START 9415513.2618

W0012-ITC-028 338

0046139

INTERNATIONAL TECHNOLOGY CORPORATION

MAY 1994 RECEIVED SDLA

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

Dear J.A. Lerch

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

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

   Your Data Summary Packet contains the following items:

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

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

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

Please contact me with any questions or suggestions.

Sincerely,

Sheree Schneider

Sheree' Schneider
Project Manager

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

IT Corporation is a wholly owned subsidiary of International Technology Corporation

9713513.2619

OFFICE OF SAMPLE MANAGEMENT

RECORD OF DISPOSITION

ROD-B94-024
Record of Disposition No.

DATE:8/18/94	LABORATORY:Quanterra
PROJECT TITLE/NO.:200-UP-1	NCR NO.:

SAMPLE IDENTIFICATION NUMBERS:B0BKG7, B0BKG8, B0BKG9, B0BKH0, B0BKH2, B0BKH6

DESCRIPTION OF EVENT:
Lab did not analyze for NO3, NO2, or PO4 by method 300.0 as requested on SAF. This was due to the samplers not writing the anions needed on the COC and also to the lab not asking for guidance when they came up with a confusing situation.

DISPOSITION OF SAMPLES:
Per memo from Jim Harvey dated August 17, the lab will be instructing their project managers "to always seek guidance when in doubt as to the request on the COC. Wendy Thompson of IT has instructed the samplers to always specify the analytes on the COC as they are listed on the SAF.

APPROVAL SIGNATURES:

J. A. Lerch — 8/19/94
OSM Project Coordinator (Print/Sign Name) — Date

C. D. Wittreich — 9/5/94
Technical Representative (Print/Sign Name) — Date

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

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352
Attn: J.A. Lerch

RECORD COPY

May 11, 1994

Job Number: 283; 301

MAY 1994 RECEIVED SDLA

This is the Certificate of Analysis for the following samples:

SDG:	W0012
Client Project ID:	Westinghouse Hanford
Date Received by Lab:	April 1, 1994; April 5, 1994
Number of Samples:	Twelve (12)
Sample Type:	Water

I. Introduction

On April 1 and April 5, 1994, twelve (12) waters sample arrived at ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. Soil results are reported on a dry weight basis.

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

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

IT Corporation
May 11, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 283; 301

II. Analytical Results/Methodology (Continued)

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

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

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

III. Quality Control

The volatiles analyses were performed on April 5, 1994 by purge and trap with a J & W DB-624 capillary column on a Hewlett-Packard 5970 GC/MS/DS. All QC results were within method specified limits.

Data were reported with qualifiers as follows:

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

The samples were digested on April 18, 1994 for ICP and April 11, 1994 for GFAA. The GFAA analyses for arsenic, lead and selenium were performed from April 11 through April 15, 1994; the remaining metals were analyzed by ICP on April 18, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number 8202A for GFAA and sample number 8701C for ICP. Spike recovery (accuracy) results were within acceptance limits for all requested parameters. Duplicate RPD (precision) results were within acceptance limits for all requested parameters.

IT Corporation
May 11, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 283; 301

III. Quality Control (Continued)

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.

On April 19, 1994, the samples were analyzed for nitrate-nitrite by cadmium reduction followed by colorimetric determination using the LACHAT QuikChem automated flow injection analyzer (QuikChem Method No. 10-107-04-1-C).

The samples were analyzed for sulfate, chloride and fluoride by EPA method 300.0 on April 24 and April 28, 1994. A matrix spike and matrix spike duplicate were performed on sample number 404039-01D. All results were acceptable.

IT Corporation
May 11, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 283; 301

III. Quality Control (Continued)

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

TABLE I

WHC ID	Richland ID	Knoxville ID	Test
BOBKG8	40358201A	AA5110	ANION
BOBKG8	40358201B	AA5111	NO3NO2
BOBKH8	40358202A	AA5122	METALS
BOBKH9	40358203A	AA5123	METALS
BOBKH7	40358702A	AA5124	METALS
BOBKG7	40358204A	AA5120	ANIONS
BOBKG7	40358204B	AA5121	NO3NO2
BOBKH6	40358701A	AA5125	ANIONS
BOBKH6	40358701B	AA5126	NO3NO2
BOBKH6	40358701C	AA5127	METALS
BOBKH2	40403901A	AA5277	VOA
BOBKH2	40403901D	AA5283	ANIONS
BOBKH2	40403901E	AA5284	NO3NO2
BOBKH5	40403902A	AA5278	VOA
BOBM24	40403903A	AA5279	VOA
BOBKG9	40403904A	AA5287	ANIONS
BOBKG9	40403904B	AA5288	NO3NO2
BOBKH0	40403905A	AA5289	ANIONS
BOBKH0	40403905B	AA5290	NO3NO2
TRIP BLANK	40403906A	AA5280	VOA
TRIP BLANK	40403906B	AA5280	VOA

IT Corporation
May 11, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 283; 301

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

9713513.2625

RECORD COPY

Analytical Data Package Prepared for

WESTINGHOUSE HANFORD

MAY 1994
RECEIVED
SDLA

Chemical Analysis By

IT Analytical Services
Middlebrook Laboratory

Sample Delivery Group Number: W0012

WHC IDENTIFICATION NUMBER	ITAS RICHLAND ID NUMBER	KNOXVILLE ID NUMBER

* See attached Table I.

9215515.2636

IT Corporation
May 11, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 283; 301

III. Quality Control (Continued)

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

TABLE I

WHC ID	Richland ID	Knoxville ID	Test
BOBKG8	40358201A	AA5110	ANION
BOBKG8	40358201B	AA5111	NO3NO2
BOBKH8	40358202A	AA5122	METALS
BOBKH9	40358203A	AA5123	METALS
BOBKH7	40358702A	AA5124	METALS
BOBKG7	40358204A	AA5120	ANIONS
BOBKG7	40358204B	AA5121	NO3NO2
BOBKH6	40358701A	AA5125	ANIONS
BOBKH6	40358701B	AA5126	NO3NO2
BOBKH6	40358701C	AA5127	METALS
BOBKH2	40403901A	AA5277	VOA
BOBKH2	40403901D	AA5283	ANIONS
BOBKH2	40403901E	AA5284	NO3NO2
BOBKH5	40403902A	AA5278	VOA
BOBM24	40403903A	AA5279	VOA
BOBKG9	40403904A	AA5287	ANIONS
BOBKG9	40403904B	AA5288	NO3NO2
BOBKH0	40403905A	AA5289	ANIONS
BOBKH0	40403905B	AA5290	NO3NO2
TRIP BLANK	40403906A	AA5280	VOA
TRIP BLANK	40403906B	AA5280	VOA

9713513.2607

WO# 283

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER:_____ DATE INITIATED: 3-29-94

INITIATED BY: Heidelberg

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT:_____

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED

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 at 7°. BOBK68 has no sample date or time filled out. Containers have 3-28 @ 12:00 which will be used for login

SUPERVISOR REVIEW: Tami Heidelberg

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

WO#283

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER:_____ DATE INITIATED:_____

INITIATED BY: TGilose

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: 3/30/94 1025

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED

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 received at 8°C

SUPERVISOR REVIEW: Tami Heidelberg

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

9715415.2619

WO#283

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1550 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

For Shipping Containers

Date/Time Received 3/30/94 1025 Client Name WHC

Project/Client # 94-088 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) SML118

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 ☑ samples all in one bag – not individ
7. Number of sample containers in cooler: 12
8. Samples have: ✓ tape ____ hazard labels ✓ custody seals ✓ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking ____ broken ____ have air bubbles ____ other
10. Coolant present? Yes ☑ No ☐

Sample temperature 8°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 Tom Gilmore [signature] Date/Time 3/30/94 1025

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

9713513.2650

WO#283

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1500 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

For Shipping Containers

Date/Time Received 3/29 1440 Client Name WHC

Project/Client # SAF 94-088 Batch or Case # na

Cooler ID (if noted on the outside of cooler) SML118

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
   ✓ custody seals ____ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐
    Sample temperature 70°
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) ____
    Request for analysis #(s) na
    Airbill # ____ Carrier ____
12. Have any anomalies been identified above? Yes ☒ No ☐
13. Memos have been initiated for all anomalies identified above? Yes ☐

Printed Name/Signature Lisa Lidwiling Date/Time 3/29 @ 1445

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

9713513.2651

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

WO#301

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 4/4/94 1140 Client Name WHC

Project/Client # SAF-94-088 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) SML 118

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: 23
8. Samples have: ____ tape ____ hazard labels
   ✓ 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°

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 R. Boyd R. Boyd Date/Time 4/4/94 1140

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

9713513.2612

WO# 283

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/28/94

Ice Chest No. SMC-118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NONE

Offsite Property No. IC94-C-C336-25

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG7

1; 500mL; G; WATER; ANIONS (IC)-NO3 A 40358204.
1; 500mL; P; WATER; NO3 (H2SO4) B
1; 2L; P; WATER; TOTAL URANIUM (HNO3) 40358303 A
1; 1L; P; WATER; Tc-99 (HCl) B

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	3/28/94	1445	[illegible]	3/28/94	1445
[illegible]	3/29/94	0720	[illegible]	3/29/94	0720
[illegible]	3/29/94	1400	[illegible]	3-29-94	1400

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone Relinq to Frig # 2A By BJ WHITTEN 3/28/94

A-6000-407 (12/92) WEF061

9713513.2613

WO# 283

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector _____ Date Sampled 3/28/94 Time 1105 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK/#7	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC:
			BOL:
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9713513.2634

WO#283

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/28/94

Ice Chest No. SMC115

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. None

Offsite Property No. W94-C-C336-05

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG5

40358201

1; 500mL; G; WATER; ANIONS (IC)-NO3 A

1; 500mL; P; WATER; NO3 (H2SO4) B

1; 2L; P; WATER; TOTAL URANIUM (HNO3) 40358301 A

1; 1L; P; WATER; Tc-99 (HCl) B

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
Bill Whitten B WHITTEN	3/28/94	1444	A T SIMPSON	3/28/94	1444
A T Simpson A T SIMPSON	3/29/94	0720	L Sweeney	3/29/94	0720
L Sweeney L Sweeney	3/29/94	14.30	R Boyd Jr	3-29-94	1440

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

Data Deliverable-Standalone Relinq to Face # 3A By Bill Whitten 3/29/94

A-6000-407 (12/92) WEF061

9713513.2635

WO# 283

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector _____ Date Sampled _____ Time _____ hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK04	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC: 1194-C-C336-25
			BOL: None
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location

9713513.2636

WO#283

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3-24-94

Ice Chest No. SMC-118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-26

Method of Shipment - EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK#6

1; 500mL; G; WATER; ANIONS (IC)-NO3 A 40358701
1; 500mL; P; WATER; NO3 (H2SO4) B 40358801 A
1; 2L; P; WATER; TOTAL URANIUM (HNO3)
3; 1L; P; WATER; GAMMA SPEC. to include Co-58/60, Cs-137, Eu-152/154/155, Fe-59 (HNO3) B
1; 1L; P; WATER; Tc-99 (HCl) C
1; 1L; P; WATER; ICP METALS (HNO3) UNFILTERED C

