START 9613497.1062

00010

W0049-ITC-056

0045482

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

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

June 10, 1994

Job Number: 464; 470; 493

This is the Certificate of Analysis for the following samples:

SDG:	W0049
Client Project ID:	WHC SAF-94-130 200-BP-5 Groundwater Round 1
Date Received by Lab:	April 30; May 3; May 6, 1994
Number of Samples:	Sixteen (16)
Sample Type:	Water

I. Introduction

On April 30, May 3 and May 6, 1994, sixteen (16) water samples arrived at ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The following samples for cyanide were received at pH less than 12: BOBNJ3, BOBNJ9, BOBNK9, BOBNL9, BOBNL1, BOBNM3, BOBNM4 AND BOBRL1. See attached CRU #1558. 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.

The samples were analyzed for Target Compound List (TCL) volatiles and 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

OCT 1996 RECEIVED EDMC

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Compound List (TCL) pesticides and PCBs by gas chromatography/electron capture detection (GC/ECD) in accordance with the EPA CLP 3/90 Statement of Work.

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 nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for sulfate based on EPA method 375.4.

The total dissolved solids (TDS) content of the samples was determined using EPA method 160.1.

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

III. Quality Control

The samples for work order #464 were digested on May 17, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed on May 23 and May 24, 1994; the remaining metals were analyzed by ICP on May 27 and June 2, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample numbers BOBNJ3 (total) and BOBNJ4 (dissolved). Spike recovery (accuracy) results were within acceptance limits for all requested analytes for both samples except for iron by ICP analysis for sample BOBNJ3. As the silicon concentrations are greater than four times (4X) the spike added in both samples, spiking criteria did not apply for these analytes. A blank spike was performed for cyanide analysis due to insufficient sample. Duplicate RPD (precision) results were within acceptance limits for all requested parameters for both samples. The 1/5 serial dilution on sample BOBNJ3 (total) exhibited slight matrix interferences for calcium, magnesium, sodium and silicon.

The samples for work order #470 were digested on May 17, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 23 through May 25, 1994; the remaining metals were analyzed by ICP on May 27, 1994. All run QC was acceptable. The samples were batched with QC from work order #464.

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
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KNOXVILLE, TN

III. Quality Control (Continued)

The samples for work order #493 were digested on May 17, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed on May 23, 1994; the remaining metals were analyzed by ICP on June 6, 1994. All run QC was acceptable. The samples were batched with QC from work order #464.

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.

"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.

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
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III. Quality Control (Continued)

The samples were analyzed for alkalinity on May 4, 1994. A duplicate was analyzed using sample number BOBJN3. All quality control results were acceptable.

The samples were analyzed for nitrite/nitrate on May 19, 1994. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBJN3. All quality control results were acceptable.

The samples were analyzed for sulfate on May 16, 1994. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBTW4 of work order 508 (SDG W0054). All quality control results were acceptable. The analytical results are included in this report.

The samples were analyzed for total dissolved solids on May 3 and May 5, 1994. A duplicate for total dissolved solids was performed using sample number BOBJN3. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, nitrite, phosphate and sulfate by EPA method 300.0 from May 12 through May 26, 1994. A matrix spike and matrix spike duplicate were analyzed using sample BOBNJ3. All quality control results were acceptable.

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
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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

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample Ids.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA7896	404570-01A	BOBNJ3	METALS-T
AA7897	404570-01B	"	ANIONS
AA7898	404570-01C	"	NO2NO3
AA7899	404570-01D	"	ALKALINITY
AA7900	404570-01E	"	TDS
AA7902	404570-01G	"	CYANIDE
AA7903	404570-02A	BOBNJ4	METALS-D
AA7904	404570-03A	BOBNJ9	METALS-T
AA7905	404570-03B	"	ANIONS
AA7906	404570-03C	"	NO2NO3
AA7907	404570-03D	"	ALKALINITY
AA7908	404570-03E	"	TDS
AA7910	404570-03G	"	CYANIDE
AA7911	404570-04A	BOBNK0	METALS-D
AA7912	404570-05A	BOBNK9	METALS-T
AA7913	404570-05B	"	ANIONS
AA7914	404570-05C	"	NO2NO3
AA7915	404570-05D	"	ALKALINITY
AA7916	404570-05E	"	TDS
AA7918	404570-05G	"	CYANIDE

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June 10, 1994
Job Number: 464; 470; 493
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5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA7919	404570-06A	BOBNL0	METALS-D
AA7920	404570-07A	BOBNL9	METALS-T
AA7921	404570-07B	"	ANIONS
AA7922	404570-07C	"	NO2NO3
AA7923	404570-07D	"	ALKALINITY
AA7924	404570-07E	"	TDS
AA7926	404570-07G	"	CYANIDE
AA7927	404570-08A	BOBNM0	METALS-D
AA7935	404570-09A	BOBNL1	METALS-T
AA7936	404570-09B	"	ANIONS
AA7937	404570-09C	"	NO2NO3
AA7938	404570-09D	"	ALKALINITY
AA7939	404570-09E	"	TDS
AA7941	404570-09G	"	CYANIDE
AA7942	404570-10A	BOBNL2	METALS-D
AA8023	4050108-01A	BOBNM3	METALS-T
AA8024	405018-01B	"	ANIONS
AA8025	405018-01C	"	NO2NO3
AA8026	405018-01D	"	ALKALINITY

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA8027	405018-01E	BOBNM3	CYANIDE
AA8028	405018-01F	"	TDS
AA8029	405018-01G	"	SULFATE
AA8037	405018-02A	BOBNM4	METALS-D
AA8030	405018-03A	BOBNK7	METALS-T
AA8031	405018-03B	"	ANIONS
AA8032	405018-03C	"	NO2NO3
AA8033	405018-03D	"	ALKALINITY
AA8034	405018-03E	"	CYANIDE
AA8035	405018-03F	"	TDS
AA8036	405018-03G	"	SULFATE
AA8038	405018-04A	BOBNK8	METALS-D
AA8189	405077-01A	BOBRL1	METALS-T
AA8190	405077-01B	"	ANIONS
AA8191	405077-01C	"	NO2NO3
AA8192	405077-01D	"	ALKALINITY
AA8193	405077-01E	"	CYANIDE
AA8194	405077-01G	"	TDS
AA8196	405077-02A	BOBRL2	METALS-D

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OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0107
Record of Disposition No.

DATE: May 2, 1994 | LABORATORY: IT/TMA

PROJECT TITLE/NO.: 200-BP-5/94-130 | NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:

All samples which were not analyzed prior to this notification.

DESCRIPTION OF EVENT:

The analysis for sulfate by methods EPA 300.0 and EPA 375.4 was requested on the Sampling Authorization Form (SAF). This redundancy in analysis is not necessary.

DISPOSITION OF SAMPLES:

Discontinue analysis for sulfate by EPA 375.4.

APPROVAL SIGNATURES:

R. C. Smith/ Clayton Smith — 5/4/94
OSM Project Coordinator (Print/Sign Name) — Date

D. B. Erb/ David B. Erb — 5/3/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0109
Record of Disposition No.

DATE: 5/6/94	LABORATORY: IT
PROJECT TITLE/NO.: 100-BP-5	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS:

B0BS61, B0BS62, B0BS65

DESCRIPTION OF EVENT:

The above referenced samples were sent by PNL samplers, under contract to WHC, to IT for analysis. The PNL samplers used a PNL Chain-of-Custody instead of a WHC Chain-of-Custody.

DISPOSITION OF SAMPLES:

Proceed with analysis and report data as usual under the WHC contract.

APPROVAL SIGNATURES:

R. C. Smith/ R Clayt Smith — 5/6/94
OSM Project Coordinator (Print/Sign Name) — Date

D. B. Erb/ David B Erb — 5/17/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

Surveyed : Yes ✓ No ___ ? Less than 200 counts/minute: Yes ✓ No ___ ? By (initials) [illegible]

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Pacific Northwest Laboratories Battelle Boulevard Richland, Washington 99352	**CHAIN OF CUSTODY**	Test User ID: BATTM16723 C-of-C: 5013D3 pg. 1 of

Company Contact: BE OPITZ Telephone: (509) 372-0069

Samples Collected by: HANKEL/HARRISON Date: 5/2/94 Time: 830

ID/Sample No.: 30BS65

Ice Chest No.: ER-6 Field Logbook Page No.: 4/868

Remarks: SAE 94-130 200·bp·5 gw project

Possible Sample Hazard Identification: Contract No.:

Destination: DELIVER TO SIGMA 5 (WHC Contract) Carrier/Waybill No.:

Ground-Water x Soil ___ Other ___

Shipping container internal temperature when samples sealed in it ___. Shipping container internal temperature when opened in laboratory ___.

Sample Identification

30BS65 -(8) 1000mlP-GAMM
30BS65 -(2) 1000mlP-TC99

Chain of Possession

Relinquished by:	Received by:	Date/Time:
Hankel PNL For TL Van Arsdale	[illegible] PNL	5/2/94 1140
[illegible] PNL	L Sweeney WHC	5/3/94 0740
L Sweeney WHC	[illegible] ST	5/3/94 1310
Disposed by:	Disposal Method:	Date/Time:

PNL-MA-567, AD2 BD-1200-345 (1)

Surveyed : Yes ✓ No ___ ? Less than 200 counts/minute: Yes ✓ No ___ ? By (initials) [illegible]

Pacific Northwest Laboratories Battelle Boulevard Richland, Washington 99352	**CHAIN OF CUSTODY**	Test User ID: [illegible] C-of-C: 301309 pg. 1 of [illegible]

Company Contact: SE SPITZ Telephone: (509) [illegible]-0063

Samples Collected by: Hankel/Harrison Date: 5/2/94 Time: 1040

ID/Sample No.: 30BS61

Ice Chest No.: ER-14 Field Logbook Page No.: [illegible]

Remarks: SAE94-130

Possible Sample Hazard Identification: ___ Contract No.: ___

Destination: DELIVER TO SIGMA 3 (WHC contract) Carrier/Waybill No.: ___

Ground-Water ___ Soil ___ Other ___

Shipping container internal temperature when samples sealed in it ___. Shipping container internal temperature when opened in laboratory ___

Sample Identification

30BS61 - 3) 1000mLP-GAMM
30BS61 - 4) 1000mLP-TC39

Chain of Possession

[signature] PNL	[signature] PNL	5/2/94 1140
Relinquished by: For TL VanArsdale	Received by:	Date/Time:
[signature] PNL	[signature] WHC	5-3-94 0740
Relinquished by:	Received by:	Date/Time:
[signature] WHC	[signature]	5/3/94 1310
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Disposed by:	Disposal Method:	Date/Time:

PNL-MA-567, AD2 BD-1200-345 (

Surveyed : Yes ✓ No ____ ? Less than 200 counts/minute: Yes ✓ No ____ ? By (initials) Hm

Pacific Northwest Laboratories Battelle Boulevard Richland, Washington 99352	**CHAIN OF CUSTODY**	Test User ID: BATTM16783 C-of-C: 8013D0 pg. 1 of

Company Contact: BE OPITZ Telephone: (509) 373-0063

Samples Collected by: Hankel / Harrison Date: 5/2/94 Time: 930

ID/Sample No.: 80BS62

Ice Chest No.: ER14 Field Logbook Page No.: 343

Remarks: SAF 94-130

Possible Sample Hazard Identification: ____ Contract No.: ____

Destination: DELIVER TO SIGMA 3 (WHC Contract) Carrier/Waybill No.: ____

Ground-Water ____ Soil ____ Other ____

Shipping container internal temperature when samples sealed in it ____. Shipping container internal temperature when opened in laboratory ____

Sample Identification

80BS62 -(A) 1000mlP-GAMM
80BS62 -(B) 1000mlP-TC99

Chain of Possession

Relinquished by:	Received by:	Date/Time:
Hankel PNL For TL VanArsdale	JW-AM PNL	5/2/94 1140
Janet L Kilgo PNL	L Sweeney / Sweeney WHC	5/3/94 0740
L Sweeney / Sweeney WHC	A. Boyd ET	5/3/94 1310

Disposed by: ____ Disposal Method: ____ Date/Time: ____

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CUR #1558

Work Order No.: 464

Condition Upon Receipt Variance Report

ITAS - -KNOXVILLE Laboratory

:nt: ~~Hanf~~ IT-Richland

Date: 5-2-94

ect No: Westinghouse Hanford

Initiated by: KAK

lysis Requested: Cyanide

RFA/COC Numbers: 453618

:lient Sample Numbers Affected: 404570-01; 03; 05; 07; 09

:ondition/Variance (Check all that apply):

1. ☐ Not enough sample received for proper analysis.
   Received approximately: _____
2. ☐ Sample received broken/leaking.
3. ☑ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: _____
   - ☑ pH 11, 10, 10, 10, 10
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☐ Custody tape disturbed/broken/missing.
9. ☐ Sample splits performed by lab.
10. ☐ Volatile sample received with approximately _____ mm headspace.
11. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
12. ☐ All coolers on airbill not received with shipment.
13. ☑ Other (explain below):
    Sample Descriptions for 404570 01 and 404570 02 were listed on RFA/COC as BOBJN3 and BOBJN4; should have been BOBNJ3 and BOBNJ4, respectively

Notes:

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: Kenya Klemm Date: 5-3-94

KAK 5-3-94

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

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CUR # 1587

Work Order No.: 493

Condition Upon Receipt Variance Report

ITAS - KNOXVILLE Laboratory

lient: IT Richland

Date: 5/6/94

roject No: Westinghouse Hanford

Initiated by: KAK

nalysis Requested: Metals, Cyanide, TDS Alk, NO3/NO2, Anions

RFA/COC Numbers: 453626

Client Sample Numbers Affected: Cyanide - 40507701

Condition/Variance (Check all that apply):

1. ☐ Not enough sample received for proper analysis. Received approximately: _____
2. ☐ Sample received broken/leaking.
3. ☑ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C Record temperature: _____
   - ☑ pH for cyanide = 11
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☐ Custody tape disturbed/broken/missing.
9. ☐ Sample splits performed by lab.
10. ☐ Volatile sample received with approximately _____ mm headspace.
11. ☐ Sample ID on container does not match sample ID on paperwork. Explain: _____
12. ☐ All coolers on airbill not received with shipment.
13. ☐ Other (explain below): _____

