-31-94	1005	(1) 250ml aG	Semi-VOA ✓	CLP	
BOBNQ1	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
BOBNQ1	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
BOBNQ1	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
BOBNQ1	S			(1) 125ml G	Cyanide ✓	CPL	
BOBNQ1	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
~~BOBNQ1~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RCK 3 31 94	9060	
BOBNQ1	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-D001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

A 1104106705
B
C
D
E
1104106805

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R T Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	Heidelberg IT 4/5/94 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2178

049

WO#308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006260

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. G605007
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ2	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNQ2	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBNQ2	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNQ2	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNQ2	S			(1) 125ml G	Cyanide	CPL	
F	BOBNQ2	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNQ2~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~	9060	
	BOBNQ2	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

H0406707

H0406807

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	[illegible]
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2179

050

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006264

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. G05120
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation 200-UP-2
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations 216-U-10 Pond
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ6	S	3.31.94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ6	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ6	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ6	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ6	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RR 3.31.94	9060	
	BOBNQ6	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

40406702
40406802

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	Heidelberg
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

W0#308

051

9613479.2180

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006265

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5009
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to TMA
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ7	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNQ7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBNQ7	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNQ7	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNQ7	S			(1) 125ml G	Cyanide	CPL	
F	BOBNQ7	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNQ7~~	~~S~~			~~(1) 250ml aGs~~	TOC DLC 4-4-94	9060	
	BOBNQ7	S			(1) 1000ml Poly (1) 500ml Poly	Gross Alpha/Beta EP-060,070,170; Gamma Spec. Cs-134/137, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 EP-060,070,100; Total Uranium EP-060,070,044,928; U-235/234/238 EP-060,070,901; Np-237 EP-060,070,930; Pu-238/239/240 EP-060,070,940; I-129 EP-024,560; Sr-90 EP-060,070,500,519,520; Tc-99 EP-020,540; Am-241, Cm-244 EP-060,070,960; Se-79 Lab Specific;		

404060704
404060704
404060804

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	[illegible] 4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2181

W0E308

052

9613479.2182

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6/15/94

VALIDATION LEVEL:	A	B	C	D	~~E~~

PROJECT: 200-UP-2		DATA PACKAGE: W0024-ITC-034
VALIDATOR: [illegible]	LAB: ITC	DATE: 06/14/94
~~CASE:~~ Work Order #308		SDG: W0024-ITC-034

6/14/94

ANALYSES PERFORMED					
☒ CLP/ICP	☒ CLP/GFAA	☒ CLP/Hg	☒ CLP/Cyanide	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐

SAMPLES/MATRIX Soils

B0BKM8	B0BNQ6
B0BFP6	B0BNQ7
B0BNQ0	
B0BNQ1	
B0BNQ2	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

054

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . Yes No N/A
Are initial calibrations acceptable? . . . . . Yes No N/A
Are ICP interference checks acceptable? . . . . . Yes No N/A
Were ICV and CCV checks performed on all instruments? . . . . . Yes No N/A
Are ICV and CCV checks acceptable? . . . . . Yes No N/A
Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? . . . . . Yes No N/A
Were preparation blanks analyzed? . . . . . Yes No N/A
Are preparation blank results acceptable? . . . . . Yes No N/A
Were field/trip blanks analyzed? . . . . . Yes No N/A
Are field/trip blank results acceptable? . . . . . Yes No N/A
Comments:

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A
Are spike sample recoveries acceptable? . . . . . Yes No N/A
Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A
Are LCS recoveries acceptable? . . . . . Yes No N/A
Comments: LCS control limits of 80 to 120 were applied to antimony and titanium. No qualification is required.

Sb & Tl MS%R were 46% and 74%. Assoc. results have been qualified as estimated (BJ/UJ).

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . Yes No N/A

Are laboratory duplicate samples RPD values acceptable? . . . . Yes No N/A

Were ICP serial dilution samples analyzed? . . . . . Yes No N/A

Are ICP serial dilution %D values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: Sample locations are currently not available. Field QC will be evaluated in the final summary report.

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A

Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A

Were analytical spikes performed as required? . . . . . Yes No N/A

Are analytical spike recoveries acceptable? . . . . . Yes No N/A

Was MSA performed as required? . . . . . Yes No N/A

Are MSA results acceptable? . . . . . Yes No N/A

Comments: Analytical spike recoveries of thallium and selenium <85%. Associated sample results qualified as estimated (J, UJ, BJ) 6/24/94

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

Do results meet the CRDLs? . . . . . Yes No N/A

Comments:

Reviewed 6/24/94

056

9613479.2186

HOLDING TIME SUMMARY

W0024-ITC-034

SDG:	VALIDATOR: [illegible]	DATE: 6/14/94	PAGE 1 OF 3
COMMENTS: Metals, Work Order #308			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BKM8	ICP	3/31/94		04/14/94		14	None
KP6		3/31/94					
NQ0							
NQ1							
NQ2							
NQ6							
NQ7							
B0BKM8	AS	3/31/94		4/19/94		19	
KP6		3/31/94					
NQ0							
NQ1							
NQ2							
NQ6							
NQ7							
B0BKM8	Se	3/31/94		4/14/94		14	
KP6		3/31/94					
NQ0							

9613479.2187

HOLDING TIME SUMMARY

W0024-ITC-034

SDG:	VALIDATOR: [illegible]	DATE: 6/14/94	PAGE 2 OF 3
COMMENTS: Metals, Work Order #308			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BNQ1	Se	3/31/94		4/14/94		14	None
NQ2							
NQ6							
NQ7							
B0BKM8	Pb	3/31/94		6/14/94 4/14/94 4/28/94		28	
KP6		3/31/94		4/14/94		14	
NQ0				4/12/94		12	
NQ1				4/19/94		19	
NQ2				4/14/94		14	
NQ6				4/19/94		19	
NQ7				4/12/94		12	
B0BKM8	Tl	3/31/94		4/18/94		18	
KP6		3/31/94					
NQ0							
NQ1							
NQ2							
NQ6							

HOLDING TIME SUMMARY

W0024-ITC-034

SDG:	VALIDATOR: [illegible]	DATE: 6/14/94	PAGE 3 OF 3
COMMENTS: Metals, Work Order #308			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BNQ7	Tl	3/31/94		4/18/94		18	None
B0BFM8	Hg	3/31/94		4/08/94		8	
KP6		3/31/94		4/08/94			
NQ0				4/08/94			
NQ1				4/08/94			
NQ2				4/08/94			
NQ6				4/08/94			
NQ7				4/08/94			
B0BFM8	CN	3/31/94		4/13-4/14		13-14	
KP6		3/31/94					
NQ0							
NQ1							
NQ2							
NQ6							
NQ7							

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD\WE

Lab Code: ITSTU_ Case No.: WO308 SAS No.: _____ SDG No.: W0024_

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	C PB504128 (AA5777) PB504128 (AA6073) APB 504128 (AA6075) Preparation Blank PB 504113 (CN)	C	M
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	12.652	B	P
Antimony	50.0	U	50.0	U	50.0	U	50.0	U	10.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Barium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	0.200	U	P
Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	26.240	B	P
Chromium	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	8.948	B	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Magnesium	31.9	B	30.0	U	30.0	U	30.0	U	7.108	B	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	P
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.100	U	CV
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	4.000	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	200.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Silver	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	24.972	B	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Vanadium	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Zinc	5.0	U	5.0	U	5.0	U	5.0	U	1.734	B	P
Titanium	3.0	U	3.0	U	3.0	U	3.0	U	0.600	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	-1.200		AS

FORM III - IN

ILM02.1
8
5/12/94

6/15/94

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOBKM8S

Lab Name: ITAS_KNOXVILLE_____ Contract:HANFORD\WE

Lab Code: ITSTU_ Case No.: W0308 SAS No.: _____ SDG No.: W0024_
Matrix: __SOIL_____ Level (low/med): _LOW____
% Solids for Sample: _98.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	56.0797		11.4459	B	96.30	46.3	N	P
Arsenic	75-125	8.5675		2.3306		8.01	77.9		F
Barium	75-125	460.7675		84.2737		385.19	97.7		P
Beryllium	75-125	10.2749		0.4892	B	9.63	101.6		P
Cadmium	75-125	9.5739		0.9630	U	9.63	99.4		P
Calcium									NR
Chromium	75-125	47.9985		9.0885		38.52	101.0		P
Cobalt	75-125	108.5233		12.6053		96.30	99.6		P
Copper	75-125	58.0846		11.4941		48.15	96.8		P
Iron									NR
Lead	75-125	10.7319		6.8076		4.00	98.1		F
Magnesium									NR
Manganese	75-125	449.3004		334.2173		96.30	119.5		P
Mercury	75-125	0.4670		0.0963	U	0.48	97.3		CV
Nickel	75-125	105.2569		9.6432		96.30	99.3		P
Potassium									NR
Selenium	75-125	2.0042		0.4004	U	2.00	100.2		F
Silver	75-125	9.9321		2.1590		9.63	80.7		P
Sodium									NR
Thallium	75-125	7.4383		0.4004	U	10.01	74.3	N	F
Vanadium	75-125	155.5973		56.6286		96.30	102.8		P
Zinc	75-125	131.2726		37.6696		96.30	97.2		P
Titanium		2049.8011		1798.3764		96.30	261.1		P
Cyanide									NR

Comments:

FORM V (Part 1) - IN ILM02.1

Qualify Sb & Tl results as estimated (BS/UJ).

8
5/12/94

6/14/94

ACCURACY DATA SUMMARY 6/14/94

W0024-ITC-034

SDG:	VALIDATOR:	DATE: 6/24/94	PAGE 1 OF 1

COMMENTS: GFAA Analytical Spikes

SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
BOBKM8	Thallium	81.8%	BOBKM8	UJ
BOBNQ6	Thallium	80%	BOBNQ6	UJ
BOBNQ0	Thallium	81%	BOBNQ0	UJ
BOBNQ1	Thallium	77.7%	BOBNQ1	UJ
BOBKP6	Thallium	82.1%	BOBKP6	UJ
BOBNQ2	Thallium	78.3%	BOBNQ2	UJ
BOBNQ7	Thallium	79.4%	BOBNQ7	UJ

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

06/15/94

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2		DATA PACKAGE: W0024-ITC-034	
VALIDATOR: [illegible]	LAB: ITC		DATE: 06/15/94
~~CASE:~~ Work Order # 331		SDG: W0024-ITC-034	

ANALYSES PERFORMED					
☒ CLP/ICP	☒ CLP/GFAA	☒ CLP/Hg	☒ CLP/Cyanide	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐

SAMPLES/MATRIX Soils
B0BKN0
B0BKN7

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

063

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . Yes No N/A
Are initial calibrations acceptable? . . . . . Yes No N/A
Are ICP interference checks acceptable? . . . . . Yes No N/A
Were ICV and CCV checks performed on all instruments? . . . . . Yes No N/A
Are ICV and CCV checks acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? . . . . . Yes No N/A
Were preparation blanks analyzed? . . . . . Yes No N/A
Are preparation blank results acceptable? . . . . . Yes No N/A
Were field/trip blanks analyzed? . . . . . Yes No N/A
Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Cyanide was detected in the ICB, CCB and the prep blank at conc. > CRDL. Therefore, the CN results have been qualified as unusable (UR).

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A
Are spike sample recoveries acceptable? . . . . . Yes No N/A
Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A
Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments: Sb & Tl MS%R were 46.3% and 74.3%, respectively. Therefore, the associated results have been qualified as estimated (UJ).

LCS control limits of 80 to 120 were applied to antimony and titanium. ~~Since the~~ 6/15/94 No qualification is required.

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . Yes No N/A

Are laboratory duplicate samples RPD values acceptable? . . . . Yes No N/A

Were ICP serial dilution samples analyzed? . . . . . Yes No N/A

Are ICP serial dilution %D values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: Sample locations are currently not available. Field QC will be evaluated in the Final Summary report.

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A

Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A

Were analytical spikes performed as required? . . . . . Yes No N/A

Are analytical spike recoveries acceptable? . . . . . Yes No N/A

Was MSA performed as required? . . . . . Yes No N/A

Are MSA results acceptable? . . . . . Yes No N/A

Comments: The laboratory flagged the Tl result for BORKNO indicating that the GFAA associated analytical spike was unacceptable. However, the GFAA analytical spike was 91.3% which is within the 85% to 115% control limits. Therefore, no qualification is required. 6/15/94

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

Do results meet the CRDLs? . . . . . Yes No N/A

Comments:

065

9613479.2195

HOLDING TIME SUMMARY

W0024-ITC-034

SDG:	VALIDATOR: [illegible]	DATE: 6/15/94	PAGE 1 OF 1

COMMENTS: Metals, Work Order #331

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BKN0	ICP	4/05/94		4/20/94		15	None
B0BKN7	↓	4/05/94		4/20/94		15	
B0BKN0	As	4/05/94		4/19/94		14	
B0BKN7	↓	4/05/94		5/17/94		42	
B0BKN0	Pb	4/05/94		4/12/94		7	
B0BKN7	↓	4/05/94		4/14/94		9	
B0BKN0	Se	4/05/94		4/15/94		10	
B0BKN7	↓	4/05/94		4/15/94		10	
B0BKN0	Tl	4/05/94		4/19/94		14	
B0BKN7	↓	4/05/94		4/19/94		14	
B0BKN0	Hg	4/05/94		4/12/94		7	
B0BKN7	↓	4/05/94		4/12/94		7	↓
~~B0BKN0~~					6/15/94		
~~B0BKN0~~					6/15/94		
B0BKN0	CN	4/05/94		4/14/94		9	None
B0BKN7	↓	4/05/94		4/14/94		9	↓

6/15/94
6/15/94

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0331 SAS No.: _____ SDG No.: W0024_

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	PBS 0413 (GN) APBS04128 CPBS04128 (6098) Preparation Blank PBS04158 (6571)	C	M
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	23.600	B	P
Antimony	50.0	U	50.0	U	50.0	U	50.0	U	10.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Barium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	0.200	U	P
Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	16.314	B	P
Chromium	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	11.242	B	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Magnesium	30.0	U	30.0	U	30.0	U	30.0	U	11.888	B	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	0.412	B	P
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.100	U	CV
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	4.000	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	200.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Silver	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	23.780	B	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Vanadium	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Zinc	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Titanium	3.0	U	3.0	U	3.0	U	3.0	U	0.600	U	P
Cyanide	-10.0		-11.0						-1.200		AS

FORM III - IN

ILM02.1
8
5/16/94

6/15/94

9613479.2197

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOBKM8S

Lab Name: ITAS_KNOXVILLE_____ Contract:HANFORD/WE

Lab Code: ITSTU_ Case No.: W0331 SAS No.: _____ SDG No.: W0024_
Matrix: __SOIL_____ Level (low/med): _LOW____
% Solids for Sample: _98.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	56.0797		11.4459	B	96.30	46.3	N	P
Arsenic	75-125	8.5675		2.3306		8.01	77.9		F
Barium	75-125	460.7675		84.2737		385.19	97.7		P
Beryllium	75-125	10.2749		0.4892	B	9.63	101.6		P
Cadmium	75-125	9.5739		0.9630	U	9.63	99.4		P
Calcium									NR
Chromium	75-125	47.9985		9.0885		38.52	101.0		P
Cobalt	75-125	108.5233		12.6053		96.30	99.6		P
Copper	75-125	58.0846		11.4941		48.15	96.8		P
Iron									NR
Lead	75-125	10.7319		6.8076		4.00	98.1		F
Magnesium									NR
Manganese	75-125	449.3004		334.2173		96.30	119.5		P
Mercury	75-125	0.4670		0.0963	U	0.48	97.3		CV
Nickel	75-125	105.2569		9.6432		96.30	99.3		P
Potassium									NR
Selenium	75-125	2.0042		0.4004	U	2.00	100.2		F
Silver	75-125	9.9321		2.1590		9.63	80.7		P
Sodium									NR
Thallium	75-125	7.4383		0.4004	U	10.01	74.3	N	F
Vanadium	75-125	155.5973		56.6286		96.30	102.8		P
Zinc	75-125	131.2726		37.6696		96.30	97.2		P
Titanium		2049.8011		1798.3764		96.30	261.1		P
Cyanide									NR

Comments:

FORM V (Part 1) - IN ILM02.1

8
5/16/94

6/15/94

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6/15/94

VALIDATION LEVEL:	A	B	C	D	~~E~~
PROJECT: 200-UP-2			DATA PACKAGE: W0024-ITC-034		
VALIDATOR: [illegible]		LAB: ITC		DATE: 06/15/94	
~~CASE:~~ Work order # 338			SDG: W0024-ITC-034		
ANALYSES PERFORMED					
☒ CLP/ICP	☒ CLP/GFAA	☒ CLP/Hg	☒ CLP/Cyanide	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐
SAMPLES/MATRIX Soil					
80BNP9					

6/15/94

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No N/A

Is a case narrative present? . . . . . Yes No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes No N/A

Comments:

069

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . Yes No N/A

Are initial calibrations acceptable? . . . . . Yes No N/A

Are ICP interference checks acceptable? . . . . . Yes No N/A

Were ICV and CCV checks performed on all instruments? . . . . . Yes No N/A

Are ICV and CCV checks acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A

Are ICB and CCB results acceptable? . . . . . Yes No N/A

Were preparation blanks analyzed? . . . . . Yes No N/A

Are preparation blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Cyanide was detected in the ICB, CCB, and prep blank at negative concentrations > CRDL. Therefore, the 06/15/94 CN result has been qualified as unusable (UR).

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A

Are spike sample recoveries acceptable? . . . . . Yes No N/A

Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments: The MS% R for Sb and Tl were 46.3% and 74.3%. Therefore, the associated results have been qualified as estimated (UJ).

LCS control limits of 80 to 120 were applied to antimony and titanium. No qualification was required.

070

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . Yes No N/A

Are laboratory duplicate samples RPD values acceptable? . . . . Yes No N/A

Were ICP serial dilution samples analyzed? . . . . . Yes No N/A

Are ICP serial dilution %D values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: X @ 6/15/94 Sample locations are currently not available. Field QC will be evaluated in the final summary report.

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A

Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A

Were analytical spikes performed as required? . . . . . Yes No N/A

Are analytical spike recoveries acceptable? . . . . . Yes No N/A

Was MSA performed as required? . . . . . Yes No N/A

Are MSA results acceptable? . . . . . Yes No N/A

Comments: Analytical spike recovery of thallium <85%. Associated results qualified as estimated (UJ)

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

Do results meet the CRDLs? . . . . . Yes No N/A

Comments:

The titanium result exceeded the linear range of the instrument by 15.6%. No qualification is required.

Reviewed 6/24/94

071

HOLDING TIME SUMMARY

W0024-ETC-034

SDG:	VALIDATOR: [illegible]	DATE: 6/15/94	PAGE 1 OF 1
COMMENTS: Metals, Work Order # 338			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BYH9	ICP	3/31/94		4/20/94		20	None
	As			4/18/94		18	
	Pb			4/19/94		19	
	Se			4/19/94		19	
	Tl			4/18/94		18	
	Hg			04/15/94		15	
	CN			04/14/94		14	

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U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0338 SAS No.: _____ SDG No.: W0024_

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank (PBS0413(CV) CPBS0415A (AA6466) APBS0415B (AA6578) PBS0415B (AA6571))	C	M
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	23.600	B	P
Antimony	50.0	U	50.0	U	50.0	U	50.0	U	10.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Barium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	0.200	U	P
Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	16.314	B	P
Chromium	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	11.242	B	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Magnesium	30.0	U	30.0	U	30.0	U	30.0	U	11.888	B	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	0.412	B	P
Mercury	0.2	U	0.2	U					0.200	U	CV
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	4.000	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	200.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Silver	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	23.780	B	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Vanadium	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Zinc	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Titanium	3.0	U	3.0	U	3.0	U	3.0	U	0.600	U	P
Cyanide	-10.0		-11.0						-1.200		AS

FORM III - IN ILM02.1

6/15/94

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOBKM8S

Lab Name: ITAS_KNOXVILLE_____ Contract:HANFORD/WE

Lab Code: ITSTU_ Case No.: W0338 SAS No.: _____ SDG No.: W0024_
Matrix: __SOIL_____ Level (low/med): _LOW____
% Solids for Sample: _98.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	56.0797		11.4459	B	96.30	46.3	N	P
Arsenic	75-125	8.5675		2.3306		8.01	77.9		F
Barium	75-125	460.7675		84.2737		385.19	97.7		P
Beryllium	75-125	10.2749		0.4892	B	9.63	101.6		P
Cadmium	75-125	9.5739		0.9630	U	9.63	99.4		P
Calcium									NR
Chromium	75-125	47.9985		9.0885		38.52	101.0		P
Cobalt	75-125	108.5233		12.6053		96.30	99.6		P
Copper	75-125	58.0846		11.4941		48.15	96.8		P
Iron									NR
Lead	75-125	10.7319		6.8076		4.00	98.1		F
Magnesium									NR
Manganese	75-125	449.3004		334.2173		96.30	119.5		P
Mercury	75-125	0.4670		0.0963	U	0.48	97.3		CV
Nickel	75-125	105.2569		9.6432		96.30	99.3		P
Potassium									NR
Selenium	75-125	2.0042		0.4004	U	2.00	100.2		F
Silver	75-125	9.9321		2.1590		9.63	80.7		P
Sodium									NR
Thallium	75-125	7.4383		0.4004	U	10.01	74.3	N	F
Vanadium	75-125	155.5973		56.6286		96.30	102.8		P
Zinc	75-125	131.2726		37.6696		96.30	97.2		P
Titanium		2049.8011		1798.3764		96.30	261.1		P
Cyanide									NR

Comments:

FORM V (Part 1) - IN ILM02.1

8
5/16/94

6/15/94

ACCURACY DATA SUMMARY

W0024-ITC-034

SDG:	VALIDATOR: [illegible]	DATE: 6/15/94	PAGE 1 OF 1
COMMENTS: GFAA Analytical Spikes, work order #338			

SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B0BNP9	Thallium	83%	B0BNP9	UJ

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-UP-2			DATA PACKAGE: W0024-ITC-034		
VALIDATOR: [illegible]		LAB: ITC		DATE: 06/15/94	
~~CASE:~~ work order #403			SDG: W0024-ITC-034		
ANALYSES PERFORMED					
☐ CLP/ICP	☐ CLP/GFAA	☐ CLP/Hg	☐ CLP/Cyanide	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐
SAMPLES/MATRIX Soil					
BOBKN8					

6/15/94

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes (No) N/A

Comments: The CN analysis was performed out of holding time. The result has been qualified as ~~E~~ estimated (UJ).

6/15/94

076

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . Yes No N/A
Are initial calibrations acceptable? . . . . . Yes No N/A
Are ICP interference checks acceptable? . . . . . Yes No N/A
Were ICV and CCV checks performed on all instruments? . . . . Yes No N/A
Are ICV and CCV checks acceptable? . . . . . Yes No N/A
Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? . . . . . Yes No N/A
Were preparation blanks analyzed? . . . . . Yes No N/A
Are preparation blank results acceptable? . . . . . Yes No N/A
Were field/trip blanks analyzed? . . . . . Yes No N/A
Are field/trip blank results acceptable? . . . . . Yes No N/A
Comments: Sodium was detected in the prep blank. The assoc. sample result has been qual. as undetected (U).
- Thallium was detected in CCB4, however, this blank is not assoc with the sample BOBKN8. Therefore, no qualification was required.

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A
Are spike sample recoveries acceptable? . . . . . Yes No N/A
Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A
Are LCS recoveries acceptable? . . . . . Yes No N/A
Comments: LCS control limits of 80 to 120 were applied to antimony and titanium. No qualification was required.

MS % R for Sb and Tl were 46.3% and 74.3%, respectively. The assoc. results have been qualified as estimated (UJ/BJ).

077

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . Yes No N/A

Are laboratory duplicate samples RPD values acceptable? . . . . Yes No N/A

Were ICP serial dilution samples analyzed? . . . . . Yes No N/A

Are ICP serial dilution %D values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: Sample locations are currently not available. Field QC will be evaluated in the final summary report.

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A

Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A

Were analytical spikes performed as required? . . . . . Yes No N/A

Are analytical spike recoveries acceptable? . . . . . Yes No N/A

Was MSA performed as required? . . . . . Yes No N/A

Are MSA results acceptable? . . . . . Yes No N/A

Comments: Analytical spike recovery of selenium and thallium <85%. Associated results qualified as estimated (UJ, BJ)

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

Do results meet the CRDLs? See comment below . . . Yes No N/A

Comments:

The cyanide analysis was performed at a five times dilution. Therefore, the detection limit has been increased. No qualification for this is required.

Revised 6/24/94

078

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HOLDING TIME SUMMARY

W0024-ITC-034

SDG:	VALIDATOR: [illegible]	DATE: 6/15/94	PAGE 1 OF 1
COMMENTS: Metals, Work Order #403			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BKN8	ICP	4/05/94		4/30/94		25	None
	As			5/02/94		27	
	Pb			5/01/94		26	
	Se			5/04/94		29	
	Tl			5/02/94		27	
	Hg			5/03/94		28	
	CN			04/27/94		22	UJ

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___

Lab Code: ITSTU_ Case No.: W0403 SAS No.: _____ SDG No.: W0024_

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

CPBS0502C (AA8102)
APBS0502B (AA8159)
PBS0502B (AA8157)

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	40.0	U	40.0	U	40.0	U	40.0	U	27.412	B	P
Antimony	50.0	U	50.0	U	50.0	U	50.0	U	10.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Barium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	0.200	U	P
Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	27.266	B	P
Chromium	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	12.674	B	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Magnesium	30.0	U	30.0	U	30.0	U	30.0	U	6.000	U	P
Manganese	2.0	U	2.8	B	2.0	U	2.0	U	0.400	U	P
Mercury	0.2	U	0.2	U	0.2	U	0.2	U	0.100	U	CV
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	4.000	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	200.000	U	P
Selenium	2.0	U	2.0	U	2.0	U			0.400	U	F
Silver	5.0	U	5.0	U	5.0	U	5.0	U	61.000	U	P
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	33.312	B	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	0.400	U	F
Vanadium	10.0	U	10.0	U	10.0	U	10.0	U	2.000	U	P
Zinc	5.0	U	5.0	U	5.0	U	5.0	U	6.558		P
Cyanide	10.0	U	10.0	U	10.0	U			1.000	U	AS
Titanium	3.0	U	3.0	U	3.0	U	3.0	U	0.600	U	P

FORM III - IN ILM02.1

6/15/94

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~~00025NA~~

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOBKM8S

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___

Lab Code: ITSTU_ Case No.: W0403 SAS No.: _____ SDG No.: W0024_
Matrix: __SOIL_____ Level (low/med): _LOW____
% Solids for Sample: _98.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	56.0797		11.4459	B	96.30	46.3	N	P
Arsenic	75-125	8.5675		2.3306		8.01	77.9		F
Barium	75-125	460.7675		84.2737		385.19	97.7		P
Beryllium	75-125	10.2749		0.4892	B	9.63	101.6		P
Cadmium	75-125	9.5739		0.9630	U	9.63	99.4		P
Calcium									NR
Chromium	75-125	47.9985		9.0885		38.52	101.0		P
Cobalt	75-125	108.5233		12.6053		96.30	99.6		P
Copper	75-125	58.0846		11.4941		48.15	96.8		P
Iron									NR
Lead	75-125	10.7319		6.8076		4.00	98.1		F
Magnesium									NR
Manganese	75-125	449.3004		334.2173		96.30	119.5		P
Mercury	75-125	0.4670		0.0963	U	0.48	97.3		CV
Nickel	75-125	105.2569		9.6432		96.30	99.3		P
Potassium									NR
Selenium	75-125	2.0042		0.4004	U	2.00	100.2		F
Silver	75-125	9.9321		2.1590		9.63	80.7		P
Sodium									NR
Thallium	75-125	7.4383		0.4004	U	10.01	74.3	N	F
Vanadium	75-125	155.5973		56.6286		96.30	102.8		P
Zinc	75-125	131.2726		37.6696		96.30	97.2		P
Titanium		2049.8011		1798.3764		96.30	261.1		P
Cyanide									NR

Comments:

FORM V (Part 1) - IN ILM02.1

6/15/94

ACCURACY DATA SUMMARY

W0024-ITC-034

SDG:	VALIDATOR: [illegible]	DATE: 6/15/94	PAGE 1 OF 1
COMMENTS: GFAA Analytical Spikes, Work Order #403			

SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B0BKN8	Selenium	84.2%	B0BKN8	UJ
B0BKN8	Thallium	76.4%	B0BKN8	BJ

9613479.2212

MEMORANDUM

JUN 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record June 16, 1994

FR: Christina Jensen, Golder Associates Inc. CJ

RE: GENERAL GC DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0024-ITC-034 (923-E418 Filename W0024G.UP2)

INTRODUCTION

This memo presents the results of data validation on data package W0024-ITC-034 prepared by the International Technology Corporation (ITC) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B0BKM8	03/31/94	SOIL	SEE NOTE 1
B0BKN0	04/05/94	SOIL	
B0BKN7	04/05/94	SOIL	
B0BKN8	04/05/94	SOIL	
B0BKP6	03/31/94	SOIL	
B0BNP9	03/31/94	SOIL	
B0BNQ0	03/31/94	SOIL	
B0BNQ1	03/31/94	SOIL	
B0BNQ2	03/31/94	SOIL	
B0BNQ6	03/31/94	SOIL	
B0BNQ7	03/31/94	SOIL	

RECEIVED JUN 20 1994 VALIDATION DOCUMENTATION SDLA

Note 1. All samples were analyzed for total high boiling petroleum hydrocarbons, as diesel range organics, using Method 8015.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of eleven samples were validated in this data package with a total of eleven determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data as estimated.

Holding Times

- The extraction holding time for sample B0BKN8 was unacceptable. Attachments 2 and 5 provide a summary of the sample affected, data qualifications applied and supporting documentation.

Surrogate Recovery

- The surrogate recovery of C32 for sample B0BKN8 was below the control limit. Attachments 2 and 5 provide a summary of the sample affected, data qualifications applied and supporting documentation.