BOBK#6 #7 04 3-24-94

1; 1L; P; WATER; ICP METALS (HNO3) FILTERED 40358702A

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[signature] A. WHITE	3/24/94	1313	[signature] AJ SIMPSON	3/24/94	1313
[signature] AJ SIMPSON	3/30/94	0904	[signature] L SWEENEY	3/30/94	0904
[signature] L SWEENEY	3/30/94	1030	[signature] L GILMORE	3/30/94	1025

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

Data Deliverable-Standalone Placed in locker 3C by AJ SIMPSON 3/24/94 1313

A-6000-407 (12/92) WEF061

9713513.2657

WO#283

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: BT WHITEN Date Sampled: 3/29/94 Time: 1207 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
BOBK16	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	3; 1L; P	WATER	GAMMA SPEC: Co-58/60, Cs-137, Eu-152/154/155,
			Fe-59 (HNO3)
	1; 1L; P	WATER	ICP METALS (HNO3) UNFILTERED
	1; 1L; P	WATER	Tc-99 (HCl)
BOBK17	1; 1L; P	WATER	ICP METALS (HNO3) FILTERED
			OPC: W194-C-0336-26
			BOL: NONE
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9713513.2608

WO#283

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 03/25/94

Ice Chest No. SMC118

Field Logbook No. EPL-1124

Bill of Lading/Airbill No. CONC

Offsite Property No. WG94-C-0336-25

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK H8

1; 1L; P; WATER; Tc-99 (HCl) 40358302A

1; 1L; P; WATER; GFAA METALS (HNO3) UNFILTERED 40358202A

BOBK H9

1; 1L; P; WATER; GFAA METALS (HNO3) FILTERED 40358203A

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	3/25/94	0720	[illegible]	3/25/94	0720
[illegible]	3/29/94	1440	E. Boyd Jr	3-29-94	1440

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

Data Deliverable-Standalone Samples stored in Frig. at 3C by [illegible] 3/25/94

A-6000-407 (12/92) WEF061

9713513.2619

WO#283

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: B.T. WHITTEN Date Sampled: 03/25/94 Time: 1037 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK 48	1; 1L; P	WATER	Tc-99 (HCl)
	1; 1L; P	WATER	GFAA METALS (HNO3) UNFILTERED
B0BK 49	1; 1L; P	WATER	GFAA METALS (HNO3) FILTERED
			OPC: W94-C-0336-25
			BOL: NONE
			SAF: 94-088

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9713513.2610

WO#283

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/29/94

Ice Chest No. SMC-118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-C-0336-26

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKJ2
1; 2L; P; WATER; TOTAL URANIUM (HNO3) A 40358802
1; 1L; P; WATER; Tc-99 (HCl) B
3; 1L; P; WATER; U-234/235/238 (HNO3) C

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	3/29/94	1313	[illegible] AT SIMPSON	3/29/94	1312
AT Simpson AJ SIMPSON	3/30/94	0904	[illegible]	3/30/94	0904
[illegible]	3/30/94	1030	[illegible]	3/30/94	1025

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. ~~[illegible]~~ BW 3-29-94
FILE #3C by AJ SIMPSON

A-6000-407 (12/92) UEF061

9713513.2641

WO#283

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector B.T. WHITTEN Date Sampled 3/24/94 Time 0935 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BKJ2	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
	3; 1L; P	WATER	U-234/235/238 (HNO3)
			OPC: 1094-C-0336-26
			BOL: NONE
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9715513.2692

WO#301

Westinghouse Hanford Company	SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: B.T. WHITTEN Date Sampled: 4/1/94 Time: 1210 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK H2	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
	3; 1L; P	WATER	Sr-90 (HNO3)
	3; 40mL; P	WATER	VOA (HCl)
B0BK H5	3; 40mL; P	WATER	VOA (HCl)
B0BM84	3; 40mL; G	water	VOA (HCL)
			OPC: W-94-0-0336-30
			BOL: NONE
			SAF: 94-088

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

9713513.2603

WO #301

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 4-1-94

Ice Chest No. SITC 118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-30

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

40403401
BOBK#2
ABL 3; 40mL; Gs; WATER; VOA (HCl)
D 1; 500mL; G; WATER; ANIONS (IC)-NO3
E 1; 500mL; P; WATER; NO3 (H2SO4)
40404001 1; 2L; P; WATER; TOTAL URANIUM (HNO3)
3; 1L; P; WATER; Sr-90 (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

BOBK#5
40403902 A 3; 40mL; Gs; WATER; VOA (HCl)
B
C

BOBM24 3; 40mL; G WATER VOA (HCL)
40403503 A
B
C

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	4/1/94	1350	L Sweeney L Sweeney	4/1/94	1350
L Sweeney L Sweeney	4-4-94	1140	R. Boyd	4/4/94	1140

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone

Placed in Refrig 3C temp. OK AJS 4/1/94

A-6000-407 (12/92) WEF061

9413515.2649

WO #301

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 4-1-94

Ice Chest No. SMC118

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-C-C336-30

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

40403904
BOBKG9
A 1; 500mL; G; WATER; ANIONS (IC)-NO3
B 1; 500mL; P; WATER; NO3 (H2SO4)
40404002 1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

~~BOBM24 3, 40 mL 6 vials VOA (HCL)~~ BW 4-1-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	4/1/94	1350	J Sweeney	4/1/94	1350
J Sweeney	4-4-94	[illegible]	R. Berryll	4/4/94	1140

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone

Placed in Refrig 3C AJ Simpson 4/1/94 Temp OK

A-6000-407 (12/92) WEF061

9713513.2605

WO #301

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: BT WHITTEN Date Sampled: 4/1/94 Time: 1058 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BKG9	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
~~B0BM24~~	~~3; 40 mL G~~	~~water~~	~~VOA (HCl)~~ BW 4-1-94
			OPC: W94-0-0336-30
			BOL: LOWE
			SAF: 94-088

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

9215513.2696

WO#301

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 4-1-94

Ice Chest No. SML-118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No.

Offsite Property No. W94-0-0336-30

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

40403405
BOBKH0
A 1; 500mL; G; WATER; ANIONS (IC)-NO3
B 1; 500mL; P; WATER; NO3 (H2SO4)
40404003 1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	4/1/94	1350	L Sweeney L Sweeney	4/1/94	1350
L Sweeney L Sweeney	4-4-94	1140	L. Boyd	4/4/94	1140

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone

Placed in Lefrig 3C Temp. OK AJ Simpson 4/1/94

A-6000-407 (12/92) WEF061

9713513.2697

WO #301

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: B.T. WHITTEN Date Sampled: 4/1/94 Time: 1115 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BKH0	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC: W94-0-0336-30
			BOL: NONE
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9715513.2648

WO #283

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
		[illegible]

PART I – TO BE COMPLETED BY ORIGINATOR

Department [illegible]	Section (EFS) [illegible]	Unit [illegible] Hydrocle.

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

Routing [illegible] Delivery ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT [illegible] Services 2SCC [illegible], UAV [illegible], 10[illegible] 9352[illegible]	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Serial No.: BOBKG7, BOBKG8, BOBKH5, BOBKH9 Item ID.: SHL118 Poly Cooler with [illegible] spigot [illegible] [illegible] vermiculite	

☐ 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 ~~[illegible]~~ AREA
[illegible] 3/24/94

No Bill of Lading

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

RM Clearance for Public Release [illegible]	RM Survey No. 157600	Date 3/24/94
Location of Property (Area & Bldg.) [illegible]	Contact PH Butler	Phone 376-1388
Date Ready for Shipment [illegible]	Cost Code to be Charged 8B410 / PTIF[illegible]	Approximate Date This Property will be Returned N/A
Originated By [illegible]	Date 3/24/94	Authorized By [illegible] / Date 3/24/94
Signature and Name of Property Control	Custodian Date	Property Management Approval [illegible] / Date [illegible]

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
[illegible]				
Date [illegible] 1430				

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

0000038

9715515.2649

WO# 283

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-C-0336-26

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Env. Eng & Tech	(EFS) Geosciences	Geochem & Hydrology

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

Routing Hand Deliver ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 G.W. WAY Richland, WA 99352	
	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample No: BURH10, BURH11, BURH12, Cooler ID: SMC 118 Polycooler with groundwater samples packed in wet ice and vermiculite	NA

☐ 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.

No Bill of lading

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 16054	3-30-94

Location of Property (Area & Bldg.)	Contact	Phone
200-UP-1	PH Butcher	376-0358

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
3/30/94	8B410 / PT / FA	NA

Originated By	Date	Authorized By	Date
PH Butcher	3/30/94	[illegible]	3/30/94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[illegible]	3/30/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
ITAS				
Date 3/30/94 1025				

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

SA-3000-470 (09/90)

9213514.2650

WO#301

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-0-0336-30

PART I – TO BE COMPLETED BY ORIGINATOR

Department Env Ens. & Tech	Section EFS	Unit Groundwater Hydrologic
The following items are to be shipped from	☒ Contractor	☐ Vendor
Routing Hand Deliver	☒ Contractor	☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 G.W. Way Richland, WA 99352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample No.: B0BKH2, B0BKH3, B0BM24, B0BKH0, B0BK49 Cooler ID: SMC-118 Polycooler with groundwater samples packed in wet ice and vermiculite.	NA

☐ 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

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. 152303	Date 4/4/94
Location of Property (Area & Bldg.) 200-UP-1	Contact DH Butcher		Phone (509) 376-4858
Date Ready for Shipment 4.4.94	Cost Code to be Charged 88410 PTIFA	Approximate Date This Property will be Returned NA	
Originated By DH Butcher	Date 4.4.94	Authorized By DH Butcher	Date 4.4.94
Signature and Name of Property Control	Custodian Date	Property Management Approval GP Hankel	Date 4/4/94

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

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001377*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

RL#381 WO#283

Reference Document No. 340355

Page 1 of 2

Project Name/No. 1: SAF 94-088

Sample Team Members 2:

Profit Center No. 3: 4632

Project Manager 4: Van Pattey

Purchase Order No. 6:

Required Report Date 11: 5-3-94

Samples Shipment Date 7: 3/30/94

Lab Destination 8: Middlebrook

Lab Contact 9:

Project Contact/Phone 12:

Carrier/Waybill No. 13: N/A

Bill to: 5: I.T. Richland

Report to: 10: I.T. 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
40358201A	BOBKG8/WATER	3-28-94 12:00	500ml/G	500ml		ANIONS	3°C BPT 3/31/94	
↓ B	BOBKG8	↓	500mL P	500mL		NO3	↓	
40358202A	BOBKH8	3-25-94 10:37	P	1L		UNFILTERED G FAA METALS		
40358203A	BOBKH9	3-25-94 10:37	P	1L		FILTERED. GFAA METALS		
40358204A	BOBKG7	3-28-94 11:05	G	500ml		Anions		
↓ B	BOBKG7	3-28-94 11:05	P	500mL		NO3		
40358701A	BOBKH6	3-29-94 12:07	G	500ml		ANIONS		
↓ B	↓	↓	P	500mL		NO3	↓	

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions: 23

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

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

Turnaround Time Required: 26
Normal ☐ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0017

1. Relinquished by 28 (Signature/Affiliation) Karen Stahlenberg ITAS Date: 3/30/94 Time: 16:00	1. Received by 29 (Signature/Affiliation) Bryan Blomquist ITASKN Date: 3/31/94 Time: 9:10
2. Relinquished by (Signature/Affiliation) Date: Time:	2. Received by (Signature/Affiliation) Date: Time:
3. Relinquished by (Signature/Affiliation) Date: Time:	3. Received by (Signature/Affiliation) Date: Time:

Comments: 29

MCA 3/15/91

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

0000040

INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#283
RL#881

Reference Document No.[30] 340355

Page 2 of 2

Project Name WHC SAF 94-088

Project No.