Notes:

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: Bryan Blomquist Date: 5/09/94

Project Management Review: _____ Date: _____

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ9

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO464 SAS No.: SDG No.: W0049

Matrix (soil/water): WATER Lab Sample ID: AA7904

Level (low/med): LOW Date Received: 04/30/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	66.2	B		P
7440-70-2	Calcium	34000		E	P
7439-89-6	Iron	340		N	P
7439-95-4	Magnesium	10300		E	P
7439-96-5	Manganese	20.8			P
7440-09-7	Potassium	4380	B		P
7782-49-2	Selenium	2.5	B	W	F
7440-23-5	Sodium	19100		E	P
5955-70-0	Cyanide				NR
7440-31-5	Silicon	16000		E	P
	Bismuth	10.0	U		F

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ3

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO464 SAS No.: _____ SDG No.: W0049_

Matrix (soil/water): WATER Lab Sample ID: AA7896

Level (low/med): LOW__ Date Received: 04/30/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	43.7	B		P_
7440-70-2	Calcium__	35000		E	P_
7439-89-6	Iron____	704		N	P_
7439-95-4	Magnesium	9760		E	P_
7439-96-5	Manganese	15.0	B		P_
7440-09-7	Potassium	5960			P_
7782-49-2	Selenium_	3.3	B	W	F_
7440-23-5	Sodium___	21400		E	P_
5955-70-0	Cyanide__				NR
7440-31-5	Silicon__	16500		E	P_
	Bismuth__	10.0	U		F_

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ3

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO464 SAS No.: _____ SDG No.: W0049_

Matrix (soil/water): WATER Lab Sample ID: AA7902

Level (low/med): LOW__ Date Received: 04/30/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_				NR
7440-70-2	Calcium__				NR
7439-89-6	Iron____				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium_				NR
7440-23-5	Sodium___				NR
5955-70-0	Cyanide__	10.0	U		AS
7440-31-5	Silicon__				NR
	Bismuth__				NR

Color Before: _____ Clarity Before: _____ Texture: _____

Color After: _____ Clarity After: _____ Artifacts: _____

Comments:

CYANIDE_ONLY.

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ4

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: WO464 SAS No.: _____ SDG No.: W0049_

Matrix (soil/water): WATER Lab Sample ID: AA7903

Level (low/med): LOW__ Date Received: 04/30/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	97.8	B		P
7440-70-2	Calcium__	32600			P
7439-89-6	Iron_____	18.8	B		P
7439-95-4	Magnesium	8980			P
7439-96-5	Manganese	5.3	B		P
7440-09-7	Potassium	5880			P
7782-49-2	Selenium_	2.4	B	W	F
7440-23-5	Sodium___	19400			P
5955-70-0	Cyanide__				NR
7440-31-5	Silicon__	15600			P
	Bismuth__	10.0	U		F

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED.

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNJ9

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO464 SAS No.: SDG No.: W0049

Matrix (soil/water): WATER Lab Sample ID: AA7910

Level (low/med): LOW Date Received: 04/30/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
5955-70-0	Cyanide	10.0	U		AS
7440-31-5	Silicon				NR
	Bismuth				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

CYANIDE_ONLY.

FORM I - IN

ILM02.1

8 6/9/94

9613497.1082

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK0

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0464 SAS No.: _____ SDG No.: W0049_

Matrix (soil/water): WATER Lab Sample ID: AA7911

Level (low/med): LOW__ Date Received: 04/30/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	142	B		P_
7440-70-2	Calcium__	35800			P_
7439-89-6	Iron_____	33.6	B		P_
7439-95-4	Magnesium	10800			P_
7439-96-5	Manganese	10.3	B		P_
7440-09-7	Potassium	5060			P_
7782-49-2	Selenium_	2.0	B	W	F_
7440-23-5	Sodium___	20100			P_
5955-70-0	Cyanide__				NR
7440-31-5	Silicon__	17000			P_
	Bismuth__	10.0	U		F_

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED.

FORM I - IN

ILM02.1

8 6/9/94

9613497.1083

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK9

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0464 SAS No.: SDG No.: W0049

Matrix (soil/water): WATER Lab Sample ID: AA7912

Level (low/med): LOW Date Received: 04/30/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	74.2	B		P
7440-70-2	Calcium	30700		E	P
7439-89-6	Iron	37.0	B	N	P
7439-95-4	Magnesium	9590		E	P
7439-96-5	Manganese	1.7	B		P
7440-09-7	Potassium	4780	B		P
7782-49-2	Selenium	2.7	B	W	F
7440-23-5	Sodium	20800		E	P
5955-70-0	Cyanide				NR
7440-31-5	Silicon	15200		E	P
	Bismuth	10.0	U		F

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

ILM02.1

8 6/9/94

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK9

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0464 SAS No.: SDG No.: W0049

Matrix (soil/water): WATER Lab Sample ID: AA7918

Level (low/med): LOW Date Received: 04/30/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
5955-70-0	Cyanide	10.0	U		AS
7440-31-5	Silicon				NR
	Bismuth				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

CYANIDE_ONLY.

FORM I - IN

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8 6/9/94

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL0

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0464 SAS No.: _____ SDG No.: W0049_

Matrix (soil/water): WATER Lab Sample ID: AA7919

Level (low/med): LOW__ Date Received: 04/30/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	79.9	B		P_
7440-70-2	Calcium__	33000			P_
7439-89-6	Iron_____	11.3	B		P_
7439-95-4	Magnesium	10300			P_
7439-96-5	Manganese	1.1	B		P_
7440-09-7	Potassium	5320			P_
7782-49-2	Selenium_	2.7	B	W	F_
7440-23-5	Sodium___	22400			P_
5955-70-0	Cyanide__				NR
7440-31-5	Silicon__	16400			P_
	Bismuth__	10.0	U		F_

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED.

FORM I - IN

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8 6/9/94

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL1

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO464 SAS No.: SDG No.: W0049

Matrix (soil/water): WATER Lab Sample ID: AA7935

Level (low/med): LOW Date Received: 04/30/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	80.4	B		P
7440-70-2	Calcium	38500		E	P
7439-89-6	Iron	102		N	P
7439-95-4	Magnesium	12100		E	P
7439-96-5	Manganese	3.3	B		P
7440-09-7	Potassium	4990	B		P
7782-49-2	Selenium	3.2	B	W	F
7440-23-5	Sodium	20900		E	P
5955-70-0	Cyanide				NR
7440-31-5	Silicon	15200		E	P
	Bismuth	10.0	U		F

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL1

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: W0464 SAS No.: SDG No.: W0049

Matrix (soil/water): WATER Lab Sample ID: AA7941

Level (low/med): LOW Date Received: 04/30/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
5955-70-0	Cyanide	10.0	U		AS
7440-31-5	Silicon				NR
	Bismuth				NR

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

CYANIDE_ONLY.

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ILM02.1

8 6/9/94

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL2

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE

Lab Code: ITSTU_ Case No.: W0464 SAS No.: _____ SDG No.: W0049_

Matrix (soil/water): WATER Lab Sample ID: AA7942

Level (low/med): LOW__ Date Received: 04/30/94

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	73.1	B		P
7440-70-2	Calcium__	40000			P
7439-89-6	Iron____	12.1	B		P
7439-95-4	Magnesium	12600			P
7439-96-5	Manganese	1.7	B		P
7440-09-7	Potassium	6010			P
7782-49-2	Selenium_	2.9	B	W	F
7440-23-5	Sodium___	21700			P
5955-70-0	Cyanide__				NR
7440-31-5	Silicon__	15900			P
	Bismuth__	10.0	U		F

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

DISSOLVED.

FORM I - IN

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8 6/9/94

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNL9

Lab Name: ITAS KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO464 SAS No.: SDG No.: W0049

Matrix (soil/water): WATER Lab Sample ID: AA7920

Level (low/med): LOW Date Received: 04/30/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	86.0	B		P
7440-70-2	Calcium	30000		E	P
7439-89-6	Iron	56.1	B	N	P
7439-95-4	Magnesium	6790		E	P
7439-96-5	Manganese	5.5	B		P
7440-09-7	Potassium	3890	B		P
7782-49-2	Selenium	2.0	U	W	F
7440-23-5	Sodium	20900		E	P
5955-70-0	Cyanide				NR
7440-31-5	Silicon	15600		E	P
	Bismuth	10.0	U		F

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

ILM02.1

8 6/9/94

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U.S. EPA - CLP

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EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

BOBNL9

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: WO464 SAS No.: SDG No.: W0049
Matrix (soil/water): WATER Lab Sample ID: AA7926
Level (low/med): LOW Date Received: 04/30/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
5955-70-0	Cyanide	10.0	U		AS
7440-31-5	Silicon				NR
	Bismuth				NR

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

Comments:
CYANIDE_ONLY.

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8 6/9/94

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM0

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: W0464 SAS No.: _____ SDG No.: W0049_
Matrix (soil/water): WATER Lab Sample ID: AA7927
Level (low/med): LOW__ Date Received: 04/30/94
% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96.4	B		P
7440-70-2	Calcium	28000			P
7439-89-6	Iron	15.6	B		P
7439-95-4	Magnesium	6300			P
7439-96-5	Manganese	4.2	B		P
7440-09-7	Potassium	3330	B		P
7782-49-2	Selenium	2.0	U	W	F
7440-23-5	Sodium	19200			P
5955-70-0	Cyanide				NR
7440-31-5	Silicon	14700			P
	Bismuth	10.0	U		F

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
DISSOLVED.

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK7/WATER

Lab Name: ITAS_KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: W0470 SAS No.: SDG No.: W0049

Matrix (soil/water): WATER Lab Sample ID: AA8034

Level (low/med): LOW Date Received: 05/03/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	10.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

TOTAL CYANIDE

FORM I - IN

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U.S. EPA - CLP

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1

EPA SAMPLE NO.

INORGANIC ANALYSES DATA SHEET

BOBNK7/WATER

Lab Name: ITAS_KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO470 SAS No.: SDG No.: WO049
Matrix (soil/water): WATER Lab Sample ID: AA8030
Level (low/med): LOW Date Received: 05/03/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	50500		E	P
7439-89-6	Iron	425		N	P
7439-95-4	Magnesium	14400		E	P
7439-96-5	Manganese	6.0	B		P
7440-09-7	Potassium	6100			P
7782-49-2	Selenium	3.6	B	W	F
7440-23-5	Sodium	21000		E	P
	Bismuth	10.0	U		F
7440-31-5	Silicon	19500		E	P
5955-70-0	Cyanide				NR

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

Comments:
TOTAL

FORM I - IN

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNK8/WATER

Lab Name: ITAS_KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO470 SAS No.: SDG No.: WO049
Matrix (soil/water): WATER Lab Sample ID: AA8038
Level (low/med): LOW Date Received: 05/03/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	50600			P
7439-89-6	Iron	66.3	B		P
7439-95-4	Magnesium	14400			P
7439-96-5	Manganese	5.7	B		P
7440-09-7	Potassium	6430			P
7782-49-2	Selenium	4.6	B	S	F
7440-23-5	Sodium	20700			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	19600			P
5955-70-0	Cyanide				NR

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

Comments:
DISSOLVED

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM3/WATER

Lab Name: ITAS_KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO470 SAS No.: SDG No.: WO049
Matrix (soil/water): WATER Lab Sample ID: AA8027
Level (low/med): LOW Date Received: 05/03/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	10.0	U		AS

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

Comments:
TOTAL_CYANIDE

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM3/WATER

Lab Name: ITAS_KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO470 SAS No.: SDG No.: WO049

Matrix (soil/water): WATER Lab Sample ID: AA8023

Level (low/med): LOW Date Received: 05/03/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.8	B		P
7440-70-2	Calcium	40700		E	P
7439-89-6	Iron	186		N	P
7439-95-4	Magnesium	11300		E	P
7439-96-5	Manganese	5.5	B		P
7440-09-7	Potassium	7470			P
7782-49-2	Selenium	2.5	B	W	F
7440-23-5	Sodium	12700		E	P
	Bismuth	10.0	U		F
7440-31-5	Silicon	27100		E	P
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

TOTAL

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1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBNM4/WATER

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO470 SAS No.: SDG No.: WO049

Matrix (soil/water): WATER Lab Sample ID: AA8037

Level (low/med): LOW Date Received: 05/03/94

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	41100			P
7439-89-6	Iron	22.5	B		P
7439-95-4	Magnesium	11400			P
7439-96-5	Manganese	4.0	B		P
7440-09-7	Potassium	7710			P
7782-49-2	Selenium	2.5	B	W	F
7440-23-5	Sodium	12800			P
	Bismuth	10.0	U		F
7440-31-5	Silicon	27400			P
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL1

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE
Lab Code: ITSTU Case No.: W0493 SAS No.: SDG No.: W0049
Matrix (soil/water): WATER Lab Sample ID: AA8193
Level (low/med): LOW Date Received: 06/06/94
% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-70-2	Calcium				NR
7439-89-6	Iron				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-23-5	Sodium				NR
	Bismuth				NR
7440-31-5	Silicon				NR
5955-70-0	Cyanide	10.0	U		AS

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

Comments:
CYANIDE_ONLY.

FORM I - IN

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U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL1

Lab Name: ITAS_KNOXVILLE Contract: HANFORD/WE

Lab Code: ITSTU Case No.: WO493 SAS No.: SDG No.: W0049

Matrix (soil/water): WATER Lab Sample ID: AA8189

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

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	40.0	U		P
7440-70-2	Calcium	190	B	E	P
7439-89-6	Iron	15.0	B	N	P
7439-95-4	Magnesium	30.0	U	E	P
7439-96-5	Manganese	2.0	U		P
7440-09-7	Potassium	1000	U		P
7782-49-2	Selenium	2.0	U	W	F
7440-23-5	Sodium	449	B	E	P
	Bismuth	10.0	U		F
7440-31-5	Silicon	40.0	B	E	P
5955-70-0	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN

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1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBRL2

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD/WE
Lab Code: ITSTU_ Case No.: W0493 SAS No.: _____ SDG No.: W0049_
Matrix (soil/water): WATER Lab Sample ID: AA8196
Level (low/med): LOW__ Date Received: 06/06/94
% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	44.7	B		P_
7440-70-2	Calcium__	130	B		P_
7439-89-6	Iron____	17.8	B		P_
7439-95-4	Magnesium	30.0	U		P_
7439-96-5	Manganese	2.0	U		P_
7440-09-7	Potassium	1000	U		P_
7782-49-2	Selenium_	2.0	U	W	F_
7440-23-5	Sodium___	446	B		P_
	Bismuth__	10.0	U		F_
7440-31-5	Silicon__	114			P_
5955-70-0	Cyanide__				NR

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: N/A___
Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:
DISSOLVED.