DATA REPORTING

The laboratory reported sample B0BKN7 with a "D" qualifier, indicating a positive result analyzed at a dilution. Also, sample B0BNP9 was reported with an "MD" qualifier indicating the sample was analyzed at a dilution with an elevated detection limit. The result was below detection, therefore, a "U" qualifier was applied to the laboratory result form.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

961570.234

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN - Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

9613479.2216

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY

SDG: W0024-ITC-034	VALIDATOR: C. Jensen	DATE: June 16, 1994	PAGE 1 OF 1
COMMENTS: HIGH BOILING HYDROCARBONS W0024-ITC-034			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
HIGH BOILING PETROLEUM HYDROCARBONS	UJ	B0BKN8	HOLDING TIME EXCEEDED
HIGH BOILING PETROLEUM HYDROCARBONS	UJ	B0BKN8	SURROGATE %R < CONTROL LIMIT

9613479.2219

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	B0BKM8		B0BKN0		B0BKN7		B0BKN8		B0BKP6		B0BNP9	
	Date	3-31-94		4-5-94		4-5-94		4-5-94		3-31-94		3-31-94	
	Location	U1/U2 TILE FIELD		U1/U2 TILE FIELD		207-U BASIN		207-U BASIN		216-U-11		216-U-10	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
HIGH BOILING HYDROCARBONS	MG/KG	10.000	U	10.000	U	76.000	D	10.000	UJ	10.000	U	21.000	U

Verified 5/20/94

008

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	B0BNQ0		B0BNQ1		B0BNQ2		B0BNQ6		B0BNQ7	
	Date	3-31-94		3-31-94		3-31-94		3-31-94		3-31-94	
	Location	216-U-10		216-U-10		216-U-10		216-U-10		216-U-10	
	Depth	---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
HIGH BOILING HYDROCARBONS	MG/KG	10.000	U	10.000	U	10.000	U	10.000	U	10.000	U

9413243.1220

Verified 4/6/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBKM8	Extraction Date:	04/08/94
Lab Sample ID:	AA5449	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9891
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5449	102	114

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

verified
5/6/15/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ6	Extraction Date:	04/08/94
Lab Sample ID:	AA5478	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9854
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5478	89	98

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Verified
3/6/15/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ0	Extraction Date:	04/08/94
Lab Sample ID:	AA5490	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9901
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5490	95	106

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

verified
5/6/15/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ7	Extraction Date:	04/08/94
Lab Sample ID:	AA5500	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9794
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5500	105	113

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

verified
9/6/5/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ1	Extraction Date:	04/08/94
Lab Sample ID:	AA5509	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9803
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5509	97	107

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

verified
3/6/15/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBKP6	Extraction Date:	04/08/94
Lab Sample ID:	AA5518	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9772
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5518	105	115

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

verified
G 6/15/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ2	Extraction Date:	04/08/94
Lab Sample ID:	AA5524	Analysis Date:	04/13/94
Sample Matrix:	SOIL	Dryness Factor:	0.9851
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5524	102	111

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Verified 5/16/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	331
Client Sample ID:	BOBKN7	Extraction Date:	04/13/94
Lab Sample ID:	AA5840	Analysis Date:	04/28/94
Sample Matrix:	SOIL	Dryness Factor:	0.6270
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	76	D	32

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5840	130	136

D - Sample analyzed at secondary dilution of 1:2.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Verified 5/6/15/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	331
Client Sample ID:	BOBKN0	Extraction Date:	04/13/94
Lab Sample ID:	AA5846	Analysis Date:	04/28/94
Sample Matrix:	SOIL	Dryness Factor:	0.9797
Concentration Units:	mg/kg		

Compound	Result	Qualifier	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	U	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA5846	109	116

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Verified
5/11/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	338
Client Sample ID:	BOBNP9	Extraction Date:	04/13/94
Lab Sample ID:	AA6051	Analysis Date:	04/28/94
Sample Matrix:	SOIL	Dryness Factor:	0.9743
Concentration Units:	mg/kg		

Compound	Result	Qualifier		Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	21	~~MD~~	U	21

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA6051	104	121

D - Sample analyzed at a secondary dilution of 1:2.
M - Elevated detection limit due to matrix interference.

verified S 6/15/94

Reviewed 6/24/94

HIGH BOILING PETROLEUM HYDROCARBONS ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	403
Client Sample ID:	~~BOBNK8~~ BOBKN8	Extraction Date:	04/27/94
Lab Sample ID:	AA7088 5/6/15/94	Analysis Date:	04/27/94
Sample Matrix:	SOIL	Dryness Factor:	0.9622
Concentration Units:	mg/kg		

Compound	Result	Qualifier Q	Detection Limit
total high boiling petroleum hydrocarbons, as diesel range organics	10	~~U~~ UJ	10

Surrogate Recovery	C23	C32
Acceptance Limits	(41-149%)	(59-179%)
Lab Sample ID: AA7088	123	52

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Verified
5/6/25/94

9613479.2232

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

May 20, 1994

MAY 1994
RECEIVED
SDLA

Job Number: 308; 331; 338; 403

This is the Certificate of Analysis for the following samples:

SDG:	W0024
Client Project ID:	Westinghouse Hanford
Date Received by Lab:	April 6, 1994; April 8, 1994, April 12, 1994; April 16, 1994
Number of Samples:	Eleven (11)
Sample Type:	Soil

I. Introduction

On April 6, April 8, April 12 and April 16, 1994, eleven (11) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

RECORD COPY

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
May 20, 1994

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics (DRO) with a kerosene spike by gas chromatography/flame ionization detection (GC/FID) based on method 8015.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

The samples for work order #308 were digested on April 12 for ICP and GFAA. The CVAA analysis for mercury was performed on April 8, 1994; The GFAA analyses for arsenic, lead, selenium and thallium were performed on April 12, 1994; the remaining metals were analyzed by ICP on April 14, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBKM8. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses except for antimony by ICP analysis and thallium by GFAA analysis. The titanium concentration was greater than four times (4X) the spike added; spiking criteria did not apply for this analyte. Poor spike recovery for antimony is attributable to matrix interferences as indicated by the post digestion spike. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses.

The samples for work order #338 were digested on April 15, 1994 for GFAA. The CVAA analysis for mercury was performed on April 15, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed on April 18 and April 19, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #331 were digested on April 15, 1994 for GFAA and April 12, 1994 for GFAA. The CVAA analysis for mercury was performed on April 12, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from April 12 through May 17, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #403 were digested on May 2, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 2, 1994. All run QC was acceptable. Zinc was found in the method blank above the client required detection limit (CRDL). However, zinc concentration in the sample was ten times (10X) greater than the contamination and results are acceptable.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
May 20, 1994

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics by gas chromatography/flame ionization detection using an SPB-1 column on a Hewlett Packard GC. Matrix spike/matrix spike duplicate analyses were performed using sample number BOBNK8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for nitrate/nitrite using sample number BOBKM8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for anion analysis using sample number BOBKM8 with acceptable results.

Matrix spike/duplicate analyses were performed for cyanide analysis using sample number BOBKM8 with acceptable results.

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA5444	404067-01	BOBKM8	SOIL	SVOC
AA5445	"	"	"	METALS
AA5446	"	"	"	ANIONS
AA5447	"	"	"	NO3NO2
AA5448	"	"	"	CN
AA5449	"	"	"	TPH
AA5470	404067-02	BOBNQ6	"	SVOC
AA5472	"	"	"	METALS
AA5475	"	"	"	ANIONS
AA5476	"	"	"	NO3NO2
AA5477	"	"	"	CN
AA5478	"	"	'	TPH
AA5483	404067-03	BOBNQ0	"	SVOC
AA5484	"	"	"	METALS
AA5486	"	"	"	ANIONS
AA5487	"	"	"	NO3NO2
AA5489	"	"	"	CN
AA5490	"	"	"	TPH
AA5492	404067-04	BOBNQ7	"	SVOC
AA5494	"	"	"	METALS
AA5496	"	"	"	ANIONS
AA5497	"	"	"	NO3NO2
AA5499	"	"	"	CN
AA5500	"	"	"	TPH

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA5501	404067-05	BOBNQ1	SOIL	SVOC
AA5503	"	"	"	METALS
AA5505	"	"	"	ANIONS
AA5506	"	"	"	NO3NO2
AA5508	"	"	"	CN
AA5509	"	"	"	TPH
AA5512	404067-06	BOBKP6	"	SVOC
AA5514	"	"	"	METALS
AA5515	"	"	"	ANIONS
AA5516	"	"	"	NO3NO2
AA5517	"	"	"	CN
AA5518	"	"	"	TPH
AA5519	404067-07	BOBNQ2	"	SVOC
AA5520	"	"	"	METALS
AA5521	"	"	"	ANIONS
AA5522	"	"	"	NO3NO2
AA5523	"	"	"	CN
AA5524	"	"	"	TPH
AA5835	404118-01 (A-F)	BOBKN7	"	SVOC
AA5836	"	"	"	METALS
AA5837	"	"	"	ANIONS
AA5838	"	"	"	NO3NO2
AA5839	"	"	"	CN
AA5840	"	"	"	TPH
AA5841	404118-02 (A-F)	BOBKN0	"	SVOC
AA5842	"	"	"	METALS
AA5843	"	"	"	ANIONS
AA5844	"	"	"	NO3NO2
AA5845	"	"	"	CN
AA5846	"	"	"	TPH

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA6046	404181-01 (A-F)	BOBNP9	SOIL	SVOC
AA6047	"	"	"	METALS
AA6048	"	"	"	ANIONS
AA6049	"	"	"	NO3NO2
AA6050	"	"	"	CN
AA6051	"	"	"	TPH
AA7083	404280-01 (A-F)	BOBKN8	"	SVOC
AA7084	"	"	"	METALS
AA7085	"	"	"	ANIONS
AA7086	"	"	"	NO3NO2
AA7087	"	"	"	CN
AA7088	"	"	"	TPH

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
May 20, 1994

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

IV. Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature:

Reviewed and Approved:

Sheree' A. Schneider

Sheree' A. Schneider
Project Manager

0000035

WO#308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006455

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. WS 020
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 RJ 3.30.94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 41/42 Tile Field RJ 3-30-94
Offsite Property No.
Field Logbook No.
SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKM8	S	3-31-94	1535	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKM8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKM8	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKM8	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKM8	S			(1) 125ml G	Cyanide	CPL	
F	BOBKM8	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKM8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RJ 3-31-94	9060	
	BOBKM8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

40406701
40406801

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
RT Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	[illegible] 4-5-94 10:30

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9413479.2211

030

WO#308

0000036

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006266

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-11 Trench
Ice Chest No. GW5020
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKP6	S	3-31-94	1425	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKP6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Hercury	CPL	
C	BOBKP6	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKP6	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKP6	S			(1) 125ml G	Cyanide	CPL	
F	BOBKP6	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKP6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RPH 3-31-94	9060	
	BOBKP6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

404106806 A B C D E F

404106804

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	[illegible]
[illegible]	4-5-94	0815	[illegible] IT 10:30

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2212

031

WO#308

0000037

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006258

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ0	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ0	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ0	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ0	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ0	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
	BOBNQ0	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

H04060703

H04068 03

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Daniel L. Heinrich
Daniel L. Heinrich	4-5-94	0815	Heidelberg IT
			4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2243

032

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006259

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ1	S	3-31-94	1005	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ1	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ1	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ1	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ1	S			(1) 125ml G	Cyanide ✓	CPL	
	BOBNQ1	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ1~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3 31 94	9060	
	BOBNQ1	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

4410670 5
1104068 05

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R T Sickle	4-4-94	0830	David L. Edwards
David L. Edwards	4-5-94	0815	Heidecker IT 4/5/94 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2244

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0000039

WOH#308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006260

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5007
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ2	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNQ2	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBNQ2	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNQ2	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNQ2	S			(1) 125ml G	Cyanide	CPL	
F	BOBNQ2	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNQ2~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RE 3-31-94	9060	
	BOBNQ2	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

H0406707

H0406807

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Sprint L. Thurgis
Sprint L. Thurgis	4-5-94	0815	Hendcelec
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2245

034

0000040

WO#308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006264

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ6	S	3.31.94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ6	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ6	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ6	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ6	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3.31.94	9060	
	BOBNQ6	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

40406802

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	Heidelberg 4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2246

035

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006265

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5009
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to TMA
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBNQ7	S	3-31-94	1140	(1) 250ml aG	Semi-VOA CLP	
B	BOBNQ7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL	
C	BOBNQ7	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBNQ7	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBNQ7	S			(1) 125ml G	Cyanide CPL	
F	BOBNQ7	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBNQ7~~	~~S~~			~~(1) 250ml aGs~~	~~TOC~~ DLC 4-4-94 9060	
	BOBNQ7	S			(1) 1000ml Poly (1) 500ml Poly	Gross Alpha/Beta EP-060,070,170; Gamma Spec. Cs-134/137, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 EP-060,070,100; Total Uranium EP-060,070,044,928; U-235/234/238 EP-060,070,901; Np-237 EP-060,070,930; Pu-238/239/240 EP-060,070,940; I-129 EP-026,560; Sr-90 EP-060,070,500,519,520; Tc-99 EP-020,540; Am-241, Cm-244 EP-060,070,960; Se-79 Lab Specific;	

404068 04
404068 04

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	[illegible]
			4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2247

0000041

M0#308

036

WO#331

0000042

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006457

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. 5002 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS Standard Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN0	S	4-5-94	0805	(1) 250ml aG	Semi-VOA CLP	cAP
B	BOBKN0	S	↓	↓	(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CRL	cAP
C	BOBKN0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN0	S			(1) 125ml G	Cyanide CPL	cAP 4-6-94
F	BOBKN0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 9060	
	BOBKN0	S	↓	↓	(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411802

40411902

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Technician

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2248

037

40#331

0000043

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006464

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. SMZ 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STANDARD Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN7	S	4-5-94	09:30	(1) 250ml aG	Semi-VOA CLP	cool
B	BOBKN7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL	cool HNO3
C	BOBKN7	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN7	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN7	S			(1) 125ml G	Cyanide CPL	cool NaOH
F	BOBKN7	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN7~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-5-94 9060	
	BOBKN7	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411901

40411901

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Tomkins

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

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038

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#338	Page 1 of 1
		006257

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation 200-UP-2
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations 216-U-10 Pond
Offsite Property No.
Field Logbook No.
SPECIAL INSTRUCTIONS STANDNone Deliverable

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
01A	BOBNP9	S	3-31-94	0845	(1) 250ml aG	Semi-VOA CLP	
B	BOBNP9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury Pa CPL CAP	4-6-94
C	BOBNP9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBNP9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBNP9	S			(1) 125ml G	Cyanide Pa CPL CAP	4-6-94
F	BOBNP9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBNP9~~	S			~~(1) 125ml aGs~~	~~TOC~~ RIE 3-31-94 9060	
104182 01	BOBNP9	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

404181

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4/11/94	0800	D.L. Edwards
D.L. Edwards	4/11/94	1140	J.M. Hogan JG HOGAN
J.M. Hogan JG HOGAN	4/11/94	1418	ITAS Tom Gilmore

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000044

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039

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#403	Page 1 of 1 006465

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 PMT 3-30-94
Sampling Locations ~~216-U-8 Crib~~ 207 U BASIN PMT 3-30-94
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STANDALONE Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404280 01A BOBKN8	S	4-5-94	0950	(1) 250ml aG	Semi-VOA CLP	
B BOBKN8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL SLD	4-6-94
C BOBKN8	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D BOBKN8	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E BOBKN8	S			(1) 125ml G	Cyanide CPL SLD	4-6-94
F BOBKN8	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-5-94 9060	
404281 01 BOBKN8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. SICKLE	4-14-94	1500	[illegible] 4-14-94 15:00

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000045

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040

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ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GENERAL GC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 200-UP-2		DATA PACKAGE: W0024-ITC-034
VALIDATOR: C Juden	LAB: ITC	DATE: 6/15/94
CASE:		SDG:

ANALYSES PERFORMED

☐ 8010	☒ 8015 Mod.	☐ 8020	☐ 8021	8140	8141
☐ 8150	☐ 8151	☐ WTPH-HCID	☐ WTPH-G	☐ WTPH-D	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX: Soils /

BOBKN4	BOBKP6	BOBKN8
BOBNQ6	BOBNQ2	
BOBNQ0	BOBKN7	
BOBNQ7	BOBKN0	
BOBNQ1	BOBNP9	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments: Verification performed by WHC

2. HOLDING TIMES

Are sample holding times acceptable? KN 6/24/94 . . . . . Yes (No) N/A

Comments: One sample, BOBKN4, was extracted 22 days after collection. Result qualified as UJ.

Revised KN 6/24/94

GENERAL GC DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

3.1 INITIAL CALIBRATION

Was an initial calibration performed? . . . . . Yes No N/A

Are %RSD values for calibration or response factors acceptable? . . . . . Yes No N/A

Comments: Correlation coefficient r > .995, GC curve used to quantitate.

3.2 CONTINUING CALIBRATION

Was a continuing calibration check performed? . . . . . Yes No N/A

Are %D values for calibration or response factors acceptable? . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments:

5. ACCURACY

Were surrogates analyzed? . . . . . Yes No N/A

Are surrogate recoveries acceptable? . . . . . Yes No N/A

Were MS/MSD samples analyzed? . . . . . Yes No N/A

Are MS/MSD recoveries acceptable? . . . . . Yes No N/A

Were LCS samples analyzed? . . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

GENERAL GC DATA VALIDATION CHECKLIST

Comments: ① The surrogate recovery for BOBKN8, C32, was 52, limits are 59-179. Result will be qualified UJ.

6. PRECISION

Are MS/MSD sample RPD values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments:

7. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No N/A

Is compound quantitation acceptable? . . . . . Yes No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? ① . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Do results meet the CRQLs? . . . . . Yes No N/A

Comments:

The chain of custody indicates sample BOBKN8, also the case narrative. The reporting form identified this sample as BOBNK8 which has been corrected to match the custody form.

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 6/15/94	PAGE 1 OF 1
COMMENTS: Kerosene	W0024-IR-034		

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOBKM8	~~Kerosene~~ High Boiling	3/31/94	4/8/94	4/13/94	8	5	none
BOBNQ6	petroleum	3/31/94	4/8/94	4/13/94	8	5	
BOBNQ0	Hydrocarbons	3/31/94	4/8/94	4/13/94	8	5	
BOBNQ7	5/6/15/94	3/31/94	4/8/94	4/13/94	8	5	
BOBNQ1		3/31/94	4/8/94	4/13/94		5	
BOBKP6		3/31/94	4/8/94	4/13/94		5	
BOBNQ2		3/31/94	4/8/94	4/13/94		5	
BOBKN7		4/5/94	4/13/94	4/28/94	8	15	
BOBKN0		4/5/94	4/13/94	4/28/94	8	15	
BOBNP9		3/31/94	4/13/94	4/28/94	13	15	
5/6/15/94 ~~BOBNK4~~ BOBKN8		4/5/94	4/27/94	4/27/94	22	0	J

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MEMORANDUM

JUN 1994 RECEIVED TOO

TO: 200-UP-2 Project QA Record June 16, 1994

FR: Sandra Schildt, Golder Associates Inc.

RE: GENERAL CHEMISTRY ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE W0024-ITC-034 (923-E418)

INTRODUCTION

This memorandum presents the results of data validation on data package W0024-ITC-034 prepared by International Technology Corp. (IT). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B0BKM8	3/31/94	SOIL	SEE NOTE 1
B0BKP6	3/31/94	SOIL	
B0BNQ0	3/31/94	SOIL	
B0BNQ1	3/31/94	SOIL	
B0BNQ2	3/31/94	SOIL	
B0BNQ6	3/31/94	SOIL	
B0BNQ7	3/31/94	SOIL	
B0BKN0	4/05/94	SOIL	
B0BKN7	4/05/94	SOIL	
B0BNP9	3/31/94	SOIL	
B0BKN8	4/05/94	SOIL	

RECEIVED JUN 20 1994 VALIDATION DOCUMENTATION SDLA

Note 1: Samples were analyzed for IC anions (chloride, fluoride, and sulfate) using WHC approved methods.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 to this memo provide the following information:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data with the exception of the chloride and fluoride results which were transposed on the report form.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. Eleven samples (11) were validated in this data set with a total of 33 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

No minor deficiencies were identified during data validation which required qualification of the data.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and was not detected. Due to a minor quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the CRDL but greater then the IDL. Due to a minor quality control deficiency identified during data validation, The associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

WHC-SD-EN-SPP-002. Rev. 2

DATA QUALIFICATION SUMMARY - FORM B-7

PKG: B09WH5-TMA-741	REVIEWER: S. Schildt	DATE: 6/13/94	PAGE 1 OF 1
COMMENTS: Wet Chemistry, No qualification			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON

9613479.2263

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	B0BKM8		B0BKN0		B0BKN7		B0BKN8		B0BKP6		B0BNP9	
	Date	3-31-94		4-5-94		4-5-94		4-5-94		3-31-94		3-31-94	
	Location	U1/U2 TILE FIELD		U1/U2 TILE FIELD		207-U BASIN		207-U BASIN		216-U-11		216-U-10	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/KG	0.400	U	0.500		23.000		3.600		0.400	U	10.000	
FLUORIDE	MG/KG	0.400	U	0.600		0.400	U	0.400	U	0.400	U	0.400	U
SULFATE	MG/KG	1.500	U	2.200		230.000		19.000		1.600		3.700	

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Verified 6/16/94

008

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	B0BNQ0		B0BNQ1		B0BNQ2		B0BNQ6		B0BNQ7	
	Date	3-31-94		3-31-94		3-31-94		3-31-94		3-31-94	
	Location	216-U-10		216-U-10		216-U-10		216-U-10		216-U-10	
	Depth	---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/KG	0.400		0.400	U	0.400	U	0.400	U	0.400	U
FLUORIDE	MG/KG	0.400	U	0.400	U	0.400	U	0.400	U	0.400	U
SULFATE	MG/KG	1.800		4.300		1.500	U	1.600		1.500	U

Verified 6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBKM8	Analysis Date:	04/28/94
Lab Sample ID:	AA5446	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	1.5	U	1.5

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	331
Client Sample ID:	BOBKN0	Analysis Date:	04/28/94
Lab Sample ID:	AA5843	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.5 ~~0.6~~	+	0.4
fluoride	0.6 ~~0.5~~	+	0.4
sulfate	2.2	+	1.5

+ - Positive result.

6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	331
Client Sample ID:	BOBKN7	Analysis Date:	04/28/94
Lab Sample ID:	AA5837	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	23 ~~0.4~~	+ ~~U~~	3.2 ~~0.4~~
fluoride	0.4 ~~.23~~	U ~~+~~	.4 ~~3.2~~
sulfate	230	+	12

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	403
Client Sample ID:	BOBKN8	Analysis Date:	05/12/94
Lab Sample ID:	AA7085	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	3.6 ~~0.4~~	+ ~~U~~	0.4
fluoride	0.4 ~~3.6~~	U ~~+~~	0.4
sulfate	19	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBKP6	Analysis Date:	04/28/94
Lab Sample ID:	AA5515	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	1.6	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	338
Client Sample ID:	BOBNP9	Analysis Date:	04/28/94
Lab Sample ID:	AA6048	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	10 ~~0.4~~	+ ~~U~~	.8 ~~0.4~~
fluoride	0.4 ~~10~~	U ~~+~~	.4 ~~0.8~~
sulfate	3.7	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ0	Analysis Date:	04/28/94
Lab Sample ID:	AA5486	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	~~+ U~~	0.4
fluoride	0.4	U ~~+~~	0.4
sulfate	1.8	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

AAS 6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ1	Analysis Date:	04/28/94
Lab Sample ID:	AA5505	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	4.3	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ2	Analysis Date:	04/28/94
Lab Sample ID:	AA5521	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	1.5	U	1.5

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ6	Analysis Date:	04/28/94
Lab Sample ID:	AA5475	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	1.6	+	1.5

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

6/16/94

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Client Sample ID:	BOBNQ7	Analysis Date:	04/28/94
Lab Sample ID:	AA5496	Confirmation Date:	N/A
Sample Matrix:	SOIL	Concentration Units:	mg/kg

Compound	Result	Qualifier	Detection Limit
chloride	0.4	U	0.4
fluoride	0.4	U	0.4
sulfate	1.5	U	1.5

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

6/16/94

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

INTERNATIONAL TECHNOLOGY CORPORATION

MAY 1994
RECEIVED
SDLA

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Dear J.A. Lerch

Thank you for purchasing analytical testing services from IT Corporation. It is our intention to supply our clients with data packages which not only meet the industry's highest standards for quality, but are also easy to use. Features which we point out are:

1. A Data Summary Packet which allows you to review your data without searching through the complete data package.

   Your Data Summary Packet contains the following items:

   - Case Narrative: listing of sample identifications, analyses performed, explanation of any problem associated with samples, corrective action taken.
   - Quality control sample identifications and analyses performed.
   - Data summary.

2. A data package which meets the specific requirements you requested and is easy to use as well. The package is organized in accordance with the Table of Contents which you will find at the beginning of each section. Sections are separated by color-coded tabs, making it easy to find individual analytical parameters which may be of particular interest to you. The data package is custody-sealed at the laboratory - your assurance that parts of the package are not missing.

We are constantly searching for ways to improve our service to you. This current product has many of the features which you have told us are important to you. Your suggestions regarding additional improvements will be appreciated.

Please contact me with any questions or suggestions.

Sincerely,

Sheree Schneider/sp

Sheree' Schneider
Project Manager

Regional Office
5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

IT Corporation is a wholly owned subsidiary of International Technology Corporation

6/16/94

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

May 20, 1994

MAY 1994
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SDLA

Job Number: 308; 331; 338; 403

This is the Certificate of Analysis for the following samples:

SDG:	W0024
Client Project ID:	Westinghouse Hanford
Date Received by Lab:	April 6, 1994; April 8, 1994, April 12, 1994; April 16, 1994
Number of Samples:	Eleven (11)
Sample Type:	Soil

I. Introduction

On April 6, April 8, April 12 and April 16, 1994, eleven (11) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

RECORD COPY

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
May 20, 1994

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics (DRO) with a kerosene spike by gas chromatography/flame ionization detection (GC/FID) based on method 8015.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

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IT Corporation
May 20, 1994

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5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

The samples for work order #308 were digested on April 12 for ICP and GFAA. The CVAA analysis for mercury was performed on April 8, 1994; The GFAA analyses for arsenic, lead, selenium and thallium were performed on April 12, 1994; the remaining metals were analyzed by ICP on April 14, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBKM8. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses except for antimony by ICP analysis and thallium by GFAA analysis. The titanium concentration was greater than four times (4X) the spike added; spiking criteria did not apply for this analyte. Poor spike recovery for antimony is attributable to matrix interferences as indicated by the post digestion spike. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses.

The samples for work order #338 were digested on April 15, 1994 for GFAA. The CVAA analysis for mercury was performed on April 15, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed on April 18 and April 19, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #331 were digested on April 15, 1994 for GFAA and April 12, 1994 for GFAA. The CVAA analysis for mercury was performed on April 12, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from April 12 through May 17, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #403 were digested on May 2, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 2, 1994. All run QC was acceptable. Zinc was found in the method blank above the client required detection limit (CRDL). However, zinc concentration in the sample was ten times (10X) greater than the contamination and results are acceptable.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

6/16/94

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
May 20, 1994

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics by gas chromatography/flame ionization detection using an SPB-1 column on a Hewlett Packard GC. Matrix spike/matrix spike duplicate analyses were performed using sample number BOBNK8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for nitrate/nitrite using sample number BOBKM8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for anion analysis using sample number BOBKM8 with acceptable results.

Matrix spike/duplicate analyses were performed for cyanide analysis using sample number BOBKM8 with acceptable results.

6/16/94

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA5444	404067-01	BOBKM8	SOIL	SVOC
AA5445	"	"	"	METALS
AA5446	"	"	"	ANIONS
AA5447	"	"	"	NO3NO2
AA5448	"	"	"	CN
AA5449	"	"	"	TPH
AA5470	404067-02	BOBNQ6	"	SVOC
AA5472	"	"	"	METALS
AA5475	"	"	"	ANIONS
AA5476	"	"	"	NO3NO2
AA5477	"	"	"	CN
AA5478	"	"	'	TPH
AA5483	404067-03	BOBNQ0	"	SVOC
AA5484	"	"	"	METALS
AA5486	"	"	"	ANIONS
AA5487	"	"	"	NO3NO2
AA5489	"	"	"	CN
AA5490	"	"	"	TPH
AA5492	404067-04	BOBNQ7	"	SVOC
AA5494	"	"	"	METALS
AA5496	"	"	"	ANIONS
AA5497	"	"	"	NO3NO2
AA5499	"	"	"	CN
AA5500	"	"	"	TPH

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IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. **Quality Control** (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA5501	404067-05	BOBNQ1	SOIL	SVOC
AA5503	"	"	"	METALS
AA5505	"	"	"	ANIONS
AA5506	"	"	"	NO3NO2
AA5508	"	"	"	CN
AA5509	"	"	"	TPH
AA5512	404067-06	BOBKP6	"	SVOC
AA5514	"	"	"	METALS
AA5515	"	"	"	ANIONS
AA5516	"	"	"	NO3NO2
AA5517	"	"	"	CN
AA5518	"	"	"	TPH
AA5519	404067-07	BOBNQ2	"	SVOC
AA5520	"	"	"	METALS
AA5521	"	"	"	ANIONS
AA5522	"	"	"	NO3NO2
AA5523	"	"	"	CN
AA5524	"	"	"	TPH
AA5835	404118-01 (A-F)	BOBKN7	"	SVOC
AA5836	"	"	"	METALS
AA5837	"	"	"	ANIONS
AA5838	"	"	"	NO3NO2
AA5839	"	"	"	CN
AA5840	"	"	"	TPH
AA5841	404118-02 (A-F)	BOBKN0	"	SVOC
AA5842	"	"	"	METALS
AA5843	"	"	"	ANIONS
AA5844	"	"	"	NO3NO2
AA5845	"	"	"	CN
AA5846	"	"	"	TPH

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IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA6046	404181-01 (A-F)	BOBNP9	SOIL	SVOC
AA6047	"	"	"	METALS
AA6048	"	"	"	ANIONS
AA6049	"	"	"	NO3NO2
AA6050	"	"	"	CN
AA6051	"	"	"	TPH
AA7083	404280-01 (A-F)	BOBKN8	"	SVOC
AA7084	"	"	"	METALS
AA7085	"	"	"	ANIONS
AA7086	"	"	"	NO3NO2
AA7087	"	"	"	CN
AA7088	"	"	"	TPH

6/16/94

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

IV. Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature:

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

6/16/94

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006455

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. WS 020
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216 U-8 Vitrified Clay Pipeline~~ 200 UP 2 3-30-94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ U1/U2 Tile Field 3-30-94
Offsite Property No.
Field Logbook No.
SPECIAL INSTRUCTIONS

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A BOBKM8	S	3-31-94	1535	(1) 250ml aG	Semi-VOA	CLP	
B BOBKM8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C BOBKM8	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D BOBKM8	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E BOBKM8	S			(1) 125ml G	Cyanide	CPL	
F BOBKM8	S			(1) 125ml Gs	TPH Diesel Range	8015m	
~~BOBKM8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
BOBKM8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

40406801

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
RT Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	[illegible] 4-5-94 10:30

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

WO #308

0000035

9613479.2287

031

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006266

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. GW5020
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation 200-UP-2
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations 216-U-11 Trench
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKP6	S	3-31-94	1425	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKP6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKP6	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKP6	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKP6	S			(1) 125ml G	Cyanide	CPL	
F	BOBKP6	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKP6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RJK 3-31-94	9060	
	BOBKP6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

404106806
404106804

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	[illegible] ITS 10:30 4-5-94

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

WO#308
0000036
9613479.2288
6/16/94
032

WBT#308

0000037

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006258

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBNQ0	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓ CLP	
B	BOBNQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓ CPL	
C	BOBNQ0	S			(1) 125ml G	Anions F, Cl, SO_4 ✓ EPA 300.0	
D	BOBNQ0	S			(1) 125ml G	NO_2 NO_3 ✓ EPA 353.2	
E	BOBNQ0	S			(1) 125ml G	Cyanide ✓ CPL	
F	BOBNQ0	S			(1) 125ml Gs	TPH Diesel Range ✓ 8015m	
	~~BOBNQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 9060	
	BOBNQ0	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

404067 03
404068 03

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-4-94	0830	Daniel L. Stevens
Daniel L. Stevens	4-5-94	0815	Heidelberg IT
			4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2289

033

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006259

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ1	S	3-31-94	1005	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNQ1	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBNQ1	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNQ1	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNQ1	S			(1) 125ml G	Cyanide	CPL	
	BOBNQ1	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNQ1~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
	BOBNQ1	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R T Sickle	4-4-94	0830	David L. Edwards
David L. Edwards	4-5-94	0815	Heidelberg IT 4/5/94 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

WR #308

4/4/06705 A B C D E

1/04/06805

6/16/94

034

9613479.2290

000038

WOFF308

0000039

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006260

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5007
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

6/16/94

035

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A BOBNQ2	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
B BOBNQ2	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C BOBNQ2	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D BOBNQ2	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E BOBNQ2	S			(1) 125ml G	Cyanide	CPL	
F BOBNQ2	S			(1) 125ml Gs	TPH Diesel Range	8015m	
~~BOBNQ2~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ PE 3-31-94	9060	
BOBNQ2	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

H0406807

H0406707

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	[illegible]
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2291

WO#308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006264

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. G05120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ6	S	3.31.94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ6	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ6	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ6	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ6	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3.31.94	9060	
	BOBNQ6	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

40406702
40406802

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	Heidelberg
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2292

036

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006265

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5009
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to TMA
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
BOBNQ7	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
BOBNQ7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
BOBNQ7	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
BOBNQ7	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
BOBNQ7	S			(1) 125ml G	Cyanide	CPL	
BOBNQ7	S			(1) 125ml Gs	TPH Diesel Range	8015m	
~~BOBNQ7~~	~~S~~			~~(1) 250ml aGs~~	~~TOC~~ DLC 4-4-94	9060	
BOBNQ7	S			(1) 1000ml Poly (1) 500ml Poly	Gross Alpha/Beta EP-060,070,170; Gamma Spec. Co-134/137, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 EP-060,070,100; Total Uranium EP-060,070,044,928; U-235/234/238 EP-060,070,901; Np-237 EP-060,070,930; Pu-238/239/240 EP-060,070,940; I-129 EP-024,560; Sr-90 EP-060,070,500,519,520; Tc-99 EP-020,540; Am-241, Cm-244 EP-060,070,960; Se-79 Lab Specific;		

A 40406704
B
C
D
E
F
Lab 4/4/94
40406804

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	[illegible] 4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

WO#308

9613479.2293

037

4/6/94

WO#331

038

000042

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006457

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. 5012 413
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN0	S	4-5-94	0505	(1) 250ml aG	Semi-VOA CLP	
B	BOBKN0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CRL	
C	BOBKN0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN0	S			(1) 125ml G	Cyanide CPL	
F	BOBKN0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
	BOBKN0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411802

40411902

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Technician

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2291

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006464

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay~~ Pipeline
Sampling Locations ~~216-U-8 Crib~~
Ice Chest No. SMZ 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS STANDALONE DELIVERABLE

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN7	S	4-5-94	0930	(1) 250ml aG	Semi-VOA CLP	cool
B	BOBKN7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL	cool HCl
C	BOBKN7	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN7	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN7	S			(1) 125ml G	Cyanide CPL	cool NaOH
F	BOBKN7	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN7~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-5-94 9060	
	BOBKN7	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411901

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Tomblinson

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

WO #331

0000043

9613479.2295

039

6/16/94

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#338	Page 1 of 1
		006257

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation 200-UP-2
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations 216-U-10 Pond
Offsite Property No.
Field Logbook No.
SPECIAL INSTRUCTIONS STANDALONE Deliverable

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
01A BOBNP9	S	3-31-94	0845	(1) 250ml aG	Semi-VOA CLP	
B BOBNP9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury Pa EPL CLP	4-6-94
C BOBNP9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D BOBNP9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E BOBNP9	S			(1) 125ml G	Cyanide Pa EPL CLP	4-6-94
F BOBNP9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBNP9~~	S			~~(1) 125ml aGs~~	~~TOC~~ RE 3-31-94 9060	
104182 01 BOBNP9	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

104181

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4/11/94	0800	D.L. Edwards
D.L. Edwards	4/11/94	1140	J.G. Hogan JG HOGAN
J.G. Hogan JG HOGAN	4/11/94	1418	ITAS Tom Gilmore

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000044

9613479.2296

040

4/16/94

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#403	Page 1 of 1 006465

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 area 2 PRF 7-30-94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 207 U Basin PRF 7-30-94
Offsite Property No.
Field Logbook No.
SPECIAL INSTRUCTIONS Standalone Deliverable

6/16/94

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404280 01A BOBKN8	S	4-5-94	0950	(1) 250ml aG	Semi-VOA CLP	
B BOBKN8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury PRF CPL 5/13	4-6-94
C BOBKN8	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D BOBKN8	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E BOBKN8	S			(1) 125ml G	Cyanide PRF CPL 5/13	4-6-94
F BOBKN8	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ PRF 4-5-94 9060	
BOBKN8 40428101	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-14-94	1500	Karen Stitelburg IT 4-14-94 15:00

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

041

0000045

9613479.2297

96134722398

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2		DATA PACKAGE: W0024-ITC-034	
VALIDATOR: L. Schlidt	LAB: IT	DATE: 6/16/94	
CASE: NA		SDG: W0024	

ANALYSES PERFORMED

☑ Anions/IC	☐ TOC	☐ TOX	☐ TPH-418.1	Oil and Grease	Alkalinity
☐ Ammonia	☐ BOD/COD	☐ Chloride	☐ Chromium-VI	☐ pH	☐ NO_3/NO_2
☐ Sulfate	☐ TDS	☐ TKN	☐ Phosphate	☐	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX BOBKM8, BOBKP6, BOBNQ0, Q1, Q2, Q6, Q7
BOBKN0, N7, BOBNP9, BOBKN8 / soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No N/A

Is a case narrative present? . . . . . Yes No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes No N/A

Comments:

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

Was initial calibration performed for all applicable analyses? Yes No N/A

Are initial calibration results acceptable? . . . . . Yes No N/A

Was a calibration check performed for all applicable analyses? Yes No N/A

Are calibration check results acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Field QC information was unavailable, field QC results will be evaluated in the summary report

5. ACCURACY

Were spike samples analyzed at the required frequency? . . . . Yes No N/A

Are spike recoveries acceptable? . . . . . Yes No N/A

Were LCS analyses performed at the required frequency? . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments:

6. PRECISION

Were laboratory duplicate samples analyzed at the required frequency? . . . . . Yes No N/A

Are laboratory duplicate sample RPD values acceptable? . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

044

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments: Field QC information was unavailable, field QC results will be evaluated in the summary report.