Samples Shipment Date

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
40358701C	BOBXH6	3-29-94 12:07	P	1L		ICP METALS UNFILTERED, 3C BB 3/31/94		
40358702A	BOBXH7	3-29-94 12:07	P	1L		ICP METALS FILTERED		
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

JH 3/30/94

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA-3/15/91

9212543262

0000041

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001396*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO #301
RL #392

Reference Document No. 340360
Page 1 of 2

Project Name/No. [1] SAF 94-088
Sample Team Members [2]
Profit Center No. [3] 4632
Project Manager [4] Van Petty
Purchase Order No. [6]
Required Report Date [11]

Samples Shipment Date [7] 4-4-94
Lab Destination [8] Middlebrook
Lab Contact [9]
Project Contact/Phone [12]
Carrier/Waybill No. [13] 395 3500 634

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]
40403901 A	BOBKH2 / water	4-1-94 1210	Gs	40 ml	Cool 40	Voa	2°C BTB 4/05/94	
B	↓	↓	↓	↓	↓	VOA	↓	
C	↓	↓	↓	↓	↓	VOA	↓	
D	↓	↓	↓	500 ml	↓	Anions (IC) NO3	↓	
E	↓	↓	Poly	500 ml	↓	NO3 (H2SO4)	↓	
40403902 A	BOBKH5 /	↓	Gs	40 ml	↓	Voa	↓	
B	↓	↓	↓	↓	↓	Voa	↓	
C	↓	↓	↓	↓	↓	Voa	↓	

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions: [23]

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

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

Turnaround Time Required: [26]
Normal ☐ Rush ☐

QC Level: [27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): SAG W0012

1. Relinquished by [28] (Signature/Affiliation) R. Boyd IT	Date: 4-4-94 Time: 1600	1. Received by [28] (Signature/Affiliation) Bryan Blomquist IT Richland	Date: 4/05/94 Time: 9:10
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: [29]

MCA 3/15/91

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

9713514.2693

0000042

INTERNATIONAL TECHNOLOGY CORPORATION

COC No 1396

WO#301
RL#392

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

Reference Document No.[30] 340360
Page 2 of 2

Project Name _____ Project No. SAF 94-008 Samples Shipment Date 4-4-94

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.
40403903 A	BoBM24/water	4-1-94 1210	GS	40ml	COOL 4°	VOA	2°C BPB 4/5/94	
B						VOA	FOR LAB USE ONLY	
C						VOA		
40403904 A	BoBKG9	4-1-94 1008	GS	500ml		Anions (IC)-NO3	FOR LAB USE ONLY	
B		4-1-94 1115	Poly	500ml		NO3 (H2SO4)		
40403905 A	BoBKH0	4-1-94 1115	GS	500ml		Anions (IC)-NO3		
B		4-1-94 1115	Poly	500ml		NO3 (H2SO4)	FOR LAB USE ONLY	
40403906 A	TRIP Blank	4-4-94 1600	GS	40ml		VOA		
B						VOA	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

0000043

WO#283

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

All category I
JRN 30 Mar 94

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			33094		330	10	15	225	240

Customer ID	pH <2 Rcvd/Req	Pinch Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Category 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
WHC/WATER																				
B0BKH8		1.9	5	1.5	35	2	9	0.14	-0.04	5.5E-01	-2E-01	7.4E-05	-2E-05	1.3E-07	-4E-08	4.9E+01	-2E+01	Yes	2.0E+02	-6E+03
B0BKG7		2.4	5	1.5	36	4	14	0.34	0.46	1.3E+00	7.6E-01	1.8E-04	1.0E-04	2.2E-07	7.6E-08	1.2E+02	6.9E+01	Yes	8.3E+01	1.5E+03
B0BKG8		3.1	5	1.5	37	10	40	0.94	3.06	3.7E+00	5.9E+00	5.0E-04	8.0E-04	3.8E-07	5.4E-07	3.3E+02	5.3E+02	Yes	3.0E+01	1.9E+02
TOTAL	uCi							-0.06	-0.94	-2E-01	-2E+00	7.6E-04	8.8E-04	ERR	ERR	ERR	ERR	Yes	ERR	ERR

9713513.2655

0000044

WO# 283

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Both Category I
JRN 30 Mar 94

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			33094		330	10	15	225	240

Customer ID	pH <2 Rcvd/Reiq	RESIDUE Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Catagory 1 Yes/No	Aliquot to Cat I Gm or Ltr Alpha	Beta
WHC/WATER																				
B0BKJ2		4.2	5	4.0	44	53	288	5.24	27.86	2.1E+01	5.6E+01	7.5E-03	2.0E-02	2.8E-06	3.1E-06	1.9E+03	5.1E+03	Yes	5.3E+00	2.0E+01
B0BKH6		1.3	5	4.0	45	4	16	0.34	0.66	1.3E+00	1.2E+00	4.7E-04	4.3E-04	5.6E-07	3.8E-07	1.2E+02	1.1E+02	Yes	8.8E+01	9.3E+02
TOTAL	uCi							-0.06	-0.94	-2E-01	-2E+00	8.0E-03	2.1E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

WO#301

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

All category I
JRM 4-4-94

Customer Code	Recieved Date	Time	Screening Prep Date	Screening Prep Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	BACKGROUND Beta	BACKGROUND Mnts
WHC			40494		404	10	4	124	120

Customer ID	pH <2 Rcvd/Reiq	Pincht 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
WHC/WATER																				
B0BKH0		1.6	5	2.0	61	5	35	0.47	2.47	1.6E+00	5.0E+00	3.2E-04	8.9E-04	3.4E-07	4.1E-07	1.6E+02	4.5E+02	Yes	6.3E+01	2.2E+02
B0BKG9		2.1	5	2.0	93	7	23	0.67	1.27	2.6E+00	2.3E+00	4.7E-04	4.1E-04	4.1E-07	2.5E-07	2.4E+02	2.0E+02	Yes	4.2E+01	4.9E+02
B0BKH2		14.0	5	2.0	62	6	15	0.57	0.47	2.7E+00	6.0E-01	4.9E-04	1.1E-04	4.6E-07	4.3E-08	2.4E+02	5.4E+01	Yes	4.1E+01	1.8E+03
TOTAL	uCi							-0.03	-1.03	-1E-01	-2E+00	1.3E-03	1.4E-03	ERR	ERR	ERR	ERR	Yes	ERR	ERR

00000046

9713513.2658

03/29/94 08:42 ☎373 3178 2225 3B WO#283 006

SAMPLE STATUS REPORT FOR Ξ 5676. E-BLANK 299W199 TIME: 3/29/94 8:31
DISPATCHED: 3/14/94 9:17 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/28/94 13:29

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

BOBKG7

LCS 3/29/94

~~3/15~~

9715515.2659

SAMPLE STATUS REPORT FOR E 5677. E-BLANK 299W1911 TIME: 3/29/94 8:31
DISPATCHED: 3/14/94 9:18 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/28/94 13:29

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

BOBKG8

LCS
~~3/29/93~~
3/29/94

9713513.2660

03/28/94 08:21 ☎373 3176 222S 3B WO#283 ☑002

SAMPLE STATUS REPORT FOR E 5684. E-BLANK 299W1921 TIME: 3/28/94 8:11
DISPATCHED: 3/14/94 9:21 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/28/94 7:58

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

BOBKH4
BOBKH9
LCS
3/29/94

WO#283

SAMPLE STATUS REPORT FOR E ~~5670.~~ 5682. E-BLANK 299W1912 TIME: 3/30/94 8:41
DISPATCHED: 3/14/94 9:18 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/29/94 15: 2

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

BOBKH6
BOBKH7
LCS
3/30/94

9715513.3682

03/30/94 09:21 ☎373 3176 2225 3B

WO#283

SAMPLE STATUS REPORT FOR E 5689. E-BLANK 299W1929 TIME: 3/30/94 8:41
DISPATCHED: 3/14/94 9:24 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/29/94 15: 2

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 BKJ2

AJS
3/30/94

9716515.2663

WO #301

SAMPLE STATUS REPORT FOR E 5679. E-BLANK 299W1913 TIME: 4/ 4/94 9: 5
DISPATCHED: 3/14/94 9:19 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 4/94 8:33

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

BOBKG9
LCS
4-4-94

9213513.2684

04/04/94 08:59 ☎373 3176 ZZZS JB ☒003

WO #301

SAMPLE STATUS REPORT FOR E 5680. E-BLANK 299W1916 TIME: 4/ 4/94 9: 5
DISPATCHED: 3/14/94 9:19 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 4/94 8:33

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

BOBKHO
LCS
4-4-94

9713513.2665

04/04/94 09:00 ☎373 3176 2225 3B ☑004

WO#301

SAMPLE STATUS REPORT FOR E 5691. E-BLANK 299W21-1. TIME: 4/ 4/94 9: 5
DISPATCHED: 3/14/94 9:25 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 4/94 8:33

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

BOBKH2
BOBKH5
BOBMZ4
WCS
4-4-94

9713515.2666

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKH2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 301 SAS No.: _____ SDG No.: W0012

Matrix: (soil/water) WATER Lab Sample ID: AA5277

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ADF05

Level: (low/med) LOW Date Received: 04/05/94

% Moisture: not dec. ____ Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	BJ
67-64-1	Acetone	7	BJ
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	1	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	19	
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	8	J
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

9713513.2667

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKH2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 301 SAS No.: _____ SDG No.: W0012

Matrix: (soil/water) WATER Lab Sample ID: AA5277

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ADF05

Level: (low/med) LOW Date Received: 04/05/94

% Moisture: not dec. ____ Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9213513.2488

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKH5

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 301 SAS No.: _____ SDG No.: W0012

Matrix: (soil/water) WATER Lab Sample ID: AA5278

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ADF06

Level: (low/med) LOW Date Received: 04/05/94

% Moisture: not dec. ____ Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	BJ
67-64-1	Acetone	17	B
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	3	J
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

85A

9715513.2669

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBKH5

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 301 SAS No.: _____ SDG No.: W0012

Matrix: (soil/water) WATER Lab Sample ID: AA5278

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ADF06

Level: (low/med) LOW Date Received: 04/05/94

% Moisture: not dec. ____ Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9713913.2610

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBM24

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 301 SAS No.: _____ SDG No.: W0012