FORM I - IN

ILM02.1
6/9/94

9613497.1101

00201

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	464
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/03/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6159	1.0	U
Method Blank	P6170	1.0	U
BOBNJ9	AA7908	313	+
BOBNL1	AA7939	291	+
BOBNK9	AA7916	81	+
BOBNJ3	AA7900	329	+
BOBNL9	AA7924	191	+

Method blank P6159 applies to samples: BOBNJ9 and BOBNL1
Method blank P6170 applies to samples: BOBNK9, BOBNJ3 and BOBNL9

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

9613497.1102

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	470
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/05/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6172	1.0	U
BOBNM3	AA8028	259	+
BOBNK7	AA8035	333	+

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

9613497.1103

TOTAL DISSOLVED SOLIDS ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	493
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/10/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6183	1.0	U
BOBRL1	AA8194	50	+

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

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	464
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/04/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6148	2	U
BOBNK9	AA7915	118	+
BOBNJ3	AA7899	94	+
BOBNL9	AA7923	128	+
BOBNJ9	AA7907	106	+
BOBNL1	AA7938	108	+

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

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	470
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/04/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6148	2	U
BOBNM3	AA8026	104	+
BOBNK7	AA8033	102	+

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

ALKALINITY ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	493
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/13/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6196	2	U
BOBRL1	AA8192	4	+

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

SULFATE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	470
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/16/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6208	5.0	U
BOBNK7	AA8036	96	+
BOBNM3	AA8029	52	+

+ - 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:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	464
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/19/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6219	0.02	U
BOBNJ3	AA7898	4.07	+
BOBNJ9	AA7906	9.07	+
BOBNK9	AA7914	6.37	+
BOBNL9	AA7922	0.27	+
BOBNL1	AA7937	2.09	+

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

9613497.1109

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	470
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/19/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6219	0.02	U
BOBNM3	AA8025	2.41	+
BOBNK7	AA8032	2.33	+

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

9613497.1110

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-Knoxville	SDG Number:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	493
Sample Matrix:	Water	Extraction Date:	N/A
Concentration Units:	mg/l	Analysis Date:	05/19/94

Client Sample ID	Lab Sample ID	Result	Qualifiers
Method Blank	P6219	0.02	U
BOBRL1	AA8191	0.02	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:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	464
Client Sample ID:	BOBNJ3	Preparation Date:	05/23/94
Lab Sample ID:	AA7897	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	+	0.40
chloride	9.5	+	2.0
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	54	+	7.5

+ - 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:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	464
Client Sample ID:	BOBNJ9	Preparation Date:	05/23/94
Lab Sample ID:	AA7905	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	8.3	+	0.8
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	40	+	3.0

+ - 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:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	464
Client Sample ID:	BOBNK9	Preparation Date:	05/23/94
Lab Sample ID:	AA7913	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.60	+	0.40
chloride	12	+	1.2
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	43	+	4.5

+ - 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:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	464
Client Sample ID:	BOBNL9	Preparation Date:	05/23/94
Lab Sample ID:	AA7921	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.70	+	0.40
chloride	10	+	0.8
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	13	+	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:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	464
Client Sample ID:	BOBNL1	Preparation Date:	05/23/94
Lab Sample ID:	AA7936	Analysis Date:	05/23/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.60	+	0.40
chloride	22	+	2.0
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	80	+	7.5

\+ - 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:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	470
Client Sample ID:	BOBNM3	Preparation Date:	05/26/94
Lab Sample ID:	AA8024	Analysis Date:	05/26/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	10	+	1.2
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	45	+	4.5

+ - 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:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	470
Client Sample ID:	BOBNK7	Preparation Date:	05/26/94
Lab Sample ID:	AA8031	Analysis Date:	05/26/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.50	+	0.40
chloride	22	+	2.0
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	77	+	7.5

+ - 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:	W0049
Contract Name:	Westinghouse Hanford	Job Number:	493
Client Sample ID:	BOBRL1	Preparation Date:	05/26/94
Lab Sample ID:	AA8190	Analysis Date:	05/26/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.40	U	0.40
chloride	0.40	U	0.40
nitrite	0.40	U	0.40
phosphate	1.0	U	1.0
sulfate	1.5	U	1.5

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

9613497.1119

WO #464

00025

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 4-29-94 12:10 Client Name WHC

Project/Client # 94130 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) PNL 722

1. Condition of shipping container? GIC
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☒ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: _____
8. Samples have: X tape ____ hazard labels
   X custody seals ____ appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 6°C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) N/A
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature Karen Fahlenberg FAS Date/Time 4-29-94 12:10

FORM NO. LS-042, Rev.0, 2/94

9613497.1120

WO #464

00026

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 4-29-94 12:10 Client Name WHC

Project/Client # 94-130 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER14

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☒ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 15
8. Samples have: X tape ____ hazard labels
   X custody seals ____ appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 3°C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) N/A
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature [illegible] Date/Time 4-29-94 12:10

FORM NO. LS-042, Rev.0, 2/94

9613497.1121

WO#464
00027

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
200 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Container

Date/Time Received 4-29-94 12:10 Client Name WHC

Project/Client # 94-130 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) EFS 11

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☒ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 15
8. Samples have: X tape ____ hazard labels
   X custody seals ____ appropriate sample labels
9. Samples are: ____ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 5°C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) n/a
    Request for analysis #(s) n/a
    Airbill # n/a Carrier n/a
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature [illegible] ITAS Date/Time 4-29-94 12:10

FORM NO. LS-042, Rev.0, 2.94

9613497.1122

WO #464

00028

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1200 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Container

Date/Time Received 4-29-94 12:10 Client Name WHC

Project/Client # 94-130 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER05

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☒ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 15
8. Samples have: X tape ____ hazard labels
   X custody seals ____ appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 5°C

11. The following paperwork should be accounted for (N/A if not applicable):

    Chain of Custody #'(s) N/A

    Request for analysis #(s) N/A

    Airbill # N/A Carrier N/A

12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature Karen Fontenbury Date/Time 4-29-94 12:10

FORM NO. LS-042, Rev.0, 2/94

9613497.1123

WO#464

00029

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1020 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

Per Shipping Container

Date/Time Received 4-29-94 12:10 Client Name WHC

Project/Client # 94-130 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) 4-19-94 CH EFS 101

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☒ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 15
8. Samples have: X tape ____ hazard labels
   X custody seals ____ appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐
    Sample temperature 4°C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #(s) N/A
    Request for analysis #(s) N/A
    Airbill # N/A Carrier _____
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature Karen Gottenberg EMS Date/Time 4-29-94 12:10

FORM NO. LS-042, Rev.0, 2.94

9613497.1124

WO #470

00030

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 5/2/94 1200 Client Name WHC

Project/Client # SAF 94-130 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER-05

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☒ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 15
8. Samples have: ____ tape ____ hazard labels
   X custody seals X appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 2°

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) N/A
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature R. Boyd R. Boyd Date/Time 5/2/94 1200

FORM NO. LS-042, Rev.0, 2/94

9613497.1125

WO #470

00031

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 5/2/94 1220 Client Name WHC

Project/Client # SAF 94-130 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER-6

1. Condition of shipping container? OK
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☒ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 15
8. Samples have: ____ tape ____ hazard labels
   15 custody seals 15 appropriate sample labels
9. Samples are: 15 in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 30

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) N/A
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature R. Boyd R. Boyd Date/Time 5/2/94 1220

FORM NO. LS-042, Rev.0, 2/94

9613497.1126

WO#493

00032

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 5-4-94 12:05 Client Name WHC

Project/Client # 94-130 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER-05

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☒ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 15
8. Samples have: X tape ____ hazard labels
   X custody seals ____ appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 20C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) N/A
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature Karen Stottenberg Date/Time 5-4-94 14:05

FORM NO. LS-042, Rev.0, 2/94

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: [ ] Priority [X] Normal

Collector: K. Trapp	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: PNL 722	Field Logbook No.: EFL-1036	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-0C518-25	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. RR trig 3C AJS 4/28/94 1340		

SAMPLE ANALYSIS: 404570

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	None			
Type of Container	G	G	P	P	P	P	P	P	Gs	P	P	OGS			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	10 mL			
	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Activity Scan			
	A	B	C	D	E	F	G	404571		101	02A				

Sample No.	Matrix*	Date Sampled	Time Sampled	*1	IC ANIONS	NO2, NO3	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Activity Scan			
BOBNJ3 01	W	4/28/94	0955	X	X	X	X	X	X	X	X	X	X		X			
BOBNJ4 02	W	↓												X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K. J. Mapp / K. Trapp	4/28/94 1300	[illegible] B. Hutton	4/28/94 1300
[illegible] B. Hutton	4/28/94 1339	A J Simpson	4/28/94 1340
A J Simpson (AJ SIMPSON)	4/29/94 1027	L Sweeney L Sweeney	4/29/94 1030
L Sweeney L Sweeney	4-29-94 1210	[illegible]	4-29-94 12:10

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ce, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

SDG-W0049

Matrix*

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

LABORATORY SECTION: Received By | Title | Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

00033

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: K. Trapp	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-14	Field Logbook No.: EFL-1036 1020	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: 1094-0-0578-23	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refrig 3B AJS 1350 4/28/94		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	None			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	vGs			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	40mL			
SAMPLE ANALYSIS 404570	*1 A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 404571 02	TRITIUM	Tc-99	*3 04 A	Activity Scan			

Sample No.	Matrix*	Date Sampled	Time Sampled	*1	IC ANIONS	NO2, NO3	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Activity Scan			
BOBN J9 03	W	4/28/94	1140	X	X	X	X	X	X	X	X	X	X		X			
BOBN K0 04	W	↓	↓											X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: K. Trapp / K. Trapp		4/28/94 1300
Received By: B. White		4/28/94 1300
Relinquished By: B. White		4/28/94 1330
Received By: AJ Simpson		4/28/94 1350
Relinquished By: AJ Simpson		4/29/94 1027
Received By: L Sweeney		4/29/94 1030
Relinquished By: L Sweeney		4-28-94 1210
Received By: Karen Hollinsley		4-29-94 12:10

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

Matrix*

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

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

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

000034

WO 464

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Date Turnaround: ☐ Priority ☒ Normal

Collector: K. D. Lee	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: EFS11	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: LW94-0-0578-25	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		

Special Handling and/or Storage: Cool to 4 C. Relinq JC ATS 1345 4/28/94

SAMPLE ANALYSIS: 404570

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	P G	G	P	P	P	P	P	P	Gs	P	P G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 1	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1P 2L	1L	40mL			
SAMPLE ANALYSIS	*1 A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKALINITY D	TDS E	SULFATE F	CYANIDE G	*2 404571	TRITIUM	Tc-99 03	*3 06 A	TOTAL ACTIVITY			

Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F	G								
BOBN k9 05	W	04/28/94	0915	X	X	X	X	X	X	X	X	X	X		X			
BOBN L0 06	W	04/28/94	0915											X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	K. D. Lee / P. H. Butcher	4/28/94 1330	AJ Simpson / AJ SIMPSON	4/28/94 1345
Relinquished By	AJ SIMPSON / AJ Simpson	4/29/94 1027	L Sweeney / L Sweeney	4/29/94 1030
Relinquished By	L Sweeney / L Sweeney	4-29-94 1210	Karen Kolstad / Karen Kolstad	4/29/94 12:11
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

Matrix*

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

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

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

00035

WO-7601

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: K. D. Lee / B. T. Williams	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: EFS 101	Field Logbook No.:	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W74-C-C518-23	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. KMIS 3B AJS 4/28/94 1356		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	P	G	P	P	P	P	P	P	Gs	P	P	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1 pt	1L	40 mL			
SAMPLE ANALYSIS 404570	*1 A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKALINITY D	TDS E	SULFATE F	CYANIDE G	*2 404571	TRITIUM	Tc-99 05	*3 10 A	TOTAL ACTIVITY			

Sample No.	Matrix*	Date Sampled	Time Sampled	*1 A	IC ANIONS B	NO2, NO3 C	ALKALINITY D	TDS E	SULFATE F	CYANIDE G	*2 404571	TRITIUM	Tc-99 05	*3 10 A	TOTAL ACTIVITY			
BOBN61 09	W	04/28/94	12:30	X	X	X	X	X	X	X	X	X	X		X			
BOBN62 10	W	04/28/94	12:30											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[signature] B. Williams	4/28/94 1380	[signature] AJ Simpson	4/28/94 1356
[signature] AJ Simpson	4/29/94 1027	[signature] L Sweeney	4/29/94 1030
[signature] L Sweeney	4-29-94 1210	[signature]	4/29/94 12:10
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

Matrix*

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

LABORATORY SECTION: Received By | Title | Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

DISTRIBUTION: Original - Sample Yellow - Sampler

BC-6000-828 (12/92)

00036

WOH764

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: K.D. Lee / B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ~~ER-14~~ AJS 4/29/94 ER-05	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: W94-0-0578-24	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. RR Frag 3C AJS 4/28/94 1340		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	~~P~~ G	G	P	P	P	P	P	P	Gs	P	~~P~~ G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 4	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L 2L	1L	40 mL			
SAMPLE ANALYSIS 404570	*1 A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 40457104	TRITIUM	Tc-99	*3 08 A	TOTAL ACTIVITY			

Sample No.	Matrix*	Date Sampled	Time Sampled	*1	IC ANIONS	NO2, NO3	ALKALINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL ACTIVITY
BOBNL9 017	W	04/28/94	1105	X	X	X	X	X	X	X	X	X	X		X
BOBNM0 08	W	04/28/94	1105											X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
B.Whitten	4/28/94 1330	AJ Simpson (AJ SIMPSON)	4/28/94 1343
AJ Simpson (AJ SIMPSON)	4/29/94 1027	L Sweeney	4-29-94 1030
L Sweeney	4-29-94 1210	[illegible] TAK	4-29-94 1210

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

Matrix*

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

LABORATORY SECTION — Received By | Title | Date/Time

FINAL SAMPLE DISPOSITION — Disposal Method | Disposed By | Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

00037

WO# 4+U

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-6	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks: None Refrig 3D 0.75 4/29/94 1306		
Special Handling and/or Storage: Cool to 4 C.		