7. ANALYTE QUANTITATION

Was analyte quantitation performed properly? . . . . . (Yes) No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . (Yes) No N/A

Are results supported in the raw data? . . . . . (Yes) No N/A

Are results calculated properly? . . . . . (Yes) No N/A

Do results meet the CRDLs? . . . . . (Yes) No N/A

Comments: Results for chloride and fluoride are transposed on the report forms. Results reported as fluoride are chloride results on the raw data sheets. Raw data sheets are included.

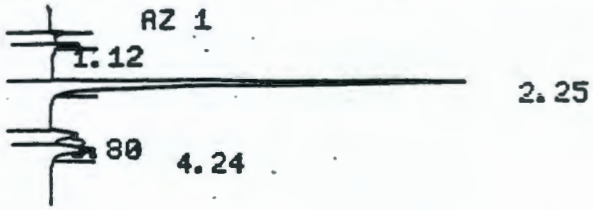
HOLDING TIME SUMMARY

SDG: W0024-ITC-034 | VALIDATOR: L. Schilabl | DATE: 6/16/94 | PAGE 1 OF 1

COMMENTS: General Chemistry

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BKM8	Cl, F, SO4	3-31-94	4/26/94	4/28/94	26	2	none
B0BKP6	↓	3/31/94	4/26/94	4/28/94	↓	↓	↓
B0BNQ0,1,2,6	↓	3/31/94	4/26/94	4/28/94	↓	↓	↓
B0BNQ7	↓	3/31/94	4/26/94	4/28/94	↓	↓	↓
B0BKN0,7,8	↓	4/5/94	4/26/94	4/28/94	21	↓	↓
B0BNP9	↓	3/31/94	4/26/94	4/28/94	26	↓	↓
B0BKN8	↓	4/5/94	5/12/94	5/12/94	37	0	↓

CHANNEL A INJECT 04/28/94 17:22:57



AA5475

5.0003

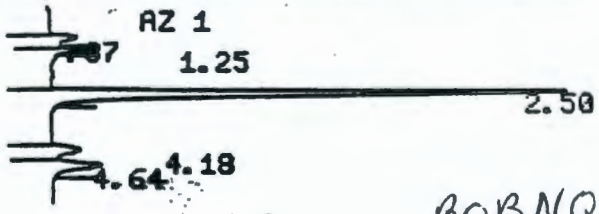
ANIONS 04/28/94 17:22:57 CH= "A" PS= 1.

FILE 1. METHOD 5. RUN 28 INDEX 1

ANALYST: RKM

NAME	PPM	RT	AREA	BC	RF	RRT
CL	0.194	1.12	180746	01	931680.412	0.264
2	0.	2.25	5927953	01		0.531
3	0.	3.8	481392	02		0.896
SO4	1.569	4.24	850668	03	542172.084	1.
TOTALS	1.763		7440759			

CHANNEL A INJECT 04/28/94 17:30:28



AA5486

5.0029

BOBNQO

ANIONS 04/28/94 17:30:28 CH= "A" PS= 1.

FILE 1. METHOD 5. RUN 29 INDEX 1

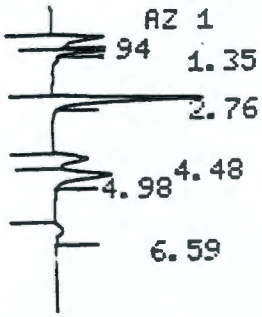
ANALYST: RKM

NAME	PPM	RT	AREA	BC	RF	RRT
FL	0.192	0.87	[illegible]	01	1185541 1.459	0.696
CL	0.402	1.25	[illegible]	01	846522.388	1.
3	0.	2.5	[illegible]	01		0.539
4	0.	4.18	[illegible]	02		0.901
SO4	1.814	4.64	[illegible]	03	554882.58	1.
TOTALS	2.408		10370702			

6/16/94

FL	0.162	0.93	[illegible]	01 [illegible]	[illegible]
CL	0.162	1.36	156127	01 963746.914	1.
3	0.	1.62	88414	01	1.191
4	0.	2.78	2736090	01	2.044
SO4	1.631	5.04	890257	01 545835.071	3.706
TOTALS	1.895		4146592		

CHANNEL A INJECT 04/28/94 18:22:52



AA5843

5.0025

BOBKNO

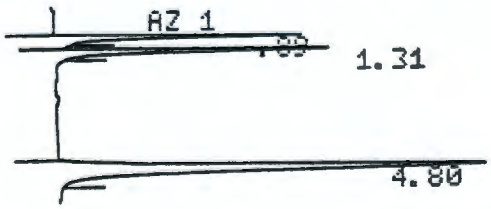
ANIONS 04/28/94 18:22:52 CH= "A" PS= 1.

FILE 1. METHOD 5. RUN 34 INDEX 1

ANALYST: RKM

NAME	PPM	RT	AREA	BC	RF	RRT
FL	0.602	0.94	751567	011	248450.166	0.696
CL	0.467	1.35	389858	01	834813.704	1.
3	0.	2.76	2203390	01		0.554
4	0.	4.48	673762	02		0.9
SO4	2.163	4.98	1229699	03	568515.488	1.
6	0.	6.59	209315	01		1.323
TOTALS	3.232		5457591			

CHANNEL A INJECT 04/28/94 18:33:15



MID RANGE ICWS 334

ANIONS 04/28/94 18:33:15 CH= "A" PS= 1.

FILE 1. METHOD 5. RUN 35 INDEX 1

ANALYST: RKM

NAME	PPM	RT	AREA	BC	RF	RRT
FL	2.	0.89	2422744	011	211372.	0.679
CL	3.119	1.31	2556126	01	819533.825	1.
SO4	14.789	4.8	9416817	01	636744.675	1.
TOTALS	19.909		14295687			

6/16/94

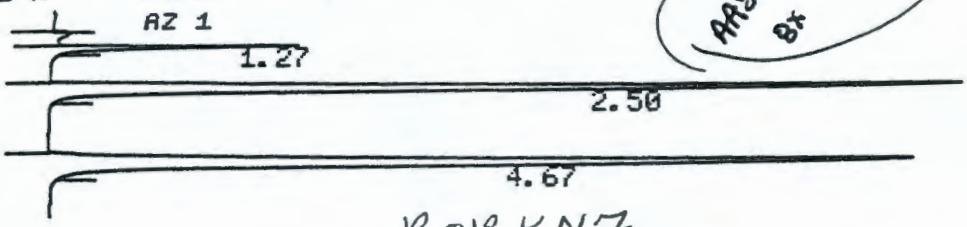
9613479.2305

~~0003118~~

CL	6.102	1.32	5289575	01	866859.227	1.
2	0.	2.6	30910043	01		0.544
SO4	53.624	4.78	36113671	01	673460.969	1.
TOTALS	59.726		72313289			

CHANNEL A INJECT 04/28/94 19:03:07

AZ 1



AA5837 8x dilution

5.0089

BOBKN7

ANIONS 04/28/94 19:03:07 CH= "A" PS= 1.

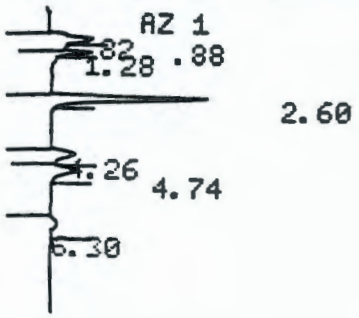
FILE 1. METHOD 5. RUN 38 INDEX 1

ANALYST: RKM

NAME	PPM	RT	AREA	BC	RF	RRT
CL	2.859	1.27	2333121	01	816061.91	1.
2	0.	2.5	15863505	01		0.535
SO4	29.313	4.67	19133528	01	652731.825	1.
TOTALS	32.172		37330154			

CHANNEL A INJECT 04/28/94 19:10:45

AZ 1



AA5446

5.0037

ANIONS 04/28/94 19:10:45 CH= "A" PS= 1.

FILE 1. METHOD 5. RUN 39 INDEX 1

ANALYST: RKM

NAME	PPM	RT	AREA	BC	RF	RRT
1	0.	0.82	108525	02		0.641
FL	0.333	0.88	487542	031464090.091		0.688
CL	0.303	1.28	264276	01	872198.02	1.
4	0.	2.6	2254792	01		0.549
5	0.	4.26	428124	01		0.899
SO4	1.064	4.74	528470	01	496682.331	1.
7	0.	6.3	198338	01		1.329

6/16/94

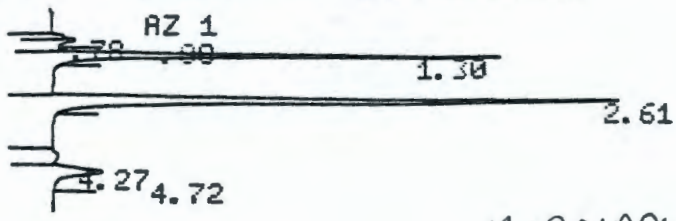
9613479.2306

0003121

BOBNP9

NAME	PPM	RT	AREA	BC	RF	RRT
FL	0.105	0.88	278098	01	2648552.379	0.677
CL	9.893	1.3	9214142	01	931379.966	1.
3	0.	2.56	20713242	01		0.537
4	0.	4.32	269664	02		0.906
SO4	3.661	4.77	2187743	03	597580.716	1.
TOTALS	13.659		32662889			

CHANNEL A INJECT 04/28/94 16:47:03



AA6048 2x Dilute

5.005g

BOBNP9

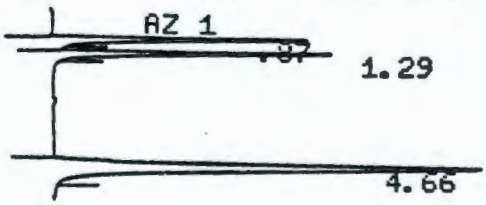
ANIONS 04/28/94 16:47:03 CH= "A" PS= 1.

FILE 1. METHOD 5. RUN 24 INDEX 1

ANALYST: RKM

NAME	PPM	RT	AREA	BC	RF	RRT
1	0.	0.78	104365	02		0.6
FL	0.026	0.88	208113	03	8004346.156	0.677
CL	5.113	1.3	4348922	01	850561.705	1.
4	0.	2.61	9453530	01		0.553
5	0.	4.27	135833	02		0.905
SO4	1.981	4.72	1113540	03	562110.045	1.
TOTALS	7.12		15364303			

CHANNEL A INJECT 04/28/94 16:53:57



MID RANGE ICWS 334

ANIONS 04/28/94 16:53:57 CH= "A" PS= 1.

FILE 1. METHOD 5. RUN 25 INDEX 1

ANALYST: RKM

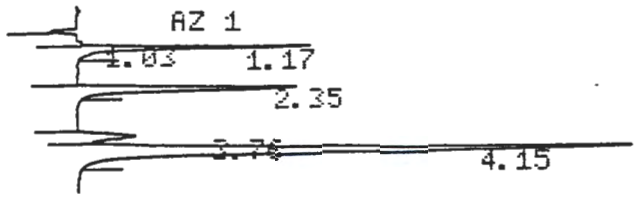
NAME	PPM	RT	AREA	BC	RF	RRT
FL	1.988	0.87	2406367	01	1210446.176	0.674
CL	3.08	1.29	2522879	01	819116.559	1.
SO4	14.441	4.66	9187421	01	636203.933	1.
TOTALS	19.509		14116667			

AS 6/16/94

043

CHANNEL A INJECT 05/12/94 23:59:59

AZ 1



AA7085

BOBKNS

ANIONS 05/12/94 23:59:59 CH= "A" PS= 1.

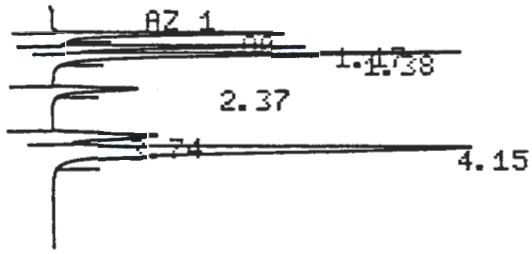
FILE 1. METHOD 5. RUN 15 INDEX 1

ANALYST: RKM

NAME	PPM	RT	AREA	BC	RF	RRT
1	0.	1.03	568502	02		0.438
CL	3.559	1.17	2340232	03	657553.245	0.498
NO3	6.474	2.35	2889732	01	446359.592	1.
PO4	5.543	3.76	1011770	02	182531.12	0.906
SO4	19.167	4.15	10920127	03	569735.848	1.
TOTALS	34.743		17730363			

CHANNEL A INJECT 05/13/94 00:05:59

AZ 1



MID RANGE

ANIONS 05/13/94 00:05:59 CH= "A" PS= 1.

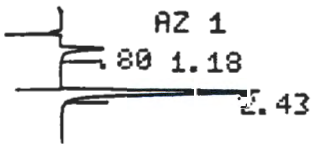
FILE 1. METHOD 5. RUN 16 INDEX 1

ANALYST: RKM

NAME	PPM	RT	AREA	BC	RF	RRT
FL	2.004	0.8	1885167	01	940702.096	1.
CL	3.052	1.17	1992686	02	652911.534	1.462
NO2	2.515	1.38	3866438	03	1537351.095	0.582
NO3	2.54	2.37	1021595	01	402202.756	1.
PO4	9.9	3.74	1868591	02	188746.566	0.901
SO4	15.004	4.15	8364436	03	557480.405	1.
TOTALS	35.015		18998913			

CHANNEL A INJECT 05/13/94 00:17:25

AZ 1



.907 Dilution

6/16/94

051

9613479.2308

MEMORANDUM

JUN 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record June 15, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: NITRATE/NITRITE DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0024-ITC-034 (923-E418 Filename W0024N.UP2)

INTRODUCTION

This memo presents the results of data validation on data package W0024-ITC-034 prepared by the International Technology Corporation (ITC) laboratory. A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B0BKM8	03/31/94	SOIL	SEE NOTE 1
B0BKN0	04/05/94	SOIL	
B0BKN7	04/05/94	SOIL	
B0BKN8	04/05/94	SOIL	
B0BKP6	03/31/94	SOIL	
B0BNP9	03/31/94	SOIL	
B0BNQ0	03/31/94	SOIL	
B0BNQ1	03/31/94	SOIL	
B0BNQ2	03/31/94	SOIL	
B0BNQ6	03/31/94	SOIL	
B0BNQ7	03/31/94	SOIL	

RECEIVED JUN 20 1994 VALIDATION DOCUMENTATION SDLA

Note 1. All samples were analyzed for nitrate+nitrite.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

001

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of eleven samples were validated in this data package with a total of eleven determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

No minor deficiencies were identified during data validation which required qualification of data as estimated.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9613479.2310

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

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GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY

SDG: W0024-ITC-034	VALIDATOR: C. Jensen	DATE: June 15, 1994	PAGE 1 OF 1
COMMENTS: NO2/NO3 W0024-ITC-034			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
No qualification of the data was required			

9613479.2314

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	B0BKM8		B0BKN0		B0BKN7		B0BKN8		B0BKP6		B0BNP9	
	Date	3-31-94		4-5-94		4-5-94		4-5-94		3-31-94		3-31-94	
	Location	U1/U2 TILE FIELD		U1/U2 TILE FIELD		207-U BASIN		207-U BASIN		216-U-11		216-U-10	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
NITRATE+NITRITE	MG-N/KG	2.500	U	2.500	U	145.000		2.500	U	2.500	U	9.400	

9613479.2315

Verified
5/16/94

008

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	BOBNQ0		BOBNQ1		BOBNQ2		BOBNQ6		BOBNQ7	
	Date	3-31-94		3-31-94		3-31-94		3-31-94		3-31-94	
	Location	216-U-10		216-U-10		216-U-10		216-U-10		216-U-10	
	Depth	---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
NITRATE+NITRITE	MG-N/KG	3.300		2.500	U	2.500	U	4.400		2.500	U

Updated by 6/15/94

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	308
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6153	2.5	U
BOBNQ6	AA5476	4.4	+
BOBNQ0	AA5487	3.3	+
BOBNQ1	AA5506	2.5	U
BOBNQ7	AA5497	2.5	U
BOBNQ2	AA5522	2.5	U
BOBKP6	AA5516	2.5	U
BOBKM8	AA5447	2.5	U

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Verified
5/6/1994

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	403
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/12/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6181	2.5	U
BOBKN8	AA7086	2.5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

verified
6/14/94

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	331
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6153	2.5	U
BOBKN0	AA5844	2.5	U
BOBKN7	AA5838	145	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Verified
SVE 11/14/94

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0024
Contract Name:	Westinghouse Hanford	Job Number:	338
Sample Matrix:	Soil	Extraction Date:	N/A
Concentration Units:	mg/kg	Analysis Date:	05/06/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6153	2.5	U
BOBNP9	AA6049	9.4	+

+ - Positive result.
U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Verified
06/14/94

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ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

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0000001

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

May 20, 1994

MAY 1994
RECEIVED
SDLA

Job Number: 308; 331; 338; 403

This is the Certificate of Analysis for the following samples:

SDG:	W0024
Client Project ID:	Westinghouse Hanford
Date Received by Lab:	April 6, 1994; April 8, 1994, April 12, 1994; April 16, 1994
Number of Samples:	Eleven (11)
Sample Type:	Soil

I. Introduction

On April 6, April 8, April 12 and April 16, 1994, eleven (11) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.

Reviewed and Approved:

Sheree' A. Schneider

Sheree' A. Schneider
Project Manager

RECORD COPY

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics (DRO) with a kerosene spike by gas chromatography/flame ionization detection (GC/FID) based on method 8015.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

Revised AHS 6/24/94 AHS 6/16/94

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

The samples for work order #308 were digested on April 12 for ICP and GFAA. The CVAA analysis for mercury was performed on April 8, 1994; The GFAA analyses for arsenic, lead, selenium and thallium were performed on April 12, 1994; the remaining metals were analyzed by ICP on April 14, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBKM8. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses except for antimony by ICP analysis and thallium by GFAA analysis. The titanium concentration was greater than four times (4X) the spike added; spiking criteria did not apply for this analyte. Poor spike recovery for antimony is attributable to matrix interferences as indicated by the post digestion spike. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses.

The samples for work order #338 were digested on April 15, 1994 for GFAA. The CVAA analysis for mercury was performed on April 15, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed on April 18 and April 19, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #331 were digested on April 15, 1994 for GFAA and April 12, 1994 for GFAA. The CVAA analysis for mercury was performed on April 12, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from April 12 through May 17, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #403 were digested on May 2, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 2, 1994. All run QC was acceptable. Zinc was found in the method blank above the client required detection limit (CRDL). However, zinc concentration in the sample was ten times (10X) greater than the contamination and results are acceptable.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

Revised 6/24/94 6/16/94

14C ~~025~~

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
May 20, 1994

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics by gas chromatography/flame ionization detection using an SPB-1 column on a Hewlett Packard GC. Matrix spike/matrix spike duplicate analyses were performed using sample number BOBNK8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for nitrate/nitrite using sample number BOBKM8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for anion analysis using sample number BOBKM8 with acceptable results.

Matrix spike/duplicate analyses were performed for cyanide analysis using sample number BOBKM8 with acceptable results.

Revised 6/24/94 6/16/94

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0000035

WO #308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006455

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 RTS 3.30.94
Sampling Locations ~~216-U-8 Crib~~ U1/U2 Tile Field RTS 3-30-94
Ice Chest No. WS 020
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKM8	S	3-31-94	1535	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKM8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKM8	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKM8	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKM8	S			(1) 125ml G	Cyanide	CPL	
F	BOBKM8	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKM8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RTS 3-31-94	9060	
	BOBKM8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

40406801 A–E
RTS 4-4-94 F
40406801

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle RT Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	Kim Hatfield RTS 4-5-94 10:30

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2326

015

WO#368

0000036

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006266

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-11 Trench
Ice Chest No. GW50020
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKP6	S	3-31-94	1425	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKP6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKP6	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKP6	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKP6	S			(1) 125ml G	Cyanide	CPL	
F	BOBKP6	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKP6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RW 3-31-94	9060	
	BOBKP6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

404106806
404106804

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	[illegible]
[illegible]	4-5-94	0815	[illegible] ITAS 10:30 4-5-94

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2327

016

WO#308

0000037

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006258

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
BOBNQ0	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
BOBNQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
BOBNQ0	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
BOBNQ0	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
BOBNQ0	S			(1) 125ml G	Cyanide ✓	CPL	
BOBNQ0	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
~~BOBNQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ DEL 3-31-94	9060	
BOBNQ0	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

A 404068 03
B
C
D
E
F
404068 03

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-1-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	Heidelberg IT 4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2328

017

0000038

W/ #308

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006259

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ1	S	3-31-94	1005	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ1	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ1	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ1	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ1	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ1	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ1~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 12cc 3-31-94	9060	
	BOBNQ1	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

4/04/06/05

1/04/06/05

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R T Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	Heidelberg IT
			4/5/94 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2329

018

WBF#308

0000039

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006260

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. G605009
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ2	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNQ2	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBNQ2	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNQ2	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNQ2	S			(1) 125ml G	Cyanide	CPL	
F	BOBNQ2	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNQ2~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ PE 3-31-94	9060	
	BOBNQ2	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

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H0406807

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	Heidi Celle
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2330

019

WO#308

0000040

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006264

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ6	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ6	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ6	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ6	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ6	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
	BOBNQ6	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

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Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	Heidelberg
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2331

020

WO#308

0000041

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006265

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5009
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to TMA
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ7	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNQ7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBNQ7	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNQ7	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNQ7	S			(1) 125ml G	Cyanide	CPL	
F	BOBNQ7	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNQ7~~	~~S~~			~~(1) 250ml aGs~~	~~TOC~~ DLC 4-4-94	9060	
	BOBNQ7	S			(1) 1000ml Poly (1) 500ml Poly	Gross Alpha/Beta EP-060,070,170; Gamma Spec. Cs-134/137, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 EP-060,070,100; Total Uranium EP-060,070,044,928; U-235/234/238 EP-060,070,901; Np-237 EP-060,070,930; Pu-238/239/240 EP-060,070,940; I-129 EP-024,560; Sr-90 EP-060,070,500,519,520; Tc-99 EP-020,540; Am-241, Cm-244 EP-060,070,960; Se-79 Lab Specific;		

404070704
404068604

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	[illegible] 4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2332

021

W0#331

0000042

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006457

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified Clay Pipeline
Sampling Locations 216-U-8 Crib
Ice Chest No. 5002 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN0	S	4-5-94	0555	(1) 250ml aG	Semi-VOA CLP	
B	BOBKN0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CRL	
C	BOBKN0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN0	S			(1) 125ml G	Cyanide CPL	
F	BOBKN0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
	BOBKN0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411802

40411902

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Technician

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2333

022

WO #331

0000043

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006464

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8 Vitrified ~~Clay~~ ~~Pipeline~~
Sampling Locations ~~216-U-8 Crib~~
Ice Chest No. SMZ 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STANDARD Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN7	S	4-5-94	09:30	(1) 250ml aG	Semi-VOA CLP	CLP
B	BOBKN7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL	CLP none
C	BOBKN7	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN7	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN7	S			(1) 125ml G	Cyanide CPL	CLP 4-6-94
F	BOBKN7	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN7~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-5-94 9060	
	BOBKN7	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411801

40411901

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Tomblinson

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2234

023

0000044

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#338	Page 1 of 1
		006257

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STANDALONE Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
01A	BOBNP9	S	3-31-94	0845	(1) 250ml aG	Semi-VOA CLP	
B	BOBNP9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury Pa ~~CPL~~ CLP	4-6-94
C	BOBNP9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBNP9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBNP9	S			(1) 125ml G	Cyanide Pa ~~CPL~~ CLP	4-6-94
F	BOBNP9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBNP9~~	S			~~(1) 125ml aGs~~	~~TOC~~ RIE 3-31-94 9060	
104182 01	BOBNP9	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

104181

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4/11/94	0800	D.L. Edwards
D.L. Edwards	4/11/94	1140	J.G. Hogan JG HOGAN
J.G. Hogan JG HOGAN	4/11/94	1418	ITAS Tom Gilmore

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2335

024

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

WO#403

006465

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 — 3-30-94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 207 U Basin 3-30-94
Offsite Property No.
Field Logbook No.
SPECIAL INSTRUCTIONS Standard Deliverable

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404280 01A BOBKN8	S	4-5-94	0950	(1) 250ml aG	Semi-VOA CLP	
B BOBKN8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CPL 5/12	4-6-94
C BOBKN8	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D BOBKN8	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E BOBKN8	S			(1) 125ml G	Cyanide CPL 5/12	4-6-94
F BOBKN8	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-5-94 9060	
40428101 BOBKN8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-14-94	1500	Karen Stitelinley

***Matrix**

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

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025

9613179.2347

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200 UP2 DV		DATA PACKAGE: W0024-ITC-034
VALIDATOR: Cjuren	LAB: ITC	DATE: 6/14/94
CASE:		SDG:

ANALYSES PERFORMED

☐ Anions/IC	☐ TOC	☐ TOX	☐ TPH-418.1	Oil and Grease	Alkalinity
☐ Ammonia	☐ BOD/COD	☐ Chloride	☐ Chromium-VI	☐ pH	☒ NO_3/NO_2
☐ Sulfate	☐ TDS	☐ TKN	☐ Phosphate	☐	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX soils

B0BNQ6	B0BKP6	B0BKN8
B0BNQ0	B0BKM9	
B0BNQ1	B0BNQ0 KND 6/14/94	
B0BNQ7	B0BKN7	
B0BNQ2	B0BNP9	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No N/A

Is a case narrative present? . . . . . Yes No N/A

Comments: Verification performed by WHC

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes No N/A

Comments:

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

Was initial calibration performed for all applicable analyses? Yes No N/A

Are initial calibration results acceptable? . . . . . Yes No N/A

Was a calibration check performed for all applicable analyses? Yes No N/A

Are calibration check results acceptable? . . . . . Yes No N/A

Comments: Calibration checks were run with recoveries within ~~[illegible]~~ 8/15/94 from ± 15 ok.

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments:

5. ACCURACY

Were spike samples analyzed at the required frequency? . . . . Yes No N/A

Are spike recoveries acceptable? . . . . . Yes No N/A

Were LCS analyses performed at the required frequency? . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments:

6. PRECISION

Were laboratory duplicate samples analyzed at the required frequency? . . . . . Yes No N/A

Are laboratory duplicate sample RPD values acceptable? . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments:

7. ANALYTE QUANTITATION

Was analyte quantitation performed properly? . . . . . Yes No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

Do results meet the CRDLs? . . . . . Yes No N/A

Comments:

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 6/14/94	PAGE 1 OF 1
COMMENTS: W0024-ITC-034			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOBNQ6	NO2/NO3	3/31/94	4/26/94	5/6/94	26	10	none
BOBNQ0		3/31/94					
BOBNQ1		3/31/94					
BOBNQ7		3/31/94					
BOBNQ2		3/31/94					
BOBKP6		3/31/94					
BOBKM8		3/31/94					
5/14/94 ~~BOBNR0~~ KNO		4/5/94		5/6/94	21		
5/14/94 ~~BOBNR7~~ KNO		4/5/94			21		
BOBNP9		3/31/94		5/6/94	26		
BOBKN8		4/5/94	5/12/94 ~~5/6/94~~ ~~not prepared~~	5/12/94	37	~~37~~ 0 6/14/94	none

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MEMORANDUM

JUN 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record June 15, 1994

FR: Sandra Schildt, Golder Associates Inc.

RE: SEMIVOLATILES DATA VALIDATION SUMMARY FOR DATA PACKAGE W0024-ITC-034 (923-E418)

INTRODUCTION

This memorandum presents the results of data validation on data package W0024-ITC-034 prepared by International Technology Corp. (IT). A list of the samples validated along with the analytes reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B0BKP6	3/31/94	SOIL	SEE NOTE 1
B0BKM8	3/31/94	SOIL	
B0BNQ6	3/31/94	SOIL	
B0BNQ0	3/31/94	SOIL	
B0BNQ7	3/31/94	SOIL	
B0BNQ1	3/31/94	SOIL	
B0BNQ2	3/31/94	SOIL	
B0BKN7	4/05/94	SOIL	
B0BKN0	4/05/94	SOIL	
B0BNP9	3/31/94	SOIL	
B0BKN8	4/05/94	SOIL	

RECEIVED JUN 20 1994 VALIDATION DOCUMENTATION SDLA

Note 1: The samples were analyzed for CLP semivolatile target compound list (TCL) organics.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 to this memo provide the following information:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. Eleven samples (11) were validated in this data set with a total of 704 determinations reported, all of which were deemed valid. This results in a completeness of 100% which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following is a summary of the minor deficiencies identified during validation which required qualification of data.