Matrix: (soil/water) WATER Lab Sample ID: AA5279

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ADF07

Level: (low/med) LOW Date Received: 04/05/94

% Moisture: not dec. ____ Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

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

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	BJ
67-64-1	Acetone	7	BJ
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

92A

9713513.2671

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBM24

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 301 SAS No.: _____ SDG No.: W0012

Matrix: (soil/water) WATER Lab Sample ID: AA5279

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ADF07

Level: (low/med) LOW Date Received: 04/05/94

% Moisture: not dec. ____ Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9713513.2672

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKH6

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO283 SAS No.: SDG No.: W0012
Matrix (soil/water): WATER Lab Sample ID: AA5127
Level (low/med): LOW Date Received: 03/31/94
% 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
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic				NR
7440-39-3	Barium	30.8	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	21800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	266			P
7439-92-1	Lead				NR
7439-95-4	Magnesium	10700			P
7439-96-5	Manganese	11.3	B		P
7439-97-6	Mercury				NR
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	3610	B		P
7782-49-2	Selenium				NR
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	17100			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	14.2	B		P
7440-66-6	Zinc	8.9	B		P
	Titanium	3.0	U		P
5955-70-0	Cyanide				NR

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

Comments:
COMPLETE CLIENT I.D.: 40358701 (A-C)
UNFILTERED

FORM I - IN

ILM02.1

9715513.2613

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKH7

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO283 SAS No.: SDG No.: W0012
Matrix (soil/water): WATER Lab Sample ID: AA5124
Level (low/med): LOW Date Received: 03/31/94
% 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	88.8	B		P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic				NR
7440-39-3	Barium	34.2	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	25000			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	46.4	B		P
7439-92-1	Lead				NR
7439-95-4	Magnesium	12300			P
7439-96-5	Manganese	12.2	B		P
7439-97-6	Mercury				NR
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	4920	B		P
7782-49-2	Selenium				NR
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	19600			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	19.6	B		P
7440-66-6	Zinc	6.0	B		P
	Titanium	3.0	U		P
5955-70-0	Cyanide				NR

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

Comments:
COMPLETE_CLIENT_I.D.: 40358702A
FILTERED

FORM I - IN

ILM02.1

9715515.2604

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKH8

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO283 SAS No.: SDG No.: W0012
Matrix (soil/water): WATER Lab Sample ID: AA5122
Level (low/med): LOW Date Received: 03/31/94
% 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
7440-36-0	Antimony				NR
7440-38-2	Arsenic	10.4			F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	2.4	B		F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide				NR

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

Comments:
COMPLETE CLIENT I.D.: 40358202A
UNFILTERED

FORM I - IN

ILM02.1

9716513.2695

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKH9

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO283 SAS No.: SDG No.: W0012
Matrix (soil/water): WATER Lab Sample ID: AA5123
Level (low/med): LOW Date Received: 03/31/94
% 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
7440-36-0	Antimony				NR
7440-38-2	Arsenic	12.0			F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	2.0	U		F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide				NR

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

Comments:
COMPLETE_CLIENT_I.D.:_40358203A
FILTERED

FORM I - IN

ILM02.1

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	283
Sample Matrix:	Water	Analysis Date:	04/19/94
Concentration Units:	mg/l		

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6101	0.02	U
BOBKG7	AA5121	4.3	+
BOBKG8	AA5111	11	+
BOBKH6	AA5126	0.64	+

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

9716415.2697

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	301
Sample Matrix:	Water	Analysis Date:	04/19/94
Concentration Units:	mg/l		

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6101	0.02	U
BOBKG9	AA5288	3.8	+
BOBKH0	AA5290	0.14	+
BOBKH2	AA5284	17	+

+ - 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:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	283
Client Sample ID:	BOBKG8	Analysis Date:	04/24/94
Lab Sample ID:	AA5110	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.44	+	0.4
chloride	13	+	0.4
sulfate	35	+	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:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	283
Client Sample ID:	BOBKG7	Analysis Date:	04/24/94
Lab Sample ID:	AA5120	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.64	+	0.4
chloride	7.5	+	0.4
sulfate	24	+	1.5

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

9713513.2689

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	283
Client Sample ID:	BOBKH6	Analysis Date:	04/24/94
Lab Sample ID:	AA5125	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.67	+	0.4
chloride	11	+	0.4
sulfate	23	+	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:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	301
Client Sample ID:	BOBKH2	Analysis Date:	04/28/94
Lab Sample ID:	AA5283	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	21	+	0.8
sulfate	38	+	6.0

+ - 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:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	301
Client Sample ID:	BOBKG9	Analysis Date:	04/28/94
Lab Sample ID:	AA5287	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	8.7	+	0.8
sulfate	25	+	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:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	301
Client Sample ID:	BOBKH0	Analysis Date:	04/28/94
Lab Sample ID:	AA5289	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.4	U	0.4
chloride	12	+	0.8
sulfate	31	+	3.0

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

9215515 2684

INTERNATIONAL TECHNOLOGY CORPORATION

RECORD COPY

Analytical Data Package Prepared For

Westinghouse Hanford

Radiochemical Analysis By

IT Analytical Services
Richland Laboratory

MAY 1994 RECEIVED SDLA

Sample Delivery Group Number: W0012

WHC IDENTIFICATION NUMBER	ITAS RICHLAND ID NUMBER
BOBKG1	40347001
BOBKG2	40347002
BOBKG4	40347003
BOBKG5	40347004
BOBKH3	40353101
BOBKG3	40353102
BOBKG6	40353103
BOBKG8	40358301
BOBKH8	40358302
BOBKG7	40358303
BOBKH6	40358801
BOBKJ2	40358802
BOBKH2	40404001
BOBKG9	40404002
BOBKHO	40404003

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

IT Corporation is a wholly owned subsidiary of International Technology Corporation

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

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

May 25, 1994

Attention: J.A.Lerch

SAF Number	:	94-088
Date SDG Closed	:	April 6, 1994
Number of Samples	:	Fifteen (15)
Sample Type	:	Water
SDG Number	:	W0012
Data Deliverable	:	Stand Alone

I. Introduction

On March 23, 25, 29, and 30, 1994, and April 4, 1994, fifteen 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
403470-01A	B0BKG1	Water	3/23/94
403470-02A	B0BKG2	Water	3/23/94
403470-03A	B0BKG4	Water	3/23/94
403470-04A	B0BKG5	Water	3/23/94
403531-01A	B0BKH3	Water	3/25/94
403531-02A	B0BKG3	Water	3/25/94
403531-03A	B0BKG6	Water	3/25/94
403583-01A	B0BKG8	Water	3/29/94
403583-02A	B0BKH8	Water	3/29/93
403583-03A	B0BKG7	Water	3/29/93
403588-01A	B0BKH6	Water	3/30/94

403588-02A	B0BKJ2	Water	3/30/94
404040-01A	B0BKH2	Water	4/4/94
404040-02A	B0BKG9	Water	4/4/94
404040-03A	B0BKH0	Water	4/4/94

II. Analytical Results/Methodology

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

The requested analyses were:

Alpha Spectroscopy
Uranium-234, 235, 238 by method ITAS-RD-3234
Gamma Spectroscopy
Gamma Scan by method ITAS-RD-3219
Gas Proportional Counting
Strontium-90 by method ITAS-RD-3204
Liquid Scintillation Counting
Technetium-99 by method ITAS-IT-RS-0001
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0012 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

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

Alpha Spectroscopy

Uranium-234, 235, 238 by method ITAS-RD-3234
The batch was reanalyzed using reduced sample volume for B0BKJ2 and the duplicate of B0BKJ2. Due to the high activity of the sample the first analysis had produced unusable spectra. The reanalysis results are acceptable. The LCS, batch blank, and sample and sample duplicate results are within contractual limits.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
The LCS, batch blank, and sample and sample duplicate results are within contractual limits.

Gas Proportional Counting

Strontium-90 by method ITAS-RD-3204
The initial analysis of the batch is acceptable with the exeption of sample B0BKH3. Sample B0BKH3 was reanalyzed because the carrier was added to the sample twice causing the precipitate weight to be out of the required analytical range. The reanalysis results are acceptable. The LCS and batch blank results are acceptable. The sample and sample duplicate results are within the 3 sigma control limit.

Liquid Scintillation Counting

Technetium-99 by method ITAS-IT-RS-0001
Two matrix spikes were analyzed with the batch, only one (B0BKG9) was used for yield correction. The matrix spike of sample B0BKG2 is not used for yield correction because the activity of the sample was high enough that the spike that was added could not be measured. The LCS and batch blank results are acceptable. The sample and sample duplicate results are within the 3 sigma control limit.

Total Uranium

Total Uranium by method ITAS-RD-4200
Two matrix spikes were analyzed with the batch. Neither spike produced useable data due the high activity present in the sample (the samples were spiked with .09 μg of natural uranium and the activity for both samples measured approximately 1000 μg\L). No matrix spike yield correction was performed. The LCS, batch blank, sample and sample duplicate results were 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

9715566.2619

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0012
LAB SAMPLE ID: 4-03-470-01
MATRIX: WATER
WHC ID: BOBKG1
DATE RECEIVED: 3/23/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	1.96E+04	4.90E+01	2.14E+03	0.805	ITAS-IT-RS-0001
URANIUM	1.22E+03	N/A	1.83E+02	1	RD4200

LAB SAMPLE ID: 4-03-470-02
MATRIX: WATER
WHC ID: BOBKG2
DATE RECEIVED: 3/23/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	1.78E+04	4.44E+01	1.94E+03	0.805	ITAS-IT-RS-001
URANIUM	1.04E+03	N/A	1.56E+02	1	RD4200

LAB SAMPLE ID: 4-03-470-03
MATRIX: WATER
WHC ID: BOBKG4
DATE RECEIVED: 3/23/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	1.44E+04	3.63E+01	1.57E+03	0.805	ITAS-IT-RS-0001
URANIUM	9.44E+02	N/A	1.42E+02	1	RD4200

682A-6-93

9213513.2690

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

SAMPLE RESULTS

LAB SAMPLE ID: 4-03-470-04 **MATRIX:** WATER

WHC ID: BOBKG5 **DATE RECEIVED:** 3/23/94

REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	1.41E+04	3.54E+01	1.54E+03	0.805	ITAS-IT-RS-0001
URANIUM	4.07E+02	N/A	6.10E+01	1	RD4200

682A-6-93

9413513.2671

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0012
LAB SAMPLE ID: 4-03-531-01
MATRIX: WATER
WHC ID: BOBKH3
DATE RECEIVED: 3/25/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TOTAL-SR	1.45E+01	9.38E-01	3.46E+00	0.573	RD3204
TC-99	2.37E+04	5.96E+01	2.59E+03	0.805	ITAS-IT-RS-0001
URANIUM	1.69E+03	N/A	2.53E+02	1	RD4200

LAB SAMPLE ID: 4-03-531-02
MATRIX: WATER
WHC ID: BOBKG3
DATE RECEIVED: 3/25/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	1.33E+04	3.34E+01	1.46E+03	0.805	ITAS-IT-RS-0001
URANIUM	3.44E+02	N/A	5.16E+01	1	RD4200