SAMPLE ANALYSIS: 405018

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	N/A			
Type of Container	~~P~~ G	G	P	P	P	P	P	P	Gs	P	~~P~~ G	G			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 ~~1~~	1	1			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1 ~~2L~~	1L	40 mL			
	*1	IC ANIONS-F, Cl, SO4, NO2 PO4.	NO2, NO3.	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL URANIUM			
	A	B	C	D	E	F	G	405018			04 A				

Sample No.	Matrix*	Date Sampled	Time Sampled	*1	IC ANIONS	NO2, NO3	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	TOTAL URANIUM
BOBNK7 03	W	04/29/94	1130	X	X	X	X	X	X	X	X	X	X		X
BOBNK8 04	W	04/29/94	1130											X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Kelly Bee/Kelly	4/29/94 1305	AJ SIMPSON AJ Simpson	4/29/94 1306
AJ SIMPSON AJ Simpson	5/2/94 0816	L Sweeney L Sweeney	5/2/94 0816
L Sweeney L Sweeney	5-2-94 1220	P. Boyd	5/2/94 1200

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

Matrix*

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

LABORATORY SECTION: Received By | Title | Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

00038

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priorty [X] Normal

Collector: K. Trapp	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: EL-05	Field Logbook No.: EFL-1020	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.	Bill of Lading/Air Bill No.
Possible Sample Hazards/Remarks: None		
Special Handling and/or Storage: Cool to 4 C. Refric 3C AJS 4/29/94 1316		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	None			
Type of Container	G R	G	P	P	P	P	P	P	Gs	P	G R	aGS			
No. of Container(s)	1	1	1	1	1	1	1	2	2	2	1	4a			
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L	1L	40mL			
SAMPLE ANALYSIS 405018	*1 A	IC ANIONS- F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 40501901	TRITIUM	Tc-99	*3 02 A	Activity Scan			

Sample No.	Matrix*	Date Sampled	Time Sampled	*1	IC ANIONS	NO2, NO3	ALKA-LINITY	TDS	SULFATE	CYANIDE	*2	TRITIUM	Tc-99	*3	Activity Scan			
BOBNM3 01	W	4/29/94	1000	X	X	X	X	X	X	X	X	X	X		X			
BOBNM4 02	W	↓	↓											X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
K. Trapp / K. Trapp	4/29/94 1149	Kathy Lee / no ice	4/29/94 1145
Kathy Lee / no ice	4/29/94 1305	AJ SIMPSON / AJ Simpson	4/29/94 1310
AJ SIMPSON / AJ Simpson	5/2/94 0817	L Sweeney / L Sweeney	5/2/94 0817
L Sweeney / L Sweeney	5-2-94 1220	R. Boyd / IT	5/2/94 1220

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

SDW W0049

Matrix*

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

LABORATORY SECTION: Received By | Title | Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

00039

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Page 1 of 1

Data Turnaround: [ ] Priority [X] Normal

Collector: B.T. WHITTEN	Company Contact: P. H. Butcher	Telephone No.: (509) 376-4388
Project Designation: 200-BP-5	Sampling Location: 200 East	SAF No.: 94-130
Ice Chest No.: ER-05	Field Logbook No.: EFL-1125	Method of Shipment: HAND DELIVERED
Shipped To: IT	Offsite Property No.: 1094-0-0578-32	Bill of Lading/Air Bill No.: NONE
Possible Sample Hazards/Remarks: None		
Ref 3B LCS 5/3/94 1500		
Special Handling and/or Storage: Cool to 4 C.		

Preservative	HNO3	COOL 4C	H2SO4	COOL 4C	COOL 4C	COOL 4C	NaOH	HNO3	NONE	HCl	HNO3	NONE
Type of Container	~~P~~ G	G	P	P	P	P	P	P	Gs	P	~~P~~ G	aGs
No. of Container(s)	1	1	1	1	1	1	1	2	2	2 ~~1~~	1	1
Volume	1L	500 mL	500 mL	250 mL	250 mL	250 mL	1L	4L	1L	1L ~~2L~~	1L	40mL
SAMPLE ANALYSIS 405077	*1 A	IC ANIONS-F, Cl, SO4, NO2 PO4. B	NO2, NO3. C	ALKA-LINITY D	TDS E	SULFATE F	CYANIDE G	*2 40507801	TRITIUM	Tc-99	*3 02 A	ACTIVI-TY SCAN

Sample No.	Matrix*	Date Sampled	Time Sampled	A	B	C	D	E	F	G							
BOBRL1 01	W	05/03/94	1145	X	X	X	X	X	X	X	X	X	X		X		
BOBRL2 02	W	05/03/94	1145											X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Fritz D. Lee (Fdlee)	05/3/94 1441	L Sweeney L Sweeney	5/3/94 1441
L Sweeney L Sweeney	5/4/94 1410	Karen Atkins	5-4-94

SPECIAL INSTRUCTIONS

*1. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (UNFILTERED). *2. GROSS ALPHA/BETA, GAMMA SPEC (to include Cs-137, Co-60, Ru-106), Pu-238/239/240, Sr-90, TOTAL URANIUM. *3. METALS - to include Ca, Mg, Na, K, Fe, Mn, Si, Al, Bi. AA METALS - Se (FILTERED). DATA DELIVERABLE - STANDALONE

SDG W0049

Matrix*

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

LABORATORY SECTION: Received By | Title | Date/Time

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-828 (12/92)

9613497.1139

00040

9613497.1135

WO #464

00041

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		WM-C-C-518-23

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to

IT Analytical Services
2800 George Washington Way
Richland, WA 99352

Off-site Custodian

Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: B0FNL1, B0FNL2 Cooler ID: E-5101 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: B0F[illegible] Cooler ID: E[illegible]4 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the 300 AREA

Bill of lading # NONE

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
K Helm	12745	4-29-94

Location of Property (Area & Bldg.)	Contact	Phone
300 BP5	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
4/29/94	8B410 PL53A	NA

Originated By	Date	Authorized By	Date
P H Butcher	4/29/94	R Simpson	4/29/94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		Hankel	4/29/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
[illegible]				
Date [illegible]				

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Yellow – Retain Green – Property Control Custodian (Issuing Office) Pink – Originator

9613497.1136

WO #464

00042

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-U-0518-24

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to
IT Analytical Services
2800 George Washington Way
Richland, WA 99352

Off-site Custodian

Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: B0BRM1, B0BRM2 Cooler ID: E1-6 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: B0BN19, B0BNM0 Cooler ID: E1-5 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the 200 AREA

Bill of lading # NONE

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

RM Clearance for Public Release: K Nelson		RM Survey No: 152725	Date: 4-29-94
Location of Property (Area & Bldg.): 200-BP-5	Contact: P. H. Butcher		Phone: (509) 376-4388
Date Ready for Shipment: 4-29-94	Cost Code to be Charged: 8B410 PL53A	Approximate Date This Property will be Returned: NA	
Originated By: PH Butcher	Date: 4/29/94	Authorized By: [signature]	Date: 4/29/94
Signature and Name of Property Control	Custodian Date	Property Management Approval: [signature]	Date: 4/29/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date				

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Yellow – Retain Green – Property Control Custodian (Issuing Office) Pink – Originator

54-3000-479 (09/89)

9613497.1137

WO #464

00043

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-C-0518-25

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to

IT Analytical Services
2800 George Washington Way
Richland, WA 99352

Off-site Custodian

Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: B0BNK9, B0BNL0 Cooler ID: EFS11 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: B0BNJ3, B0BNJ4 Cooler ID: PNL 722 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the 200 AREA

Bill of lading # NONE

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

RM Clearance for Public Release: R Nelson	RM Survey No.: 157785	Date: 4-29-94
Location of Property (Area & Bldg.): 200-BP-5	Contact: P. H. Butcher	Phone: (509) 376-4388
Date Ready for Shipment: 4/29/94	Cost Code to be Charged: 88410 PL53A	Approximate Date This Property will be Returned: N/A
Originated By: PH Butcher	Date: 4/29/94	Authorized By: G Simpson — Date: 4/29/94
Signature and Name of Property Control	Custodian Date	Property Management Approval: J Henkel — Date: 4/29/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date				

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Green – Property Control Custodian (Issuing Office) Yellow – Retain Pink – Originator

9613497.1138

WO #470

00044

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-0-0518-28

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to
IT Analytical Services
2800 George Washington Way
Richland, WA 99352

Off-site Custodian

Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: 50BNK7 50BNK Cooler ID: ER-6 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: 50BNM3 50BNM4 Cooler ID: ER-05 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the 200 area.

Bill of lading # NONE

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]	D-57752	5-2-94

Location of Property (Area & Bldg.)	Contact	Phone
200 BP-5	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
5/2/94	88410 / PL53A	NA

Originated By	Date	Authorized By	Date
P.H. Butcher		[illegible]	5/2/94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[illegible]	5/2/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
C.R. [illegible] (36)				
Date 5-2-94				

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Green – Property Control Custodian (Issuing Office) Yellow – Retain Pink – Originator

9613497.1139

WO#493 00045

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-6-0518-32

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 George Washington Way Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs.	Sample #: BCBRL1, BCBRL2 Cooler ID: ER-C5 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: Cooler ID: NA Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the 200 AREA

Bill of lading # NONE

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]	15[illegible]	5-4-94

Location of Property (Area & Bldg.)	Contact	Phone
200-BP-5	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
5-4-94	88410 PL53A	NA

Originated By	Date	Authorized By	Date
PH Butcher	5/4/94	A J Smorsten	5/4/94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		J P Hankel	5/4/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
[illegible]				
Date 5 11 94				

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Yellow – Retain Green – Property Control Custodian (Issuing Office) Pink – Originator

54-3000-479 (09/89)

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001558*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO#464 RL#587

Reference Document No. 453618

Page 1 of 3

Project Name/No. [1] SAF 94-130

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] 4-29-94

Lab Destination [8] Middlebrook

Lab Contact [9]

Project Contact/Phone [12]

Carrier/Waybill No. [13] 150 9934 641

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]
40457001 A	BOBJN3 /water	4/28 0955	G	1 L.	Cool 4°	Metals, GFAA	4°C BPB 4/30/94 <2	
B			G	500 ml		ANIONS, SO4, NO2, PO4	FOR LAB USE ONLY	
C			P	↓		NO2, NO3	<2	
D				250 ml		alka.		
E				↓		TDS	FOR LAB USE ONLY	
F				↓		Sulfate		
G				1 L.		Cyanide	"	
40457002 A	BOBJN4 /water		G	↓		Metals, GFAA	<2	

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 W0049

1. Relinquished by [28] (Signature/Affiliation) Heidelberg IT	Date: 4-29-94 Time: 16:00	1. Received by [28] (Signature/Affiliation) Bryan Blanquist IT ASKN	Date: 4/31/94 Time: 9:35
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]

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

00046

MCA 3/15/91

WO#464

INTERNATIONAL TECHNOLOGY CORPORATION

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

Reference Document No.[30] 453618

Page 2 of 3

Project Name SAF 94-130

Project No. SDG W0049

Samples Shipment Date 4-29-94

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.
40457003 A	BOBNJ9 / Water	4/28 1140	G	1 L.	COOL 4°	Metals, GFAA	4°C BB 4/30/94 <2	
B			G	500 ml		ANIONS, SO4, NO2, PO4		
C			P	↓		NO2, NO3	<2	
D				250 ml		alka.		
E						TDS		
F				↓		Sulfate		
G			~~G~~ TH 4/29/94	1 L.		Cyanide	10	
40457004 A	BOBNK0 / Water		G	↓		Metals, GFAA	<2	
40457005 A	BOBNK9 / Water	4/28 0915	G	1 L		Metals, GFAA	<2	
B			G	500 ml		ANIONS, SO4, NO2, PO4		
C			P	↓		NO2, NO3	<2	
D				250 ml		alka.		
E						TDS		
F				↓		Sulfate		
G			↓	1 L.		Cyanide	10	
40457006 A	BOBNL0 / Water		G	↓		Metals, GFAA	<2	
40457007 A	BOBNL9 / Water	4/28 1105		1 L.		Metals, GFAA	<2	
B			↓	500 ml		ANIONS, SO4, NO2, PO4		
C			P	↓		NO2, NO3	<2	
D			↓	250 ml		alka.		

White: To accompany samples • Yellow: Field copy

*See back of form for special instructions.

FOR LAB USE ONLY

00047

MCA 3/15/91

WO#464

INTERNATIONAL TECHNOLOGY CORPORATION

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

Reference Document No.[30] 453618

Page 3 of 3

Project Name SAF94-130

Project No. SDG W0049

Samples Shipment Date 4-29-94

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.
40457007 E	BOBNL9 /Water	4/28 1105	250 ml	P	Cool 4°	TDS	4°C BPB 4/29/94	
F						Sulfate		
G			1 L.			Cyanide	10	
40457008 A	BOBNM0 /Water			G		Metals, GFAA	<2	
40457009 A	BOBNL1 /Water	4/28 1230	G	1 L.		Metals, GFAA	<2	
B			G	500ml		ANIONS, SO_4, NO_2, PO_4		
C			P			NO_2, NO_3	<2	
D				250ml		Alka.		
E						TDS		
F						Sulfate		
G				1 L		Cyanide	10	
40457010 A	BOBNL2 /Water		G			Metals, GFAA	<2	
	JH 4/29/94							

White: To accompany samples • Yellow: Field copy

*See back of form for special instructions.