Holding Time

- The holding time for sample B0BKN8 was exceeded. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied, and supporting documentation.

Calibration

- Initial calibration relative response factors (RRFs) for 3-nitroanaline were not reported. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied, and supporting documentation.

- The percent difference (%D) for n-nitroso-di-n-propylamine was unacceptable. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied, and supporting documentation.

Laboratory Blanks

- Di-n-butylphthalate and bis(2-ethylhexyl)phthalate were detected in the method blank. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied, and supporting documentation.

TENTATIVELY IDENTIFIED COMPOUND EVALUATION

Tentatively identified compounds (TICs) reported by the laboratory were evaluated during validation and qualified as follows:

- TICs were detected in the samples and in the blanks, resulting in qualification of the results as undetected (UJN) as shown in Attachment 3.
- TICs were detected in the samples and blanks that were identified as common laboratory contaminants, resulting in qualification of the results as unusable (UR) as shown in Attachment 3.
- TICs were detected in the sample and determined to be valid, resulting in qualification of the results as presumptive and valid (JN).

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993, Westinghouse Hanford Company, Richland, Washington.

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN- Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

9613479.2347

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

PKG: W0024-ITC-034	REVIEWER: S. Schildt	DATE: 6/15/94	PAGE 1 OF 1
COMMENTS: Semivolatiles			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
All	J for detects UJ for undetects	B0BKN8	Holding time exceeded
3-Nitroanaline	UJ	All	Initial calibration results not reported
N-nitroso-di-n-propylamine	UJ	B0BKN0 B0BKN7 B0BKN8 B0BNP9	%D exceeded in continuing calibration
Bis(2-ethylhexyl)phthalate	BJ changed to U	B0BKN0 B0BKN7	Compound present in method blank
di-n-butylphthalate	BJ changed to U	B0BKN0	Compound present in method blank

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	BOBKM8		BOBKN0		BOBKN7		BOBKN8		BOBKP6		BOBNP9	
	Date	3-31-94		4-5-94		4-5-94		4-5-94		3-31-94		3-31-94	
	Location	U1/U2 TILE FIELD		U1/U2 TILE FIELD		207-U BASIN		207-U BASIN		216-U-11		216-U-10	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PHENOL	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2-CHLOROPHENOL	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
1,3-DICHLOROBENZENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
1,4-DICHLOROBENZENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
1,2-DICHLOROBENZENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2-METHYLPHENOL	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
4-METHYLPHENOL	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	330.000	U	330.000	UJ	2900.000	UJ	340.000	UJ	340.000	U	340.000	UJ
HEXACHLOROETHANE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
NITROBENZENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
ISOPHORONE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2-NITROPHENOL	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2,4-DIMETHYLPHENOL	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2,4-DICHLOROPHENOL	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
NAPHTHALENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
4-CHLOROANILINE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
HEXACHLOROBUTADIENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2-METHYLNAPHTHALENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	810.000	U	810.000	U	7000.000	U	830.000	UJ	810.000	U	820.000	U
2-CHLORONAPHTHALENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2-NITROANILINE	UG/KG	810.000	U	810.000	U	7000.000	U	830.000	UJ	810.000	U	820.000	U
DIMETHYLPHTHALATE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
ACENAPHTHYLENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
3-NITROANILINE	UG/KG	810.000	UJ	810.000	UJ	7000.000	UJ	830.000	UJ	810.000	UJ	820.000	UJ
ACENAPHTHENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2,4-DINITROPHENOL	UG/KG	810.000	U	810.000	U	7000.000	U	830.000	UJ	810.000	U	820.000	U
4-NITROPHENOL	UG/KG	810.000	U	810.000	U	7000.000	U	830.000	UJ	810.000	U	820.000	U
DIBENZOFURAN	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2,4-DINITROTOLUENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
2,6-DINITROTOLUENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
DIETHYLPHTHALATE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U

Reviewed 6/24/94

Verified 6/24/93

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Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	B0BKM8		B0BKN0		B0BKN7		B0BKN8		B0BKP6		B0BNP9	
	Date	3-31-94		4-5-94		4-5-94		4-5-94		3-31-94		3-31-94	
	Location	U1/U2 TILE FIELD		U1/U2 TILE FIELD		207-U BASIN		207-U BASIN		216-U-11		216-U-10	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4-CHLOROPHENYL-PHENYLETHER	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
FLUORENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
4-NITROANILINE	UG/KG	810.000	U	810.000	U	7000.000	U	830.000	UJ	810.000	U	820.000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	810.000	U	810.000	U	7000.000	U	830.000	UJ	810.000	U	820.000	U
N-NITROSODIPHENYLAMINE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
HEXACHLOROBENZENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
PENTACHLOROPHENOL	UG/KG	810.000	U	810.000	U	7000.000	U	830.000	UJ	810.000	U	820.000	U
PHENANTHRENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
ANTHRACENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
CARBAZOLE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
DI-N-BUTYLPHTHALATE	UG/KG	330.000	U	330.000	U	2900.000	U	53.000	J	340.000	U	340.000	U
FLUORANTHENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
PYRENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
BUTYLBENZYLPHTHALATE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
BENZO(A)ANTHRACENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	330.000	U	330.000	U	2900.000	U	87.000	J	340.000	U	340.000	U
CHRYSENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
DI-N-OCTYLPHTHALATE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
BENZO(B)FLUORANTHENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
BENZO(K)FLUORANTHENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
BENZO(A)PYRENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U
BENZO(G,H,I)PERYLENE	UG/KG	330.000	U	330.000	U	2900.000	U	340.000	UJ	340.000	U	340.000	U

9613479.2351

Verified 6/16/94

010

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	B0BNQ0		B0BNQ1		B0BNQ2		B0BNQ6		B0BNQ7	
	Date	3-31-94		3-31-94		3-31-94		3-31-94		3-31-94	
	Location	216-U-10		216-U-10		216-U-10		216-U-10		216-U-10	
	Depth	---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PHENOL	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2-CHLOROPHENOL	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
1,3-DICHLOROBENZENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
1,4-DICHLOROBENZENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
1,2-DICHLOROBENZENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2-METHYLPHENOL	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
4-METHYLPHENOL	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
HEXACHLOROETHANE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
NITROBENZENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
ISOPHORONE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2-NITROPHENOL	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2,4-DIMETHYLPHENOL	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2,4-DICHLOROPHENOL	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
NAPHTHALENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
4-CHLOROANILINE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
HEXACHLOROBUTADIENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2-METHYLNAPHTHALENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	810.000	U	810.000	U	810.000	U	800.000	U	810.000	U
2-CHLORONAPHTHALENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2-NITROANILINE	UG/KG	810.000	U	810.000	U	810.000	U	800.000	U	810.000	U
DIMETHYLPHTHALATE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
ACENAPHTHYLENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
3-NITROANILINE	UG/KG	810.000	UJ	810.000	UJ	810.000	UJ	800.000	UJ	810.000	UJ
ACENAPHTHENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2,4-DINITROPHENOL	UG/KG	810.000	U	810.000	U	810.000	U	800.000	U	810.000	U
4-NITROPHENOL	UG/KG	810.000	U	810.000	U	810.000	U	800.000	U	810.000	U
DIBENZOFURAN	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2,4-DINITROTOLUENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
2,6-DINITROTOLUENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
DIETHYLPHTHALATE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U

9613479.2352

Verified 6/16/94

011

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	B0BNQ0		B0BNQ1		B0BNQ2		B0BNQ6		B0BNQ7	
	Date	3-31-94		3-31-94		3-31-94		3-31-94		3-31-94	
	Location	216-U-10		216-U-10		216-U-10		216-U-10		216-U-10	
	Depth	---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4-CHLOROPHENYL-PHENYLETHER	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
FLUORENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
4-NITROANILINE	UG/KG	810.000	U	810.000	U	810.000	U	800.000	U	810.000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	810.000	U	810.000	U	810.000	U	800.000	U	810.000	U
N-NITROSODIPHENYLAMINE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
HEXACHLOROBENZENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
PENTACHLOROPHENOL	UG/KG	810.000	U	810.000	U	810.000	U	800.000	U	810.000	U
PHENANTHRENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
ANTHRACENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
CARBAZOLE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
DI-N-BUTYLPHTHALATE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
FLUORANTHENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
PYRENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
BUTYLBENZYLPHTHALATE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
BENZO(A)ANTHRACENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
CHRYSENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
DI-N-OCTYLPHTHALATE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
BENZO(B)FLUORANTHENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
BENZO(K)FLUORANTHENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
BENZO(A)PYRENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U
BENZO(G,H,I)PERYLENE	UG/KG	330.000	U	340.000	U	330.000	U	330.000	U	340.000	U

9613479.2353

Verified 6/10/94

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKP6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5512

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5512

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	810	~~U~~ UJ
83-32-9	Acenaphthene	340	U

6/15/94

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKP6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5512

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5512

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

9613479.2356

BNA-TIC B0000001

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKP6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5512

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5512

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.42	10000	~~BAJN~~ UR

FORM I SV-TIC

6/16/94 3/90

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKM8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5444

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5444

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	810	~~U~~ UJ
83-32-9	Acenaphthene	330	U

AH 6/16/94

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKM8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5444

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5444

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

6/15/94

FORM I SV-2 3/90

9613479.2359

BNA-T~~IC A0000001~~

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKM8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5444

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5444

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.0

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.47	12000	~~BAJN~~	UR
2.	UNKNOWN	5.90	1700	J	JN
3.	UNKNOWN	21.37	81	J	
4.	UNKNOWN	21.88	73	J	
5.	UNKNOWN	22.63	440	J	
6.	UNKNOWN	24.35	230	J	

FORM I SV-TIC

6/16/94 3/90

9613479.2360

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WOO24

Matrix: (soil/water) SOIL Lab Sample ID: AA5483

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA5483

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	810	~~U~~ UJ
83-32-9	Acenaphthene	330	U

FORM I SV-1 3/90

6/15/94

9613479.2361

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5483

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA5483

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

3/90

6/15/94

020

9613479.2362

BNA-TIC C0000001

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNQ0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5483

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA5483

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.9

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.45	11000	~~BAJN~~	UR
2.	UNKNOWN	21.37	87	~~J~~	JN
3.	UNKNOWN	22.63	560	~~J~~	
4.	UNKNOWN	24.35	190	~~J~~	

HS 6/16/94

021

9613479.2363

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ1

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5501

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5501

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	810	~~U~~ UJ
83-32-9	Acenaphthene	340	U

FORM I SV-1 3/90

6/15/94

022

9613479.2364

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ1

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5501

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5501

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

3/90

6/15/94

9613479.2365

BNA-TIC ~~D0000001~~

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNQ1

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5501

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5501

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.47	9900	~~BAJN~~	UR
2.	UNKNOWN	22.63	160	~~J~~	JN

6/16/94

FORM I SV TIC

9613479.2366

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5519

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5519

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	810	~~U~~ UJ
83-32-9	Acenaphthene	330	U

FORM I SV-1

3/90

6/15/94

025

9613479.2367

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5519

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5519

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

AHS 6/15/94 3/90

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNQ2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5519

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5519

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.45	14000	~~BAJN~~ UR

AH 6/16/94

9613479.2369

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WOO24

Matrix: (soil/water) SOIL Lab Sample ID: AA5470

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5470

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	~~U~~ UJ
83-32-9	Acenaphthene	330	U

FORM I SV-1 3/90

AH 6/15/94

9613479.2370

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5470

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5470

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-Methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

6/15/93/90

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNQ6

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5470

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5470

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 1 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.8

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.47	12000	~~BAJN~~ UR
2.	UNKNOWN	21.37	150	J
3.	UNKNOWN	22.63	630	J
4.	UNKNOWN	24.37	200	J

JN

AAS 6/16/94

9613479.2372

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WOO24

Matrix: (soil/water) SOIL Lab Sample ID: AA5492

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5492

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	810	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	810	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	810	~~U~~ UJ
83-32-9	Acenaphthene	340	U

FORM I SV-1 3/90

AH 6/15/94

031

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNQ7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5492

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5492

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 3/90

6/15/94

9613479.2374

BNA-TIC ~~00000001~~

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNQ7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5492

Sample wt/vol: 30.1 (g/mL) G Lab File ID: AA5492

Level: (low/med) LOW Date Received: 04/06/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.7

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.45	12000	~~BAJN~~ UK

ASS 6/16/94

FORM I SV-TIC 3/90

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5841

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5841

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
108-95-2	Phenol	330	U	
111-44-4	bis(2-Chloroethyl)Ether	330	U	
95-57-8	2-Chlorophenol	330	U	
541-73-1	1,3-Dichlorobenzene	330	U	
106-46-7	1,4-Dichlorobenzene	330	U	
95-50-1	1,2-Dichlorobenzene	330	U	
95-48-7	2-Methylphenol	330	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U	
106-44-5	4-Methylphenol	330	U	
621-64-7	N-Nitroso-Di-n-Propylamine	330	~~U~~	UJ
67-72-1	Hexachloroethane	330	U	
98-95-3	Nitrobenzene	330	U	
78-59-1	Isophorone	330	U	
88-75-5	2-Nitrophenol	330	U	
105-67-9	2,4-Dimethylphenol	330	U	
111-91-1	bis(2-Chloroethoxy)Methane	330	U	
120-83-2	2,4-Dichlorophenol	330	U	
120-82-1	1,2,4-Trichlorobenzene	330	U	
91-20-3	Naphthalene	330	U	
106-47-8	4-Chloroaniline	330	U	
87-68-3	Hexachlorobutadiene	330	U	
59-50-7	4-Chloro-3-Methylphenol	330	U	
91-57-6	2-Methylnaphthalene	330	U	
77-47-4	Hexachlorocyclopentadiene	330	U	
88-06-2	2,4,6-Trichlorophenol	330	U	
95-95-4	2,4,5-Trichlorophenol	810	U	
91-58-7	2-Chloronaphthalene	330	U	
88-74-4	2-Nitroaniline	810	U	
131-11-3	Dimethylphthalate	330	U	
208-96-8	Acenaphthylene	330	U	
606-20-2	2,6-Dinitrotoluene	330	U	
99-09-2	3-Nitroaniline	810	~~U~~	UJ
83-32-9	Acenaphthene	330	U	

FORM I SV-1 3/90

6/15/94

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5841

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5841

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	810	U
100-02-7	4-Nitrophenol	810	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	810	U
534-52-1	4,6-Dinitro-2-Methylphenol	810	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	810	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330 ~~83~~	~~BJ~~ U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330 ~~37~~	~~BJ~~ U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

6/15/94

FORM I SV-2 3/90

9613479.2377

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKN0

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5841

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5841

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 2 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.4

Number TICs found: 13

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1. 638-04-0	CYCLOHEXANE, 1,3-DIMETHYL-,	2.02	98	~~BJN~~	UJ
2. 141-79-7	3-PENTENE-2-ONE-, 4-METHYL-	2.35	320	~~BAJN~~	UK
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.20	7000	~~BAJN~~	UK
4.	UNKNOWN	16.67	350	~~J~~	JA
5.	UNKNOWN	20.83	460	J	
6.	UNKNOWN	22.17	140	BJ	
7.	UNKNOWN	23.42	430	J	
8.	UNKNOWN	23.48	110	J	
9.	UNKNOWN	24.33	84	J	
10.	UNKNOWN	24.40	68	J	
11.	UNKNOWN	24.63	520	J	
12.	UNKNOWN	24.73	260	J	
13.	UNKNOWN	26.10	74	J	

AAA 6/16/94

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5835

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5835

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 43 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
108-95-2	Phenol	2900	U	
111-44-4	bis(2-Chloroethyl)Ether	2900	U	
95-57-8	2-Chlorophenol	2900	U	
541-73-1	1,3-Dichlorobenzene	2900	U	
106-46-7	1,4-Dichlorobenzene	2900	U	
95-50-1	1,2-Dichlorobenzene	2900	U	
95-48-7	2-Methylphenol	2900	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	2900	U	
106-44-5	4-Methylphenol	2900	U	
621-64-7	N-Nitroso-Di-n-Propylamine	2900	~~U~~	uJ
67-72-1	Hexachloroethane	2900	U	
98-95-3	Nitrobenzene	2900	U	
78-59-1	Isophorone	2900	U	
88-75-5	2-Nitrophenol	2900	U	
105-67-9	2,4-Dimethylphenol	2900	U	
111-91-1	bis(2-Chloroethoxy)Methane	2900	U	
120-83-2	2,4-Dichlorophenol	2900	U	
120-82-1	1,2,4-Trichlorobenzene	2900	U	
91-20-3	Naphthalene	2900	U	
106-47-8	4-Chloroaniline	2900	U	
87-68-3	Hexachlorobutadiene	2900	U	
59-50-7	4-Chloro-3-Methylphenol	2900	U	
91-57-6	2-Methylnaphthalene	2900	U	
77-47-4	Hexachlorocyclopentadiene	2900	U	
88-06-2	2,4,6-Trichlorophenol	2900	U	
95-95-4	2,4,5-Trichlorophenol	7000	U	
91-58-7	2-Chloronaphthalene	2900	U	
88-74-4	2-Nitroaniline	7000	U	
131-11-3	Dimethylphthalate	2900	U	
208-96-8	Acenaphthylene	2900	U	
606-20-2	2,6-Dinitrotoluene	2900	U	
99-09-2	3-Nitroaniline	7000	~~U~~	uJ
83-32-9	Acenaphthene	2900	U	

FORM I SV-1 3/90

AH 6/15/94

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5835

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5835

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 43 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	7000	U
100-02-7	4-Nitrophenol	7000	U
132-64-9	Dibenzofuran	2900	U
121-14-2	2,4-Dinitrotoluene	2900	U
84-66-2	Diethylphthalate	2900	U
7005-72-3	4-Chlorophenyl-phenylether	2900	U
86-73-7	Fluorene	2900	U
100-01-6	4-Nitroaniline	7000	U
534-52-1	4,6-Dinitro-2-Methylphenol	7000	U
86-30-6	N-Nitrosodiphenylamine (1)	2900	U
101-55-3	4-Bromophenyl-phenylether	2900	U
118-74-1	Hexachlorobenzene	2900	U
87-86-5	Pentachlorophenol	7000	U
85-01-8	Phenanthrene	2900	U
120-12-7	Anthracene	2900	U
86-74-8	Carbazole	2900	U
84-74-2	Di-n-Butylphthalate	2900	U
206-44-0	Fluoranthene	2900	U
129-00-0	Pyrene	2900	U
85-68-7	Butylbenzylphthalate	2900	U
91-94-1	3,3'-Dichlorobenzidine	2900	U
56-55-3	Benzo(a)Anthracene	2900	U
218-01-9	Chrysene	2900	U
117-81-7	bis(2-Ethylhexyl)Phthalate	2900 ~~1800~~	~~BJ~~ U
117-84-0	Di-n-Octyl Phthalate	2900	U
205-99-2	Benzo(b)Fluoranthene	2900	U
207-08-9	Benzo(k)Fluoranthene	2900	U
50-32-8	Benzo(a)Pyrene	2900	U
193-39-5	Indeno(1,2,3-cd)Pyrene	2900	U
53-70-3	Dibenz(a,h)Anthracene	2900	U
191-24-2	Benzo(g,h,i)Perylene	2900	U

(1) - Cannot be separated from Diphenylamine

AH 6/15/94

FORM I SV-2 3/90

9613479.2380

BNA-TIC ~~H0000001~~

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKN7

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5835

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA5835

Level: (low/med) LOW Date Received: 04/08/94

% Moisture: 43 decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) Y pH: 7.7

Number TICs found: 11

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.18	26000	~~ABJN~~	UR
2.	UNKNOWN	14.37	1600	J	JN
3.	UNKNOWN	15.37	1100	J	
4.	UNKNOWN	15.67	1400	J	
5.	UNKNOWN	16.07	900	J	
6.	UNKNOWN	16.18	610	J	
7.	UNKNOWN	16.73	790	J	
8.	UNKNOWN	22.42	1500	J	
9.	UNKNOWN	23.50	1300	J	
10.	UNKNOWN	23.78	930	J	
11.	UNKNOWN	24.82	960	J	

AHS 6/16/94

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA7083

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA7083

Level: (low/med) LOW Date Received: 04/16/94

% Moisture: 4 decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
108-95-2	Phenol	340	U	UJ
111-44-4	bis(2-Chloroethyl)Ether	340	U	
95-57-8	2-Chlorophenol	340	U	
541-73-1	1,3-Dichlorobenzene	340	U	
106-46-7	1,4-Dichlorobenzene	340	U	
95-50-1	1,2-Dichlorobenzene	340	U	
95-48-7	2-Methylphenol	340	U	
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U	
106-44-5	4-Methylphenol	340	U	
621-64-7	N-Nitroso-Di-n-Propylamine	340	U	UJ
67-72-1	Hexachloroethane	340	U	
98-95-3	Nitrobenzene	340	U	
78-59-1	Isophorone	340	U	
88-75-5	2-Nitrophenol	340	U	
105-67-9	2,4-Dimethylphenol	340	U	
111-91-1	bis(2-Chloroethoxy)Methane	340	U	
120-83-2	2,4-Dichlorophenol	340	U	
120-82-1	1,2,4-Trichlorobenzene	340	U	
91-20-3	Naphthalene	340	U	
106-47-8	4-Chloroaniline	340	U	
87-68-3	Hexachlorobutadiene	340	U	
59-50-7	4-Chloro-3-Methylphenol	340	U	
91-57-6	2-Methylnaphthalene	340	U	
77-47-4	Hexachlorocyclopentadiene	340	U	
88-06-2	2,4,6-Trichlorophenol	340	U	
95-95-4	2,4,5-Trichlorophenol	830	U	
91-58-7	2-Chloronaphthalene	340	U	
88-74-4	2-Nitroaniline	830	U	
131-11-3	Dimethylphthalate	340	U	
208-96-8	Acenaphthylene	340	U	
606-20-2	2,6-Dinitrotoluene	340	U	
99-09-2	3-Nitroaniline	830	U	
83-32-9	Acenaphthene	340	U	

FORM I SV-1

3/90

6/15/94

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKN8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA7083

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA7083

Level: (low/med) LOW Date Received: 04/16/94

% Moisture: 4 decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q	
51-28-5	2,4-Dinitrophenol	830	U	UJ
100-02-7	4-Nitrophenol	830	U	
132-64-9	Dibenzofuran	340	U	
121-14-2	2,4-Dinitrotoluene	340	U	
84-66-2	Diethylphthalate	340	U	
7005-72-3	4-Chlorophenyl-phenylether	340	U	
86-73-7	Fluorene	340	U	
100-01-6	4-Nitroaniline	830	U	
534-52-1	4,6-Dinitro-2-Methylphenol	830	U	
86-30-6	N-Nitrosodiphenylamine (1)	340	U	
101-55-3	4-Bromophenyl-phenylether	340	U	
118-74-1	Hexachlorobenzene	340	U	
87-86-5	Pentachlorophenol	830	U	
85-01-8	Phenanthrene	340	U	
120-12-7	Anthracene	340	U	
86-74-8	Carbazole	340	U	
84-74-2	Di-n-Butylphthalate	53	J	J
206-44-0	Fluoranthene	340	U	UJ
129-00-0	Pyrene	340	U	
85-68-7	Butylbenzylphthalate	340	U	
91-94-1	3,3'-Dichlorobenzidine	340	U	
56-55-3	Benzo(a)Anthracene	340	U	
218-01-9	Chrysene	340	U	
117-81-7	bis(2-Ethylhexyl)Phthalate	87	J	J
117-84-0	Di-n-Octyl Phthalate	340	U	UJ
205-99-2	Benzo(b)Fluoranthene	340	U	
207-08-9	Benzo(k)Fluoranthene	340	U	
50-32-8	Benzo(a)Pyrene	340	U	
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U	
53-70-3	Dibenz(a,h)Anthracene	340	U	
191-24-2	Benzo(g,h,i)Perylene	340	U	

(1) - Cannot be separated from Diphenylamine

AH 6/15/94

FORM I SV-2 3/90

9613479.2383

BNA-TIC ~~K0000001~~

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKN8

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA7083

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA7083

Level: (low/med) LOW Date Received: 04/16/94

% Moisture: 4 decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.6

Number TICs found: 15

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1. 638-04-0	CYCLOHEXANE, 1,3-DIMETHYL-,	2.03	97	~~BJN~~	UJ
2. 141-79-7	3-PENTEN-2-ONE, 4-METHYL-	2.38	400	~~BAJN~~	UK
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.25	8000	~~BAJN~~	UR
4.	UNKNOWN	17.02	83	J	JN
5.	UNKNOWN	16.68	97	J	
6.	UNKNOWN	17.78	72	J	
7.	UNKNOWN	17.85	97	J	
8.	UNKNOWN	19.42	190	~~BJ~~	UJ
9.	UNKNOWN	20.23	4900	J	JN
10.	UNKNOWN	20.87	290	J	
11.	UNKNOWN	22.20	120	J	
12.	UNKNOWN	22.83	72	J	
13.	UNKNOWN	23.45	220	J	
14.	UNKNOWN	24.67	150	J	
15.	UNKNOWN	24.78	120	J	

AH 6/16/94

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNP9

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6046

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6046

Level: (low/med) LOW Date Received: 04/12/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/14/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	~~U~~ UJ
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	820	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	820	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
99-09-2	3-Nitroaniline	820	~~U~~ UJ
83-32-9	Acenaphthene	340	U

FORM I SV-1

3/90

6/15/94

9613479.2385

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBNP9

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6046

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6046

Level: (low/med) LOW Date Received: 04/12/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/14/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	820	U
100-02-7	4-Nitrophenol	820	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	820	U
534-52-1	4,6-Dinitro-2-Methylphenol	820	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	820	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340	U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
218-01-9	Chrysene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

6/15/94 3.90

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBNP9

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6046

Sample wt/vol: 30.2 (g/mL) G Lab File ID: AA6046

Level: (low/med) LOW Date Received: 04/12/94

% Moisture: 3 decanted: (Y/N) N Date Extracted: 04/14/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/04/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.2

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1. 589-90-2	CYCLOHEXANE, 1,4-DIMETHYL-	1.92	160	~~BJ~~	UJN
2. 141-79-7	3-PENTENE-2-ONE, 4-METHYL-	2.27	440	~~BAJN~~	UR
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.13	11000	~~BAJN~~	UR
4.	UNKNOWN	16.55	75	~~J~~	JN
5.	UNKNOWN	20.72	78	~~J~~	UJN
6.	UNKNOWN	22.03	75	J	JN
7.	UNKNOWN	23.28	180	J	
8.	UNKNOWN	24.48	140	J	
9.	UNKNOWN	24.60	85	J	

9613479.2387

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9613479.2388

INTERNATIONAL TECHNOLOGY CORPORATION

MAY 1994
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SDLA

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Dear J.A. Lerch

Thank you for purchasing analytical testing services from IT Corporation. It is our intention to supply our clients with data packages which not only meet the industry's highest standards for quality, but are also easy to use. Features which we point out are:

1. A Data Summary Packet which allows you to review your data without searching through the complete data package.

   Your Data Summary Packet contains the following items:

   - Case Narrative: listing of sample identifications, analyses performed, explanation of any problem associated with samples, corrective action taken.
   - Quality control sample identifications and analyses performed.
   - Data summary.

2. A data package which meets the specific requirements you requested and is easy to use as well. The package is organized in accordance with the Table of Contents which you will find at the beginning of each section. Sections are separated by color-coded tabs, making it easy to find individual analytical parameters which may be of particular interest to you. The data package is custody-sealed at the laboratory - your assurance that parts of the package are not missing.

We are constantly searching for ways to improve our service to you. This current product has many of the features which you have told us are important to you. Your suggestions regarding additional improvements will be appreciated.

Please contact me with any questions or suggestions.

Sincerely,

Sheree Schneider/sp

Sheree' Schneider
Project Manager

Regional Office
5815 Middlebrook Pike • Knoxville, Tennessee 37921 • 615-588-6401

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

IT Corporation
2800 George Washington Way
Richland, WA 99352
Attn: Van Pettey

May 20, 1994

MAY 1994
RECEIVED
SDLA

Job Number: 308; 331; 338; 403

This is the Certificate of Analysis for the following samples:

SDG:	W0024
Client Project ID:	Westinghouse Hanford
Date Received by Lab:	April 6, 1994; April 8, 1994, April 12, 1994; April 16, 1994
Number of Samples:	Eleven (11)
Sample Type:	Soil

I. Introduction

On April 6, April 8, April 12 and April 16, 1994, eleven (11) soil samples arrived at the ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Soil results are reported on a dry weight basis.

The samples were analyzed for Target Compound List (TCL) semivolatiles by gas chromatography/mass spectroscopy (GC/MS) in accordance with the EPA CLP 3/90 Statement of Work.

Reviewed and Approved:

Sheree' A. Schneider

Sheree' A. Schneider
Project Manager

RECORD COPY

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Analyte List (TAL) metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total cyanide in accordance with the EPA CLP ILM03 Statement of Work.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics (DRO) with a kerosene spike by gas chromatography/flame ionization detection (GC/FID) based on method 8015.

The samples were analyzed for nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for anions by ion chromatography using EPA method 300.0.

III. Quality Control

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. All QC results were within the method specified limits.

Data were reported with qualifiers as follows:

U - Compound analyzed for but not detected; value given is quantitation limit.
E - Compound exceeded calibration range.
D - Compound analyzed at a secondary dilution factor.
J - Compound detected but below quantitation limit; value estimated.
S - Spiked compound.
B - Compound found in method blank.
A - Suspected aldol condensation product.
Y - Indistinguishable isomer in tentatively identified compounds.
N - Presumptive evidence of compound presence.

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IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

The samples for work order #308 were digested on April 12 for ICP and GFAA. The CVAA analysis for mercury was performed on April 8, 1994; The GFAA analyses for arsenic, lead, selenium and thallium were performed on April 12, 1994; the remaining metals were analyzed by ICP on April 14, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number BOBKM8. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses except for antimony by ICP analysis and thallium by GFAA analysis. The titanium concentration was greater than four times (4X) the spike added; spiking criteria did not apply for this analyte. Poor spike recovery for antimony is attributable to matrix interferences as indicated by the post digestion spike. Duplicate RPD (precision) results were within acceptance limits for all parameters by ICP, GFAA and CVAA analyses.

The samples for work order #338 were digested on April 15, 1994 for GFAA. The CVAA analysis for mercury was performed on April 15, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed on April 18 and April 19, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #331 were digested on April 15, 1994 for GFAA and April 12, 1994 for GFAA. The CVAA analysis for mercury was performed on April 12, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from April 12 through May 17, 1994; the remaining metals were analyzed by ICP on April 20, 1994. All run QC was acceptable.

The samples for work order #403 were digested on May 2, 1994 for ICP and GFAA. The CVAA analysis for mercury was performed on May 3, 1994; the GFAA analyses for arsenic, lead, selenium and thallium were performed from May 2 through May 4, 1994; the remaining metals were analyzed by ICP on May 2, 1994. All run QC was acceptable. Zinc was found in the method blank above the client required detection limit (CRDL). However, zinc concentration in the sample was ten times (10X) greater than the contamination and results are acceptable.

Data were reported with qualifiers as follows:

"C" Qualifiers

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

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IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
May 20, 1994

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

"Q" Qualifiers

* - Duplicate analysis outside control limits.
N - Spiked sample recovery outside control limits.
W - Post-digestion spike for GFAA was out of control limits (85-115%), while sample absorbance was less than 50% of spike absorbance.
S - The reported value was determined by method of standard additions.

"M" Qualifiers

P - Analysis performed by ICP.
V - Analysis performed by CVAA.
F - Analysis performed by GFAA.
C - Cyanide analysis by manual distillation/colorimetric determination.

Miscellaneous

D - Duplicate.
S - Spike.
NR - Not required.
G - Native analyte > 4 times spike added, therefore, acceptance criteria do not apply.
X - Detection limits higher than normal due to sample matrix interferences.