LAB SAMPLE ID: 4-03-531-03
MATRIX: WATER
WHC ID: BOBKG6
DATE RECEIVED: 3/25/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	7.18E+03	1.87E+01	7.86E+02	0.805	ITAS-IT-RS-0001
URANIUM	1.43E+02	N/A	2.15E+01	1	RD4200

682A-6-93

9413513.2612

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0012
LAB SAMPLE ID: 4-03-583-01
MATRIX: WATER
WHC ID: BOBKG8
DATE RECEIVED: 3/29/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	6.46E+02	5.93E+00	7.39E+01	0.805	ITAS-IT-RS-0001
URANIUM	2.58E+02	N/A	3.87E+01	1	RD4200

LAB SAMPLE ID: 4-03-583-02
MATRIX: WATER
WHC ID: BOBKH8
DATE RECEIVED: 3/29/94
REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	5.26E-01	1.25E+00	5.11E+00	0.805	ITAS-IT-RS-0001

LAB SAMPLE ID: 4-03-583-03
MATRIX: WATER
WHC ID: BOBKG7
DATE RECEIVED: 3/29/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	2.09E+02	3.41E+00	2.64E+01	0.805	ITAS-IT-RS-0001
URANIUM	3.70E+01	N/A	5.55E+00	1	RD4200

9413515.2653

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0012
LAB SAMPLE ID: 4-03-588-01
MATRIX: WATER
WHC ID: BOBKH6
DATE RECEIVED: 3/30/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
K-40	8.70E+01	7.56E+01	7.61E+01	N/A	RD3219
CO-60	-1.47E+00	3.94E+00	3.94E+00	N/A	RD3219
FE-59	-6.43E-01	1.16E+01	1.16E+01	N/A	RD3219
EU-152	-9.74E+00	2.46E+01	2.46E+01	N/A	RD3219
CO-58	-4.71E-01	5.73E+00	5.73E+00	N/A	RD3219
CS-137DA	-2.07E+00	3.90E+00	3.90E+00	N/A	RD3219
CS-134	4.07E+00	2.87E+00	2.90E+00	N/A	RD3219
RU-106DA	6.46E+00	3.86E+01	3.86E+01	N/A	RD3219
NA-22	-1.97E+00	3.68E+00	3.68E+00	N/A	RD3219
EU-155	-1.01E+00	6.94E+00	6.94E+00	N/A	RD3219
EU-154	-5.47E+00	1.02E+01	1.02E+01	N/A	RD3219
TC-99	1.92E+02	3.28E+00	2.47E+01	0.805	ITAS-IT-RS-0001
URANIUM	5.37E+00	N/A	8.05E-01	1	RD4200

LAB SAMPLE ID: 4-03-588-02
MATRIX: WATER
WHC ID: BOBKJ2
DATE RECEIVED: 3/30/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
U-234	1.07E+03	5.73E+01	1.66E+02	0.543	RD3234
U-235	4.67E+01	1.20E+01	1.38E+01	0.543	RD3234
U-238DA	1.07E+03	5.72E+01	1.65E+02	0.543	RD3234
TC-99	8.28E+03	2.08E+01	9.05E+02	0.805	ITAS-IT-RS-0001
URANIUM	2.70E+03	N/A	4.05E+02	1	RD4200

9715013.2694

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0012
LAB SAMPLE ID: 4-04-040-01
MATRIX: WATER
WHC ID: BOBKH2
DATE RECEIVED: 4/4/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TOTAL-SR	-6.11E-02	4.95E-01	4.95E-01	0.514	RD3204
TC-99	8.75E+01	2.41E+00	1.35E+01	0.805	ITAS-IT-RS-0001
URANIUM	4.17E+00	N/A	6.25E-01	1	RD4200

LAB SAMPLE ID: 4-04-040-02
MATRIX: WATER
WHC ID: BOBKG9
DATE RECEIVED: 4/4/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	2.42E+02	3.62E+00	3.00E+01	0.805	ITAS-IT-RS-0001
URANIUM	3.86E+00	N/A	5.78E-01	1	RD4200

LAB SAMPLE ID: 4-04-040-03
MATRIX: WATER
WHC ID: BOBKH0
DATE RECEIVED: 4/4/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	2.11E+02	3.43E+00	2.66E+01	0.805	ITAS-IT-RS-0001
URANIUM	2.44E+02	N/A	3.66E+01	1	RD4200

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-0149 page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): GB 5/24/94

PARAMETER(S): SVTOT

SAMPLE NUMBER(S) AFFECTED: -40353101

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): Double carrier rerun.
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

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

PROJECT MANAGER (signature & date): Suzy Daines 5/25/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

IT CORPORATION

LOG #: RD-94-0149 page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE SE 5/25/94

Double carrier. -- ppt wt too high to calc. rxt. sat absorption curve. Reanalysis req.

☒ CORRECTIVE ACTION: INITIALS/DATE SE 5/25/94

Report reanalysis

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: [signature] DATE: 5/25/94

RESPONSIBLE MANAGER: [signature] DATE: 5/25/94

QC REVIEW

☒ NONCONFORMANCE ☐ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED

ASSIGNED TO

QC COORDINATOR: [signature] DATE: 5/25/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/25/94

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

9713515.2675

0129

INTERNATIONAL TECHNOLOGY CORPORATION

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

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

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

PARAMETER(S): U150

SAMPLE NUMBER(S) AFFECTED: 40358801 W0012

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): activity too high to analyze by ct rm
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): Sang Haines 5/6/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9716915.2697

IT CORPORATION

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

CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE JMM 5-5-94

sample activity too high to reliable

☐ CORRECTIVE ACTION: INITIALS/DATE JMM 5-5-94

Rerun at reduced vol.

reran [illegible] 5-5-94 JMM

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

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

RESPONSIBLE MANAGER: W. MacKelle DATE: 5/19/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED.

ASSIGNED TO.

QC COORDINATOR: Jodie Cox DATE: 5/20/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cox DATE: 5/20/94

0032

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

INTERNATIONAL TECHNOLOGY CORPORATION 7159 13.2679

0328

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

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): STi 5/19/95

PARAMETER(S): Tc99

SAMPLE NUMBER(S) AFFECTED: W0347002

MATRIX: H_2O

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): Sample activity much greater than spk level in MS.
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 Daines 5/20/94

0033

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

9715515.2679

IT CORPORATION

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

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE SB 5/19/94

High sample level. completely swamped spike levels

☒ CORRECTIVE ACTION: INITIALS/DATE SB 5/19/94

Use other MS for chemical yield.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: [signature] DATE: 5/19/94.

RESPONSIBLE MANAGER: W MacKell DATE: 5/23/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cor DATE: 5/24/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cor DATE: 5/24/94

0034

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

9716013.2710

INTERNATIONAL TECHNOLOGY CORPORATION

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

0311

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): P Kenitzer 5-10-94

PARAMETER(S): U nat

SAMPLE NUMBER(S) AFFECTED: 403470, 403531, 403588, 404040, 403583

MATRIX: water W0347001 + 02 W0012

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): Two matrix spikes considered lost. We will assume 100% yield on the samples reagent spike OK
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

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

PROJECT MANAGER (signature & date): Suzy Davies 5/16/94

0035

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

IT CORPORATION

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

CORRECTIVE ACTION

[X] ROOT CAUSE: INITIALS/DATE PK 5-11-94

2 samples were spiked with .09 µgm of U nat. The samples read ~1000.00 µgm/L. The spike was lost in such a high sample.

[ ] CORRECTIVE ACTION: INITIALS/DATE _____

[ ] RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

[X] ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE PK 5-11-94

In the future, using screening data, the prep tech will try to find a sample to use as a matrix spike that has few alpha counts, or use a higher level spike

FIRST LEVEL SUPERVISOR: Pam Kemitzer DATE: 5-11-94

RESPONSIBLE MANAGER: W Mackelle DATE: 5/19/94

QC REVIEW

[ ] NONCONFORMANCE [X] DEFICIENCY [ ] RERUN

[ ] FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cor DATE: 5/20/94

CORRECTIVE ACTION VERIFICATION

[X] VERIFIED [ ] CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cor DATE: 5/20/94

0036

SIGNED ORIGINAL MUST BE RETAINED IN FILE: [ ] QUALITY/OPERATIONS FILE [X] PROJECT FILE

9713513.2712

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 03/22/94

Ice Chest No. GWS141

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-~~20~~21 LCB 3/23/94

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG1
1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

4034700 1

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
B. WHITTEN	3/23/94	0850	L Sweeney / Sweeney	3/23/94	0850
L Sweeney / Sweeney	3/22/94	1155	Karen Hottenberg IT	3-23-94	11:50

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. Samples stored in frig. #3C by K.D. Lee 03/22/94 1454

0038

A-6000-407 (12/92) WEF061

9715513.2235

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector _____ Date Sampled 03/22/94 Time 1120 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK61	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl) 4034 7001
			OPC: W94-C-0336-21
			BOL: NONE
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____ 0039

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9413515.2714

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/22/94

Ice Chest No. GWS141

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-21

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG2
1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40347002

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] B. Whitmer	3/23/94	0850	L Sweeney L Sweeney	3/23/94	0850
L Sweeney L Sweeney	3/23/94	1155	[illegible]	3-23-94	11:50

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. Samples stored in frig. # 3C by K.O. Lee 3/22/94 1459

A-6000-407 (12/92) WEF061

9213513.2215

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector _____ Date Sampled 03/22/94 Time 1300 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK02	1; 2L; P	WATER	TOTAL URANIUM (HNO3) 40347002
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC: W94-C-0336-21
			BOL: NONE
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

0041

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9413033.2736

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Project Designation/Sampling Locations 200-UP-1

Ice Chest No. GWS141

Bill of Lading/Airbill No. NONE

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Telephone (509) 376-5045

Collection Date 03/22/94

Field Logbook No. EFL-1124

Offsite Property No. W94-0-0336-21

Sample Identification

BOBKG4

1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40347003

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
B. WHITTON	3/23/94	0850	L Sweeney	3/23/94	0850
L Sweeney	3/23/94	1155	Karen Aschtenberg	3-23-94	11:50

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. samples stored in frig. # 3C by K.D. Lee 03/22/94 1459

A-6000-407 (12/92) WEF061

9715513.037

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector _____ Date Sampled 03/22/94 Time 1215 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BKG4	1; 2L; P	WATER	TOTAL URANIUM (HNO3) 40347-003
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC: W94-0-0336-21
			BOL: NONE
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

0043

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9715313.2739

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/22/94

Ice Chest No. GWS141

Field Logbook No. EFC-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-21

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK G5

1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40347004

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] B WHITTER	3/23/94	0850	L Sweeney L Sweeney	3/23/94	0850
L Sweeney L Sweeney	3/23/94	1155	[illegible]	3-23-94	11:50

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. Samples stored in Frig. #3C by K D Lee 3/22/94 1459

A-6000-407 (12/92) WEF061

9713513.2739

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector _____ Date Sampled 3/22/94 Time 1326 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK65	1; 2L; P	WATER	TOTAL URANIUM (HNO3) 46347004
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC: W94-0-0336-21
			BOL: NONE
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

0045

A-6000-406(05/90)

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
		11FU-0-[illegible]36-21

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
[illegible] Tech	[illegible]	[illegible] Hyper[illegible]

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

Routing [illegible] ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
ITA [illegible] Services DOE Geo. WA WAY. Richland, WA 9352	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 ea	Sample No.: BURR-4, BURR-5, BURR-6, BURR-7, Loc'n ID: GW 3141 [illegible]	

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

Necessity for the Off-Site Use of this Property

[illegible] FI/FS work in the DOE AREA

(no Railway)

[illegible] TCGA.