00048

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001564*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO#470
RL#593

Reference Document No. 453624
Page 1 of 2

Project Name/No. [1] SAF94-130
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] 5-2-94
Lab Destination [8] Middlebrook
Lab Contact [9]
Project Contact/Phone [12]
Carrier/Waybill No. [13] 151 0447 994

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]
40501801 A	BOBNM3 / Water	4/29 1000	G	1L.	Cool 4°	Metals, GFAA	3a KAK 5-3-94 pH=<2	
B			G	500ml		Anions, SO_4, NO_2, PO_4		
C			P	↓		NO_2, NO_3	pH=<2	
D				250ml		alka.		
E						TDS		
F				↓		Sulfate		
G				1L.		Cyanide	pH=10	
40501802 A	BOBNM4 / water		G	1L.		Metals, GFAA	pH=<2	

FOR LAB USE ONLY

FOR LAB USE ONLY

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 W0049

1. Relinquished by [28] (Signature/Affiliation) Heidelberg IT	Date: 5-2-94 Time: 16:00	1. Received by [28] (Signature/Affiliation) Kenny A Klemm ITAS-KN	Date: 05-03-94 Time: 09:20
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]

White: Company samples Yellow: Field copy

*See back of form for special instructions.

00049

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

WO#470

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

RL#593

Reference Document No.[30] 453624

Page 2 of 2

Project Name SAF 94-130

Project No. SDL W0049

Samples Shipment Date 5-2-94

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.
40501803 A	BOBNK7 / water	4/29 1130	G	1 L.	Cool 4°	Metals, GFAA	pH = <2 3°C KAK 5-3-94	
B			↓	500ml		Anions, SO_4, NO_2, PO_4		
C			P	↓		NO_2, NO_3	pH = <2	
D				250ml		alka.		
E				↓		TDS		
F				↓		Sulfate		
G			↓	1 L.		Cyanide	pH = 10	
40501804 A	BOBNK8 / water		G	↓		Metals, GFAA	pH = <2	
	JH 5/2/94							

White: To accompany samples • Yellow: Field copy

*See back of form for special instructions.

FOR LAB USE ONLY

00050

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001587*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

KAK 5-6-94 WO# 493 RL #619

Reference Document No. 453626
Page 1 of 1

Project Name/No. [1] SAF 94-130
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] 5-5-94
Lab Destination [8] Middlebrook
Lab Contact [9]
Project Contact/Phone [12]
Carrier/Waybill No. [13] 151 2116 846

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]
40507701 A	BOBRL1 /Water	5/3 1145	G	1 L.	Cool 4°	Metals, GFAA	2°C KAK 5/6/94 pH<2	
B			G	500ml		Anions, SO_4, NO_2, PO_4	FOR LAB USE ONLY	
C			P	↓		NO_2, NO_3	pH<2	
D				250ml		alka.		
E				↓		TDS		
F						Sulfate	FOR LAB USE ONLY	
G				1 L.		Cyanide	pH=11	
40507702 A	BOBRL2 /water		G	↓		Metals, GFAA		

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 W0049

1. Relinquished by [28] (Signature/Affiliation) Heidelberg II	Date: 5-5-94 Time: 16:00	1. Received by [28] (Signature/Affiliation) Kenyatta Lemon ITAS-KN	Date: 5-6-94 Time: 09:05
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]

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

00051

MCA 3/15/91

WO#464

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

All are Category I
JKN 29 Apr 94

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			42994		429	10	18	227	240

Customer ID WHC/WATER	pH <2 Rcvd/Relq	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
B0BNL1		1.9	5	4.0	1	1	25	0.03	1.55	5.0E-02	3.3E+00	1.8E-05	1.2E-03	1.5E-07	6.4E-07	4.5E+00	3.0E+02	Yes	2.2E+03	3.4E+02
B0BNJ3		2.0	5	4.0	2	4	23	0.33	1.35	1.3E+00	2.7E+00	4.5E-04	9.6E-04	5.6E-07	8.0E-07	1.1E+02	2.4E+02	Yes	8.9E+01	4.1E+02
B0BNJ9		2.0	5	4.0	3	5	48	0.43	3.85	1.6E+00	8.0E+00	5.7E-04	2.9E-03	6.4E-07	4.9E-06	1.4E+02	7.2E+02	Yes	7.1E+01	1.4E+02
B0BP08		1.8	5	1.0	4	3	20	0.23	1.05	8.6E-01	2.1E+00	7.8E-05	1.9E-04	1.1E-07	3.1E-07	7.8E+01	1.9E+02	Yes	1.3E+02	5.3E+02
B0BNL9		0.6	5	4.0	5	1	7	0.03	-0.25	1.0E-01	-5E-01	3.6E-05	-2E-04	1.4E-07	-1E-06	9.5E+00	-5E+01	Yes	1.1E+03	-2E+03
B0BRM1		1.2	5	4.0	6	2	11	0.13	0.15	4.9E-01	2.5E-01	1.8E-04	8.9E-05	3.3E-07	1.0E-07	4.4E+01	2.2E+01	Yes	2.3E+02	4.5E+03
B0BNK9		1.1	5	4.0	7	0	12	-0.08	0.25	-3E-01	5.9E-01	-1E-04	2.1E-04	-3E-07	4.9E-07	-3E+01	5.3E+01	Yes	-4E+02	1.9E+03
TOTAL	uCi							-0.08	-0.95	-3E-01	-2E+00	1.2E-03	5.3E-03	ERR	ERR	ERR	ERR	Yes	ERR	ERR

9613497.1146

00052

WO# 470

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date	Recieved Time	Screening Prep Date	Screening Prep Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	BACKGROUND Beta	BACKGROUND Mnts
WHC			5294		502	10	18	227	240

Customer ID WHC/WATER	pH <2 Rcvd/Relq	RESIDUE Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Counts Alpha	Total Counts Beta	Net Sample Counts/Minute Alpha	Net Sample Counts/Minute Beta	DPM / Aliqout Alpha	DPM / Aliqout Beta	uCi per Sample Alpha	uCi per Sample Beta	2 Sigma Error uCi per Sample Alpha	2 Sigma Error uCi per Sample Beta	pCi/(Gm or L) Alpha	pCi/(Gm or L) Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Aliquot to Cat 1 Gm or Ltr Beta
B0BNM3		1.5	5	4.0	1	4	14	0.33	0.45	1.3E+00	7.5E-01	4.6E-04	2.7E-04	5.6E-07	3.5E-07	1.1E+02	6.8E+01	Yes	8.7E+01	1.5E+03
B0BNK7		2.1	5	4.0	2	2	16	0.13	0.65	4.8E-01	1.3E+00	1.7E-04	4.7E-04	3.4E-07	4.1E-07	4.3E+01	1.2E+02	Yes	2.3E+02	8.4E+02
TOTAL	uCi											6.3E-04	7.5E-04	ERR	ERR	ERR	ERR	Yes	ERR	ERR

O.K.
gtm
2 May 94

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WO#493

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

all Cat I
Matt Lordy 5-4-94

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			50494		504	10	16	231	240

Customer ID WHC/WATER	pH <2 Rcvd/Relq	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
B0BRL1		0.0	5		4.0		4	2	11	0.13	0.14	5.1E-01	2.1E-01	1.8E-04	7.4E-05	3.4E-07	1.9E-07	4.6E+01	1.9E+01	Yes	2.2E+02	5.4E+03
B0BWB5		2.2	5		2.0		5	4	42	0.33	3.24	1.2E+00	6.7E+00	2.2E-04	1.2E-03	2.8E-07	4.7E-07	1.1E+02	6.0E+02	Yes	9.0E+01	1.7E+02
TOTAL	uCi									-0.07	-0.96	-2E-01	-2E+00	4.1E-04	1.3E-03	ERR	ERR	ERR	ERR	Yes	ERR	ERR

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00054

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WO#464

00055

04/29/94 09:05 ☎373 3176 222S 3B 007

SAMPLE STATUS REPORT FOR E 6209. E-BLANK 299E3314 TIME: 4/29/94 9:52
DISPATCHED: 4/ 1/94 13:48 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/28/94 15: 5

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

B.O BNJ3
BO BNJ4
LCS
4/29/94

SAMPLE STATUS REPORT FOR E 6212. E-BLANK 299E3326 TIME: 4/29/94 9:52
DISPATCHED: 4/ 1/94 13:50 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/28/94 15: 6

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

BOBNS9
BOBNKO
KCS
4/29/94

SAMPLE STATUS REPORT FOR E 6216. E-BLANK 69947-60 TIME: 4/29/94 9:52
DISPATCHED: 4/ 1/94 13:55 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/28/94 15: 3

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

BOBNK9
BOBNLO
LCS
4/29/94

SAMPLE STATUS REPORT FOR E 6217. E-BLANK 69948-50 TIME: 4/29/94 9:52
DISPATCHED: 4/ 1/94 13:55 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/28/94 15: 4

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

BOBNL1
BOBNL2
LCS
4/29/94

SAMPLE STATUS REPORT FOR E 6221. E-BLANK 6994957B TIME: 4/29/94 9:52
DISPATCHED: 4/ 1/94 13:58 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/28/94 15: 4

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

BOBNL9
BOBNMO
KCS
4/29/94

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WO#470 00060

05/02/94 06:58 ☎373 3176 222S 3B 003

SAMPLE STATUS REPORT FOR E 6236. E-BLANK 69947-50 TIME: 5/ 2/94 7:47
DISPATCHED: 4/ 1/94 14:11 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/29/94 14:13

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

BO BNK7
BO BNK8

AJS
5/2/94

SAMPLE STATUS REPORT FOR E 6223. E-BLANK 6995053B TIME: 5/ 2/94 7:47
DISPATCHED: 4/ 1/94 14: 0 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/29/94 14:13

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

BO BNM3
BO BNM4

AJS
5/2/94

SAMPLE STATUS REPORT FOR E 6636. E-BLANK EQBLK-2 TIME: 5/ 4/94 8:35
DISPATCHED: 4/11/94 8:14 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 5/ 3/94 14:51

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

BOBRL1
BOBRL2

LCS
5/4/94

9613497.1157

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JUN 1996
RECEIVED
SDLA

Analytical Data Package Prepared For

Westinghouse Hanford

Radiochemical Analysis By

IT Analytical Services
Richland Laboratory

Sample Delivery Group Number: W0049

WHC IDENTIFICATION NUMBER	ITAS RICHLAND ID NUMBER
B0BNJ3	40457101
B0BNJ9	40457102
B0BNK9	40457103
B0BNL9	40457104
B0BNL1	40457105
B0BNM3	40501901
B0BNK7	40501902
B0BRL1	40507801
B0BS61	40510601
B0BS62	40510602
B0BS65	40510603
B0BS64	40520001

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

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CERTIFICATE OF ANALYSIS

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

June 24, 1994

Attention: J.A.Lerch

SAF Number	:	94-130
Date SDG Closed	:	May 10, 1994
Number of Samples	:	Twelve (12)
Sample Type	:	Water
SDG Number	:	W0049
Data Deliverable	:	Stand Alone

I. Introduction

On April 29, May 2, 3, 4, and 10, 1994, twelve water 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
404571-01A	B0BNJ3	Water	4/29/94
404571-02A	B0BNJ9	Water	4/29/94
404571-03A	B0BNK9	Water	4/29/94
404571-04A	B0BNL9	Water	4/29/94
404571-05A	B0BNL1	Water	4/29/94
405019-01A	B0BNM3	Water	5/2/94
405019-02A	B0BNK7	Water	5/2/94
405106-01A	B0BS61	Water	5/3/94
405106-02A	B0BS62	Water	5/3/94
405106-03A	B0BS65	Water	5/3/94
405078-01A	B0BRL1	Water	5/4/94
405200-01A	B0BS64	Water	5/10/94

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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
Plutonium-238, -239/40 by method ITAS-RD-3209
Gamma Spectroscopy
Gamma Scan 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
Technetium-99 by method ITAS-IT-RS-0001
Tritium by method ITAS-RD-3205
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0049 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

Results from the initial radioactivity screening of these samples classified them as Category I.

Samples B0BS64 and B0BS63 were received in the same cooler on May 10, 1994, and share the same Off-Site Property Control Form W94-0-0518-37. Sample B0BS64 was assigned to workorder number 405200, SDG W0049, and sample B0BS63 was assigned to workorder number 405201, SDG W0060.

Alpha Spectroscopy

Plutonium-238, -239/40 by method ITAS-RD-3209
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNJ3) results are within contractual limits.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
The Eu-152 detection limit was not met for sample B0BNL1. The Fe-59 detection limit was not met for samples B0BNK7 and B0BS61. The batch blank MDCs were met for both nuclides, therefore, the sample MDCs are accepted. Cd-109 was detected in sample B0BNM3, however, the result is not reported because it is a suspected false positive result caused by an x-ray line produced by energy reflection from the detector shielding. The LCS was recounted because the original Eu-152 result was out of limits. The recounted LCS results are within limits. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BS62 and sample B0BS65) results are within contractual limits.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNK9) results are within contractual limits.

Gross Beta by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNK9) results are within contractual limits.

Strontium-90 by method ITAS-RD-3204
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNJ3) results are within contractual requirements.

Liquid Scintillation Counting
Technetium-99 by method ITAS-IT-RS-0001
The matrix spikes, LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNK7) results are within contractual requirements.

Tritium by method ITAS-RD-3205
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNJ3) results are within contractual requirements.

Total Uranium

Total Uranium by method ITAS-RD-4200
The matrix spike yield of sample B0BNJ9 is high (172%). The cause of the high spike yield is a matrix effect due to the high activity of the sample (7.7 μg/l) compared to the activity of the spike added (0.9 μg/l). The matrix spike of sample B0BNJ3, LCS, batch blank, sample and sample duplicate (duplicate of sample B0BNK9 and B0BNL9) results are within contractual requirements.