The samples were analyzed for total high boiling petroleum hydrocarbons as diesel range organics by gas chromatography/flame ionization detection using an SPB-1 column on a Hewlett Packard GC. Matrix spike/matrix spike duplicate analyses were performed using sample number BOBNK8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for nitrate/nitrite using sample number BOBKM8 with acceptable results.

Matrix spike/matrix spike duplicate analyses were performed for anion analysis using sample number BOBKM8 with acceptable results.

Matrix spike/duplicate analyses were performed for cyanide analysis using sample number BOBKM8 with acceptable results.

6/15/94

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA5444	404067-01	BOBKM8	SOIL	SVOC
AA5445	"	"	"	METALS
AA5446	"	"	"	ANIONS
AA5447	"	"	"	NO3NO2
AA5448	"	"	"	CN
AA5449	"	"	"	TPH
AA5470	404067-02	BOBNQ6	"	SVOC
AA5472	"	"	"	METALS
AA5475	"	"	"	ANIONS
AA5476	"	"	"	NO3NO2
AA5477	"	"	"	CN
AA5478	"	"	'	TPH
AA5483	404067-03	BOBNQ0	"	SVOC
AA5484	"	"	"	METALS
AA5486	"	"	"	ANIONS
AA5487	"	"	"	NO3NO2
AA5489	"	"	"	CN
AA5490	"	"	"	TPH
AA5492	404067-04	BOBNQ7	"	SVOC
AA5494	"	"	"	METALS
AA5496	"	"	"	ANIONS
AA5497	"	"	"	NO3NO2
AA5499	"	"	"	CN
AA5500	"	"	"	TPH

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IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA5501	404067-05	BOBNQ1	SOIL	SVOC
AA5503	"	"	"	METALS
AA5505	"	"	"	ANIONS
AA5506	"	"	"	NO3NO2
AA5508	"	"	"	CN
AA5509	"	"	"	TPH
AA5512	404067-06	BOBKP6	"	SVOC
AA5514	"	"	"	METALS
AA5515	"	"	"	ANIONS
AA5516	"	"	"	NO3NO2
AA5517	"	"	"	CN
AA5518	"	"	"	TPH
AA5519	404067-07	BOBNQ2	"	SVOC
AA5520	"	"	"	METALS
AA5521	"	"	"	ANIONS
AA5522	"	"	"	NO3NO2
AA5523	"	"	"	CN
AA5524	"	"	"	TPH
AA5835	404118-01 (A-F)	BOBKN7	"	SVOC
AA5836	"	"	"	METALS
AA5837	"	"	"	ANIONS
AA5838	"	"	"	NO3NO2
AA5839	"	"	"	CN
AA5840	"	"	"	TPH
AA5841	404118-02 (A-F)	BOBKN0	"	SVOC
AA5842	"	"	"	METALS
AA5843	"	"	"	ANIONS
AA5844	"	"	"	NO3NO2
AA5845	"	"	"	CN
AA5846	"	"	"	TPH

6/15/94

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

III. Quality Control (Continued)

TABLE I

Knoxville ID	Richland ID	WHC ID	Matrix	Test
AA6046	404181-01 (A-F)	BOBNP9	SOIL	SVOC
AA6047	"	"	"	METALS
AA6048	"	"	"	ANIONS
AA6049	"	"	"	NO3NO2
AA6050	"	"	"	CN
AA6051	"	"	"	TPH
AA7083	404280-01 (A-F)	BOBKN8	"	SVOC
AA7084	"	"	"	METALS
AA7085	"	"	"	ANIONS
AA7086	"	"	"	NO3NO2
AA7087	"	"	"	CN
AA7088	"	"	"	TPH

AJS 6/15/94

IT Corporation
May 20, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 308; 331; 338; 403

IV. Certification

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature:

Reviewed and Approved:

Sheree A. Schneider

Sheree' A. Schneider
Project Manager

6/15/94

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006455

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. WS 020
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 3-30-94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 41/42 File 1-28-94 3-30-94
Offsite Property No.
Field Logbook No.
SPECIAL INSTRUCTIONS

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A BOBKM8	S	3-31-94	1530	(1) 250ml aG	Semi-VOA	CLP	
B BOBKM8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C BOBKM8	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D BOBKM8	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E BOBKM8	S			(1) 125ml G	Cyanide	CPL	
F BOBKM8	S			(1) 125ml Gs	TPH Diesel Range	8015m	
~~BOBKM8~~	~~S~~			~~(1) 125ml aGs~~	TOC 3-31-94	9060	
BOBKM8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Co-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

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40406801

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	[illegible] 4-5-94 10:30

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

WO #308

9613479.2397

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WO#331

0000042

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006457

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~
Sampling Locations ~~216-U-8 Crib~~
Ice Chest No. 5002 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN0	S	4-5-94	0845	(1) 250ml aG	Semi-VOA	
B	BOBKN0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury CRL	
C	BOBKN0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN0	S			(1) 125ml G	Cyanide CPL	
F	BOBKN0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-4-94 9060	
	BOBKN0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411802
40411902

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
[illegible]	4-7-94	1045	ITAS Technician

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2399

057

WO #331

0000043

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006464

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 216-U-8-Vitrified Clay Pipeline
Sampling Locations ~~216-U-8 Crib~~ 200 U BASIN
Ice Chest No. SNL 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STANDARD Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKN7	S	4-5-94	09:30	(1) 250ml aG	Semi-VOA	CLP	cld
B	BOBKN7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	cld
C	BOBKN7	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKN7	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKN7	S			(1) 125ml G	Cyanide	CPL	cld
F	BOBKN7	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKN7~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 4-5-94	9060	
	BOBKN7	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

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Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Tom Gilmore

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2399

058

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#403	Page 1 of 1 006465

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 PM 3-30-94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 207 U BASIN PM 3-30-94
Offsite Property No.
Field Logbook No.
SPECIAL INSTRUCTIONS STANDALONE Deliverable

4/15/94

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404280 01A BOBKN8	S	4-5-94	0950	(1) 250ml aG	Semi-VOA CLP	
B BOBKN8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury PM CPL SD	4-6-94
C BOBKN8	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D BOBKN8	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E BOBKN8	S			(1) 125ml G	Cyanide PM CPL SD	4-6-94
F BOBKN8	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ PM/E 4-5-94 9060	
404281 01 BOBKN8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle R.T. SICKLE	4-14-94	1500	Karen Stickelberger IT 4-14-94 15:00

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000045

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059

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006266

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-11 Trench
Ice Chest No. GW5020
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKP6	S	3-31-94	1425	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKP6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKP6	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKP6	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKP6	S			(1) 125ml G	Cyanide	CPL	
F	BOBKP6	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKP6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RJK 3-31-94	9060	
	BOBKP6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

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Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	[illegible]
[illegible]	4-5-94	0815	[illegible] 10:30 4-5-94

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

WO#368

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090

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST WO#338	Page 1 of 1
		006257

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STANDALONE Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
01A	BOBNP9	S	3-31-94	0845	(1) 250ml aG	Semi-VOA CLP	
B	BOBNP9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury EPA CLP	4-6-94
C	BOBNP9	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBNP9	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBNP9	S			(1) 125ml G	Cyanide EPA CLP	4-6-94
F	BOBNP9	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBNP9~~	S			~~(1) 125ml aGs~~	~~TOC~~ RTS 3-31-94 9060	
104182 01	BOBNP9	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

104181

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4/11/94	0800	D.L. Edwards
D.L. Edwards	4/11/94	1140	J.G. Hogan JG HOGAN
J.G. Hogan JG HOGAN	4/11/94	1418	ITAS Tom Gilmore

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

190

0000044

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Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006258

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBNQ0	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓ CLP	
BOBNQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓ CPL	
BOBNQ0	S			(1) 125ml G	Anions F, Cl, SO_4 ✓ EPA 300.0	
BOBNQ0	S			(1) 125ml G	NO_2 NO_3 ✓ EPA 353.2	
BOBNQ0	S			(1) 125ml G	Cyanide ✓ CPL	
BOBNQ0	S			(1) 125ml Gs	TPH Diesel Range ✓ 8015m	
~~BOBNQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94 9060	
BOBNQ0	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

A 404068 03
B
C
D
E
F

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	Heidelberg IT 4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

WO#308

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4/15/94

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006259

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
BOBNQ1	S	3-31-94	1005	(1) 250ml aG	Semi-VOA ✓ CLP	
BOBNQ1	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓ CPL	
BOBNQ1	S			(1) 125ml G	Anions F, Cl, SO_4 ✓ EPA 300.0	
BOBNQ1	S			(1) 125ml G	NO_2 NO_3 ✓ EPA 353.2	
BOBNQ1	S			(1) 125ml G	Cyanide ✓ CPL	
BOBNQ1	S			(1) 125ml Gs	TPH Diesel Range ✓ 8015m	
~~BOBNQ1~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94 9060	
BOBNQ1	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

A 4406705
B
C
D
E
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1404068 05

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R T Sickle	4-4-94	0830	[illegible]
[illegible]	4-5-94	0815	Heidelberg OT 4/5/94 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2404

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W#3 #308

690 6/15/94

WO#308

0000039

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006260

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. G605007
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation 200-UP-2
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations 216-U-10 Pond
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ2	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNQ2	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBNQ2	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNQ2	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNQ2	S			(1) 125ml G	Cyanide	CPL	
F	BOBNQ2	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNQ2~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ PH 3-31-94	9060	
	BOBNQ2	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

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Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Sprint L. Thurgis
Sprint L. Thurgis	4-5-94	0815	[illegible]
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2405

190

WO#308

0000040

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006264

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. G05120
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation 200-UP-2
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations 216-U-10 Pond
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ6	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ6	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ6	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ6	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ6	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
	BOBNQ6	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3206; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

40406702

40406802

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	Heidelberg
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613429.2406

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006265

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5009
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to TMA
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
BOBNQ7	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
BOBNQ7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
BOBNQ7	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
BOBNQ7	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
BOBNQ7	S			(1) 125ml G	Cyanide	CPL	
BOBNQ7	S			(1) 125ml Gs	TPH Diesel Range	8015m	
~~BOBNQ7~~	~~S~~			~~(1) 250ml aGs~~	~~TOC~~ 4-4-94	9060	
BOBNQ7	S			(1) 1000ml Poly (1) 500ml Poly	Gross Alpha/Beta EP-060,070,170; Gamma Spec. Cs-134/137, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 EP-060,070,100; Total Uranium EP-060,070,044,928; U-235/234/238 EP-060,070,901; Np-237 EP-060,070,930; Pu-238/239/240 EP-060,070,940; I-129 EP-024,560; Sr-90 EP-060,070,500,519,520; Tc-99 EP-020,540; Am-241, Cm-244 EP-060,070,960; Se-79 Lab Specific;		

404068704
404068804

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	April L. Edwards
April L. Edwards	4-5-94	0815	[illegible]
			4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

W0#3308

0000041

9613479.2407

990

9613479.2408

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2		DATA PACKAGE: W0024-ITC-034
VALIDATOR: S. Schulz	LAB: IT	DATE: 6/15/94
CASE: 338		SDG: W0024-ITC-034

ANALYSES PERFORMED

☐ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (packed column)	☑ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 (packed column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX BOBKP6, BOBKM8, BOBNQ6, BOBNQ0, BOBNQ7, BOBNQ1, BOBNQ2, BOBKN7, BOBKN0, BOBNP9, BOBKN8.

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments: BOBKN8 extracted after holding time, qualified as estimated. (UJ or J)

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? . . . . . (Yes) No N/A

Are initial calibrations acceptable? . . . . . (Yes) No N/A

Are continuing calibrations acceptable? . . . . . (Yes) No N/A

Comments: %D for N-nitroso-di-n-propylamine exceeded limit, associated results qualified as estimated (UJ) 3-Nitroaniline initial cal. results not reported, associated results qualified as estimated (UJ)

4. BLANKS

Were laboratory blanks analyzed? . . . . . (Yes) No N/A

Are laboratory blank results acceptable? . . . . . (Yes) No N/A

Were field/trip blanks analyzed? . . . . . Yes No (N/A)

Are field/trip blank results acceptable? . . . . . Yes No (N/A)

Comments: Bis(2-ethylhexyl)phthalate, Di-n-butylphthalate detected in blanks, associated results qualified undetected (U).

Field QC information unavailable, field QC results will be evaluated in the summary report.

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? . . . . . (Yes) No N/A

Are surrogate/System Monitoring Compound recoveries acceptable? (Yes) No N/A

Were MS/MSD samples analyzed? . . . . . (Yes) No N/A

Are MS/MSD results acceptable? . . . . . (Yes) No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: Field QC information unavailable, field QC results will be evaluated in the summary report

7. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . Yes No N/A

Are internal standard areas acceptable? . . . . . Yes No N/A

Are internal standard retention times acceptable? . . . . . Yes No N/A

Comments:

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No N/A

Is compound quantitation acceptable? . . . . . Yes No N/A

Comments:

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Do results meet the CRQLs? . . . . . Yes No N/A

Has the laboratory properly identified and coded all TIC? . . Yes No N/A

Comments:

HOLDING TIME SUMMARY

SDG: W0024-ITC-034 | VALIDATOR: S. Schildt | DATE: 6/15/94 | PAGE 1 OF 1

COMMENTS: Semivolatiles

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOBKM8		3/31/94	4/7/94	4/28/94	7	28	none
BOBKN0, ~~7,8~~ 6/15/94		4/5/94	4/11/94	4/29/94	6	24	
BOBKP6, ~~9~~ 6/15/94		3/31/94	4/7/94	4/28/94	7	28	
BOBNQ0,1,2,6,7		3/31/94	4/7/94	4/28/94	7	28	
BOBNP9		3/31/94	4/14/94	5/4/94	14	34	d
BOBKN8		4/5/94	4/25/94	4/29/94	20	24	J

9613479.2413

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: W0024

Instrument ID: FINN Calibration Date(s): 04/26/94 04/26/94

Calibration Times: 1608 1831

LAB FILE ID: RRF20 = IC04261 RRF50 = IC04262
RRF80 = IC04263 RRF120= IC04264 RRF160= IC04265

COMPOUND		RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Phenol	*	1.476	1.733	1.767	1.841	1.671	1.698	8.1*
bis(2-Chloroethyl)Ether	*	1.187	1.351	1.361	1.340	1.432	1.334	6.7*
2-Chlorophenol	*	1.212	1.293	1.263	1.256	1.050	1.215	7.9*
1,3-Dichlorobenzene	*	1.263	1.182	1.290	1.180	1.150	1.213	5.0*
1,4-Dichlorobenzene	*	1.740	1.568	1.363	1.514	1.438	1.525	9.4*
1,2-Dichlorobenzene	*	1.127	1.228	1.245	1.301	1.328	1.246	6.2*
2-Methylphenol	*	0.923	1.019	0.968	1.107	1.159	1.035	9.4*
2,2'-oxybis(1-Chloropropane		1.768	1.895	1.994	2.258	2.439	2.071	13.2
4-Methylphenol	*	0.808	0.838	0.853	1.034	1.262	0.959	19.9*
N-Nitroso-Di-n-Propylamine	*	0.707	0.837	0.892	1.004	1.007	0.889	14.1*
Hexachloroethane	*	0.563	0.578	0.598	0.642	0.754	0.627	12.3*
Nitrobenzene	*	0.393	0.466	0.496	0.549	0.542	0.489	13.0*
Isophorone	*	0.754	0.868	0.875	0.935	0.894	0.865	7.8*
2-Nitrophenol	*	0.168	0.202	0.221	0.239	0.238	0.214	13.8*
2,4-Dimethylphenol	*	0.328	0.390	0.411	0.442	0.476	0.409	13.7*
bis(2-Chloroethoxy)Methane	*	0.360	0.438	0.458	0.501	0.520	0.455	13.8*
2,4-Dichlorophenol	*	0.258	0.299	0.309	0.319	0.327	0.302	8.9*
1,2,4-Trichlorobenzene	*	0.359	0.389	0.399	0.391	0.382	0.384	4.0*
Naphthalene	*	0.966	1.067	1.094	1.043	1.003	1.035	4.9*
4-Chloroaniline		0.286	0.341	0.349	0.357	0.364	0.339	9.2
Hexachlorobutadiene		0.259	0.277	0.281	0.277	0.275	0.274	3.1
4-Chloro-3-Methylphenol	*	0.233	0.288	0.317	0.344	0.372	0.311	17.2*
2-Methylnaphthalene	*	0.609	0.734	0.787	0.815	0.827	0.754	11.8*
Hexachlorocyclopentadiene		0.236	0.374	0.424	0.475	0.522	0.406	27.1
2,4,6-Trichlorophenol	*	0.302	0.407	0.424	0.470	0.510	0.423	18.6*
2,4,5-Trichlorophenol	*		0.438	0.468	0.509	0.554	0.492	10.2*
2-Chloronaphthalene	*	0.956	1.129	1.167	1.220	1.374	1.169	13.0*
2-Nitroaniline			0.395	0.441	0.462	0.508	0.452	10.4
Dimethylphthalate		1.083	1.297	1.345	1.377	1.464	1.313	10.8
Acenaphthylene	*	1.492	1.704	1.791	1.806	2.043	1.767	11.2*
2,6-Dinitrotoluene	*	0.228	0.282	0.299	0.321	0.328	0.292	13.7*
Acenaphthene	*	0.872	1.006	1.050	1.093	1.205	1.045	11.7*
2,4-Dinitrophenol			0.078	0.099	0.125	0.140	0.110	25.0
4-Nitrophenol			0.086	0.117	0.133	0.155	0.123	23.6
Dibenzofuran	*	1.267	1.494	1.577	1.653	1.802	1.559	12.7*
2,4-Dinitrotoluene	*	0.250	0.313	0.339	0.361	0.382	0.329	15.5*
Diethylphthalate		0.985	1.214	1.252	1.328	1.377	1.231	12.3

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

3-nitroaniline not reported

FORM VI SV-1 3/90

6/16/94

9613479.2414

6B

SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Instrument ID: 4500 Calibration Date(s): 04/13/94 04/13/94

Calibration Times: 0919 1229

LAB FILE ID: RRF20 = BIC0413E RRF50 = BCC0413
RRF80 = BIC0413C RRF120= BIC0413B RRF160= BIC0413A

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Phenol *	2.007	2.192	2.210	2.214	2.112	2.147	4.1*
bis(2-Chloroethyl)Ether *	1.787	1.764	1.785	1.778	1.790	1.781	0.6*
2-Chlorophenol *	1.403	1.398	1.421	1.452	1.378	1.410	2.0*
1,3-Dichlorobenzene *	1.475	1.465	1.497	1.469	1.428	1.467	1.7*
1,4-Dichlorobenzene *	1.510	1.505	1.517	1.502	1.446	1.496	1.9*
1,2-Dichlorobenzene *	1.388	1.372	1.383	1.347	1.314	1.361	2.2*
2-Methylphenol *	1.619	1.543	1.442	1.430	1.417	1.490	5.9*
2,2'-oxybis(1-Chloropropane	3.718	3.762	3.620	3.633	3.630	3.673	1.7
4-Methylphenol *	1.498	1.483	1.478	1.447	1.384	1.458	3.1*
N-Nitroso-Di-n-Propylamine *	1.275	1.281	1.226	1.282	1.195	1.252	3.1*
Hexachloroethane *	0.615	0.578	0.596	0.593	0.571	0.591	2.9*
Nitrobenzene *	0.470	0.477	0.481	0.478	0.467	0.475	1.2*
Isophorone *	0.906	0.921	0.918	0.913	0.913	0.914	0.6*
2-Nitrophenol *	0.175	0.187	0.193	0.194	0.192	0.188	4.2*
2,4-Dimethylphenol *	0.355	0.358	0.368	0.365	0.362	0.362	1.4*
bis(2-Chloroethoxy)Methane *	0.553	0.559	0.567	0.566	0.564	0.562	1.0*
2,4-Dichlorophenol *	0.268	0.280	0.281	0.274	0.277	0.276	1.9*
1,2,4-Trichlorobenzene *	0.293	0.297	0.292	0.287	0.289	0.292	1.3*
Naphthalene *	1.050	1.026	1.025	1.005	0.990	1.019	2.2*
4-Chloroaniline	0.387	0.431	0.432	0.430	0.442	0.424	5.1
Hexachlorobutadiene	0.148	0.150	0.147	0.144	0.143	0.146	2.0
4-Chloro-3-Methylphenol *	0.350	0.359	0.370	0.363	0.363	0.361	2.0*
2-Methylnaphthalene *	0.687	0.684	0.691	0.667	0.662	0.678	1.9*
Hexachlorocyclopentadiene	0.266	0.353	0.348	0.351	0.364	0.336	11.8
2,4,6-Trichlorophenol *	0.355	0.388	0.381	0.369	0.375	0.374	3.4*
2,4,5-Trichlorophenol *		0.433	0.421	0.402	0.408	0.416	3.3*
2-Chloronaphthalene *	1.156	1.187	1.200	1.118	1.108	1.154	3.5*
2-Nitroaniline		0.629	0.660	0.650	0.638	0.644	2.1
Dimethylphthalate	1.332	1.340	1.407	1.323	1.315	1.343	2.7
Acenaphthylene *	1.993	1.940	1.988	1.854	1.836	1.922	3.8*
2,6-Dinitrotoluene *	0.305	0.312	0.322	0.301	0.311	0.310	2.6*
Acenaphthene *	1.167	1.148	1.173	1.070	1.080	1.128	4.3*
2,4-Dinitrophenol		0.132	0.143	0.159	0.175	0.152	12.4
4-Nitrophenol		0.136	0.156	0.152	0.151	0.149	5.9
Dibenzofuran *	1.652	1.681	1.711	1.580	1.585	1.642	3.5*
2,4-Dinitrotoluene *	0.444	0.454	0.491	0.442	0.463	0.459	4.3*
Diethylphthalate	1.438	1.397	1.490	1.374	1.360	1.412	3.7

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

FORM VI SV-1 3/90

3-nitroaniline not reported

4/16/94

9613479.2415

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Instrument ID: 4500 Calibration date: 04/29/94 Time: 1130

Lab File ID: BCC0429 Init. Calib. Date(s): 04/13/94 04/13/94

Init. Calib. Times: 0919 1229

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Phenol	2.147	1.948	0.800	9.3	25.0
bis(2-Chloroethyl)Ether	1.781	1.609	0.700	9.7	25.0
2-Chlorophenol	1.410	1.389	0.800	1.5	25.0
1,3-Dichlorobenzene	1.467	1.517	0.600	-3.4	25.0
1,4-Dichlorobenzene	1.496	1.570	0.500	-4.9	25.0
1,2-Dichlorobenzene	1.361	1.448	0.400	-6.4	25.0
2-Methylphenol	1.490	1.365	0.700	8.4	25.0
2,2'-oxybis(1-Chloropropane)	3.673	3.038		17.3	
4-Methylphenol	1.458	1.479	0.600	-1.4	25.0
N-Nitroso-Di-n-Propylamine	1.252	0.815	0.500	34.9	25.0
Hexachloroethane	0.591	0.615	0.300	-4.1	25.0
Nitrobenzene	0.475	0.429	0.200	9.7	25.0
Isophorone	0.914	0.793	0.400	13.2	25.0
2-Nitrophenol	0.188	0.155	0.100	17.6	25.0
2,4-Dimethylphenol	0.362	0.335	0.200	7.5	25.0
bis(2-Chloroethoxy)Methane	0.562	0.520	0.300	7.5	25.0
2,4-Dichlorophenol	0.276	0.297	0.200	-7.6	25.0
1,2,4-Trichlorobenzene	0.292	0.329	0.200	-12.7	25.0
Naphthalene	1.019	1.049	0.700	-2.9	25.0
4-Chloroaniline	0.424	0.444		-4.7	
Hexachlorobutadiene	0.146	0.178		-21.9	
4-Chloro-3-Methylphenol	0.361	0.345	0.200	4.4	25.0
2-Methylnaphthalene	0.678	0.742	0.400	-9.4	25.0
Hexachlorocyclopentadiene	0.336	0.286		14.9	
2,4,6-Trichlorophenol	0.374	0.414	0.200	-10.7	25.0
2,4,5-Trichlorophenol	0.416	0.430	0.200	-3.4	25.0
2-Chloronaphthalene	1.154	1.207	0.800	-4.6	25.0
2-Nitroaniline	0.644	0.531		17.6	
Dimethylphthalate	1.343	1.419		-5.7	
Acenaphthylene	1.922	1.961	1.300	-2.0	25.0
2,6-Dinitrotoluene	0.310	0.329	0.200	-6.1	25.0
3-Nitroaniline	0.366	0.314		14.2	
Acenaphthene	1.128	1.209	0.800	-7.2	25.0
2,4-Dinitrophenol	0.152	0.038		75.0	
4-Nitrophenol	0.149	0.121		18.8	
Dibenzofuran	1.642	1.795	0.800	-9.3	25.0
2,4-Dinitrotoluene	0.459	0.482	0.200	-5.0	25.0

All other compounds must meet a minimum RRF of 0.010.

revised BOBKNO, 7, 8 6/16/94
6/24/94 ~~BOBKNO, 0, 1, 2, 6~~
~~BOBKP6~~

FORM VII SV-1 3/90

6/16/94

074

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Instrument ID: 4500 Calibration date: 05/04/94 Time: 1634

Lab File ID: BCC0504 Init. Calib. Date(s): 04/13/94 04/13/94

Init. Calib. Times: 0919 1229

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Phenol	2.147	2.105	0.800	2.0	25.0
bis(2-Chloroethyl)Ether	1.781	1.649	0.700	7.4	25.0
2-Chlorophenol	1.410	1.466	0.800	-4.0	25.0
1,3-Dichlorobenzene	1.467	1.452	0.600	1.0	25.0
1,4-Dichlorobenzene	1.496	1.575	0.500	-5.3	25.0
1,2-Dichlorobenzene	1.361	1.398	0.400	-2.7	25.0
2-Methylphenol	1.490	1.613	0.700	-8.3	25.0
2,2'-oxybis(1-Chloropropane)	3.673	3.445		6.2	
4-Methylphenol	1.458	1.576	0.600	-8.1	25.0
N-Nitroso-Di-n-Propylamine	1.252	0.769	0.500	38.6	25.0
Hexachloroethane	0.591	0.582	0.300	1.5	25.0
Nitrobenzene	0.475	0.451	0.200	5.1	25.0
Isophorone	0.914	0.885	0.400	3.2	25.0
2-Nitrophenol	0.188	0.199	0.100	-5.9	25.0
2,4-Dimethylphenol	0.362	0.342	0.200	5.5	25.0
bis(2-Chloroethoxy)Methane	0.562	0.558	0.300	0.7	25.0
2,4-Dichlorophenol	0.276	0.296	0.200	-7.2	25.0
1,2,4-Trichlorobenzene	0.292	0.306	0.200	-4.8	25.0
Naphthalene	1.019	1.108	0.700	-8.7	25.0
4-Chloroaniline	0.424	0.491		-15.8	
Hexachlorobutadiene	0.146	0.141		3.4	
4-Chloro-3-Methylphenol	0.361	0.350	0.200	3.0	25.0
2-Methylnaphthalene	0.678	0.742	0.400	-9.4	25.0
Hexachlorocyclopentadiene	0.336	0.254		24.4	
2,4,6-Trichlorophenol	0.374	0.398	0.200	-6.4	25.0
2,4,5-Trichlorophenol	0.416	0.424	0.200	-1.9	25.0
2-Chloronaphthalene	1.154	1.194	0.800	-3.5	25.0
2-Nitroaniline	0.644	0.535		16.9	
Dimethylphthalate	1.343	1.357		-1.0	
Acenaphthylene	1.922	1.982	1.300	-3.1	25.0
2,6-Dinitrotoluene	0.310	0.327	0.200	-5.5	25.0
3-Nitroaniline	0.366	0.377		-3.0	
Acenaphthene	1.128	1.147	0.800	-1.7	25.0
2,4-Dinitrophenol	0.152	0.137		9.9	
4-Nitrophenol	0.149	0.135		9.4	
Dibenzofuran	1.642	1.730	0.800	-5.4	25.0
2,4-Dinitrotoluene	0.459	0.445	0.200	3.0	25.0

All other compounds must meet a minimum RRF of 0.010.

~~BOBKM8~~ 6/16/94
BOBNP9

FORM VII SV-1 3/90

6/16/94

9613479.2417

4B
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKAA5614A

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: W0024

Lab File ID: AA5614 Lab Sample ID: AA5614

Instrument ID: FINN Date Extracted: 04/07/94

Matrix: (soil/water) SOIL Date Analyzed: 04/28/94

Level:(low/med) LOW Time Analyzed: 0402

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	BOBKM8	AA5444	AA5444	04/28/94
02	BOBKP6	AA5512	AA5512	04/28/94
03	BOBNQ0	AA5483	AA5483	04/28/94
04	BOBNQ1	AA5501	AA5501	04/28/94
05	BOBNQ2	AA5519	AA5519	04/28/94
06	BOBNQ6	AA5470	AA5470	04/28/94
07	BOBNQ7	AA5492	AA5492	04/28/94

COMMENTS: CLP,308,,SBLKAA5614A,LOW,SOIL,AA5614,BNA,EPA,
FINN: XTI-5 30M 50TO150@20D/M: 150TO250@10D/M:250TO330@20D/M

FORM IV SV 3/90

6/16/94

9613479.2418

4B
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKAA6020B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Lab File ID: AA6020 Lab Sample ID: AA6020

Instrument ID: 4500 Date Extracted: 04/11/94

Matrix: (soil/water) SOIL Date Analyzed: 04/29/94

Level:(low/med) LOW Time Analyzed: 1927

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	BOBKN0	AA5841	AA5841	04/29/94
02	BOBKN7	AA5835	AA5835	04/29/94
03	BOBKN0MS	AA5841MS	AA5841MS	04/29/94
04	BOBKN0MSD	AA5841MSD	AA5841MD	04/29/94

COMMENTS: CLP,,,SBLKAA6020B,L,S,AA6020,BNA,BLANK,
XTI-5/.32,BCC0429,DFB0429,,,,,4500,2UL INJECTION,

FORM IV SV 3/90

6/16/94

9613479.2419

4B
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKAA7430B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Lab File ID: AA7430 Lab Sample ID: AA7430

Instrument ID: 4500 Date Extracted: 04/25/94

Matrix: (soil/water) SOIL Date Analyzed: 04/29/94

Level:(low/med) LOW Time Analyzed: 2130

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	BOBKN8	AA7083	AA7083	04/29/94

COMMENTS: CLP,,,SBLKAA7430B,L,S,AA7430,BNA,BLANK,
XTI-5/.32,BCC0429,DFB0429,,,,,4500,2UL INJECTION,

FORM IV SV 3/90

6/16/94

9613479.2420

4B
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

SBLKAA6337B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Lab File ID: AA6337A Lab Sample ID: AA6337

Instrument ID: 4500 Date Extracted: 04/14/94

Matrix: (soil/water) SOIL Date Analyzed: 05/05/94

Level:(low/med) LOW Time Analyzed: 1510

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	BOBNP9	AA6046	AA6046	05/04/94

COMMENTS: CLP,,,SBLKAA6337B,L,S,AA6337,BNA,BLANK,
XTI-5/.32,BIC9,DFB0505,,,,,4500,2UL INJECTION

FORM I[illegible] 3/90

6/16/94

079

9613479.2421

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA5614A

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5614

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA5614

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

FORM I SV-1 3/90

6/15/94

080

9613479.2422

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA5614A

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: WO024

Matrix: (soil/water) SOIL Lab Sample ID: AA5614

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA5614

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-Methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	35	J
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 3/90

AJS 6/15/94

9613479.2423

BNA-TIC L0000001

EPA SAMPLE NO.