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

RM Clearance for Public Release	RM Survey No.	Date
[illegible]	[illegible]	[illegible]

Location of Property (Area & Bldg.)	Contact	Phone
DOE-UR-1	KUPH Butcher	509 376-[illegible]

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
3-[illegible]	WS[illegible] PTIFA	NA

Originated By	Date	Authorized By	Date
[illegible]	3-[illegible]	[illegible]	3-23-94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		[illegible]	[illegible]

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

0046

54-3000-479 (09/89)

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) WF94-0-0336-21

PART I – TO BE COMPLETED BY ORIGINATOR

Department Env. Eng. & Tech	Section Geosciences	Unit GeoChem & HydroChem.
The following items are to be shipped from	☒ Contractor	☐ Vendor
Routing Hand Deliver	☒ Contractor	☐ Vendor
Shipped to IT Analytical Services 2800 Geo. WA. WAY. Richland, WA 99352	Off-site Custodian	
	Full Title	

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 lbs	Sample No.: B0BKG4, B0BKG5, B0BKG3, B0BKG1, Cooler ID: GWS141 Polycooler with groundwater samples packed in wet ice and vermiculite.	

☐ 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

No Bill of Lading

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

RM Clearance for Public Release [illegible]	RM Survey No 15757	Date 3/23/94
Location of Property (Area & Bldg.) 200-UP-1	Contact P. H Butcher	Phone (509) 376-8829
Date Ready for Shipment 3/23/94	Cost Code to be Charged W81232 PTIFA	Approximate Date This Property will be Returned NA
Originated By PH Butcher	Date 3/23/94	Authorized By P.H Butcher	Date 3-23-94
Signature and Name of Property Control	Custodian Date	Property Management Approval [illegible]	Date 3/23/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient [illegible] Date 3/23/94 1450	Return Order No.	Date Issued	Purchase Order No.	Date Issued

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

0047

54-3000-479 (09/89)

9216513.2712

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 3/23 1150 Client Name WHC

Project/Client # 94-088 Batch or Case # na

Cooler ID (if noted on the outside of cooler) GWS141

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: _____
8. Samples have: ____ tape ____ hazard labels
   ✓ custody seals ____ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 6° (na Radoney)

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

Printed Name/Signature Jami Heidelberg Date/Time 3/23 1150

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

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Cust Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			32494		324	10	8	112	120

Customer ID	pH <2 Rcvd/Relq	Plncht Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
WHC/WATER																				
B0BKG4		8.6	5	1.5	37	29	546	2.83	53.67	1.1E+01	1.1E+02	1.5E-03	1.5E-02	7.7E-07	1.8E-06	9.7E+02	1.0E+04	Yes	1.0E+01	9.7E+00
B0BKG5		10.5	5	1.5	38	20	501	1.93	49.17	7.1E+00	1.1E+02	9.6E-04	1.4E-02	6.3E-07	2.0E-05	6.4E+02	9.5E+03	Yes	1.6E+01	1.1E+01
B0BKG1		13.0	5	1.5	39	41	695	4.03	68.57	1.7E+01	1.5E+02	2.3E-03	2.0E-02	1.0E-06	1.4E-05	1.5E+03	1.3E+04	Yes	6.6E+00	7.6E+00
B0BKG2		11.9	5	1.5	40	35	663	3.43	65.37	1.4E+01	1.4E+02	1.9E-03	1.9E-02	9.1E-07	1.6E-05	1.2E+03	1.3E+04	Yes	8.1E+00	7.9E+00
TOTAL	uCi							-0.07	-0.93	-2E-01	-2E+00	6.5E-03	6.8E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

Cat I
Mary Lordy
3-24-94

0049

2127514

9713415.2714

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/23/94

Ice Chest No. SMC118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NA

Offsite Property No. W94-0-03-36-2f

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK H3

1; 2L; P; WATER; TOTAL URANIUM (HNO3)
3; 1L; P; WATER; Sr-90 (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40353101

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
G G Amundson	3/23/94	1445	D. St. John	3-23-94	1445
D. St. John	3/25/94	0801	L Sweeney	3/25/94	0801
L Sweeney	3/25/94	1335	[illegible]	3/25/94	1335

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone STORED Frig #3b @ 1502 3/23/94

0050

A-6000-407 (12/92) WEF061

9713513.2215

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: GG HAMILTON Date Sampled: 3/27/94 Time: 1210 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BKH3	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	3; 1L; P	WATER	Sr-90 (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC: WU94-0-0336-24
			BOL: NA
			SAF: 94-088

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

0051

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

SAMPLE STATUS REPORT FOR E 5686. E-BLANK 299W1924 TIME: 3/24/94 7:55
DISPATCHED: 3/14/94 9:22 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/24/94 7:37

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
1271	TOT-ACT	< 5.00000E 01 pCi/G	N	Y	VOGEL

END OF REPORT

BOBKH3
LCS
3/25/94

9215515.2717

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator GG Hamilton

Company Contact PH BUTCHER

Project Designation/Sampling Locations 200-UP-1

Ice Chest No. SMC-118

Bill of Lading/Airbill No. NA

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Telephone (509) 376-5045

Collection Date 3/23/94

Field Logbook No. EFL 1124

Offsite Property No. W94-0-0336-24

Sample Identification

BOBKG3
1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40353102

[X] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
GG Hamilton	3/23/94	1444	D. St. John	3-23-94	1444
D. St. John	3/25/94	0802	L. Sweeney	3/25/94	0801
L. Sweeney	3/25/94	1355	[illegible]	3/25/94	13:45

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. Stored Frig. #36 @ 1502 3/23/94

0053

A-6000-407 (12/92) WEF061

9715515.2778

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: G G Hamilton Date Sampled: 3/23/94 Time: 0945 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BKG3	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC: W94-0-0336-24
			BOL: NA
			SAF: 94-088

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

0054

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9/15/13.2219

SAMPLE STATUS REPORT FOR E 5685. E-BLANK 299W1923 TIME: 3/24/94 7:55
DISPATCHED: 3/14/94 9:21 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/24/94 7:37

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

BOBKG3
LCS
3/25/94

9716513.2710

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector _____ Date Sampled 3/24/94 Time 0906 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BKG6	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC: W94-0-0336-24
			BOL: NA
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9716513.2721

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/24/94

Ice Chest No. SMC118

Field Logbook No. FFL-1124

Bill of Lading/Airbill No. NA

Offsite Property No. W94-0-0336-24

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG6
1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40353103

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
K.A. Lee K.A. Lee	03/25/94	0722	L Sweeney L Sweeney	3/25/94	0722
L Sweeney L Sweeney	3/25/94	1335	[illegible] TAS	3/25/94	13:45

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. Samples stored in Bldg. 3C by K.A. Lee 3/24/94 1417

A-6000-407 (12/92) WEF061

SAMPLE STATUS REPORT FOR E 5690. E-BLANK 299W1930 TIME: 3/25/94 8:25
DISPATCHED: 3/14/94 9:24 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/24/94 14:59

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

BOBKG6
LCS
3/25/94

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-0-0336-24

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Env. Eng. & Tech	Geosciences	Geo Chem & Hydrochem

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

Routing Hand Deliver ☒ Contractor ☐ Vendor

Shipped to IT Analytical Svcs. 2800 Geo WA. WAY Richland, WA 99352

Off-site Custodian

Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample No.: B0BKG6, B0BKG3, B0BKH3, Cooler ID: SMC118 Polycooler with ground water samples packed in wet Ice and vermiculite.	NA

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

Necessity for the Off-Site Use of this Property

Samples supports RI/FS work in the 200 AREA

No Bill of Ladins

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]	157-26	1/1/94

Location of Property (Area & Bldg.)	Contact	Phone
200-UP-1	PH Butcher	

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
3/25/94	W81232 / PT1FA	NA

Originated By	Date	Authorized By	Date
PH Butcher	3/25/94	P.H. Butcher	3-25-94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
Karen Hattenburg		[illegible]	3/25/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Karen Hattenburg TAS				
Date 3-25-94 13:45				

0059

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)

9213513.2724

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(Per Shipping Container)

Date/Time Received 3/25/94 1345 Client Name WHC

Project/Client # SAF 94-088 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) SMC 118

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: 9
8. Samples have: ____ tape ____ hazard labels
   ☒ custody seals ☒ appropriate sample labels
9. Samples are: ☒ 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 Tom Gilmore [signature] Date/Time 3/25/94 1345

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

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

All are Category I
JRN 29 Mar 94

1900

Customer Code	Recieved Date	Recieved Time	Screening Prep Date	Screening Prep Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	BACKGROUND Beta	BACKGROUND Mnts
WHC			32894		328	10	15	204	240

Customer ID	pH <2 Rcvd/Relq	Pincht 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
WHC/WATER																				
B0BKG3		14.7	5	1.5	51	22	467	2.14	45.85	8.7E+00	9.9E+01	1.2E-03	1.3E-02	7.2E-07	1.6E-06	7.9E+02	8.9E+03	Yes	1.3E+01	1.1E+01
B0BKG6		11.3	5	1.5	52	14	284	1.34	27.55	5.2E+00	5.9E+01	7.1E-04	8.0E-03	5.2E-07	1.1E-05	4.7E+02	5.3E+03	Yes	2.1E+01	1.9E+01
B0BKH3		12.4	5	1.5	53	66	744	6.54	73.55	2.8E+01	1.6E+02	3.8E-03	2.1E-02	1.4E-06	9.4E-06	2.5E+03	1.4E+04	Yes	3.9E+00	7.1E+00
WHC/LIQ																				
B0BKZ7		74.4	5	0.2	54	1	12	0.04	0.35	3.2E-01	8.1E-01	5.7E-06	1.5E-05	2.0E-08	4.3E-08	2.9E+01	7.3E+01	Yes	3.5E+02	1.4E+03
TOTAL	uCi							-0.06	-0.85	-2E-01	-2E+00	5.7E-03	4.2E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

9715613.2736

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/28/94

Ice Chest No. SMC118

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-C-0336-25

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG9 40358201

1; 500mL; G; WATER; ANIONS (IC)-NO3 A

1; 500mL; P; WATER; NO3 (H2SO4) B

1; 2L; P; WATER; TOTAL URANIUM (HNO3) 40358301 A

1; 1L; P; WATER; Tc-99 (HCl) B

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[signature] B. WHITTEN	3/28/94	1444	[signature] AJ SIMPSON	3/28/94	1444
[signature] AJ SIMPSON	3/29/94	0720	[signature] L Sweeney	3/29/94	0720
[signature] L Sweeney	3/29/94	1430	[signature]	3-29-94	1440