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

9613497.1162

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40457101
MATRIX: WATER
WHC ID: B0BNJ3
DATE RECEIVED 4/29/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	2.09E-01	2.83E-01	2.85E-01	4.55E-01	0.517	RD3209
PU-238	6.45E-02	1.64E-01	1.65E-01	3.86E-01	0.517	RD3209
CO-60	3.61E+00	4.08E+00	4.09E+00	9.66E+00	N/A	RD3219
FE-59	-3.01E+00	1.54E+01	1.54E+01	2.83E+01	N/A	RD3219
EU-152	-4.65E+00	2.06E+01	2.06E+01	3.65E+01	N/A	RD3219
CO-58	-9.54E-01	5.69E+00	5.69E+00	1.05E+01	N/A	RD3219
CS-137DA	1.21E+00	3.12E+00	3.12E+00	6.43E+00	N/A	RD3219
RU-106DA	-3.90E+01	4.74E+01	4.75E+01	7.43E+01	N/A	RD3219
CE-144	-1.55E+00	1.68E+01	1.68E+01	2.81E+01	N/A	RD3219
EU-154	-2.99E+00	1.04E+01	1.04E+01	1.88E+01	N/A	RD3219
BETA	1.58E+01	2.29E+00	2.55E+00	2.81E+00	1	RD3222
ALPHA	1.70E+00	9.10E-01	9.33E-01	1.13E+00	1	RD3222
TOTAL-SR	6.89E-02	2.79E-01	2.79E-01	9.26E-01	0.749	RD3204
TC-99	3.47E+01	1.40E+00	7.22E+00	2.15E+00	0.951	ITAS-IT-RS-0001
TRITIUM	3.73E+03	1.98E+02	4.47E+02	2.56E+02	0.94	RD3205
URANIUM	2.54E+00	N/A	3.81E-01	3.54E-03	1	RD4200

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9613497.1163

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40457102
MATRIX: WATER
WHC ID: B0BNJ9
DATE RECEIVED 4/29/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-2.52E-02	5.04E-02	5.07E-02	6.04E-01	0.331	RD3209
PU-238	1.01E-01	2.57E-01	2.58E-01	6.05E-01	0.331	RD3209
CO-60	5.95E+00	8.40E+00	8.42E+00	1.67E+01	N/A	RD3219
FE-59	-7.48E+00	1.35E+01	1.35E+01	2.34E+01	N/A	RD3219
EU-152	5.05E-01	1.70E+01	1.70E+01	3.64E+01	N/A	RD3219
CO-58	1.34E+00	6.05E+00	6.05E+00	1.17E+01	N/A	RD3219
CS-137DA	-6.31E+00	5.45E+00	5.49E+00	7.52E+00	N/A	RD3219
RU-106DA	3.12E+01	3.93E+01	3.95E+01	8.02E+01	N/A	RD3219
CE-144	-1.77E+00	1.91E+01	1.91E+01	3.12E+01	N/A	RD3219
EU-154	9.81E+00	8.01E+00	8.07E+00	2.31E+01	N/A	RD3219
ALPHA	5.10E+00	1.45E+00	1.59E+00	1.16E+00	1	RD3222
BETA	1.93E+02	6.86E+00	1.53E+01	2.93E+00	1	RD3222
TOTAL-SR	2.22E-01	2.67E-01	2.74E-01	7.65E-01	1	RD3204
TC-99	7.75E+02	5.12E+00	8.72E+01	2.15E+00	0.951	ITAS-IT-RS-0001
TRITIUM	6.78E+03	2.49E+02	6.60E+02	2.56E+02	0.94	RD3205
URANIUM	7.75E+00	N/A	1.16E+00	3.54E-03	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40457103
MATRIX: WATER
WHC ID: B0BNK9
DATE RECEIVED 4/29/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	2.52E-02	8.73E-02	8.73E-02	2.37E-01	0.992	RD3209
PU-238	0.00E+00	0.00E+00	1.26E-01	1.14E-01	0.992	RD3209
CO-60	-2.23E+00	3.62E+00	3.63E+00	5.78E+00	N/A	RD3219
FE-59	3.54E+00	1.43E+01	1.43E+01	2.78E+01	N/A	RD3219
EU-152	-6.02E+00	1.95E+01	1.95E+01	3.54E+01	N/A	RD3219
CO-58	-5.15E+00	6.09E+00	6.11E+00	9.72E+00	N/A	RD3219
CS-137DA	1.12E+00	3.03E+00	3.03E+00	6.17E+00	N/A	RD3219
RU-106DA	3.17E+01	3.72E+01	3.73E+01	7.52E+01	N/A	RD3219
CE-144	4.91E+00	1.75E+01	1.75E+01	3.06E+01	N/A	RD3219
EU-154	3.71E+00	1.22E+01	1.22E+01	2.32E+01	N/A	RD3219
ALPHA	2.70E+00	1.10E+00	1.15E+00	1.13E+00	1	RD3222
BETA	9.08E+00	1.90E+00	2.01E+00	2.76E+00	1	RD3222
TOTAL-SR	2.55E-01	2.46E-01	2.55E-01	7.49E-01	0.986	RD3204
TC-99	1.14E+00	9.44E-01	4.20E+00	2.15E+00	0.951	ITAS-IT-RS-0001
TRITIUM	-1.54E+01	1.08E+02	2.14E+02	2.56E+02	0.94	RD3205
URANIUM	2.05E+00	N/A	3.07E-01	3.54E-03	1	RD4200

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40457104
MATRIX: WATER
WHC ID: B0BNL9
DATE RECEIVED 4/29/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	0.00E+00	0.00E+00	1.30E-01	1.17E-01	0.965	RD3209
PU-238	-8.64E-03	1.73E-02	1.73E-02	2.07E-01	0.965	RD3209
CO-60	-3.29E+00	5.00E+00	5.01E+00	7.83E+00	N/A	RD3219
FE-59	-1.87E+01	1.58E+01	1.59E+01	2.28E+01	N/A	RD3219
EU-152	9.00E+00	1.04E+01	1.04E+01	3.23E+01	N/A	RD3219
CO-58	1.89E-01	5.75E+00	5.75E+00	1.09E+01	N/A	RD3219
CS-137DA	2.59E+00	4.50E+00	4.50E+00	8.92E+00	N/A	RD3219
RU-106DA	-5.58E+00	4.43E+01	4.43E+01	7.82E+01	N/A	RD3219
CE-144	1.75E-01	2.01E+01	2.01E+01	3.36E+01	N/A	RD3219
EU-154	5.64E+00	1.04E+01	1.05E+01	2.42E+01	N/A	RD3219
ALPHA	1.74E+00	8.33E-01	8.64E-01	8.45E-01	1	RD3222
BETA	5.09E+00	1.72E+00	1.76E+00	2.99E+00	1	RD3222
TOTAL-SR	2.18E-01	2.35E-01	2.42E-01	7.25E-01	1	RD3204
TC-99	2.84E-01	9.24E-01	4.14E+00	2.15E+00	0.951	ITAS-IT-RS-0001
TRITIUM	-1.06E+02	1.05E+02	2.10E+02	2.56E+02	0.94	RD3205
URANIUM	2.18E+00	N/A	3.27E-01	3.54E-03	1	RD4200

682A-6-93

9613497.1166

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40457105
MATRIX: WATER
WHC ID: B0BNL1
DATE RECEIVED 4/29/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-1.38E-02	2.76E-02	2.76E-02	3.30E-01	0.605	RD3209
PU-238	-2.76E-02	3.90E-02	3.92E-02	3.90E-01	0.605	RD3209
CO-60	2.52E+00	4.16E+00	4.17E+00	9.59E-00	N/A	RD3219
FE-59	-2.50E+00	1.47E+01	1.47E+01	2.80E-01	N/A	RD3219
EU-152	1.31E+01	2.69E+01	2.69E+01	5.49E-01	N/A	RD3219
CO-58	-2.88E-01	4.95E+00	4.95E+00	9.61E-00	N/A	RD3219
CS-137DA	7.50E-01	4.75E+00	4.75E+00	9.01E-00	N/A	RD3219
RU-106DA	2.45E+01	3.82E+01	3.83E+01	7.43E-01	N/A	RD3219
CE-144	-8.04E+00	1.97E+01	1.97E+01	3.20E-01	N/A	RD3219
EU-154	-1.50E+01	1.77E+01	1.77E+01	2.40E-01	N/A	RD3219
ALPHA	3.14E+00	1.19E+00	1.24E+00	1.12E-00	1	RD3222
BETA	8.40E+00	1.94E+00	2.02E+00	2.98E-00	1	RD3222
TOTAL-SR	-1.32E-01	2.12E-01	2.15E-01	8.07E-01	1	RD3204
TC-99	1.67E+00	9.45E-01	4.24E+00	2.15E-00	0.951	ITAS-IT-RS-0001
TRITIUM	3.12E+02	1.19E+02	2.31E+02	2.56E-02	0.94	RD3205
URANIUM	3.74E+00	N/A	5.61E-01	3.54E-03	1	RD4200

682A-6-93

9613497.1167

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40501901
MATRIX: WATER
WHC ID: B0BNM3
DATE RECEIVED 5/2/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	3.06E-01	4.13E-01	4.17E-01	6.64E-01	0.354	RD3209
PU-238	0.00E+00	0.00E+00	3.53E-01	3.19E-01	0.354	RD3209
CO-60	-8.32E-01	4.90E+00	4.90E+00	8.99E+00	N/A	RD3219
FE-59	0.00E+00	1.11E+01	1.11E+01	N/A	N/A	RD3219
EU-152	1.16E+01	1.92E+01	1.92E+01	4.29E+01	N/A	RD3219
CO-58	-2.41E+00	4.69E+00	4.69E+00	7.81E+00	N/A	RD3219
CS-137DA	2.36E+00	4.09E+00	4.10E+00	8.28E+00	N/A	RD3219
RU-106DA	-1.52E+01	3.27E+01	3.27E+01	5.64E+01	N/A	RD3219
CE-144	1.20E+01	1.59E+01	1.59E+01	2.87E+01	N/A	RD3219
EU-154	2.24E+00	8.72E+00	8.72E+00	1.96E+01	N/A	RD3219
ALPHA	2.08E+00	1.02E+00	1.05E+00	1.26E+00	1	RD3222
BETA	9.35E+00	1.97E+00	2.08E+00	2.93E+00	1	RD3222
TOTAL-SR	-2.75E-02	2.13E-01	2.13E-01	7.62E-01	1	RD3204
TC-99	1.22E+00	9.38E-01	4.21E+00	2.15E+00	0.951	ITAS-IT-RS-0001
TRITIUM	-1.00E+02	1.06E+02	2.10E+02	2.56E+02	0.94	RD3205
URANIUM	1.99E+00	N/A	2.98E-01	3.54E-03	1	RD4200

682A-6-93

9613497.1168

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40501902
MATRIX: WATER
WHC ID: B0BNK7
DATE RECEIVED 5/2/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-4.69E-02	4.69E-02	4.74E-02	4.02E-01	0.711	RD3209
PU-238	-1.17E-02	2.35E-02	2.35E-02	2.81E-01	0.711	RD3209
CO-60	3.52E+00	4.01E+00	4.03E+00	9.34E+00	N/A	RD3219
FE-59	3.71E+00	1.61E+01	1.61E+01	3.12E+01	N/A	RD3219
EU-152	4.73E+00	1.64E+01	1.65E+01	3.64E+01	N/A	RD3219
CO-58	2.92E+00	5.67E+00	5.68E+00	1.10E+01	N/A	RD3219
CS-137DA	4.26E-01	3.30E+00	3.30E+00	6.38E+00	N/A	RD3219
RU-106DA	-9.45E+00	3.90E+01	3.90E+01	6.57E+01	N/A	RD3219
CE-144	1.88E+01	1.73E+01	1.74E+01	3.28E+01	N/A	RD3219
EU-154	-3.48E+00	1.32E+01	1.32E+01	2.32E+01	N/A	RD3219
ALPHA	2.31E+00	1.10E+00	1.13E+00	1.23E+00	1	RD3222
BETA	8.49E+00	1.93E+00	2.02E+00	2.94E+00	1	RD3222
TOTAL-SR	1.67E-01	2.52E-01	2.56E-01	7.32E-01	1	RD3204
TC-99	1.25E+00	9.39E-01	4.21E+00	2.15E+00	0.951	ITAS-IT-RS-0001
TRITIUM	1.33E+02	1.14E+02	2.22E+02	2.56E+02	0.94	RD3205
URANIUM	3.09E+00	N/A	4.63E-01	3.54E-03	1	RD4200

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9613497.1169

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40507801
MATRIX: WATER
WHC ID: BOBRL1
DATE RECEIVED 5/4/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
PU239/40	-8.94E-03	1.79E-02	1.79E-02	2.14E-01	0.932	RD3209
PU-238	3.58E-02	9.13E-02	9.14E-02	2.14E-01	0.932	RD3209
CO-60	1.99E-01	4.72E+00	4.72E+00	9.46E+00	N/A	RD3219
FE-59	-3.02E+00	1.54E+01	1.54E+01	2.77E+01	N/A	RD3219
EU-152	1.20E+01	1.20E+01	1.21E+01	3.57E+01	N/A	RD3219
CO-58	-3.34E+00	6.68E+00	6.69E+00	1.04E+01	N/A	RD3219
CS-137DA	9.47E-01	3.35E+00	3.35E+00	6.87E+00	N/A	RD3219
RU-106DA	-1.11E+00	3.14E+01	3.14E+01	6.02E+01	N/A	RD3219
CE-144	-2.24E+00	1.61E+01	1.61E+01	2.69E+01	N/A	RD3219
EU-154	-4.02E+00	1.38E+01	1.39E+01	2.55E+01	N/A	RD3219
ALPHA	5.96E-02	2.12E-01	2.12E-01	5.21E-01	1	RD3222
BETA	8.00E-01	1.21E+00	1.21E+00	2.56E+00	1	RD3222
TOTAL-SR	2.64E-01	2.54E-01	2.63E-01	7.73E-01	0.938	RD3204
TC-99	1.99E-01	9.21E-01	4.13E+00	2.15E+00	0.951	ITAS-IT-RS-0001
TRITIUM	2.41E+01	1.09E+02	2.16E+02	2.56E+02	0.94	RD3205
URANIUM	4.90E-02	N/A	7.00E-03	3.54E-03	1	RD4200