SBLKAA5614A

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 308 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA5614

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA5614

Level: (low/med) LOW Date Received: 04/06/94 6/13/94

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/07/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/28/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	4.45	9700	AJN
2.	UNKNOWN	16.68	81	J
3.	UNKNOWN	22.25	72	J

6/15/94

9613479.2424

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA6020B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6020

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6020

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	~~U~~ UJ
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

AAJ 6/15/94

9613479.2425

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA6020B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6020

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6020

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-Methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	36	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	46	J
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2 3/90

6/15/94

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKAA6020B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 331 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6020

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6020

Level: (low/med) LOW Date Received: 04/08/94 mm 6/6/94

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/11/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 638-04-0	CYCLOHEXANE, 1,3-DIMETHYL-,	2.02	150	JN
2. 141-79-7	3-PENTENE-2-ONE-, 4-METHYL-	2.37	400	AJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.22	9200	AJN
4.	UNKNOWN	20.85	70	J

SAS 6/15/94

AJS 6/15/94

9613479.2427

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA7430B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA7430

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7430

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	~~U~~
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

FORM I SV-1 3/90

6/15/94

9613479.2428

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA7430B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA7430

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7430

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/25/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-Methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

3/90

AAS 6/15/94

9613479.2429

BNA-TIC 00000001

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKAA7430B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 403 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA7430

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA7430

Level: (low/med) LOW Date Received: 04/16/94

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/25/94 6/6/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 04/29/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 638-04-0	CYCLOHEXANE, 1,3-DIMETHYL-,	2.05	120	JN
2. 141-79-7	3-PENTENE-2-ONE-, 4-METHYL-	2.38	400	AJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	3.23	7100	AJN
4.	UNKNOWN	19.42	140	J

AAS 6/15/94

FORM I SV-TIC 3/90

9613479.2430

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA6337B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6337

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6337A

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/14/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/05/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	800	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	800	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
99-09-2	3-Nitroaniline	800	U
83-32-9	Acenaphthene	330	U

AS 6/15/94

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKAA6337B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6337

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6337A

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/14/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/05/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	800	U
100-02-7	4-Nitrophenol	800	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	800	U
534-52-1	4,6-Dinitro-2-Methylphenol	800	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	800	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	66	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	46	J
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

6/15/94

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BNA-TIC N0000001

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

SBLKAA6337B

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 338 SAS No.: _____ SDG No.: W0024

Matrix: (soil/water) SOIL Lab Sample ID: AA6337

Sample wt/vol: 30.0 (g/mL) G Lab File ID: AA6337A

Level: (low/med) LOW Date Received: 04/12/94

% Moisture: _____ decanted: (Y/N) N Date Extracted: 04/14/94 6/6/94

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 05/05/94

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: ____

Number TICs found: 16

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 589-90-2	CYCLOHEXANE, 1,4-DIMETHYL-	1.82	160	JN
2. 141-79-7	3-PENTENE-2-ONE, 4-METHYL-	2.17	180	AJN
3. 123-42-2	2-PENTANONE, 4-HYDROXY-4-MET	2.98	9200	AJN
4.	UNKNOWN	7.62	80	J
5.	UNKNOWN	18.32	210	J
6.	UNKNOWN	19.83	180	J
7.	UNKNOWN	20.62	110	J
8.	UNKNOWN	21.28	73	J
9.	UNKNOWN	22.57	120	J
10.	UNKNOWN	22.65	120	J
11.	UNKNOWN PHTHALATE	22.75	130	J
12.	UNKNOWN PHTHALATE	22.90	200	J
13.	UNKNOWN PHTHALATE	22.98	280	J
14.	UNKNOWN PHTHALATE	23.07	300	J
15.	UNKNOWN PHTHALATE	23.15	170	J
16.	UNKNOWN PHTHALATE	23.23	93	J

6/15/94

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MEMORANDUM

JUN 1994
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TQO

TO: 200 UP-2 Project QA Record

June 24, 1994

FR: Thomas Stapp, Golder Associates Inc.

RE: RADIOCHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE W0024-ITC-034 (923-E418 W0024R.UP2)

INTRODUCTION

This memo presents the results of data validation on data package W0024-ITC-034 prepared by International Technology (ITC) laboratory, Richland, under contract to Westinghouse/Hanford using WHC approved methods. Information concerning the samples validated along with the analyses reported and the methods of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B0BKM8	03/31/94	SOIL	SEE NOTE 1.
B0BNQ6	03/31/94	SOIL	
B0BNQ0	03/31/94	SOIL	
B0BNQ7	03/31/94	SOIL	
B0BNQ1	03/31/94	SOIL	
B0BKP6	03/31/94	SOIL	
B0BNQ2	03/31/94	SOIL	
B0BKN7	04/05/94	SOIL	
B0BKN0	03/31/94	SOIL	
B0BNP9	04/05/94	SOIL	
B0BKN8	04/05/94	SOIL	

RECEIVED
JUN 27 1994
VALIDATION DOCUMENTATION
SDLA

NOTES:

1. Indicates the samples were analyzed for gross alpha/beta, strontium-90 (beta counting), selenium-79 and technetium-99 (liquid scintillation), isotopic plutonium, uranium, curium-244, americium-241, and neptunium-237 (alpha spectroscopy), and selected radioisotopes by gamma spectroscopy.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

001

Precision. Goals for precision were met with the exception of the "Minor Deficiencies" summarized below.

Accuracy. Goals for accuracy were met with the exception of the "Minor Deficiencies" summarized below.

Sample Result Verification. All sample results were supported in the raw data with the exception of results and MDA's that could not be verified by recalculation for technetium-99 and MDA's could not be verified by recalculation for neptunium-237 and selenium-79. Attachments 2 and 5 provide a summary of the samples affected and qualifications applied.

The total uranium result for sample B0BKM8 was reported incorrectly and has been changed on the laboratory report form.

Detection Limits. Detection limit goals were met with the exception of MDA for europium-152, europium-154, europium-155 and technetium-99.

Completeness. The data package was complete for all requested analyses. A total of eleven (11) samples were validated in this data package with a total of 368 determinations reported, of which 366 were deemed valid. This results in a completeness of 99 percent, which meets the work plan objective of 90%.

MAJOR DEFICIENCIES

Major deficiencies were identified during data validation which required qualification of data as unusable.

Continuing Calibrations Checks

- Background counts were unacceptable for plutonium-239/240 on alpha spectrometer detector number 19. Samples that were counted on this detector have been qualified as unusable (R for detects, UR for non-detects).

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Laboratory Blanks

- Americium-241 and plutonium-239/240 were detected in method blanks. Attachments 2 and 5 provide a summary of samples affected, qualification applied and supporting documentation.

Laboratory Duplicates

- Relative percent difference for technetium-99 was unacceptable. Attachments 2 and 5 provide a summary of samples affected, qualification applied and supporting documentation.

Matrix Spikes

- Matrix spike recovery for selenium-79 was unacceptable. Attachments 2 and 5 provide a summary of samples affected, qualification applied and supporting documentation.

Laboratory Control Sample (LCS)

- LCS recoveries for neptunium-237 and selenium-79 were unacceptable. Attachments 2 and 5 provide a summary of samples affected, qualification applied and supporting documentation.

Gamma Spectrometry Detector Geometries

- Sample B0BKN7 was analyzed in a different geometry than the associated quality control samples, therefore associated results have been qualified as estimated. Attachments 2 and 5 provide a summary of qualification applied and supporting documentation.

DATA REPORTING

- Results reported at a concentration of less than the minimum detectable activity (MDA) have been qualified as undetected (U) and the MDA is reported in the validated data summary in Attachment 3.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Radiochemical Analyses, WHC-SD-EN-SPP-001, Rev. 1, 1993. Westinghouse Hanford Company, Richland, Washington.

9613979 2496

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF RADIOCHEMISTRY DATA REPORTING QUALIFIERS

U - Indicates the constituent was analyzed for, but was not detected at a concentration above the minimum detectable activity (MDA). The concentration reported is the MDA corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and was not detected at a concentration above the MDA. Due to a quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample MDA. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. The concentration reported is qualified as estimated due to a quality control deficiency identified during data validation. The associated data should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported is qualified as unusable due to a quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported is qualified as unusable due to a quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

WHC-SD-EN-SPP-001, REV.1

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: W0024-ITC-034	REVIEWER: T. STAPP	DATE: 6-22-94	PAGE 1 OF 1
COMMENTS: RADIOCHEMISTRY			
COMPOUND/ANALYTE	QUALIFIER	SAMPLES AFFECTED	REASON
AMERICIUM-241	J	ALL EXCEPT B0BKN7	CONTAMINANT DETECTED IN BLANK
PLUTONIUM-239/240	J	B0BNQ1 B0BKP6 B0BNQ2 B0BNP9	CONTAMINANT DETECTED IN BLANK
TECHNETIUM-99	J/UJ	ALL	RPD IS > 2X RDL FOR DUPLICATE SAMPLE
SELENIUM-79	J/UJ	ALL	LCS RECOVERY <70% BUT >30%
SELENIUM-79	J/UJ	ALL	MS RECOVERY <60% BUT >10%
NEPTUNIUM-237	J	B0BNQ0 B0BNQ7 B0BNQ2 B0BKN7 B0BKN8	LCS RECOVERY >130%
ALL GAMMA ANALYTES	J/UJ	B0BKN7	DISSIMILAR GEOMETRY USED FOR QC AND SAMPLES
NEPTUNIUM-237, SELENIUM-79, TECHNETIUM-99	UJ	ALL NON-DETECTS	MDA NOT VERIFIABLE BY RECALCULATION
PLUTONIUM-239/240	R/UR	B0BNQ6 B0BKP6	BACKGROUND COUNT CHECKS EXCEED CONTROL LIMITS
TECHNETIUM-99	J/UJ	ALL	RESULTS AND MDA NOT VERIFIABLE BY RECALCULATION

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

96134792411

Validated Data Summary, Data Package: W0024-11C-034

	Samp#	B0BKN8		B0BKN0		B0BKN7		B0BKN8		B0BKP6		B0BKP9	
	Date	3-31-94		4-5-94		4-5-94		4-5-94		3-31-94		3-31-94	
	Location	U1/U2 TILE FIELD		U1/U2 TILE FIELD		207-U BASIN		207-U BASIN		216-U-11		216-U-10	
	Depth	---		---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
AMERICIUM-241	PCI/G	0.705	J	0.716	J	4.310		0.933	J	0.679	J	0.627	J
CURIUM-242	PCI/G	0.032	U	0.015	U	0.023	U	0.021	U	0.023	U	0.035	U
CURIUM-244	PCI/G	0.029	U	0.018	U	0.033		0.017	U	0.023	U	0.017	U
NEPTUNIUM-237	PCI/G	0.017	UJ	0.01[illegible]	UJ	0.033	J	0.014	J	0.011	UJ	0.311	UJ
PLUTONIUM-238	PCI/G	0.032	U	0.07[illegible]	U	0.650		0.037		0.022	U	0.020	U
PLUTONIUM-239/240	PCI/G	0.271		0.148		5.150		1.220		0.023	R	0.029	J
URANIUM-234	PCI/G	0.537		0.417		32.900		1.170		0.496		0.689	
URANIUM-235	PCI/G	0.045	UJ	0.036	U	1.050		0.061		0.042	U	0.043	U
URANIUM-238	PCI/G	0.765		0.512		11.230		1.120		0.503		0.468	
POTASSIUM-40	PCI/G	14.100		13.900		9.670	J	13.000		13.800		13.100	
COBALT-60	PCI/G	0.018	U	0.017	U	44.700	J	0.178		0.015	U	0.014	U
EUROPIUM-152	PCI/G	0.087	U	0.089	U	0.642	J	0.183		0.076	U	0.073	U
BISMUTH-212	PCI/G	---		---		---		---		---		---	
CESIUM-137	PCI/G	50.100		13.500		209.000	J	1233.000		0.014	U	181.000	
CESIUM-134	PCI/G	0.034	U	0.020	U	0.122	UJ	0.154	U	0.012	U	0.055	U
RUTHENIUM-106	PCI/G	0.342	U	0.212	U	1.280	UJ	1.580	U	0.120	U	0.570	U
RADIUM-224	PCI/G	0.780		0.762		---		---		0.769		0.742	
SODIUM-22	PCI/G	0.022	U	0.020	U	8.230	J	0.047		0.017	U	0.018	U
EUROPIUM-155	PCI/G	0.117	U	0.088		5.430	J	0.520	U	0.043	U	0.203	U
THORIUM-234	PCI/G	---		5.040		69.800	J	---		---		---	
ANTIMONY-125	PCI/G	---		0.095	U	---		---		---		---	
EUROPIUM-154	PCI/G	0.052	U	0.056	U	22.700	J	0.130		0.048	U	0.049	U
RADIUM-226	PCI/G	0.619		0.642		0.900	J	---		0.558		0.513	
URANIUM-235 (by gamma scan)	PCI/G	---		---		1.340	J	---		---		---	
URANIUM-238 (by gamma scan)	PCI/G	0.675		0.650		0.683	J	---		0.616		0.550	
ACTINIUM-228	PCI/G	0.832		0.804		---		---		0.760		---	
THALLIUM-208	PCI/G	---		0.283		---		---		0.232		---	
BISMUTH-214	PCI/G	0.619		0.642		---		0.310		0.553		0.513	
LEAD-212	PCI/G	0.764		0.733		0.625	J	0.531		0.737		0.710	
LEAD-214	PCI/G	0.675		0.650		0.683	J	---		0.616		0.550	
THORIUM-232	PCI/G	0.832		0.804		---		---		0.760		0.755	
RADIUM-228	PCI/G	0.845		0.814		---		---		0.771		---	
IODINE-129	PCI/G	1.650	U	1.150	U	4.400	U	7.460	U	0.821	U	2.830	U
ALPHA	PCI/G	20.700		13.200		60.200		15.700		14.900		9.960	
BETA	PCI/G	81.100		44.100		217.000		701.000		26.600		197.000	
TOTAL STRONTIUM	PCI/G	6.600		3.780		32.700		4.510		0.137	U	4.750	
SELENIUM-79	PCI/G	2.400	J	2.770	J	3.550	J	17.400	J	1.470	UJ	4.030	J
TECHNETIUM-99	PCI/G	0.830	UJ	0.830	UJ	2.750	J	0.830	UJ	0.830	UJ	0.830	UJ
URANIUM	UG/G	2.120		1.870		3[illegible].800		2.040		1.380		1.890	

Revised page
7/14/94

Validated Data Summary, Data Package: W0024-ITC-034

	Samp#	B0BNQ0		B0BNQ1		B0BNQ2		B0BNQ6		B0BNQ7	
	Date	3-31-94		3-31-94		3-31-94		3-31-94		3-31-94	
	Location	216-U-10		216-U-10		216-U-10		216-U-10		216-U-10	
	Depth	---		---		---		---		---	
	Type	SOIL		SOIL		SOIL		SOIL		SOIL	
	Comments	---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
AMERICIUM-241	PCI/G	0.803	J	0.684	J	0.650	J	0.748	J	0.842	J
CURIUM-242	PCI/G	0.015	U	0.023	U	0.015	U	0.015	U	0.016	U
CURIUM-244	PCI/G	0.012	U	0.019	U	0.012	U	0.013	U	0.019	U
NEPTUNIUM-237	PCI/G	0.014	J	0.011	UJ	0.027	J	0.017	UJ	0.020	J
PLUTONIUM-238	PCI/G	0.027	U	0.046	U	0.036	U	0.058	U	0.038	U
PLUTONIUM-239/240	PCI/G	0.242		0.033	J	0.075	J	0.229	R	0.198	
URANIUM-234	PCI/G	0.629		0.584		1.290		0.931		1.540	
URANIUM-235	PCI/G	0.030	U	0.038	U	0.076	U	0.127		0.058	U
URANIUM-238	PCI/G	0.921		0.547		0.956		0.754		1.510	
POTASSIUM-40	PCI/G	14.600		13.200		13.000		15.000		13.900	
COBALT-60	PCI/G	0.020	U	0.015	U	0.015	U	0.019	U	0.016	U
EUROPIUM-152	PCI/G	0.092	U	0.085		0.080	U	0.091		0.079	U
BISMUTH-212	PCI/G	0.580		---		---		---		---	
CESIUM-137	PCI/G	34.300		0.122		146.000		36.200		106.000	
CESIUM-134	PCI/G	0.028	U	0.012	U	0.048	U	0.028	U	0.043	U
RUTHENIUM-106	PCI/G	0.289	U	0.116	U	0.458	U	0.302	U	0.459	U
RADIUM-224	PCI/G	0.768		0.683		0.584		0.746		0.634	
SODIUM-22	PCI/G	0.022	U	0.018	U	0.019	U	0.020	U	0.019	U
EUROPIUM-155	PCI/G	0.104	U	0.043	U	0.183	U	0.104	U	0.159	U
THORIUM-234	PCI/G	---		7.070		---		---		---	
ANTIMONY-125	PCI/G	---		---		---		---		---	
EUROPIUM-154	PCI/G	0.059	U	0.048	U	0.053	U	0.055	U	0.054	U
RADIUM-226	PCI/G	0.593		0.557		0.489		0.533		0.545	
URANIUM-235 (by gamma scan)	PCI/G	---		---		---		---		---	
URANIUM-238 (by gamma scan)	PCI/G	0.656		0.581		0.444		0.711		0.528	
ACTINIUM-228	PCI/G	0.838		0.700		0.611		0.757		---	
THALLIUM-208	PCI/G	---		0.233		---		0.232		---	
BISMUTH-214	PCI/G	0.593		0.557		0.489		0.533		0.545	
LEAD-212	PCI/G	0.736		0.654		0.594		0.715		0.607	
LEAD-214	PCI/G	0.656		0.581		0.444		0.711		0.528	
THORIUM-232	PCI/G	0.838		0.700		0.611		0.757		0.689	
RADIUM-228	PCI/G	0.850		0.710		0.608		0.768		---	
IODINE-129	PCI/G	1.480	U	0.840	U	3.030	U	1.540	U	2.300	U
ALPHA	PCI/G	13.700		11.100		18.500		15.300		12.200	
BETA	PCI/G	78.400		24.700		505.000		72.100		284.000	
TOTAL STRONTIUM	PCI/G	1.380		0.239	U	12.200		1.170		7.980	
SELENIUM-79	PCI/G	1.470	UJ	1.470	UJ	5.410	J	1.850	J	5.310	J
TECHNETIUM-99	PCI/G	0.830	UJ	0.830	UJ	0.830	UJ	0.830	UJ	0.895	J
URANIUM	UG/G	2.260		1.490		5.450		2.720		5.240	

Verified [illegible] 6-24-94

9613479.2442

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9613479.2443

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406801
MATRIX: SOIL
WHC ID: BOBKM8
DATE RECEIVE 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	7.05E-01	1.34E-01	1.80E-01	2.56E-02	0.571	RD3302	J
CM-242	-6.28E-04	1.26E-03	1.26E-03	3.16E-02	0.571	RD3302	U
CM-244	5.37E-03	1.29E-02	1.29E-02	2.92E-02	0.571	RD3302	U
NP-237	1.30E-02	1.92E-02	1.94E-02	1.68E-02	0.615	RD3208	UJ
PU-238	0.00E+00	0.00E+00	3.53E-02	3.19E-02	0.354	RD3209	U
PU239/40	2.71E-01	1.13E-01	1.24E-01	3.18E-02	0.354	RD3209	
U-234	5.37E-01	1.46E-01	1.68E-01	5.56E-02	0.423	RD3234	
U-235	8.26E-03	1.98E-02	1.98E-02	4.49E-02	0.423	RD3234	UJ
U-238DA	7.65E-01	1.74E-01	2.11E-01	4.90E-02	0.423	RD3234	
K-40	1.41E+01	4.71E-01	1.48E+00	N/A	0	RD3219	
CO-60	7.21E-03	1.06E-02	1.06E-02	1.85E-02	0	RD3219	U
EU-152	-5.87E-04	5.16E-02	5.16E-02	8.74E-02	0	RD3219	U
CS-137DA	5.01E+01	2.24E-01	5.01E+00	N/A	0	RD3219	
CS-134	1.41E-03	2.06E-02	2.06E-02	3.40E-02	0	RD3219	U
RU-106DA	-1.96E-01	2.11E-01	2.11E-01	3.42E-01	0	RD3219	U
RA-224DA	7.80E-01	7.61E-02	1.09E-01	N/A	0	RD3219	
NA-22	2.07E-02	1.24E-02	1.26E-02	2.24E-02	0	RD3219	U
EU-155	-6.39E-04	7.08E-02	7.08E-02	1.17E-01	0	RD3219	U
EU-154	5.67E-02	3.40E-02	3.45E-02	6.15E-02	0	RD3219	U
RA-226DA	6.19E-01	8.90E-02	1.08E-01	N/A	0	RD3219	
U-238DA	6.75E-01	9.75E-02	1.19E-01	N/A	0	RD3219	
AC-228	8.32E-01	8.13E-02	1.16E-01	N/A	0	RD3219	
BI-214	6.19E-01	8.90E-02	1.08E-01	N/A	0	RD3219	
PB-212	7.44E-01	7.26E-02	1.04E-01	N/A	0	RD3219	
PB-214	6.75E-01	9.75E-02	1.19E-01	N/A	0	RD3219	
TH-232DA	8.32E-01	8.13E-02	1.16E-01	N/A	0	RD3219	
RA-228DA	8.45E-01	8.26E-02	1.18E-01	N/A	0	RD3219	
I-129LP	-3.52E+00	1.09E+00	1.14E+00	1.65E+00	0	RD3219	U
ALPHA	2.07E+01	6.46E+00	6.84E+00	4.65E+00	1	RD3222	
BETA	8.11E+01	6.02E+00	8.05E+00	2.84E+00	1	RD3222	
TOTAL-SR	6.60E+00	3.14E-01	1.61E+00	1.56E-01	0.747	RD3204	
SE-79	2.40E+00	7.34E-01	2.15E+00	1.47E+00	0.645	RD3253	J
TC-99	1.98E-02	3.61E-01	1.49E+00	8.30E-01	0.682	ITAS-IT-RS-0001	UJ
URANIUM	~~0.00E+00~~ 2.12E+00	N/A	3.18E-01	~~5.67E-03~~	0.931	RD4200	~~U~~ J RS 6-24-9

Verified RS 6-22-94

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682A-6-93

9613479.2444

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406802
MATRIX: SOIL
WHC ID: BOBNQ6
DATE RECEIVE 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	7.48E-01	1.18E-01	1.63E-01	1.25E-02	0.784	RD3302	J
CM-242	0.00E+00	0.00E+00	1.71E-02	1.55E-02	0.784	RD3302	U
CM-244	0.00E+00	0.00E+00	1.39E-02	1.26E-02	0.784	RD3302	U
NP-237	6.23E-03	1.36E-02	1.36E-02	1.67E-02	0.615	RD3208	UJ
PU-238	3.38E-02	4.21E-02	4.26E-02	5.78E-02	0.345	RD3209	U
PU239/40	2.29E-01	1.05E-01	1.14E-01	3.26E-02	0.345	RD3209	R
U-234	9.31E-01	2.34E-01	2.90E-01	7.28E-02	0.285	RD3234	
U-235	1.27E-01	8.77E-02	9.08E-02	7.80E-02	0.285	RD3234	
U-238DA	7.54E-01	2.11E-01	2.52E-01	8.25E-02	0.285	RD3234	
K-40	1.50E+01	4.89E-01	1.58E+00	N/A	N/A	RD3219	
CO-60	8.64E-03	1.06E-02	1.07E-02	1.92E-02	N/A	RD3219	U
EU-152	9.14E-02	4.67E-02	4.76E-02	9.01E-02	N/A	RD3219	
CS-137DA	3.62E+01	1.70E-01	3.63E+00	N/A	N/A	RD3219	
CS-134	-2.40E-03	1.72E-02	1.72E-02	2.84E-02	N/A	RD3219	U
RU-106DA	1.27E-03	1.83E-01	1.83E-01	3.02E-01	N/A	RD3219	U
RA-224DA	7.46E-01	5.91E-02	9.51E-02	N/A	N/A	RD3219	
NA-22	-1.21E-03	1.17E-02	1.17E-02	1.97E-02	N/A	RD3219	U
EU-155	3.02E-02	6.69E-02	6.69E-02	1.04E-01	N/A	RD3219	U
EU-154	-3.34E-03	3.21E-02	3.21E-02	5.47E-02	N/A	RD3219	U
RA-226DA	5.33E-01	6.98E-02	8.78E-02	N/A	N/A	RD3219	
U-238DA	7.11E-01	1.06E-01	1.28E-01	N/A	N/A	RD3219	
AC-228	7.57E-01	7.73E-02	1.08E-01	N/A	N/A	RD3219	
TL-208	2.32E-01	3.82E-02	4.47E-02	N/A	N/A	RD3219	
BI-214	5.33E-01	6.98E-02	8.78E-02	N/A	N/A	RD3219	
PB-212	7.15E-01	5.67E-02	9.12E-02	N/A	N/A	RD3219	
PB-214	7.11E-01	1.06E-01	1.28E-01	N/A	N/A	RD3219	
TH-232DA	7.57E-01	7.73E-02	1.08E-01	N/A	N/A	RD3219	
RA-228DA	7.68E-01	7.84E-02	1.10E-01	N/A	N/A	RD3219	
I-129LP	-2.04E+00	9.76E-01	9.97E-01	1.54E+00	N/A	RD3219	U
ALPHA	1.53E+01	5.64E+00	5.88E+00	4.57E+00	1	RD3222	
BETA	7.21E+01	5.70E+00	7.42E+00	2.82E+00	1	RD3222	
TOTAL-SR	1.17E+00	1.38E-01	3.13E-01	1.51E-01	0.762	RD3204	
SE-79	1.85E+00	7.31E-01	2.10E+00	1.47E+00	0.645	RD3253	J
TC-99	2.51E-01	3.61E-01	1.51E+00	8.30E-01	0.682	ITAS-IT-RS-0001	UJ
URANIUM	2.72E+00	N/A	4.08E-01	5.67E-03	0.931	RD4200	

Verified RS 6-22-94

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682A-6-93

9613479.2445

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0024

LAB SAMPLE ID: 40406803 MATRIX: SOIL

WHC ID: BOBNQ0 DATE RECEIVE 4/5/94

REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	8.03E-01	1.20E-01	1.71E-01	2.06E-02	0.804	RD3302	J
CM-242	0.00E+00	0.00E+00	1.68E-02	1.51E-02	0.804	RD3302	U
CM-244	0.00E+00	0.00E+00	1.36E-02	1.23E-02	0.804	RD3302	U
NP-237	1.35E-02	1.92E-02	1.94E-02	1.13E-02	0.615	RD3208	J
PU-238	1.74E-02	1.95E-02	1.97E-02	2.73E-02	0.863	RD3209	U
PU239/40	2.42E-01	6.90E-02	7.66E-02	3.31E-02	0.863	RD3209	
U-234	6.29E-01	1.37E-01	1.64E-01	4.20E-02	0.559	RD3234	
U-235	2.17E-02	2.58E-02	2.60E-02	2.99E-02	0.559	RD3234	U
U-238DA	9.21E-01	1.66E-01	2.11E-01	3.40E-02	0.559	RD3234	
K-40	1.46E+01	4.96E-01	1.54E+00	N/A	N/A	RD3219	
CO-60	8.04E-03	1.11E-02	1.12E-02	1.98E-02	N/A	RD3219	U
EU-152	8.79E-02	4.63E-02	4.72E-02	9.20E-02	N/A	RD3219	U
CS-137DA	3.43E+01	1.66E-01	3.43E+00	N/A	N/A	RD3219	
CS-134	-4.73E-03	1.77E-02	1.77E-02	2.81E-02	N/A	RD3219	U
RU-106DA	-7.74E-02	1.83E-01	1.83E-01	2.89E-01	N/A	RD3219	U
RA-224DA	7.68E-01	7.47E-02	1.07E-01	N/A	N/A	RD3219	
NA-22	1.36E-02	1.19E-02	1.20E-02	2.15E-02	N/A	RD3219	U
EU-155	9.23E-02	6.19E-02	6.26E-02	1.04E-01	N/A	RD3219	U
EU-154	2.02E-02	3.38E-02	3.38E-02	5.91E-02	N/A	RD3219	U
RA-226DA	5.93E-01	6.66E-02	8.92E-02	N/A	N/A	RD3219	
U-238DA	6.56E-01	8.52E-02	1.08E-01	N/A	N/A	RD3219	
AC-228	8.38E-01	9.14E-02	1.24E-01	N/A	N/A	RD3219	
BI-212	5.80E-01	1.59E-01	1.69E-01	N/A	N/A	RD3219	
BI-214	5.93E-01	6.66E-02	8.91E-02	N/A	N/A	RD3219	
PB-212	7.36E-01	7.16E-02	1.03E-01	N/A	N/A	RD3219	
PB-214	6.56E-01	8.52E-02	1.08E-01	N/A	N/A	RD3219	
TH-232DA	8.38E-01	9.14E-02	1.24E-01	N/A	N/A	RD3219	
RA-228DA	8.50E-01	9.27E-02	1.26E-01	N/A	N/A	RD3219	
I-129LP	-6.52E-01	8.97E-01	9.00E-01	1.48E+00	N/A	RD3219	U
ALPHA	1.37E+01	5.25E+00	5.46E+00	3.96E+00	1	RD3222	
BETA	7.84E+01	5.94E+00	7.87E+00	2.87E+00	1	RD3222	
TOTAL-SR	1.38E+00	1.61E-01	3.60E-01	1.78E-01	0.653	RD3204	
SE-79	1.01E+00	7.04E-01	2.00E+00	1.47E+00	0.645	RD3253	UJ
TC-99	4.95E-01	3.65E-01	1.53E+00	8.30E-01	0.682	ITAS-IT-RS-0001	UJ
URANIUM	2.26E+00	N/A	3.39E-01	5.67E-03	0.931	RD4200	

Verified RS 6-22-94

582A-6-93

9613479.2446

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406804
MATRIX: SOIL
WHC ID: BOBNQ7
DATE RECEIVE 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	8.42E-01	1.27E-01	1.81E-01	1.29E-02	0.762	RD3302	J
CM-242	0.00E+00	0.00E+00	1.76E-02	1.59E-02	0.762	RD3302	U
CM-244	-3.82E-04	7.65E-04	7.67E-04	1.92E-02	0.762	RD3302	U
NP-237	2.03E-02	2.34E-02	2.38E-02	1.12E-02	0.615	RD3208	J
PU-238	1.41E-02	2.82E-02	2.84E-02	3.82E-02	0.295	RD3209	U
PU239/40	1.98E-01	1.06E-01	1.13E-01	3.82E-02	0.295	RD3209	
U-234	1.54E+00	2.59E-01	3.60E-01	6.14E-02	0.383	RD3234	
U-235	4.00E-02	4.36E-02	4.41E-02	5.80E-02	0.383	RD3234	U
U-238DA	1.51E+00	2.56E-01	3.54E-01	5.42E-02	0.383	RD3234	
K-40	1.39E+01	4.36E-01	1.46E+00	N/A	N/A	RD3219	
CO-60	-2.35E-03	9.66E-03	9.66E-03	1.60E-02	N/A	RD3219	U
EU-152	7.85E-02	4.00E-02	4.07E-02	7.93E-02	N/A	RD3219	U
CS-137DA	1.06E+02	2.06E-01	1.06E+01	N/A	N/A	RD3219	
CS-134	-4.67E-03	2.65E-02	2.65E-02	4.29E-02	N/A	RD3219	U
RU-106DA	2.39E-01	2.78E-01	2.79E-01	4.59E-01	N/A	RD3219	U
RA-224DA	6.34E-01	8.81E-02	1.09E-01	N/A	N/A	RD3219	
NA-22	4.31E-03	1.13E-02	1.13E-02	1.94E-02	N/A	RD3219	U
EU-155	7.24E-02	1.03E-01	1.03E-01	1.59E-01	N/A	RD3219	U
EU-154	3.73E-02	2.99E-02	3.01E-02	5.36E-02	N/A	RD3219	U
RA-226DA	5.45E-01	9.02E-02	1.05E-01	N/A	N/A	RD3219	
U-238DA	5.28E-01	1.04E-01	1.17E-01	N/A	N/A	RD3219	
BI-214	5.45E-01	9.02E-02	1.05E-01	N/A	N/A	RD3219	
PB-212	6.07E-01	8.44E-02	1.04E-01	N/A	N/A	RD3219	
PB-214	5.28E-01	1.04E-01	1.17E-01	N/A	N/A	RD3219	
TH-232DA	6.89E-01	7.40E-02	1.01E-01	N/A	N/A	RD3219	
I-129LP	-4.33E+00	1.47E+00	1.53E+00	2.30E+00	N/A	RD3219	U
ALPHA	1.22E+01	5.10E+00	5.27E+00	4.48E+00	1	RD3222	
BETA	2.84E+02	1.10E+01	2.17E+01	2.95E+00	1	RD3222	
TOTAL-SR	7.98E+00	3.40E-01	1.95E+00	1.53E-01	0.778	RD3204	
SE-79	5.31E+00	7.93E-01	2.46E+00	1.47E+00	0.645	RD3253	J
TC-99	8.95E-01	3.72E-01	1.56E+00	8.30E-01	0.682	ITAS-IT-RS-0001	J
URANIUM	5.24E+00	N/A	7.86E-01	5.67E-03	0.931	RD4200	