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone Relinq to Fnl #3A By BILL WHITTEN 3/29/94

0062

A-6000-407 (12/92) WEF061

9716016.2737

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector _____ Date Sampled _____ Time _____ hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BKG9	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC: W194-0-C336c-25
			BOL: NONE
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

0063

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9713515.2228

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 03/25/94

Ice Chest No. SMC118

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-25

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK H8

1; 1L; P; WATER; Tc-99 (HCl) 40358302A

1; 1L; P; WATER; GFAA METALS (HNO3) UNFILTERED 40358202A

BOBK H9

1; 1L; P; WATER; GFAA METALS (HNO3) FILTERED 40358203A

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] B. WHITEN	3/28/94	0720	D. Sweeney L. Sweeney	3/28/94	0720
D. Sweeney L. Sweeney	3/29/94	1430	R. Boyd	3-29-94	1440

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

Data Deliverable-Standalone samples stored in Frig. #3C by K.D. Lee 3/25/94

A-6000-407 (12/92) WEF061

9214515.2779

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector B. T. WHITTEN Date Sampled 03/25/94 Time 1037 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK 48	1; 1L; P	WATER	Tc-99 (HCl)
	1; 1L; P	WATER	GFAA METALS (HNO3) UNFILTERED
B0BK 49	1; 1L; P	WATER	GFAA METALS (HNO3) FILTERED
			OPC: W94-0-0336-25
			BOL: NONE
			SAF: 94-088

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Title Date

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

0065

A-6000-406(05/90)

9216515.2750

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Project Designation/Sampling Locations 200-UP-1

Ice Chest No. SMC-118

Bill of Lading/Airbill No. NONE

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Telephone (509) 376-5045

Collection Date 3/28/94

Field Logbook No. EFL 1124

Offsite Property No. W94-0-0336-25

Sample Identification

BOBKG7

1; 500mL; G; WATER; ANIONS (IC)-NO3 A 40358204.
1; 500mL; P; WATER; NO3 (H2SO4) B
1; 2L; P; WATER; TOTAL URANIUM (HNO3) 40358303 A
1; 1L; P; WATER; Tc-99 (HCl) B

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
R.L. Whitten R.L. WHITTEN	3/28/94	1445	A.J. Simpson A.J. SIMPSON	3/28/94	1445
A.J. Simpson A.J. SIMPSON	3/29/94	0720	L. Sweeney L. Sweeney	3/29/94	0720
L. Sweeney L. Sweeney	3/29/94	1430	R. Byd IT	3-29-94	1440

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone Reling to Frig # 3A By R.L. WHITTEN 3/28/94

0066

A-6000-407 (12/92) WEF061

9716513.2751

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector _____ Date Sampled 3/28/94 Time 1105 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK57	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC:
			BOL:
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

SAMPLE STATUS REPORT FOR E 5676. E-BLANK 299W199 TIME: 3/29/94 8:31
DISPATCHED: 3/14/94 9:17 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 3/28/94 13:29

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

BOBKG7

LCS 3/29/94

~~3/15~~

9713515.2785

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 3/29 1440 Client Name WHC

Project/Client # SAF 94-088 Batch or Case # na

Cooler ID (if noted on the outside of cooler) SML118

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
   ✓ custody seals ____ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☒ No ☐

Sample temperature 70°

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

Printed Name/Signature Tim Heidelberg Date/Time 3/29 @ 1445

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

9716913.2754

W0012

SAMPLE RECEIPT VARIANCE REPORT
ITAS-RICHLAND LABORATORY

WORK ORDER NUMBER: 4-03-583 DATE INITIATED: 3-29-94

INITIATED BY: Heidelberg

DATE/TIME OF SAMPLE (AND/OR RFA & COC) RECEIPT: _____

CLIENT SAMPLE NUMBER	RFA/COC NUMBERS	ANALYSIS REQUESTED

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 at 7°. BOB1K6-8 has no sample date or time filled out. Containers have 3-28 @ 12:00 which will be used for login.

SUPERVISOR REVIEW: Tami Heidelberg

PROJECT MANAGER REVIEW: Suzy Haines 5/11/94

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

0070

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			33094		330	10	15	225	240

All category I
JRM 30 Mar 94

Customer ID	pH <2 Rcvd/Reiq	Pincht 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
WHC/WATER																						
B0BKH8		1.9	5		1.5		35	2	9	0.14	-0.04	5.5E-01	-2E-01	7.4E-05	-2E-05	1.3E-07	-4E-08	4.9E+01	-2E+01	Yes	2.0E+02	-6E+03
B0BKG7		2.4	5		1.5		36	4	14	0.34	0.46	1.3E+00	7.6E-01	1.8E-04	1.0E-04	2.2E-07	7.6E-08	1.2E+02	6.9E+01	Yes	8.3E+01	1.5E+03
B0BKG8		3.1	5		1.5		37	10	40	0.94	3.06	3.7E+00	5.9E+00	5.0E-04	8.0E-04	3.8E-07	5.4E-07	3.3E+02	5.3E+02	Yes	3.0E+01	1.9E+02
TOTAL	uCi									-0.06	-0.94	-2E-01	-2E+00	7.6E-04	8.8E-04	ERR	ERR	ERR	ERR	Yes	ERR	ERR

0071

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT) W94-0-0336-25

PART I – TO BE COMPLETED BY ORIGINATOR

Department: Eng & Tech	Section: (F.S) Aeosciences	Unit: Geo Chem & Hydrochem

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

Routing: Hand Deliver ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
Analytical Services 1400 Geo Way Richland, WA 99352	
	Full Title

Qu	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample No.: BOBKG7, BOBKG8, BOBKH8, BOBKH9 Cooler ID: SMLI18 Poly Cooler with groundwater samples packed in wet ice and vermiculite	

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

Necessity for the Off-Site Use of this Property: supports RI/FS work in the 200 ~~[illegible]~~ AREA LCS 3/29/94

No Bill of Lading

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

RM Clearance for Public Release: Julie Kidwin	RM Survey No. 157600	Date 3/29/94
Location of Property (Area & Bldg): 200 [illegible]	Contact: PH Butcher	Phone 376-1388
Date Ready for Shipment: 3/29/94	Cost Code to be Charged: 88410 / PTFA	Approximate Date This Property will be Returned: NA
Originator: PH Butcher	Date: 3/29/94	Authorized By: AJ Simpson — Date 3/29/94
Signature and Name of Property Control	Custodian Date	Property Management Approval: JP Hankel — Date 3/29/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient: [illegible] JT	Return Order No.	Date Issued	Purchase Order No.	Date Issued
Date: 3-29-94 1430				

DISTRIBUTION

0072

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)

9715515.2757

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3-29-94

Ice Chest No. SMC-118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-26

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK H6

1; 500mL; G; WATER; ANIONS (IC)-NO3 A 40358701

1; 500mL; P; WATER; NO3 (H2SO4) B 40358801 A

1; 2L; P; WATER; TOTAL URANIUM (HNO3)

3; 1L; P; WATER; GAMMA SPEC. to include Co-58/60, Cs-137, Eu-152/154/155, Fe-59 (HNO3) B

1; 1L; P; WATER; Tc-99 (HCl) C

1; 1L; P; WATER; ICP METALS (HNO3) UNFILTERED C

BOBK ~~H6~~ H7 Dup 3-29-94

1; 1L; P; WATER; ICP METALS (HNO3) FILTERED 40358702A

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[signature] C. WHITTEN	3/29/94	1313	[signature] AJ SIMPSON	3/29/94	1313
[signature] AJ SIMPSON	3/30/94	0904	[signature] L Sweeney	3/30/94	0904
[signature] L Sweeney	3/30/94	1030	[signature] D Gilmore	3/30/94	1025

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

Data Deliverable-Standalone Placed in Refrig 3C by AJ SIMPSON 3/29/94 1313

A-6000-407 (12/92) WEF061

9715515.2759

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: B.T. WHITTEN Date Sampled: 3/29/94 Time: 1207 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK H6	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	3; 1L; P	WATER	GAMMA SPEC: Co-58/60, Cs-137, Eu-152/154/155,
			Fe-59 (HNO3)
	1; 1L; P	WATER	ICP METALS (HNO3) UNFILTERED
	1; 1L; P	WATER	Tc-99 (HCl)
B0BK H7	1; 1L; P	WATER	ICP METALS (HNO3) FILTERED
			OPC: U194-0-0336-26
			BOL: NOWF
			SAF: 94-088

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Title Date

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

0074

A-6000-406(05/90)

9 1 6 5 1 3 . 2 7 5 9

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Project Designation/Sampling Locations 200-UP-1

Ice Chest No. SML-118

Bill of Lading/Airbill No. NONE

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Telephone (509) 376-5045

Collection Date 3/29/94

Field Logbook No. EFL 1124

Offsite Property No. W94-0-0336-26.

Sample Identification

BOBKJ2

1; 2L; P; WATER; TOTAL URANIUM (HNO3) A 40358802

1; 1L; P; WATER; Tc-99 (HCl) B

3; 1L; P; WATER; U-234/235/238 (HNO3) C

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
R. Butcher	3/29/94	1313	AJ Simpson AJ SIMPSON	3/29/94	1313
AJ Simpson AJ SIMPSON	3/30/94	0904	L Sweeney L Sweeney	3/30/94	0904
L Sweeney L Sweeney	3/30/94	1030	~~[illegible]~~	3/30/94	1025

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:
	—	

Comments:
Data Deliverable-Standalone. ~~Relinq to FRIR~~ ~~By~~ BW 3-29-94
FRIR #3C by AJ SIMPSON

0075

A-6000-407 (12/92) WEF061

9213513.2230

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector B.J. WHITTEN Date Sampled 3/29/94 Time 0935 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
BOBK J2	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
	3; 1L; P	WATER	U-234/235/238 (HNO3)
			OPC: W94-0-0336-26
			BOL: NONE
			SAF: 94-088

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

0076

A-6000-406(05/90)

9715515.2791

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2300 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(Per Shipping Container)

Date/Time Received 3/30/94 1025 Client Name WHC

Project/Client # 94-088 Batch or Case # N/A

Cooler ID (if noted on the outside of cooler) SML118

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 ☑ Samples all in one bag - not individu
7. Number of sample containers in cooler: 12
8. Samples have: ✓ tape ____ hazard labels ✓ custody seals ✓ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking ____ broken ____ have air bubbles ____ other
10. Coolant present? Yes ☑ No ☐

Sample temperature 8°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 Tom Gilmore [signature] Date/Time 3/30/94 1025