9613497.1170

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40510601
MATRIX: WATER
WHC ID: B0BS61
DATE RECEIVED 5/3/94
REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
CO-60	7.04E-01	3.59E+00	3.59E+00	7.91E+00	N/A	RD3219
FE-59	-1.57E+00	1.63E+01	1.63E+01	3.02E+01	N/A	RD3219
EU-152	-2.52E+00	1.58E+01	1.58E+01	3.26E+01	N/A	RD3219
CO-58	-2.03E+00	5.16E+00	5.16E+00	9.25E+00	N/A	RD3219
CS-137DA	5.00E-01	3.87E+00	3.87E+00	7.39E+00	N/A	RD3219
RU-106DA	-3.87E+00	4.36E+01	4.36E+01	7.69E+01	N/A	RD3219
CE-144	-4.94E+00	1.94E+01	1.94E+01	3.05E+01	N/A	RD3219
EU-154	-1.36E+01	1.54E+01	1.55E+01	2.39E+01	N/A	RD3219
TC-99	4.34E+01	1.51E+00	8.09E+00	2.15E+00	0.951	ITAS-IT-RS-0001

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9613497.1171

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40510602
MATRIX: WATER
WHC ID: B0BS62
DATE RECEIVED 5/3/94
REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
CO-60	4.43E+00	3.14E+00	3.17E+00	8.79E+00	N/A	RD3219
FE-59	2.13E+00	1.35E+01	1.35E+01	2.54E+01	N/A	RD3219
EU-152	-1.25E+01	2.40E+01	2.40E+01	3.93E+01	N/A	RD3219
CO-58	8.35E-02	5.66E+00	5.66E+00	1.04E+01	N/A	RD3219
CS-137DA	2.93E+00	3.48E+00	3.49E+00	7.52E+00	N/A	RD3219
RU-106DA	-3.12E+01	4.11E+01	4.12E+01	6.71E+01	N/A	RD3219
CE-144	-5.60E+00	1.58E+01	1.58E+01	2.61E+01	N/A	RD3219
EU-154	4.48E+00	1.23E+01	1.23E+01	2.60E+01	N/A	RD3219
TC-99	4.43E+01	1.50E+00	8.18E+00	2.15E+00	0.951	ITAS-IT-RS-0001

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40510603
MATRIX: WATER
WHC ID: B0BS65
DATE RECEIVED 5/3/94
REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
CO-60	-1.94E+00	4.64E+00	4.64E+00	8.25E+00	N/A	RD3219
FE-59	-1.36E+01	1.45E+01	1.45E+01	2.10E+01	N/A	RD3219
EU-152	3.25E+00	1.66E+01	1.66E+01	3.65E+01	N/A	RD3219
CO-58	-2.52E+00	5.79E+00	5.80E+00	9.84E+00	N/A	RD3219
CS-137DA	1.26E+00	3.54E+00	3.54E+00	7.13E+00	N/A	RD3219
RU-106DA	3.47E+01	3.22E+01	3.24E+01	7.04E+01	N/A	RD3219
CE-144	2.66E+00	1.48E+01	1.48E+01	2.59E+01	N/A	RD3219
EU-154	7.47E-01	8.18E+00	8.18E+00	1.79E+01	N/A	RD3219
TC-99	2.73E+02	3.10E+00	3.27E+01	2.15E+00	0.951	ITAS-IT-RS-0001

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9613497.1173

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0049
LAB SAMPLE ID: 40520001
MATRIX: WATER
WHC ID: B0BS64
DATE RECEIVED 5/10/94
REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
CO-60	7.54E+00	7.19E+00	7.23E+00	1.51E+01	N/A	RD3219
FE-59	-7.55E-01	1.37E+01	1.37E+01	2.64E+01	N/A	RD3219
EU-152	1.82E+01	1.48E+01	1.49E+01	4.27E+01	N/A	RD3219
CO-58	-5.05E+00	6.96E+00	6.98E+00	1.17E+01	N/A	RD3219
CS-137DA	-6.31E+00	5.45E+00	5.49E+00	8.02E+00	N/A	RD3219
RU-106DA	3.36E+01	4.27E+01	4.28E+01	8.55E+01	N/A	RD3219
CE-144	1.81E+01	2.43E+01	2.43E+01	N/A	N/A	RD3219
EU-155	0.00E+00	8.12E+00	8.12E+00	N/A	N/A	RD3219
EU-154	-1.36E+01	1.54E+01	1.55E+01	2.34E+01	N/A	RD3219
TC-99	7.76E+02	5.10E+00	8.74E+01	2.15E+00	0.951	ITAS-IT-RS-0001

682A-6-93

9613497.1174

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

00001

CERTIFICATE OF ANALYSIS

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

June 10, 1994

JUN 1994 RECEIVED SDLA

Job Number: 464; 470; 493

This is the Certificate of Analysis for the following samples:

SDG:	W0049
Client Project ID:	WHC SAF-94-130 200-BP-5 Groundwater Round 1
Date Received by Lab:	April 30; May 3; May 6, 1994
Number of Samples:	Sixteen (16)
Sample Type:	Water

I. Introduction

On April 30, May 3 and May 6, 1994, sixteen (16) water samples arrived at ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The following samples for cyanide were received at pH less than 12: BOBNJ3, BOBNJ9, BOBNK9, BOBNL9, BOBNL1, BOBNM3, BOBNM4 AND BOBRL1. See attached CRU #1558. 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.

The samples were analyzed for Target Compound List (TCL) volatiles and 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

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

II. Analytical Results/Methodology (Continued)

The samples were analyzed for Target Compound List (TCL) pesticides and PCBs by gas chromatography/electron capture detection (GC/ECD) in accordance with the EPA CLP 3/90 Statement of Work.

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 nitrate-nitrite based on EPA method 353.2.

The samples were analyzed for sulfate based on EPA method 375.4.

The total dissolved solids (TDS) content of the samples was determined using EPA method 160.1.

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

III. Quality Control

The samples for work order #464 were digested on May 17, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed on May 23 and May 24, 1994; the remaining metals were analyzed by ICP on May 27 and June 2, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample numbers BOBNJ3 (total) and BOBNJ4 (dissolved). Spike recovery (accuracy) results were within acceptance limits for all requested analytes for both samples except for iron by ICP analysis for sample BOBNJ3. As the silicon concentrations are greater than four times (4X) the spike added in both samples, spiking criteria did not apply for these analytes. A blank spike was performed for cyanide analysis due to insufficient sample. Duplicate RPD (precision) results were within acceptance limits for all requested parameters for both samples. The 1/5 serial dilution on sample BOBNJ3 (total) exhibited slight matrix interferences for calcium, magnesium, sodium and silicon.

The samples for work order #470 were digested on May 17, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed from May 23 through May 25, 1994; the remaining metals were analyzed by ICP on May 27, 1994. All run QC was acceptable. The samples were batched with QC from work order #464.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
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III. Quality Control (Continued)

The samples for work order #493 were digested on May 17, 1994 for ICP and GFAA. The GFAA analyses for selenium and bismuth were performed on May 23, 1994; the remaining metals were analyzed by ICP on June 6, 1994. All run QC was acceptable. The samples were batched with QC from work order #464.

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.

"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.

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
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III. Quality Control (Continued)

The samples were analyzed for alkalinity on May 4, 1994. A duplicate was analyzed using sample number BOBJN3. All quality control results were acceptable.

The samples were analyzed for nitrite/nitrate on May 19, 1994. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBJN3. All quality control results were acceptable.

The samples were analyzed for sulfate on May 16, 1994. A matrix spike and a matrix spike duplicate were analyzed using sample number BOBTW4 of work order 508 (SDG W0054). All quality control results were acceptable. The analytical results are included in this report.

The samples were analyzed for total dissolved solids on May 3 and May 5, 1994. A duplicate for total dissolved solids was performed using sample number BOBJN3. All quality control results were acceptable.

The samples were analyzed for fluoride, chloride, nitrite, phosphate and sulfate by EPA method 300.0 from May 12 through May 26, 1994. A matrix spike and matrix spike duplicate were analyzed using sample BOBNJ3. All quality control results were acceptable.

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample Ids.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA7896	404570-01A	BOBNJ3	METALS-T
AA7897	404570-01B	"	ANIONS
AA7898	404570-01C	"	NO2NO3
AA7899	404570-01D	"	ALKALINITY
AA7900	404570-01E	"	TDS
AA7902	404570-01G	"	CYANIDE
AA7903	404570-02A	BOBNJ4	METALS-D
AA7904	404570-03A	BOBNJ9	METALS-T
AA7905	404570-03B	"	ANIONS
AA7906	404570-03C	"	NO2NO3
AA7907	404570-03D	"	ALKALINITY
AA7908	404570-03E	"	TDS
AA7910	404570-03G	"	CYANIDE
AA7911	404570-04A	BOBNK0	METALS-D
AA7912	404570-05A	BOBNK9	METALS-T
AA7913	404570-05B	"	ANIONS
AA7914	404570-05C	"	NO2NO3
AA7915	404570-05D	"	ALKALINITY
AA7916	404570-05E	"	TDS
AA7918	404570-05G	"	CYANIDE

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA7919	404570-06A	BOBNL0	METALS-D
AA7920	404570-07A	BOBNL9	METALS-T
AA7921	404570-07B	"	ANIONS
AA7922	404570-07C	"	NO2NO3
AA7923	404570-07D	"	ALKALINITY
AA7924	404570-07E	"	TDS
AA7926	404570-07G	"	CYANIDE
AA7927	404570-08A	BOBNM0	METALS-D
AA7935	404570-09A	BOBNL1	METALS-T
AA7936	404570-09B	"	ANIONS
AA7937	404570-09C	"	NO2NO3
AA7938	404570-09D	"	ALKALINITY
AA7939	404570-09E	"	TDS
AA7941	404570-09G	"	CYANIDE
AA7942	404570-10A	BOBNL2	METALS-D
AA8023	4050108-01A	BOBNM3	METALS-T
AA8024	405018-01B	"	ANIONS
AA8025	405018-01C	"	NO2NO3
AA8026	405018-01D	"	ALKALINITY

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

III. Quality Control (Continued)

Table I is a cross reference between client sample IDs and laboratory sample IDs.

TABLE I

Knoxville ID	Richland ID	WHC ID	Test
AA8027	405018-01E	BOBNM3	CYANIDE
AA8028	405018-01F	"	TDS
AA8029	405018-01G	"	SULFATE
AA8037	405018-02A	BOBNM4	METALS-D
AA8030	405018-03A	BOBNK7	METALS-T
AA8031	405018-03B	"	ANIONS
AA8032	405018-03C	"	NO2NO3
AA8033	405018-03D	"	ALKALINITY
AA8034	405018-03E	"	CYANIDE
AA8035	405018-03F	"	TDS
AA8036	405018-03G	"	SULFATE
AA8038	405018-04A	BOBNK8	METALS-D
AA8189	405077-01A	BOBRL1	METALS-T
AA8190	405077-01B	"	ANIONS
AA8191	405077-01C	"	NO2NO3
AA8192	405077-01D	"	ALKALINITY
AA8193	405077-01E	"	CYANIDE
AA8194	405077-01G	"	TDS
AA8196	405077-02A	BOBRL2	METALS-D

IT Corporation
June 10, 1994
Job Number: 464; 470; 493
Client Project ID: WHC SAF-94-130 200-BP-5 Groundwater Round 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

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

9613497.1182

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 5-4-94 12:05 Client Name WHC

Project/Client # 94-130 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) ER-05

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☒ No ☐
3. Custody Seals dated and signed? Yes ☒ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☒ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☒
6. Each sample is in a plastic bag? Yes ☒ No ☐
7. Number of sample containers in cooler: 15
8. Samples have: X tape ____ hazard labels
   X custody seals ____ appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 20C

11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) N/A
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☒
13. Memos have been initiated for all anomalies identified above? Yes ☒

Printed Name/Signature Karen Hattenbury Date/Time 5-4-94 14:05

FORM NO. LS-042, Rev.0, 2/94

Surveyed : Yes ✓ No ____ ? Less than 200 counts/minute: Yes ✓ No ____ ? By (initials) [illegible]

Pacific Northwest Laboratories Battelle Boulevard Richland, Washington 99352	**CHAIN OF CUSTODY**	Test User ID: BATTM16729 C-of-C: B013C9 pg. 1 of 1

Company Contact: BE OPITZ Telephone: (509) 372-0069

Samples Collected by: Hanker/Harrison Date: 5/2/94 Time: 1040

ID/Sample No.: B0BS61

Ice Chest No.: ER-14 Field Logbook Page No.: 4/864

Remarks: SAF94-130

Possible Sample Hazard Identification: ____ Contract No.: ____

Destination: DELIVER TO SIGMA 5 (WHC contract) Carrier/Waybill No.: ____

Ground-Water X Soil ____ Other ____

Shipping container internal temperature when samples sealed in it ____. Shipping container internal temperature when opened in laboratory ____.

Sample Identification

B0BS61 -(8) 1000mlP-GAMM
B0BS61 -(2) 1000mlP-TC99 > 40510601

SDG W0049

Chain of Possession

Relinquished by:	Received by:	Date/Time:
[illegible] PNL For TL VanArsdale	[illegible] PNL	5/2/94 1140
[illegible] PNL	[illegible] WHC	5-3-94 0740
[illegible] WHC	[illegible]	5/3/94 1310
Disposed by:	Disposal Method:	Date/Time:

PNL-MA-567, AD2 BD-1200-345 (12/92)

0074

9613497.1184

SAMPLE ANALYSIS ORDER
BATTELLE, PNL

ITAS

CONTRACT_____
CHAIN OF CUSTODY #: B013C9
SAMPLE ID(S): B0BS61
SAMPLE SCHEDULE DATE: 04/01/94
USER ID RATTM16729

SAF94-130

SAMPLE RECEIVER INITIAL / DATE:
_____ / DATE_____

WATER X SOIL___ OTHER___

INTERNAL TEMPERATURE OF SHIPPING CONTAINER
UPON OPENING IN LABORATORY_____

BOTT#	BOTT TYPE	BOTT SIZE	# of BOTT	PRESERVAT	NOTES	# of SAMP	ANA_1	ANA_2	ANA_3	ANA_4	ANA_5	ANA_6	Filtered
123	P	1000	1	HNO3		8 +	GAMM						
							GAMMA SCAN	9B 4/19/94					
313	P	1000	1	HNO3		2 +	TC99						
							TC-99						

Surveyed : Yes ✓ No ____ 9613497 1185 Less than 200 counts/minute: Yes ✓ No ____ ? By (initials) Pm

Pacific Northwest Laboratories Battelle Boulevard Richland, Washington 99352	**CHAIN OF CUSTODY**	Test User ID: BATTM16729 C-of-C: B013D0 pg. 1 of 1

Company Contact: BE OPITI Telephone: (509) 372-0089

Samples Collected by: Hankel / Harrison Date: 5/2/94 Time: 930

ID/Sample No.: B0BS62

Ice Chest No.: ER14 Field Logbook Page No.: 4/823

Remarks: SAF 94-130

Possible Sample Hazard Identification: ____ Contract No.: ____

Destination: DELIVER TO SIGMA 5 (WHC Contract) Carrier/Waybill No.: ____

Ground-Water X Soil ____ Other ____

Shipping container internal temperature when samples sealed in it ____. Shipping container internal temperature when opened in laboratory ____.