Verified 6-22-94

9613479.2447

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0024

LAB SAMPLE ID: 40406805 MATRIX: SOIL

WHC ID: BOBNQ1 DATE RECEIVE 4/5/94

REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	6.84E-01	1.12E-01	1.53E-01	2.45E-02	0.79	RD3302	J
CM-242	-4.55E-04	9.10E-04	9.13E-04	2.29E-02	0.79	RD3302	U
CM-244	-3.70E-04	7.39E-04	7.41E-04	1.86E-02	0.79	RD3302	U
NP-237	6.77E-03	1.36E-02	1.36E-02	1.13E-02	0.615	RD3208	UJ
PU-238	1.31E-02	2.36E-02	2.37E-02	4.62E-02	0.51	RD3209	U
PU239/40	3.26E-02	3.26E-02	3.31E-02	2.21E-02	0.51	RD3209	J
U-234	5.84E-01	1.35E-01	1.58E-01	4.12E-02	0.54	RD3234	
U-235	2.13E-02	2.68E-02	2.70E-02	3.85E-02	0.54	RD3234	U
U-238DA	5.47E-01	1.30E-01	1.52E-01	3.10E-02	0.54	RD3234	
K-40	1.32E+01	4.40E-01	1.39E+00	N/A	N/A	RD3219	
CO-60	-1.08E-03	8.69E-03	8.69E-03	1.49E-02	N/A	RD3219	U
EU-152	8.48E-02	3.99E-02	4.07E-02	7.88E-02	N/A	RD3219	
CS-137DA	1.22E-01	1.45E-02	1.89E-02	N/A	N/A	RD3219	
CS-134	-2.07E-03	6.97E-03	6.97E-03	1.15E-02	N/A	RD3219	U
RU-106DA	2.17E-02	6.84E-02	6.84E-02	1.16E-01	N/A	RD3219	U
RA-224DA	6.83E-01	2.83E-02	7.39E-02	N/A	N/A	RD3219	
NA-22	-1.13E-02	1.10E-02	1.11E-02	1.75E-02	N/A	RD3219	U
EU-155	3.56E-02	2.70E-02	2.72E-02	4.35E-02	N/A	RD3219	U
EU-154	-3.95E-02	3.12E-02	3.14E-02	4.82E-02	N/A	RD3219	U
RA-226DA	5.57E-01	3.47E-02	6.56E-02	N/A	N/A	RD3219	
TH-234	7.07E+00	5.19E+00	5.24E+00	N/A	N/A	RD3219	
U-238DA	5.81E-01	3.56E-02	6.81E-02	N/A	N/A	RD3219	
AC-228	7.00E-01	7.57E-02	1.03E-01	N/A	N/A	RD3219	
TL-208	2.33E-01	2.11E-02	3.15E-02	N/A	N/A	RD3219	
BI-214	5.57E-01	3.47E-02	6.56E-02	N/A	N/A	RD3219	
PB-212	6.54E-01	2.71E-02	7.08E-02	N/A	N/A	RD3219	
PB-214	5.81E-01	3.56E-02	6.81E-02	N/A	N/A	RD3219	
TH-232DA	7.00E-01	7.57E-02	1.03E-01	N/A	N/A	RD3219	
RA-228DA	7.10E-01	7.68E-02	1.05E-01	N/A	N/A	RD3219	
I-129LP	4.22E-01	4.53E-01	4.55E-01	8.40E-01	N/A	RD3219	U
ALPHA	1.11E+01	4.94E+00	5.09E+00	4.64E+00	1	RD3222	
BETA	2.47E+01	3.57E+00	3.92E+00	2.84E+00	1	RD3222	
TOTAL-SR	1.49E-01	1.01E-01	1.06E-01	2.39E-01	0.445	RD3204	U
SE-79	7.24E-01	7.03E-01	1.97E+00	1.47E+00	0.645	RD3253	UJ
TC-99	-1.98E-02	3.59E-01	1.49E+00	8.30E-01	0.682	ITAS-IT-RS-0001	UJ
URANIUM	1.49E+00	N/A	2.23E-01	5.67E-03	0.931	RD4200	

Verified 6-22-94

9613479.2448

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406806
MATRIX: SOIL
WHC ID: BOBKP6
DATE RECEIVE 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	6.79E-01	1.13E-01	1.53E-01	2.13E-02	0.78	RD3302	J
CM-242	-4.60E-04	9.21E-04	9.23E-04	2.31E-02	0.78	RD3302	U
CM-244	-1.12E-03	1.30E-03	1.31E-03	2.33E-02	0.78	RD3302	U
NP-237	0.00E+00	0.00E+00	0.00E+00	1.13E-02	0.615	RD3208	UJ
PU-238	-9.30E-04	1.86E-03	1.87E-03	2.23E-02	0.896	RD3209	U
PU239/40	2.32E-02	2.08E-02	2.10E-02	1.26E-02	0.896	RD3209	~~J~~ R RS 6-22
U-234	4.96E-01	1.25E-01	1.45E-01	3.61E-02	0.527	RD3234	
U-235	1.33E-02	2.25E-02	2.26E-02	4.22E-02	0.527	RD3234	U
U-238DA	5.03E-01	1.26E-01	1.46E-01	4.22E-02	0.527	RD3234	
K-40	1.38E+01	4.43E-01	1.45E+00	N/A	N/A	RD3219	
CO-60	-9.63E-03	9.72E-03	9.77E-03	1.49E-02	N/A	RD3219	U
EU-152	6.79E-02	4.01E-02	4.07E-02	7.62E-02	N/A	RD3219	U
CS-137DA	9.42E-05	8.07E-03	8.07E-03	1.38E-02	N/A	RD3219	U
CS-134	-1.91E-03	7.09E-03	7.09E-03	1.18E-02	N/A	RD3219	U
RU-106DA	-2.22E-02	7.20E-02	7.20E-02	1.20E-01	N/A	RD3219	U
RA-224DA	7.69E-01	2.92E-02	8.23E-02	N/A	N/A	RD3219	
NA-22	7.61E-04	1.01E-02	1.01E-02	1.73E-02	N/A	RD3219	U
EU-155	3.98E-02	2.68E-02	2.70E-02	4.28E-02	N/A	RD3219	U
EU-154	1.26E-03	2.78E-02	2.78E-02	4.76E-02	N/A	RD3219	U
RA-226DA	5.58E-01	3.94E-02	6.83E-02	N/A	N/A	RD3219	
U-238DA	6.16E-01	3.70E-02	7.19E-02	N/A	N/A	RD3219	
AC-228	7.60E-01	7.22E-02	1.05E-01	N/A	N/A	RD3219	
TL-208	2.32E-01	2.03E-02	3.08E-02	N/A	N/A	RD3219	
BI-214	5.58E-01	3.94E-02	6.83E-02	N/A	N/A	RD3219	
PB-212	7.37E-01	2.80E-02	7.88E-02	N/A	N/A	RD3219	
PB-214	6.16E-01	3.70E-02	7.19E-02	N/A	N/A	RD3219	
TH-232DA	7.60E-01	7.22E-02	1.05E-01	N/A	N/A	RD3219	
RA-228DA	7.71E-01	7.32E-02	1.06E-01	N/A	N/A	RD3219	
I-129LP	1.94E-01	4.59E-01	4.59E-01	8.21E-01	N/A	RD3219	U
ALPHA	1.49E+01	5.48E+00	5.71E+00	4.05E+00	1	RD3222	
BETA	2.66E+01	3.67E+00	4.07E+00	2.82E+00	1	RD3222	
TOTAL-SR	8.36E-02	5.74E-02	6.09E-02	1.37E-01	0.856	RD3204	U
SE-79	9.61E-01	7.06E-01	2.00E+00	1.47E+00	0.645	RD3253	UJ
TC-99	-3.07E-01	3.51E-01	1.47E+00	8.30E-01	0.682	ITAS-IT-RS-0001	UJ
URANIUM	~~1.38E+00~~ ~~1.41 E+00~~ 1.38 E+00 RS 6-24-94	N/A	2.07E-01	5.67E-03	0.931	RD4200	~~J~~ RS 6-24-94

Verified RS 6-22-94

~~0013~~ 016

682A-6-93

9613479.2449

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40406807
MATRIX: SOIL
WHC ID: BOBNQ2
DATE RECEIVE 4/5/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	6.50E-01	1.09E-01	1.47E-01	1.24E-02	0.791	RD3302	J
CM-242	0.00E+00	0.00E+00	1.70E-02	1.53E-02	0.791	RD3302	U
CM-244	0.00E+00	0.00E+00	1.38E-02	1.25E-02	0.791	RD3302	U
NP-237	2.70E-02	2.70E-02	2.77E-02	1.13E-02	0.615	RD3208	J
PU-238	5.92E-03	1.51E-02	1.51E-02	3.55E-02	0.562	RD3209	U
PU239/40	7.54E-02	4.94E-02	5.08E-02	5.08E-02	0.562	RD3209	J
U-234	1.29E+00	2.73E-01	3.59E-01	8.07E-02	0.291	RD3234	
U-235	3.83E-02	4.97E-02	5.02E-02	7.63E-02	0.291	RD3234	U
U-238DA	9.56E-01	2.34E-01	2.90E-01	5.75E-02	0.291	RD3234	
K-40	1.30E+01	4.29E-01	1.37E+00	N/A	N/A	RD3219	
CO-60	4.65E-03	8.88E-03	8.89E-03	1.52E-02	N/A	RD3219	U
EU-152	5.77E-02	4.34E-02	4.38E-02	7.98E-02	N/A	RD3219	U
CS-137DA	1.46E+02	3.42E-01	1.46E+01	N/A	N/A	RD3219	
CS-134	1.99E-02	3.01E-02	3.02E-02	4.81E-02	N/A	RD3219	U
RU-106DA	-5.56E-02	2.88E-01	2.88E-01	4.58E-01	N/A	RD3219	U
RA-224DA	5.84E-01	9.53E-02	1.12E-01	N/A	N/A	RD3219	
NA-22	-8.27E-03	1.16E-02	1.16E-02	1.89E-02	N/A	RD3219	U
EU-155	1.17E-01	1.11E-01	1.12E-01	1.83E-01	N/A	RD3219	U
EU-154	-3.05E-02	3.29E-02	3.30E-02	5.33E-02	N/A	RD3219	U
RA-226DA	4.89E-01	9.55E-02	1.07E-01	N/A	N/A	RD3219	
U-238DA	4.44E-01	1.26E-01	1.33E-01	N/A	N/A	RD3219	
AC-228	6.11E-01	7.72E-02	9.85E-02	N/A	N/A	RD3219	
BI-214	4.89E-01	9.55E-02	1.07E-01	N/A	N/A	RD3219	
PB-212	5.94E-01	9.69E-02	1.14E-01	N/A	N/A	RD3219	
PB-214	4.44E-01	1.26E-01	1.33E-01	N/A	N/A	RD3219	
TH-232DA	6.11E-01	7.72E-02	9.85E-02	N/A	N/A	RD3219	
RA-228DA	6.08E-01	7.68E-02	9.79E-02	N/A	N/A	RD3219	
I-129LP	-8.58E+00	1.96E+00	2.14E+00	3.03E+00	N/A	RD3219	U
ALPHA	1.85E+01	6.13E+00	6.45E+00	4.57E+00	1	RD3222	
BETA	5.05E+02	1.46E+01	3.64E+01	2.82E+00	1	RD3222	
TOTAL-SR	1.22E+01	4.09E-01	2.97E+00	1.50E-01	0.803	RD3204	
SE-79	5.41E+00	7.98E-01	2.47E+00	1.47E+00	0.645	RD3253	J
TC-99	7.83E-01	3.77E-01	1.55E+00	8.30E-01	0.682	ITAS-IT-RS-0001	UJ
URANIUM	5.45E+00	N/A	8.18E-01	5.67E-03	0.931	RD4200	

Verified 6-22-94

~~0014~~ 017

682A-6-93

9613479.2450

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME:	ITAS-RICHLAND	SDG NO.:	W0024
LAB SAMPLE ID:	40411901	MATRIX:	SOIL
WHC ID:	BOBKN7	DATE RECEIVE	4/7/94
REPORTING UNITS	pCi/g & ug/g		

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	4.31E+00	2.88E-01	7.23E-01	1.93E-02	0.755	RD3302	~~J~~ RS 6-22-94
CM-242	-4.66E-04	9.32E-04	9.34E-04	2.34E-02	0.755	RD3302	U
CM-244	3.30E-02	2.56E-02	2.61E-02	2.21E-02	0.755	RD3302	
NP-237	3.33E-02	3.03E-02	3.11E-02	1.68E-02	0.615	RD3208	J
PU-238	6.50E-01	1.50E-01	1.86E-01	2.35E-02	0.48	RD3209	
PU239/40	5.16E+00	4.23E-01	9.72E-01	4.15E-02	0.48	RD3209	
U-234	3.29E+01	1.26E+00	5.68E+00	7.41E-02	0.347	RD3234	
U-235	1.05E+00	2.25E-01	2.86E-01	6.77E-02	0.347	RD3234	
U-238DA	1.12E+01	7.33E-01	2.03E+00	7.41E-02	0.347	RD3234	
K-40	9.67E+00	6.52E-01	1.17E+00	N/A	N/A	RD3219	J
CO-60	4.47E+01	3.28E-01	4.48E+00	N/A	N/A	RD3219	J
EU-152	6.42E-01	1.67E-01	1.79E-01	3.09E-01	N/A	RD3219	J
CS-137DA	2.09E+02	6.47E-01	2.09E+01	N/A	N/A	RD3219	J
CS-134	4.98E-02	7.42E-02	7.43E-02	1.22E-01	N/A	RD3219	UJ
RU-106DA	7.90E-02	7.78E-01	7.78E-01	1.28E+00	N/A	RD3219	UJ
NA-22	8.23E+00	1.65E-01	8.39E-01	N/A	N/A	RD3219	J
EU-155	5.43E+00	3.16E-01	6.28E-01	N/A	N/A	RD3219	J
EU-154	2.27E+01	4.49E-01	2.31E+00	N/A	N/A	RD3219	J
RA-226DA	9.00E-01	2.23E-01	2.40E-01	N/A	N/A	RD3219	J
TH-234	6.98E+01	1.10E+02	1.10E+02	N/A	N/A	RD3219	J
U-235	1.34E+00	4.08E-01	4.30E-01	N/A	N/A	RD3219	J
U-238DA	6.83E-01	2.09E-01	2.20E-01	N/A	N/A	RD3219	J
PB-212	6.25E-01	1.55E-01	1.68E-01	N/A	N/A	RD3219	J
PB-214	6.83E-01	2.09E-01	2.20E-01	N/A	N/A	RD3219	J
I-129LP	-1.86E+01	2.87E+00	3.42E+00	4.40E+00	N/A	RD3219	U
ALPHA	6.02E+01	1.05E+01	1.24E+01	3.41E+00	1	RD3222	
BETA	2.17E+02	9.65E+00	1.73E+01	2.91E+00	1	RD3222	
TOTAL-SR	3.27E+01	8.28E-01	7.34E+00	2.30E-01	0.492	RD3204	
SE-79	3.55E+00	7.61E-01	2.28E+00	1.47E+00	0.645	RD3253	J
TC-99	2.75E+00	4.29E-01	1.72E+00	8.30E-01	0.682	ITAS-IT-RS-0001	J
URANIUM	3.18E+01	N/A	4.77E+00	5.67E-03	0.931	RD4200	

Verified RS 6-22-94

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662A-6-93

9613479.2451

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0024

LAB SAMPLE ID: 40411902 MATRIX: SOIL

WHC ID: BOBKN0 DATE RECEIVE 4/7/94

REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	7.16E-01	1.14E-01	1.57E-01	2.06E-02	0.805	RD3302	J
CM-242	0.00E+00	0.00E+00	1.64E-02	1.48E-02	0.805	RD3302	U
CM-244	-3.62E-04	7.25E-04	7.27E-04	1.82E-02	0.805	RD3302	U
NP-237	6.77E-03	1.35E-02	1.36E-02	1.13E-02	0.615	RD3208	UJ
PU-238	7.55E-03	2.61E-02	2.62E-02	7.11E-02	0.331	RD3209	U
PU239/40	1.48E-01	8.72E-02	9.19E-02	6.01E-02	0.331	RD3209	
U-234	4.17E-01	1.07E-01	1.21E-01	3.61E-02	0.615	RD3234	
U-235	1.81E-02	2.35E-02	2.37E-02	3.61E-02	0.615	RD3234	U
U-238DA	5.12E-01	1.18E-01	1.37E-01	3.61E-02	0.615	RD3234	
K-40	1.39E+01	4.76E-01	1.47E+00	N/A	N/A	RD3219	
CO-60	-4.74E-03	1.03E-02	1.03E-02	1.67E-02	N/A	RD3219	U
EU-152	4.61E-02	4.90E-02	4.92E-02	8.86E-02	N/A	RD3219	U
CS-137DA	1.35E+01	1.14E-01	1.36E+00	N/A	N/A	RD3219	
CS-134	-5.36E-03	1.21E-02	1.22E-02	2.01E-02	N/A	RD3219	U
RU-106DA	2.15E-02	1.26E-01	1.26E-01	2.12E-01	N/A	RD3219	U
SB-125	3.93E-02	5.94E-02	5.95E-02	9.47E-02	N/A	RD3219	U
RA-224DA	7.62E-01	4.78E-02	9.00E-02	N/A	N/A	RD3219	
NA-22	1.45E-02	1.12E-02	1.13E-02	2.02E-02	N/A	RD3219	U
EU-155	8.84E-02	4.62E-02	4.71E-02	7.25E-02	N/A	RD3219	
EU-154	3.99E-02	3.10E-02	3.13E-02	5.57E-02	N/A	RD3219	U
RA-226DA	6.42E-01	6.08E-02	8.84E-02	N/A	N/A	RD3219	
TH-234	5.04E+00	5.05E+00	5.07E+00	N/A	N/A	RD3219	
U-238DA	6.50E-01	6.14E-02	8.94E-02	N/A	N/A	RD3219	
AC-228	8.04E-01	7.72E-02	1.11E-01	N/A	N/A	RD3219	
TL-208	2.83E-01	2.78E-02	3.97E-02	N/A	N/A	RD3219	
BI-214	6.42E-01	6.08E-02	8.84E-02	N/A	N/A	RD3219	
PB-212	7.33E-01	4.60E-02	8.65E-02	N/A	N/A	RD3219	
PB-214	6.50E-01	6.14E-02	8.94E-02	N/A	N/A	RD3219	
TH-232DA	8.04E-01	7.72E-02	1.11E-01	N/A	N/A	RD3219	
RA-228DA	8.14E-01	7.82E-02	1.13E-01	N/A	N/A	RD3219	
I-129LP	-1.15E+00	7.27E-01	7.36E-01	1.15E+00	N/A	RD3219	U
ALPHA	1.32E+01	5.17E+00	5.36E+00	3.95E+00	1	RD3222	
BETA	4.41E+01	4.57E+00	5.42E+00	2.87E+00	1	RD3222	
TOTAL-SR	3.78E+00	2.30E-01	9.44E-01	1.46E-01	0.809	RD3204	
SE-79	2.77E+00	7.46E-01	2.19E+00	1.47E+00	0.645	RD3253	J
TC-99	-3.60E-01	3.50E-01	1.46E+00	8.30E-01	0.682	ITAS-IT-RS-0001	UJ
URANIUM	1.87E+00	N/A	2.81E-01	5.67E-03	0.931	RD4200	

Verified 6-22-94

682A-6-93

9613479.2452

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40418201
MATRIX: SOIL
WHC ID: BOBNP9
DATE RECEIVE 4/11/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	6.27E-01	1.25E-01	1.64E-01	2.84E-02	0.583	RD3302	J
CM-242	-1.23E-03	1.74E-03	1.75E-03	3.51E-02	0.583	RD3302	U
CM-244	0.00E+00	0.00E+00	1.87E-02	1.69E-02	0.583	RD3302	U
NP-237	0.00E+00	0.00E+00	0.00E+00	1.13E-02	0.615	RD3208	UJ
PU-238	0.00E+00	0.00E+00	2.20E-02	1.99E-02	0.567	RD3209	U
PU239/40	2.94E-02	2.94E-02	2.97E-02	1.99E-02	0.567	RD3209	J
U-234	6.89E-01	1.46E-01	1.76E-01	3.83E-02	0.542	RD3234	
U-235	1.23E-02	2.19E-02	2.20E-02	4.34E-02	0.542	RD3234	U
U-238DA	4.68E-01	1.20E-01	1.37E-01	2.08E-02	0.542	RD3234	
K-40	1.31E+01	3.91E-01	1.37E+00	N/A	N/A	RD3219	
CO-60	-1.24E-03	8.67E-03	8.67E-03	1.43E-02	N/A	RD3219	U
EU-152	6.59E-02	3.85E-02	3.91E-02	7.26E-02	N/A	RD3219	U
CS-137DA	1.81E+02	5.39E-01	1.82E+01	N/A	N/A	RD3219	
CS-134	1.13E-02	3.45E-02	3.45E-02	5.53E-02	N/A	RD3219	U
RU-106DA	-3.40E-01	3.58E-01	3.60E-01	5.70E-01	N/A	RD3219	U
RA-224DA	7.42E-01	1.10E-01	1.32E-01	N/A	N/A	RD3219	
NA-22	-3.22E-03	1.07E-02	1.07E-02	1.80E-02	N/A	RD3219	U
EU-155	8.57E-02	1.31E-01	1.31E-01	2.00E-01	N/A	RD3219	U
EU-154	5.06E-03	2.88E-02	2.88E-02	4.95E-02	N/A	RD3219	U
RA-226DA	5.13E-01	1.20E-01	1.31E-01	N/A	N/A	RD3219	
U-238DA	5.50E-01	1.35E-01	1.46E-01	N/A	N/A	RD3219	
BI-214	5.13E-01	1.20E-01	1.31E-01	N/A	N/A	RD3219	
PB-212	7.10E-01	1.05E-01	1.27E-01	N/A	N/A	RD3219	
PB-214	5.50E-01	1.35E-01	1.46E-01	N/A	N/A	RD3219	
TH-232DA	7.55E-01	7.84E-02	1.09E-01	N/A	N/A	RD3219	
I-129LP	-7.77E+00	1.84E+00	1.99E+00	2.83E+00	N/A	RD3219	U
ALPHA	9.96E+00	4.69E+00	4.81E+00	4.49E+00	1	RD3222	
BETA	1.97E+02	9.21E+00	1.59E+01	2.95E+00	1	RD3222	
TOTAL-SR	4.75E+00	2.52E-01	1.18E+00	1.41E-01	0.818	RD3204	
SE-79	4.03E+00	7.72E-01	2.33E+00	1.47E+00	0.645	RD3253	J
TC-99	-1.65E-02	3.58E-01	1.49E+00	8.30E-01	0.682	ITAS-IT-RS-0001	UJ
URANIUM	1.89E+00	N/A	2.83E-01	5.67E-03	0.931	RD4200	

Verified TC 6-22-94

9613479.2453

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0024
LAB SAMPLE ID: 40428101
MATRIX: SOIL
WHC ID: BOBKN8
DATE RECEIVE 4/14/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER	Q
AM-241	9.33E-01	1.54E-01	2.22E-01	1.73E-02	0.567	RD3302	J
CM-242	0.00E+00	0.00E+00	2.32E-02	2.09E-02	0.567	RD3302	U
CM-244	0.00E+00	0.00E+00	1.93E-02	1.74E-02	0.567	RD3302	U
NP-237	1.35E-02	1.91E-02	1.93E-02	1.12E-02	0.615	RD3208	J
PU-238	3.71E-02	2.80E-02	2.85E-02	1.43E-02	0.786	RD3209	
PU239/40	1.22E+00	1.60E-01	2.36E-01	1.43E-02	0.786	RD3209	
U-234	1.17E+00	2.07E-01	2.73E-01	4.17E-02	0.455	RD3234	
U-235	6.10E-02	4.84E-02	4.93E-02	4.88E-02	0.455	RD3234	
U-238DA	1.12E+00	2.03E-01	2.65E-01	4.56E-02	0.455	RD3234	
K-40	1.30E+01	4.47E-01	1.37E+00	N/A	N/A	RD3219	
CO-60	1.78E-01	2.35E-02	2.95E-02	N/A	N/A	RD3219	
EU-152	1.83E-01	5.84E-02	6.12E-02	1.14E-01	N/A	RD3219	
CS-137DA	1.23E+03	1.23E+02	1.23E+02	N/A	N/A	RD3219	
CS-134	-5.02E-02	9.43E-02	9.44E-02	1.54E-01	N/A	RD3219	U
RU-106DA	-8.12E-01	9.64E-01	9.67E-01	1.58E+00	N/A	RD3219	U
NA-22	4.70E-02	2.47E-02	2.52E-02	4.34E-02	N/A	RD3219	
EU-155	-5.29E-02	3.40E-01	3.40E-01	5.20E-01	N/A	RD3219	U
EU-154	1.30E-01	6.82E-02	6.94E-02	1.20E-01	N/A	RD3219	
BI-214	3.10E-01	2.29E-01	2.31E-01	N/A	N/A	RD3219	
PB-212	5.31E-01	2.17E-01	2.23E-01	N/A	N/A	RD3219	
I-129LP	-7.01E+01	4.98E+00	8.60E+00	7.46E+00	N/A	RD3219	U
ALPHA	1.57E+01	5.72E+00	5.96E+00	4.65E+00	1	RD3222	
BETA	7.01E+02	1.72E+01	4.93E+01	2.84E+00	1	RD3222	
TOTAL-SR	4.51E+00	2.49E-01	1.12E+00	1.41E-01	0.809	RD3204	
SE-79	1.74E+01	1.01E+00	3.79E+00	1.47E+00	0.645	RD3253	J
TC-99	5.65E-01	3.69E-01	1.53E+00	8.30E-01	0.682	ITAS-IT-RS-0001	UJ
URANIUM	2.04E+00	N/A	3.06E-01	5.67E-03	0.931	RD4200	

Verified RS 6-22-94

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9613479.2455

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

June 1, 1994

Attention: J.A.Lerch

SAF Number	:	94-065
Date SDG Closed	:	April 19, 1994
Number of Samples	:	Eleven (11)
Sample Type	:	Soil
SDG Number	:	W0024
Data Deliverable	:	Stand Alone

I. Introduction

On March 5, 7, 11, and 14, 1994, eleven soil samples were received by ITAS-Richland for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the WHC specific IDs:

ITAS-Richland ID	WHC ID	Matrix	Date of Receipt
404068-01A	B0BKM8	Soil	4/5/94
404068-02A	B0BNQ6	Soil	4/5/94
404068-03A	B0BNQ0	Soil	4/5/94
404068-04A	B0BNQ7	Soil	4/5/94
404068-05A	B0BNQ1	Soil	4/5/94
404068-06A	B0BKP6	Soil	4/5/94
404068-07A	B0BNQ2	Soil	4/5/94
404119-01A	B0BKN7	Soil	4/7/94
404119-02A	B0BKN0	Soil	4/7/94
404182-01A	B0BNP9	Soil	4/11/94
404281-01A	B0BKN8	Soil	4/14/94

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy
Americium-241, Curium-244 by method ITAS-RD-3302
Neptunium-237 by method ITAS-RD-3208
Plutonium-238, -239/40 by method ITAS-RD-3209
Uranium-234, -235, -238 by method ITAS-RD-3234
Gamma Spectroscopy
Gamma Scan by method ITAS-RD-3219
Iodine-129 by method ITAS-RD-3219
Gas Proportional Counting
Gross Alpha by method ITAS-RD-3222
Gross Beta by method ITAS-RD-3222
Strontium-90 by method ITAS-RD-3204
Liquid Scintillation Counting
Selenium-79 by method ITAS-RD-3253
Technetium-99 by method ITAS-IT-RS-0001
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0024 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate.

Quality control sample results are reported in the same units as sample results except for gross alpha and gross beta quality control sample results which are reported in pCi/sample.

IV. Comments

The initial radioactivity screening of the samples classified them as Category II.

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BKN7) results are within contractual requirements.

Neptunium-237 by method ITAS-RD-3208
Three matrix spikes were analyzed with the batch and their average yield is used for yield correction. The LCS is biased high (161.0%) after yield correction using the matrix spike yield average value of 61.5%. The high bias is attributed to the difference in the matrices of the matrix spike (soil) and the LCS (water). The batch blank result is acceptable. The sample and sample duplicate (duplicates of samples B0BNQ6 and B0BKN7) results are within the 3 sigma control limit.

Plutonium-238, 239/40 by method ITAS-RD-3209
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BKN7) results are within contractual requirements.

Uranium-234, 235, 238 by method ITAS-RD-3234
The initial LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BKN7) results were all within contractual requirements with the exceptions of samples B0BNQ6 and B0BNQ2 which were reanalyzed due to tracer yields less than 30%. The reanalysis tracer yields were less than 30% for the blank, LCS, sample B0BNQ2 and the duplicate of B0BNQ2. The reanalysis results for both samples are within 3 sigma of the original results and the duplicate of B0BNQ2 is within 3 sigma of sample B0BNQ2. The reanalysis shows the original data is acceptable with low yields. The original results are accepted and reported.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
Sample B0BKN7 has Eu-154 detected at levels that cause interference in other energy regions of the gamma spectrum. Specifically, Na-22, Co-57, and Zr-95 are detected by the Nuclear Data system, however, it is the Eu-154 secondary energy lines that cause those isotopes to be detected. A result for Na-22 was specifically requested on the Chain of Custody submitted with the sample, therefore, we are reporting the FALSE POSITIVE result for Na-22. Co-57 and Zr-95 are not reported although they are detected because they are FALSE POSITIVE results and are not specifically requested. The following samples did not meet the contract limit for Eu-155: B0BNQ7, the duplicate of B0BNQ7, B0BNQ2, B0BKN8, and B0BNP9. The Ottawa sand blank matrix material meets all contract limits for the requested isotopes, therefore the sample data are accepted. Sample B0BKM8 was recounted to confirm a suspected sample switch. The recount confirmed that an incorrect sample with a similar sample ID number was initially counted. The recount data is reported for the sample. The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BNQ7) are within contractual requirements, except as noted above.

Iodine-129 by method ITAS-RD-3219
The following samples did not meet the contract limit for I-129: B0BKM8, B0BKN7, B0BNP9, B0BKN8 and the duplicate of B0BKN8. The inability to meet contract limits is attributed to a matrix effect caused by elevated levels of Cs-137. The Cs-137 activity present in the samples is verified by the germanium gamma analysis results. Sample B0BKN8, analyzed in duplicate, indicates that the samples, if reanalyzed, would exhibit the same matrix interference due to the Cs-137. The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BKN8) results are accepted and reported.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BNQ6) results are within contractual requirements.

Gross Beta by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BNQ6) results are within contractual requirements.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BKM8 and B0BKN7) results are within contractual requirements.

Liquid Scintillation Counting

Selenium-79 by method ITAS-RD-3253
In our professional opinion, the reported results for samples B0BNQ7, B0BNQ2, and B0BKN8 are FALSE POSITIVE results. The raw LSC data indicates the activity attributed to Se-79 is likely caused by a nuclide other than Se-79. Three matrix spikes were analyzed and their average chemical yield is used for the batch yield corrections. The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNQ7 and B0BNP9) results are within contractual requirements.

Technetium-99 by method ITAS-IT-RS-0001
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNP9 and B0BKN7) results are within contractual requirements. Two matrix spikes were analyzed with the sample batch and their average chemical yield is used for the batch yield corrections.

Total Uranium

Total Uranium by method ITAS-RD-4200
The LCS, batch blank, sample and sample duplicate (duplicates of samples B0BNQ0 and B0BKN0) results are within contractual requirements. Two matrix spikes were analyzed with the sample batch and their average chemical yield is used for the batch yield corrections.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Suzanne Gaines

Suzanne Gaines
Project Manager

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006455

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. 6WS 020
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 3-30-94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ U1/U2 Tile Field 3-30-94
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A BOBKM8	S	3-31-94	1530	(1) 250ml aG	Semi-VOA	CLP	
B BOBKM8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C BOBKM8	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D BOBKM8	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E BOBKM8	S			(1) 125ml G	Cyanide	CPL	
F BOBKM8	S			(1) 125ml Gs	TPH Diesel Range	8015m	
~~BOBKM8~~	~~S~~			~~(1) 125ml aGs~~	TOC 3-31-94	9060	
BOBKM8	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

404006801

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	K. [illegible] 4-5-94 10:30

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2461

02

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006264

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. G05120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ6	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ6	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ6	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ6	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ6	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
	BOBNQ6	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

40406802

40406102

96135479.2462

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	[illegible]
[illegible]	4-5-94	0815	[illegible]
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

6-22-94 00053

030

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006258

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ0	S	3-31-94	0940	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ0	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ0	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ0	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ0	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ 3-31-94	9060	
	BOBNQ0	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

404068 03

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	Heidelberg IT
			4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

6-22-94 0055

031

9613479.2463

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006265

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GWSC09
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to TMA
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
BOBNQ7	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
BOBNQ7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
BOBNQ7	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
BOBNQ7	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
BOBNQ7	S			(1) 125ml G	Cyanide	CPL	
BOBNQ7	S			(1) 125ml Gs	TPH Diesel Range	8015m	
~~BOBNQ7~~	~~S~~			~~(1) 250ml aGs~~	~~TOC~~ 4-4-94	9060	
BOBNQ7	S			(1) 1000ml Poly (1) 500ml Poly	Gross Alpha/Beta EP-060,070,170; Gamma Spec. Cs-134/137, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 EP-060,070,100; Total Uranium EP-060,070,044,928; U-235/234/238 EP-060,070,901; Np-237 EP-060,070,930; Pu-238/239/240 EP-060,070,940; I-129 EP-024,560; Sr-90 EP-060,070,500,519,520; Tc-99 EP-020,540; Am-241, Cm-244 EP-060,070,960; Se-79 Lab Specific;		

A B C D E F
40406804
Date 4-4-94
40406804

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	[illegible]
			4/5 @ 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

6-22-94
0057
032

9613479.2464

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006259

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. G615120
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ1	S	3-31-94	1005	(1) 250ml aG	Semi-VOA ✓	CLP	
B	BOBNQ1	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury ✓	CPL	
C	BOBNQ1	S			(1) 125ml G	Anions F, Cl, SO_4 ✓	EPA 300.0	
D	BOBNQ1	S			(1) 125ml G	NO_2 NO_3 ✓	EPA 353.2	
E	BOBNQ1	S			(1) 125ml G	Cyanide ✓	CPL	
F	BOBNQ1	S			(1) 125ml Gs	TPH Diesel Range ✓	8015m	
	~~BOBNQ1~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RCC 3-31-94	9060	
	BOBNQ1	S	✓		(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

4104067 05

4104068 05

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R T Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	Heidelberg IT
			4/5/94 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2465

EG-221
0459

033

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1 006266

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-11 Trench
Ice Chest No. GW5020
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBKP6	S	3-31-94	1425	(1) 250ml aG	Semi-VOA	CLP	
B	BOBKP6	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBKP6	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBKP6	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBKP6	S			(1) 125ml G	Cyanide	CPL	
F	BOBKP6	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBKP6~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RJS 3-31-94	9060	
	BOBKP6	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

40406806
40406804

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	[illegible] ITAS 10:30 4-5-94

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9613479.2466

1900

034

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006260

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No. GW5009
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
A	BOBNQ2	S	3-31-94	1140	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNQ2	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	CPL	
C	BOBNQ2	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNQ2	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNQ2	S			(1) 125ml G	Cyanide	CPL	
F	BOBNQ2	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNQ2~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ PE 3-31-94	9060	
	BOBNQ2	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

H0406807

H0406707

9613479.2467

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-4-94	0830	Daniel L. Edwards
Daniel L. Edwards	4-5-94	0815	[illegible]
			4/5 1030

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

6-22-94

0003

035

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006465

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No.
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 PM 3-30-94
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 207 U BASIN PM 3-30-94
Offsite Property No.
Field Logbook No.
SPECIAL INSTRUCTIONS STANDALONE Deliverable

U200 RG-22-94

9613479.2468

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404280 01A BOBKN8	S	4-5-94	0950	(1) 250ml aG	Semi-VOA CLP	
B BOBKN8	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury PM ~~CPL~~ CLP	4-6-94
C BOBKN8	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D BOBKN8	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E BOBKN8	S			(1) 125ml G	Cyanide PM ~~CPL~~ CLP	4-6-94
F BOBKN8	S			(1) 125ml Gs	TPH Diesel Range 8015m	
~~BOBKN8~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ PM 4-5-94 9060	
BOBKN8 404281 01	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession (Sign and Print Names) Relinquished By	Date	Time	Received By
R.T. Sickle R.T. Sickle	4-14-94	1500	Karen Stoltenberg 4-14-94 15:00

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

036

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006257

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations 216-U-10 Pond
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STANDALONE Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required		Preservative
01A	BOBNP9	S	3-31-94	0845	(1) 250ml aG	Semi-VOA	CLP	
B	BOBNP9	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury	PA CPL CLP	4-6-94
C	BOBNP9	S			(1) 125ml G	Anions F, Cl, SO_4	EPA 300.0	
D	BOBNP9	S			(1) 125ml G	NO_2 NO_3	EPA 353.2	
E	BOBNP9	S			(1) 125ml G	Cyanide	PA CPL CLP	4-6-94
F	BOBNP9	S			(1) 125ml Gs	TPH Diesel Range	8015m	
	~~BOBNP9~~	S			~~(1) 125ml aGs~~	TOC RLE 3-31-94	9060	
4182 01	BOBNP9	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253		

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle R.T. Sickle	4/11/94	0800	D.L. Edwards
D.L. Edwards	4/11/94	1140	J.G. Hogan JG HOGAN
J.G. Hogan JG HOGAN	4/11/94	1418	ITAS Tom Gilmore

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

6-22-94 $100

9613479.2469

037

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006464

Collector R.T. Sickle
SAF No. 94-065
Ice Chest No. SML 413
Method of Shipment Government truck
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Company Contact C.A. Rowley
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 3-30-94 RMR
Bill of Lading/Airbill No. N/A

Telephone 372-3293
Sampling Locations ~~216-U-8 Crib~~ 207 U BASIN RMR 3-30-94
Offsite Property No.
Field Logbook No.

SPECIAL INSTRUCTIONS STANDALONE Deliverable - Request for GLASS on CLP metals; separate total activity aliquot conveyed after sample collection. 4-5-94

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN7	S	4-5-94	0930	(1) 250ml aG	Semi-VOA RMR 4-6-94 CPL	CLP
B	BOBKN7	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury RMR CPL	CLP 4-6-94
C	BOBKN7	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN7	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN7	S			(1) 125ml G	Cyanide RMR CPL	CLP 4-6-94
F	BOBKN7	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN7~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ RMR 4-5-94 9060	
40411901	BOBKN7	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411801

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
RT Sickle R.T. Sickle	4-7-94	1045	ITAS Tom Gilmore

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

6-22-94 6700

9613479.2470

038

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006457

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation ~~216-U-8 Vitrified Clay Pipeline~~ 200 UP 2 PAR 3-30-94
Sampling Locations ~~216-U-8 Crib~~ 41/42 Tile Field PAR 3-30-94
Ice Chest No. SM2 413
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

SPECIAL INSTRUCTIONS STANDALONE Deliverable
-Request for GLASS on CLP metals & separate total activity aliquot conveyed after sample collection. JH 7 Apr 94

	Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
A	BOBKN0	S	4-5-94	0525	(1) 250ml aG	Semi-VOA PAR 4-8-94 ~~CLP~~ C-21	CLP
B	BOBKN0	S			(1) 250ml Poly	Metals -CLP TAL Titanium Mercury PAR CRL	CLP
C	BOBKN0	S			(1) 125ml G	Anions F, Cl, SO_4 EPA 300.0	
D	BOBKN0	S			(1) 125ml G	NO_2 NO_3 EPA 353.2	
E	BOBKN0	S			(1) 125ml G	Cyanide PAR CPL	CLP 4-8-94
F	BOBKN0	S			(1) 125ml Gs	TPH Diesel Range 8015m	
	~~BOBKN0~~	~~S~~			~~(1) 125ml aGs~~	~~TOC~~ PAR 4-4-94 9060	
	BOBKN0	S			(1) 1000ml Poly	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

40411802 ~~40411902~~

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-7-94	1045	ITAS Tomblinson

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

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

9413479.2471

039

9615179.2972

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PS 6-24-94

PROJECT: 200-UP-2		DATA PACKAGE: W0024-ITC-034
VALIDATOR: T. Stapp	LAB: ITC/Richland	DATE: 6-18-94
CASE:		SDG:

ANALYSES PERFORMED

☑ Gross Alpha/Beta	☑ Strontium-90	☑ Technetium-99	☑ Alpha Spectroscopy	☑ Gamma Spectroscopy	
☐ Total Uranium	☐ Radium-22	☐ Tritium	☐		

SAMPLES/MATRIX BOBKM8, BOBNQ6, BOBNQ0, BOBNQ7, BOBNQ1, BOBKP6, BOBNQ2, BOBKN7, BOBKN0, BOBNP9, BOBKN8 / SOIL

1. Completeness . . . . . ☐ N/A

Technical verification forms present? . . . . . (Yes) No N/A

Comments:

2. Initial Calibration . . . . . ☐ N/A

Instruments/detectors calibrated within one year of sample analysis? . . . . . Yes (No) N/A

Initial calibration acceptable? . . . . . (Yes) No N/A

Standards NIST traceable? . . . . . (Yes) No N/A

Standards Expired? . . . . . Yes (No) N/A

Comments:

3. Continuing Calibration . . . . . ☐ N/A

Calibration checked within one week of sample analysis? . . . (Yes) No N/A
Calibration check acceptable? . . . . . Note ① . . . . Yes (No) N/A
Calibration check standards NIST traceable? . . . . . (Yes) No N/A
Calibration check standards expired? . . . . . Yes (No) N/A

Comments: ① Backgrnd counts for Pu 239/240 are out of limits for samples B0BNQ6 and B0BKP6 for background checks before the week of sample analysis. Assoc. results are ~~signif.~~ affected by elevated backgrnd and ~~will be rejected~~ (R/UR). results for these samples will be rejected. See attached calibration summary.

~~not~~ 6-23-94 6-23-

4. Blanks . . . . . ☐ N/A

Method blank analyzed? . . . . . (Yes) No N/A
Method blank results acceptable? . . . . . Yes (No) N/A
Analytes detected in method blank? . . Note ① . . . . . (Yes) No N/A
Field blank(s) analyzed? . . . . . Note ② . . . . . Yes No (N/A)
Field blank results acceptable? . . . . . Yes No (N/A)
Analytes detected in field blank(s)? . . . . . Yes No (N/A)
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: ① Contaminants detected in blank for Am-241, and Pu 239/240. See summary page for Qualification.
② Field QC not identified within this sample set, but if has been requested. See final data summary.

5. Matrix Spikes . . . . . ☐ N/A

Matrix spike analyzed? . . . . . (Yes) No N/A
Spike recoveries acceptable? . . . . . Note ① ~~②~~ . . . . Yes (No) N/A 6-22-94
Spike source traceable? . . . . . (Yes) No N/A
Spike source expired? . . . . . Yes (No) N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: ① Se-79 MS recovery <60% qualifies assoc. Smplr. (J/UJ). See MS summary page.

6. Laboratory Control Samples . . . . . ☐ N/A

LCS analyzed? . . . . . (Yes) No N/A
LCS recoveries acceptable? . . . . . Note ① + ② . . . . . Yes (No) N/A
LCS traceable? . . . . . (Yes) No N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: ① Np-237 and Se-79 LCS recoveries are ~~below~~ out of control limits (Np-237 = 161%, Se79 = 56%) requiring qualification as J and J/UJ respectively. ② Spike levels used are >30 x RDL requirement for U-235, Pu239, and Am241 and below 50x RDL requirement for gross α, β. No qualif. applies. 6-22-

7. Chemical Recovery . . . . . ☐ N/A

Chemical carrier added? . . . . . (Yes) No N/A
Chemical recovery acceptable? . . . . . (Yes) No N/A
Chemical carrier traceable? . . . . . (Yes) No N/A
Chemical carrier expired? . . . . . Yes (No) N/A
Transcription/Calculation errors? . . . . . Yes (No) N/A

Comments: _____

8. Duplicates . . . . . ☐ N/A

Duplicates Analyzed? . . . . . (Yes) No N/A
RPD Values Acceptable? . . . . . Note ① . . . . . Yes (No) N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: ① Duplicate criteria exceeded for ~~Am 241 (>2xRDL) and~~ Tc-99 (>2xRDL). See duplicate summary pages. 6-24-94

9. Field QC Samples . . . . . ☒ N/A

Field duplicate sample(s) analyzed? . . . . . Yes No N/A
Field duplicate RPD values acceptable? . . . . . Yes No N/A
Field split sample(s) analyzed? . . . . . Yes No N/A
Field split RPD values acceptable? . . . . . Yes No N/A
Performance audit sample(s) analyzed? . . . . . Yes No N/A
Performance audit sample results acceptable? . . . . . Yes No N/A

Comments: Field QC was not identified in this sample set but it has been requested. See final data summary.

10. Holding Times

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

11. Results and Detection Limits (Levels D & E) . . . . . ☐ N/A

Results reported for all required sample analyses? . . . . . (Yes) No N/A
Results supported in raw data? . . . . . (Yes) No N/A
Results Acceptable? . . . . . (Yes) No N/A
Transcription/Calculation errors? . Note ① . . . . . (Yes) No N/A
MDA's meet required detection limits? . Note ② . . . . . Yes (No) N/A
Transcription/calculation errors? . . . . . (Yes) No N/A

Due to a transcription error. 6-24

Comments: ① Total Uranium recalculation for Samples BOBKM8 ~~and BOBKP6~~ required changing reported value on report forms. ~~Results are qualified (J/UJ).~~ ② MDA exceeds RDL for Europium and Tc-99. See table attached. ③ MDA cannot be verified by recalculation for Np-237, Se-79 and Tc-99. All non-defects qualified "UJ".

FS 6-24-94

FS 6-24-94 ④ ~~BOBN~~ BOBKN7 gamma analysis performed on 200ml geometry while QC was analyzed using marinelli geometry. Associated analytes are qualified (J/UJ).

Table 1. Detection Limit Deficiencies SDG: W0024-ITC-034

		SAMPLE ID/MDA										
Isotope	RDL	B0BKM8	B0BNQ6	B0BNQ0	B0BNQ7	B0BNQ1	B0BKP6	B0BNQ2	B0BKN7	B0BKN0	B0BNP9	B0BKN8
Tc-99	0.5	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Eu-152	0.1	--	--	--	--	--	--	--	--	--	--	0.114
Eu-154	0.1	--	--	--	--	--	--	--	--	--	--	0.12
Eu-155	0.1	0.117	0.104	0.104	0.159	--	--	0.183	--	--	0.2	0.52

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9613479.2478

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

BLANK RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0024

LAB SAMPLE ID: L040681B

REPORTING UNITS: pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	6.91E-01	1.19E-01	1.61E-01	2.54E-02	0.713	RD3302
CM-242	-4.31E-04	8.63E-04	8.66E-04	2.17E-02	0.713	RD3302
CM-244	-1.22E-03	1.41E-03	1.43E-03	2.54E-02	0.713	RD3302
PU-238	-1.19E-03	2.37E-03	2.38E-03	2.84E-02	0.703	RD3209
PU239/40	1.78E-02	2.05E-02	2.07E-02	1.61E-02	0.703	RD3209
U-234	2.85E-03	1.33E-02	1.33E-02	4.01E-02	0.643	RD3234
U-235	3.89E-03	1.32E-02	1.32E-02	3.66E-02	0.643	RD3234
U-238DA	-3.63E-03	2.75E-03	2.79E-03	4.01E-02	0.643	RD3234
K-40	4.42E-01	9.94E-02	1.09E-01	2.39E-01	N/A	RD3219
CO-60	1.54E-03	4.24E-03	4.24E-03	8.91E-03	N/A	RD3219
EU-152	2.32E-02	2.47E-02	2.48E-02	5.49E-02	N/A	RD3219
CS-137DA	4.16E-04	5.60E-03	5.60E-03	1.02E-02	N/A	RD3219
CS-134	3.89E-03	4.61E-03	4.63E-03	8.94E-03	N/A	RD3219
RU-106DA	6.93E-03	4.06E-02	4.06E-02	7.53E-02	N/A	RD3219
NA-22	-2.77E-03	5.48E-03	5.49E-03	9.45E-03	N/A	RD3219
EU-155	-4.74E-03	1.29E-02	1.29E-02	2.06E-02	N/A	RD3219
EU-154	-7.65E-03	1.51E-02	1.51E-02	2.57E-02	N/A	RD3219
I-129LP	2.50E-01	2.25E-01	2.27E-01	4.72E-01	N/A	RD3219
ALPHA	8.21E-02	6.81E-02	6.95E-02	8.75E-02	1	RD3222
BETA	3.61E-01	3.76E-01	3.77E-01	6.04E-01	1	RD3222
TOTAL-SR	-2.15E-02	4.55E-02	4.58E-02	1.38E-01	0.874	RD3204
SE-79	3.14E-01	6.92E-01	1.94E+00	1.48E+00	0.645	RD3253
URANIUM	8.12E-03	N/A	1.22E-03	5.67E-03	0.931	RD4200

Analytes of the circled result are contaminants found in the laboratory blank above the assoc. MDA, See Blank data Summary form B-3 for qualified samples.

6/21/94

W0024-ITC-034

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG:	REVIEWER: T. Stapp	DATE: June 20, 1994	PAGE 1 OF 1

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
~~L0406 81B~~	~~Am-241~~	~~0.691~~			~~pCi/gm~~	~~3.455~~		~~BOBKM8~~	~~J~~
L0406 81B	Am-241	0.691			pCi/gm	3.455		All except BOBKN7	J
L0406 81B	K-40	0.442			pCi/gm	2.21		NONE	NONE
L0406 81B	Pu 239/40	0.0178				0.089		BOBNQ1	J
								BOBKP6	
								BOBNQ2	
								BOBNP9	
L0406 81B	Total U	.00812			µg/gm	0.0406		NONE	NONE

6-20-94

9613479.2479

WHC-SD-EN-SPP-002, Rev. 1

9613479.2480

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0024

LAB SAMPLE ID: F0411901

WHC ID: BOBKN7

REPORTING UNITS: pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	4.26E+00	3.06E-01	7.54E-01	2.21E-02	0.66	RD3302
CM-242	0.00E+00	0.00E+00	2.00E-02	1.80E-02	0.66	RD3302
CM-244	8.84E-02	4.42E-02	4.65E-02	1.50E-02	0.66	RD3302
NP-237	1.30E-02	1.92E-02	1.94E-02	1.67E-02	0.615	RD3208
PU-238	6.80E-01	1.18E-01	1.52E-01	2.90E-02	0.813	RD3209
PU239/40	4.85E+00	3.15E-01	7.51E-01	1.39E-02	0.813	RD3209
U-234	3.53E+01	1.11E+00	5.42E+00	6.02E-02	0.474	RD3234
U-235	1.25E+00	2.10E-01	2.82E-01	4.00E-02	0.474	RD3234
U-238DA	1.17E+01	6.39E-01	1.86E+00	2.37E-02	0.474	RD3234
TOTAL-SR	2.83E+01	7.46E-01	6.42E+00	2.20E-01	0.522	RD3204
TC-99	1.69E+00	3.89E-01	1.63E+00	8.30E-01	0.682	ITAS-IT-RS-0001

RPD CALCULATIONS

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
AM-241	4.31E+00	4.26E+00	1.17
CM-242	-4.66E-04	0.00E+00	200.00
CM-244	3.30E-02	8.84E-02	91.27
NP-237	3.33E-02	1.30E-02	87.69
PU-238	6.50E-01	6.80E-01	4.51
PU239/40	5.16E+00	4.85E+00	6.19
U-234	3.29E+01	3.53E+01	7.04
U-235	1.05E+00	1.25E+00	17.39
U-238DA	1.12E+01	1.17E+01	4.37
TOTAL-SR	3.27E+01	2.83E+01	14.43
* TC-99	2.75E+00	1.69E+00	~~47.75~~ → ±2xRDL = 1 Fail.

* Associated results for Tc-99 are qualified J/UJ. 6-22-94

6/22

~~0024~~

682A-6-93

9613479.2481

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

MATRIX SPIKE RESULTS

LAB NAME: ITAS-RICHLAND **SDG NO.:** W0024

LAB SAMPLE ID: W0406804

REPORTING UNITS: pCi/g &ug/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
SE-79	3.46E+01	5.56E+00	6.55E+00	N/A	5.31E+00	4.49E+01	77

LAB SAMPLE ID: W0411901

REPORTING UNITS: pCi/g & ug/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
NP-237	3.38E+00	2.37E-01	7.66E-01	1.90E-02	3.33E-02	5.64E+00	60

LAB SAMPLE ID: W0428101

REPORTING UNITS: pCi/g & ug/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
NP-237	4.29E+00	2.67E-01	9.61E-01	1.90E-02	1.35E-02	5.64E+00	76

LAB SAMPLE ID: W0418201

REPORTING UNITS: pCi/g & ug/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
SE-79	1.80E+01	3.92E+00	4.31E+00	N/A	4.03E+00	4.51E+01	40

*SPIKE RESULT CORRECTED FOR SAMPLE RESULT

Selenium-79 matrix spike recovery <60% limit
qualifies associated results as estimated (J/UJ).

~~RS~~ 6-22-94 ~~0033~~ 049

682A-6-93

9613479.2482

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

LABORATORY CONTROL SAMPLES

LAB NAME: ITAS-RICHLAND SDG NO.: W0024

LAB SAMPLE ID: L040681S

REPORTING UNITS: pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
AM-241	4.59E+00	2.78E-01	7.29E-01	1.14E-02	0.862	4.52E+00	102
PU239/40	3.48E+00	3.08E-01	5.68E-01	4.66E-02	0.614	3.39E+00	103
U-234	1.71E+00	2.15E-01	3.18E-01	4.76E-02	0.619	1.62E+00	106
U-235	5.28E-02	3.81E-02	3.88E-02	3.07E-02	0.619	7.39E-02	71
U-238DA	1.82E+00	2.22E-01	3.34E-01	1.82E-02	0.619	1.70E+00	107
K-40	1.86E+01	7.10E-01	1.99E+00	N/A	N/A	1.95E+01	95
CS-137DA	4.16E-01	1.22E+00	1.22E+00	N/A	N/A	4.80E-01	87
RA-226DA	1.00E+00	7.11E-02	1.23E-01	N/A	N/A	1.16E+00	86
I-129LP	1.14E+01	9.90E-01	1.51E+00	N/A	N/A	9.04E+00	126
ALPHA	4.97E+00	4.51E-01	9.51E-01	1.16E-01	1	4.51E+00	110
BETA	1.20E+01	1.08E+00	1.37E+00	6.18E-01	1	1.13E+01	106
TOTAL-SR	5.03E+00	2.66E-01	1.25E+00	1.43E-01	0.814	6.05E+00	83
SE-79	2.51E+01	5.25E+00	5.82E+00	N/A	0	4.51E+01	56
URANIUM	9.18E+00	N/A	1.38E+00	5.67E-03	0.931	1.00E+01	92

LAB SAMPLE ID: L040682S

REPORTING UNITS: pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
NP-237	9.09E+00	4.96E-01	2.02E+00	1.68E-02	0.615	5.05E+00	180

Associated results for Se-79 are qualified as estimated (J/UJ). Results above the MDA for Np-237 are qualified "J". 6-22-94

9613479.2483

CONTINUING CALIBRATION SUMMARY

VMS Quality Assurance Report V1.3 Generated 1-JUN-1994 10:53:33

Detector: Alp-19

SDG: W0024-ITC-034

QA filename : DKA200:[ALP19.QA]GROUP_1_QCB.QAF;2

Parameter Name : NCLGAMMA-4901
Description : 4901, Pu-242 bkg (cnts/min)

Parameter Units	: cnts/min	Parameter Type	: CONFIGURATION
Num Points Used	: 5	Num Records Read	: 5
Start Date	: 2-MAY-1994 15:38:48	End Date	: 30-MAY-1994 11:08:48
Minimum Value	: 0.000000E+00	Minimum Date	: 9-MAY-1994 09:22:05
Maximum Value	: 1.499126E-02	Maximum Date	: 2-MAY-1994 15:38:48
Out-of-range Test	: N-SIGMA	Test Source	: QAANALYZE COMMAND
Mean	: 5.888324E-03	Std Deviation	: 5.275787E-03 (89.60%)
Investigate Level	: 2.00	Action Level	: 3.00
Stats Start Run	: 0	Stats End Run	: 0

Measurement Time	Sample ID	Value	Deviation	Flags
2-MAY-1994 15:38:48	QCB	1.499126E-02	1.725	
9-MAY-1994 09:22:05	QCB	0.000000E+00	-1.116	
16-MAY-1994 14:22:09	QCB	4.992926E-03	-0.170	
23-MAY-1994 13:48:56	QCB	9.985022E-03	0.777	
30-MAY-1994 11:08:48	QCB	4.998334E-03	-0.169	

QA filename : DKA200:[ALP19.QA]GROUP_1_QCB.QAF;2

Parameter Name : NCLGAMMA-5155
Description : 5155 Pu-239 bkg (cnts/min)

Parameter Units	: cnts/min	Parameter Type	: CONFIGURATION
Num Points Used	: 5	Num Records Read	: 5
Start Date	: 2-MAY-1994 15:38:48	End Date	: 30-MAY-1994 11:08:48
Minimum Value	: 4.992511E-03	Minimum Date	: 23-MAY-1994 13:48:56
Maximum Value	: 2.995756E-02	Maximum Date	: 16-MAY-1994 14:22:09
Out-of-range Test	: N-SIGMA	Test Source	: QAANALYZE COMMAND
Mean	: 8.029234E-03	Std Deviation	: 7.107871E-03 (88.52%)
Investigate Level	: 2.00	Action Level	: 3.00
Stats Start Run	: 0	Stats End Run	: 0

Measurement Time	Sample ID	Value	Deviation	Flags
2-MAY-1994 15:38:48	QCB	4.997085E-03	-0.427	
9-MAY-1994 09:22:05	QCB	9.998334E-03	0.277	
16-MAY-1994 14:22:09	QCB	2.995756E-02	3.085	Action
23-MAY-1994 13:48:56	QCB	4.992511E-03	-0.427	
30-MAY-1994 11:08:48	QCB	9.996668E-03	0.277	

Associated samples BOBNQ6 and BOBKP6 analyzed May 18, 1994 are qualified (R/uR) since results are sufficiently low enough and may be affected by elevated background.

6-23-94

051

~~21061~~

W0024-ITC-034

Americium/Curium	
HEIS No.:	B0BKM8
Lab ID:	404068-01
Aliquot:	2.00E+00
Am241 net cpm:	0.5546
Am241 bkg cpm:	0.0004
Spl count time:	200
Bkg count time:	2500
Eff d/c:	3.225
Decay:	1
Yield:	0.571
Am241 calc:	7.05E-01
Am241 rptd:	7.05E-01
Am241 MDA calc:	2.56E-02
Am241 MDA rptd:	2.56E-02
Cm244 net cpm:	0.0042
Cm244 bkg cpm:	0.0008
Cm244 decay:	1.005
Cm244 calc:	5.37E-03
Cm244 rptd:	5.37E-03
Cm244 MDA calc:	2.92E-02
Cm244 MDA rptd:	2.92E-02
Cm242 net cpm:	-0.0004
Cm242 bkg cpm:	0.0004
Cm242 decay:	1.236
Cm242 calc.:	-6.29E-04
Cm242 rptd:	-6.28E-04
Cm242 MDA calc:	3.16E-02
Cm242 MDA rptd:	3.16E-02
Neptunium	
HEIS No.:	B0BKM8
Lab ID:	404068-01
Aliquot:	2.00E+00
Np237 net cpm:	0.0096
Np237 bkg cpm:	0.0004
Spl count time:	200
Bkg count time:	2500
Eff d/c:	3.7
Decay:	1
Yield:	0.615
Np237 calc:	1.30E-02
Np237 rptd:	1.30E-02
Np237 MDA calc:	2.73E-02
Np237 MDA rptd:	1.68E-02

W0024-ITC-034

Plutonium	
HEIS No.:	B0BKM8
Lab ID:	404068-01
Aliquot:	2.00E+00
Pu238 net cpm:	0
Pu238 bkg cpm:	0
Spl count time:	200
Bkg count time:	1000
Pu238 Eff d/c:	3.703
Decay:	1.001
Yield:	0.354
Pu238 calc:	0.00E+00
Pu238 rptd:	0.00E+00
Pu238 MDA calc:	3.19E-02
Pu238 MDA rptd:	3.19E-02
Pu239 net cpm:	0.115
Pu239 bkg cpm:	0
Pu239 d/c:	3.7
Pu239 decay:	1
Pu239 calc:	2.71E-01
Pu239 rptd:	2.71E-01
Pu239 MDA calc:	3.19E-02
Pu239 MDA rptd:	3.18E-02
Uranium	
HEIS No.:	B0BKM8
Lab ID:	404068-01
Aliquot:	2.00E+00
U-234 net cpm:	0.273
U-234 bkg cpm:	0.002
Spl count time:	200
Bkg count time:	2500
Eff d/c:	3.7
Decay:	1
Yield:	0.423
U-234 calc:	5.37E-01
U-234 rptd:	5.37E-01
U-234 MDA calc:	5.57E-02
U-234 MDA rptd:	5.56E-02
U-235 net cpm:	0.0042
U-235 bkg cpm:	0.0008
U-235 decay:	1
U-235 calc:	8.26E-03
U-235 rptd:	8.26E-03
U-235 MDA calc:	4.50E-02
U-235 MDA rptd:	4.49E-02
U-238 net cpm:	0.3888
U-238 bkg cpm:	0.0012
U-238 decay:	1
U-238 calc.:	7.64E-01
U-238 rptd:	7.65E-01
U-238 MDA calc:	4.91E-02
U-238 MDA rptd:	4.90E-02

W0024-ITC-034

Gross Alpha	
HEIS No.:	B0BKM8
Lab ID:	404068-01
Aliquot:	4.98E-02
Net counts:	0.456
Bkg counts:	0.044
Spl count time:	100
Bkg count time:	500
d/c:	5.008
Calc.:	2.07E+01
Rptd:	2.07E+01
MDA calc:	4.67E+00
MDA rptd:	4.65E+00
Gross Beta	
HEIS No.:	B0BKM8
Lab ID:	404068-01
Aliquot:	2.50E-01
Net counts:	15.53
Bkg counts:	1.01
Spl count time:	50
Bkg count time:	500
d/c:	2.898
Calc.:	8.11E+01
Rptd:	8.11E+01
MDA calc:	2.86E+00
MDA rptd:	2.84E+00
Strontium 90	
HEIS No.:	B0BKM8
Sample:	404068-01
Sep date:	5/25/94
Sep time:	15:30
Count date:	5/26/94
Count time:	09:52
Hours:	18.366666
Sample amt:	5.99E+00
Net, cpm:	36.488
Count time:	50
Bkg, cpm:	1.012
Count time:	500
D/C 1:	2.158
D/C 2:	1.826
D/C 3:	1.942
Yield:	0.747
Calc:	6.60E+00
Rptd:	6.60E+00
MDA, Calc:	1.55E-01
MDA, rptd:	1.56E-01

W0024-ITC-034

Selenium 79	
HEIS No.:	B0BKM8
Sample:	404068-01
Bkg cpm:	0
Spl, amt:	1.01E+00
Spl cpm:	23.33
Count time:	100
Spl dpm:	25.56
d/c:	1.096
Yield:	0.645
Blk, dpm:	3.43E+01
Calc:	2.41E+00
Rptd:	2.40E+00
MDA, calc:	2.06E-02
MDA, rptd:	1.47E+00
Technetium-99	
HEIS No.:	B0BKM8
Sample:	404068-01
Bkg cpm:	0.274
Spl, amt:	2.00E+00
Spl cpm:	25.31
Count time:	100
Spl dpm:	27.46
d/c:	1.085
Yield:	1
Blk, dpm:	2.34E+00
Calc:	5.66E+00
Rptd:	1.98E-02
MDA, calc:	6.61E-02
MDA, rptd:	8.30E-01
Total Uranium	
HEIS No.:	B0BKM8
Lab ID:	404068-01
ng, raw:	19.779
g, sample:	1.0013
Dil. vol:	100
Yield, corr:	0.9305
Calc.:	2.12E+00
Rptd:	0.00E+00