Sample Identification

B0BS62 -(5) 1000mlP-GRMM
B0BS62 -(2) 1000mlP-TC99 > 40510602

Chain of Possession

Relinquished by: For TL VanArsdale PNL	Received by: PNL	Date/Time: 5/2/94 1140
Relinquished by: PNL	Received by: WHC Sweeney	Date/Time: 5/3/94 0740
Relinquished by: WHC Sweeney	Received by: A. Boyd ST <100cpm	Date/Time: 5/3/94 1310
Relinquished by:	Received by:	Date/Time:
Disposed by:	Disposal Method:	Date/Time:

PNL-MA-567, AD2 BD-1200-345 (12/92)

9613497.1186

SAMPLE ANALYSIS ORDER
BATTELLE, PNL

ITAS

CONTRACT_____
CHAIN OF CUSTODY #: B013D0
SAMPLE ID(S): B0BS62
SAMPLE SCHEDULE DATE: 04/01/94
USER ID BATTM16729

SAF94-130

SAMPLE RECEIVER INITIAL / DATE:
_____ / DATE_____

WATER X SOIL___ OTHER___

INTERNAL TEMPERATURE OF SHIPPING CONTAINER
UPON OPENING IN LABORATORY_____

BOTT#	BOTT TYPE	BOTT SIZE	# of BOTT	PRESERVAT	NOTES	# of SAMP	ANA_1	ANA_2	ANA_3	ANA_4	ANA_5	ANA_6	Filtered
123	P	1000	1	HNO3		8	GAMM						
							GAMMA SCAN	98 4/19/94					
313	P	1000	1	HNO3		2	TC99						
							TC-99						

Surveyed : Yes ✓ No ____ 96134971 1187 Less than 200 counts/minute: Yes ✓ No ____ ? By (initials) [illegible]

Pacific Northwest Laboratories Battelle Boulevard Richland, Washington 99352	**CHAIN OF CUSTODY**	Test User ID: BATTM16729 C-of-C: B013D3 pg. 1 of 1

Company Contact: EE OPITZ Telephone: (509) 372-0069

Samples Collected by: HANKEL/HARRISON Date: 5/2/94 Time: 830

ID/Sample No.: B0BS65

Ice Chest No.: ER-6 Field Logbook Page No.: 4/86

Remarks: SAF 94-130

Possible Sample Hazard Identification: ____ Contract No.: ____

Destination: DELIVER TO SIGMA E (WHC Contract) Carrier/Waybill No.: ____

Ground-Water X Soil ____ Other ____

Shipping container internal temperature when samples sealed in it ____. Shipping container internal temperature when opened in laboratory ____.

Sample Identification

B0BS65 -(8) 1000mlP-GAMM
B0BS65 -(2) 1000mlP-TC99 > 40510603

Chain of Possession

Relinquished by:	Received by:	Date/Time:
[illegible] PNL For TL Van Arsdale	[illegible] PNL	5/2/94 1140
[illegible] PNL	[illegible] WHC	5/3/94 0740
[illegible] WHC	[illegible] PNL <100C	5/3/94 1310

PNL-MA-567, AD2 BD-1200-345 (12/92)

9613497.1188

SAMPLE ANALYSIS ORDER
BATTELLE, PNL

ITAS

CONTRACT_____
CHAIN OF CUSTODY #: B013D3
SAMPLE ID(S): B0BS65
SAMPLE SCHEDULE DATE: 04/01/94
USER ID BATTM16729

SAF94-130

SAMPLE RECEIVER INITIAL / DATE:
_____ / DATE_____

WATER X SOIL___ OTHER___

INTERNAL TEMPERATURE OF SHIPPING CONTAINER
UPON OPENING IN LABORATORY_____

BOTT#	BOTT TYPE	BOTT SIZE	# of BOTT	PRESERVAT	NOTES	# of SAMP	ANA_1	ANA_2	ANA_3	ANA_4	ANA_5	ANA_6	Filtered
123	P	1000	1	HNO3		8 +	GAMM						
							GAMMA SCAN						
313	P	1000	1	HNO3		2 +	TC99						
							TC-99						

JB 4/19/94

9613497.1189

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: 405106 DATE INITIATED: 5-6-94

INITIATED BY: Heidelberg

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 5/3 1310

	CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED
03	B0BS65	B013D3	γ, TC99
02	B0BS62	B013D0	↓ ↓
01	B0BS61	B013C9	↓ ↓

Samples were received with the following deficiencies:

- ☐ 1. Not enough sample received for proper analysis.
- ☐ 2. Sample received without proper preservative.
- ☐ 3. No sample received in container.
- ☐ 4. Sample received without a RFA/COC form.
- ☐ 5. No sample ID on container.
- ☐ 6. Sample received broken or leaking.
- ☐ 7. Holding time exceeded at receipt.
- ☐ 8. Custody tape broken.
- ☐ 9. COC not relinquished by client.
- ☐ 10. Sample information on container does not match sample information on the paper work (Explain below).
- ☐ 11. All shipping containers (coolers) on waybill not received with shipment.
  - ☐ RFA/COC received
  - ☐ RFA/COC not received
- ☒ 12. Other (Explain below).

NOTES: Samples arrived on COC's used by Battelle contract 163635-A-M1 with test user identified as M16729, also had SAF # 94-130 which is WHC contract. On 5/5/94 we rec'd instructions to log as WHC SAF 94-130.

SUPERVISOR REVIEW: Heidelberg 5/6/94

PROJECT MANAGER REVIEW:

TELEPHONED TO: ON BY

TELEFAXED TO: ON BY

SIGNED ORIGINAL MUST BE RETAINED IN WORK ORDER FILE

FORM NO. LS-023, 3/92, Rev. 0

Surveyed : Yes ✓ No ____ ? Less than 200 counts/minute: Yes ✓ No ____ ? By (initials) [illegible]

Pacific Northwest Laboratories Battelle Boulevard Richland, Washington 99352	**CHAIN OF CUSTODY**	Test User ID: BATTM16729 C-of-C: B013D2 pp. 1 of 1

Company Contact: BE OPITI Telephone: (509) 372-0063

Samples Collected by: HANKEL / HARRISON Date: 5-5-94 Time: 1045

ID/Sample No.: B0BS64

Ice Chest No.: ER-11 Field Logbook Page No.: 4/857

Remarks: SAF 94-130

Possible Sample Hazard Identification: ____ Contract No.: ____

Destination: DELIVER TO SIGMA 5 (WHC Contract) Carrier/Waybill No.: ____

Ground-Water X Soil ____ Other ____

Shipping container internal temperature when samples sealed in it ____. Shipping container internal temperature when opened in laboratory ____.

Sample Identification

B0BS64 -(8) 1000mlP-GAMMA
B0BS64 -(2) 1000mlP-TC93 > 40520001

SDG-W0049

Chain of Possession

[illegible] PNL	Kathy L. Farmer PNL	5-5-94 1140
Relinquished by:	Received by:	Date/Time:
[illegible] for KLF	L Sweeney L Sweeney WHC	5/10/94 0700
Relinquished by:	Received by:	Date/Time:
L Sweeney L Sweeney WHC	R. Baird [illegible]	5-10-94 1145
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Disposed by:	Disposal Method:	Date/Time:

PNL-MA-567, AD2 BD-1200-345 (12/92)

9613497.1191

SAMPLE ANALYSIS ORDER
BATTELLE, PNL

ITAS

CONTRACT_____
CHAIN OF CUSTODY #: B013D2
SAMPLE ID(S): B0BS64
SAMPLE SCHEDULE DATE: 04/01/94
USER ID BATTM16729

SAF94-130

SAMPLE RECEIVER INITIAL / DATE:
_____ / DATE_____

WATER X SOIL___ OTHER___

INTERNAL TEMPERATURE OF SHIPPING CONTAINER
UPON OPENING IN LABORATORY_____

BOTT#	BOTT TYPE	BOTT SIZE	# of BOTT	PRESERVAT	NOTES	# of SAMP	ANA_1	ANA_2	ANA_3	ANA_4	ANA_5	ANA_6	Filtered
123	P	1000	1	HNO3		8	GAMM						
							GAMMA SCAN						
313	P	1000	1	HNO3		2	TC99						
							TC-99						

9B 4/19/94

0086

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
MHC		W 9-1-0-0518-37

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
ER Eng Support	Field & Analytical Supp	ER Field Sampling

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 George Washington Way Richland, WA 99352	
	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 74 lbs.	Sample #: BOBS63, BOBS64 Cooler ID: ER-11 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
1 lbs.	Sample #: NA Cooler ID: Polycooler with groundwater samples packed in wet ice and vermiculite	N/A

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the 200 AREA

Bill of lading # NONE

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]	157992	5/10/94

Location of Property (Area & Bldg.)	Contact	Phone
200-BP-5	P. H. Butcher	(509) 376-4388

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
5-10-94	88410 PL53A	NA

Originated By	Date	Authorized By	Date
P H Butcher	5/10/94	P H Butcher	5-10-94
Signature and Name of Property Control	**Custodian Date**	**Property Management Approval**	**Date**
		J P Henkel	5/10/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
R Boyd JT				
Date 5-10-94 1445				

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management Green – Property Control Custodian (Issuing Office) Yellow – Retain Pink – Originator

54-3000-479 (09/89)

9613497.1193

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 6/14/94

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Gamma

NAME/DATE [illegible] / 6/10/94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0049

MATRIX WATER

BATCH NUMBER 4-571

ITAS ID	CUSTOMER ID	COMMENTS
1) L0457115	N/A	Reagent spike
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

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 [illegible] 10 Jun 94

DATA REVIEWED [illegible] 13 Jun 94

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

9613497.1194

INTERNATIONAL TECHNOLOGY CORPORATION

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

0421

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC W0049

NCM INITIATED BY (Name/Date): Marshall Lane 6/13/94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: 40457105, 40501902, 40510601

MATRIX: Water

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):
10. ☒ Comments/Explanation: Eu-152 MDC Greater than CRDL on 40457105
    Fe-59 MDC Greater than CRDL on 40501902 and 40510601

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 6/13/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613497.1195

C421

IT CORPORATION

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

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE nd 6/13/94

unknown. MDC's For both Nuclides Less than CRDL's in Blank

☒ CORRECTIVE ACTION: INITIALS/DATE nd 6/13/94

Report Results. Note in Case Narrative.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE_____

N/A

FIRST LEVEL SUPERVISOR: [signature] DATE: 6/13/94

RESPONSIBLE MANAGER: [signature] DATE: 6/15/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: [signature] DATE: 6/16/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 6/16/94

0105

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

9613497.1196

INTERNATIONAL TECHNOLOGY CORPORATION

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

C420

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC W0048

NCM INITIATED BY (Name/Date): Marshall Lane 6/13/94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: 40501901

MATRIX: WATER

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 Cd-109 detected in 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): Sanjy Davies 6/13/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9613497.1197

C42C

IT CORPORATION

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

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE vd 6/13/94

Cd-109 gamma energy is less than 1 Kev from x-ray line produced by reflection off detector sheilding

☒ CORRECTIVE ACTION: INITIALS/DATE vd 6/13/94

Do not report result. Note in case narrative

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: [signature] DATE: 6/13/94

RESPONSIBLE MANAGER: [signature] DATE: 6/15/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: [signature] DATE: 6/16/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 6/16/94

0107

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

9613497.1198

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-0110 page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC W0049

NCM INITIATED BY (Name/Date): Marshall Lane 6/13/94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: L0457115

MATRIX: WATER

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):
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): Sey Davies 6/13/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

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IT CORPORATION

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CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE nd 6/13/94

insufficient Co-60 And Eu-152 Added. Original Eu-152 Result was Out of Limits

☒ CORRECTIVE ACTION: INITIALS/DATE nd 6/13/94

Spike was recounted. All Nuclides present were in Limits on Recount

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE nd 6/13/94

insufficient Activity was Brought to Attention of CCG. Future QCAG vials will contain more Activity

FIRST LEVEL SUPERVISOR: [signature] DATE: 6/13/94

RESPONSIBLE MANAGER: [signature] DATE: 6/15/94

QC REVIEW

☒ NONCONFORMANCE ☐ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: [signature] DATE: 6/16/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 6/16/94

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

0109

INTERNATIONAL TECHNOLOGY CORPORATION

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IT A.S.-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number):	WHC W0049
NCM INITIATED BY (Name/Date):	L.W. Tidwell 6-8-94
PARAMETER(S):	W0049 u eiga
SAMPLE NUMBER(S) AFFECTED:	W0457102
MATRIX:	water

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 recovenes ☐ 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): Radiochemical yield was 172%
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 6/16/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

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IT CORPORATION

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CORRECTIVE ACTION

☒ **ROOT CAUSE:** INITIALS/DATE LT 6-8-94

the sample result was so high that it masks the spike added to W0457102.

☒ **CORRECTIVE ACTION:** INITIALS/DATE LT 6-8-94

Data accepted the result for W0457102 minus the result for 40457102 falls with in 15% error of 40457102.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☒ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE LT 6-8-94

ask technicians to read sample screens and add the spikes to samples with less activity

FIRST LEVEL SUPERVISOR: Pam Kenitzer DATE: 6-8-94

RESPONSIBLE MANAGER: W. Mackell DATE: 6/23/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: DATE: 6/23/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: DATE: 6/23/94

0137

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