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

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

8100

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			33094		330	10	15	225	240

Both Category I
JRN 30 Mar 94

Customer ID	pH <2 Rcvd/Reiq	RESIDUE Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Counts Alpha	Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
WHC/WATER																				
B0BKJ2		4.2	5	4.0	44	53	288	5.24	27.86	2.1E+01	5.6E+01	7.5E-03	2.0E-02	2.8E-06	3.1E-06	1.9E+03	5.1E+03	Yes	5.3E+00	2.0E+01
B0BKH6		1.3	5	4.0	45	4	16	0.34	0.66	1.3E+00	1.2E+00	4.7E-04	4.3E-04	5.6E-07	3.8E-07	1.2E+02	1.1E+02	Yes	8.5E+01	9.3E+02
TOTAL	uCi							-0.06	-0.94	-2E-01	-2E+00	8.0E-03	2.1E-02	ERR	ERR	ERR	ERR	Yes	ERR	ERR

9715415.2243

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 4-1-94

Ice Chest No. SMC 118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-30

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

40403901
BOBK H2
ABC 3; 40mL; Gs; WATER; VOA (HCl)
D 1; 500mL; G; WATER; ANIONS (IC)-NO3
E 1; 500mL; P; WATER; NO3 (H2SO4)
40404001 1; 2L; P; WATER; TOTAL URANIUM (HNO3)
3; 1L; P; WATER; Sr-90 (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

BOBK H5
40403902 A 3; 40mL; Gs; WATER; VOA (HCl)
B
C

BOBM Z4 3; 40mL; G WATER VOA (HCL)
40403903 A
B
C

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	4/1/94	1350	L Sweeney L Sweeney	4/1/94	1350
L Sweeney L Sweeney	4-4-94	1140 ~~0930~~	R. Boyd JT	4/4/94	1140

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone

Placed in Refrig 3C temp. OK AJS 4/1/94

A-6000-407 (12/92) WEF061

9713553.2744

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: B.T. WHITTEN Date Sampled: 4/1/94 Time: 1210 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BK H2	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
	3; 1L; P	WATER	Sr-90 (HNO3)
	3; 40mL; P	WATER	VOA (HCl)
B0BK H5	3; 40mL; P	WATER	VOA (HCl)
B0BM Z4	3; 40mL; G	WATER	VOA (HCL)
			OPC: W94-0-0336-30
			BOL: NONE
			SAF: 94-088

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Title Date

Analysis Required

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

9413513.2755

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 4-1-94

Ice Chest No. SMC118

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-C-C336-30

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

40403904
BOBKG9
A 1; 500mL; G; WATER; ANIONS (IC)-NO3
B 1; 500mL; P; WATER; NO3 (H2SO4)
40404002 1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

~~BOBM24 3, 40 mL 6 water VOA (HCL)~~ BW 4-1-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] Swanner	4/1/94	1350	L Sweeney / Sweeney	4/1/94	1350
L Sweeney / Sweeney	4-4-94	~~0730~~ 1140	R. Benjil IT	4/4/94	1140

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone

Placed in Refrig 3C AJ SIMPSON 4/1/94 Temp OK

A-6000-407 (12/92) WEF061

9213113.2276

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: B.T. WHITTEN Date Sampled: 4/1/94 Time: 1058 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BKG9	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
~~B0BM24~~	~~3; 40 mL G~~	~~water~~	~~VOA (HCl)~~ BW 4-1-94
			OPC: W94-0-0336-3/1
			BOL: NONE
			SAF: 94-088

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

0082

A-6000-406(05/90)

9413515.2747

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 4-1-94

Ice Chest No. SMC-118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No.

Offsite Property No. W94-0-0336-30

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

40403405
BOBKH0
A 1; 500mL; G; WATER; ANIONS (IC)-NO3
B 1; 500mL; P; WATER; NO3 (H2SO4)
40404003 1; 2L; P; WATER; TOTAL URANIUM (HNO3)
↓ 1; 1L; P; WATER; Tc-99 (HCl)

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] B. WHITE	4/1/94	1350	L Sweeney L Sweeney	4/1/94	1350
L Sweeney L Sweeney	4-4-94	~~0938~~ 1140 LCS	R. Boyd IT	4/4/94	1140

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone

Placed in Refrig 3C Temp. OK AJ Simpson 4/1/94

A-6000-407 (12/92) WEF061

0083

9713515.2749

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: B.T. WHITTEN Date Sampled: 4/1/94 Time: 1115 hours

Company Contact: P. H. Butcher Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B0BKH0	1; 500mL; G	WATER	ANIONS (IC)-NO3
	1; 500mL; P	WATER	NO3 (H2SO4)
	1; 2L; P	WATER	TOTAL URANIUM (HNO3)
	1; 1L; P	WATER	Tc-99 (HCl)
			OPC: W94-0-0336-30
			BOL: NONE
			SAF: 94-088

Field Information**

Special Handling and/or Storage

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by Title Date

Analysis Required

0084

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/90)

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W94-0-0336-30

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Env Ens, & Tech	EFS	Geochem & Hydrochem

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

Routing Hand Deliver ☒ Contractor ☐ Vendor

Shipped to	Off-site Custodian
IT Analytical Services 2800 G. W. Way Richland, WA 99352	
	Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1	Sample No.: B0BKH2, B0BKH3, B0BMZ4, B0BKH0, B0BKG9 Cooler ID: SMC-11F Polycooler with groundwater samples packed in wet ice and vermiculite.	NA

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

Necessity for the Off-Site Use of this Property

Samples Supports RI/FS work in the 200 AREA

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]	152803	4/4/94

Location of Property (Area & Bldg.)	Contact	Phone
200-UP-1	PH Butcher	(509) 376-4388

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

Originated By	Date	Authorized By	Date
P.H. Butcher	4-4-94	P.H. Butcher	4-4-94

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

PART II – TO BE COMPLETED BY SHIPPING

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

0085

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

R Bond JT 4/4/94 1410

54-3000-479 (09/89)

AMPLE STATUS REPORT FOR E 5680. E-BLANK 299W1916 TIME: 4/ 4/94 9: 5
ISPATCHED: 3/14/94 9:19 SAMPLE HAS NOT BEEN SLURPED
ECEIVED: 4/ 4/94 8:33

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

END OF REPORT

BOBKHO
KG
4-4-94

9715515.2751

SAMPLE STATUS REPORT FOR E 5679. E-BLANK 299W1913 TIME: 4/ 4/94 9:15
DISPATCHED: 3/14/94 9:19 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 4/94 8:33

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

BOBKG9
LCS
4-4-94

AMPLE STATUS REPORT FOR E 5691. E-BLANK 299W21-1. TIME: 4/ 4/94 9: 5
ISPATCHED: 3/14/94 9:25 SAMPLE HAS NOT BEEN SLURPED
ECEIVED: 4/ 4/94 8:33

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

END OF REPORT

BOBKH2
BOBKH5
BOBMZ4
LCS
4-4-94

9713515.2753

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(Per Shipping Container)

Date/Time Received 4/4/94 1140 Client Name WHC

Project/Client # SAF-94-088 Batch or Case # _____

Cooler ID (if noted on the outside of cooler) SML 118

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: 23
8. Samples have: ____ tape ____ hazard labels
   ✓ 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°

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 R. Boyd R. Boyd Date/Time 4/4/94 1140

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

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

All category I
JRM 4-4-94

0600

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			40494		404	10	4	124	120

Customer ID	pH <2 Rcvd/Relq	Pincht 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
WHC/WATER																				
B0BKH0		1.6	5	2.0	61	5	35	0.47	2.47	1.8E+00	5.0E+00	3.2E-04	8.9E-04	3.4E-07	4.1E-07	1.6E+02	4.5E+02	Yes	6.3E+01	2.2E+02
B0BKG9		2.1	5	2.0	93	7	23	0.67	1.27	2.6E+00	2.3E+00	4.7E-04	4.1E-04	4.1E-07	2.5E-07	2.4E+02	2.0E+02	Yes	4.2E+01	4.9E+02
B0BKH2		14.0	5	2.0	62	6	15	0.57	0.47	2.7E+00	6.0E-01	4.9E-04	1.1E-04	4.6E-07	4.3E-08	2.4E+02	5.4E+01	Yes	4.1E+01	1.8E+03
TOTAL	uCi							-0.03	-1.03	-1E-01	-2E+00	1.3E-03	1.4E-03	ERR	ERR	ERR	ERR	Yes	ERR	ERR

4/29/94

*** TOTAL-SR ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

29-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-531

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0353111B ~~L0353101~~ Om 5-17-94				
	L0353111S				
1)	40353101		WHC	BOBKH3	

ACTIONS (Initial & Date)

INITIATED 3/29/94

PREP LAB RECEIVED _____

SAMPLE REMAINDER STORED _____

SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

0091

9413515.2756

*** TOTAL-SR ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

5-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-088

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER H-040

ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1) 40404001		WHC	BOBKH2	
F0404001				

ACTIONS (Initial & Date)

INITIATED JH 4/5/94

PREP LAB RECEIVED _____

SAMPLE REMAINDER STORED _____

SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

~~0091~~
0092
SKS 5/25/94

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS Total-SR MATRIX WATER DUE DATE 5-11-94

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 03531	-1B	WHC	QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L 03531	-1M or 1S (circle)	EQL 987	QC BATCH MATRIX/REAGENT SPIKE 13.592 ± .1561 PCI 30.174 ± .3466 DPM
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F 0404001	-		Duplicate of Sample #
03-531	- 1		
04-040	- 1		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by DM on 5-17-94 Rec'd in C.R. by KC on 5-20-94

Rec'd in Prep Lab by N/A on _____ Data Reviewed and anal. Prep stored GEr on 9/29/94

Rec'd in Sep Lab by DM on 5-17-94

Rec'd in Sep lab by _____ on _____ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

9715115.2758

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE _____

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Total-SR

NAME/DATE DM / 5-24-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP _____

MATRIX WATER

BATCH NUMBER _____

ITAS ID	CUSTOMER ID	COMMENTS
1) 40353101		
2) F0353101		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L0353128

ITAS ID - SPIKE L0353125

EQL 1051 = 30.02 ± .3448 DPM

CLIENT CODE 13.522 ± .1553 PCI

ACTIONS (Initial & Date)

PREP LAB RECEIVED N/A

SAMPLE REMAINDER RETURNED TO SCG ☑ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 5-24-94 DM

COUNTING/MEASUREMENT MS 5-25-94

DATA REVIEWED SE 5/25/94

ANALYTICAL PREP STORED GE 5/25/94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT ~~MS 05 94~~ KC 5/25

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

5/4/94

9415515.2739 *** UISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-588

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0358828 ✓				
	L0358825 ✓				
1)	40358802 ✓		WHC	BOBKJ2	
	F0358802 ✓				

ACTIONS (Initial & Date)

) INITIATED 3/31/94

) PREP LAB RECEIVED 4/20/94

) SAMPLE REMAINDER STORED 4/21/94

) SEPARATION LAB RECEIVED 4/25/94

5) COUNTING/MEASUREMENT LAB KCH 4-26-94

6) DATA REVIEWED AND ANALYTICAL PREP STORED

Ext 4-25-94 KR
EN 4-26-94

0095

INTERNATIONAL TECHNOLOGY CORPORATION

9215513.2740

DUE DATE 5-9

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Uro

NAME/DATE MWM / 4-27-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0012

MATRIX water

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) L0358802		Reanalyze using 10 or
2) F0358802		20 mL
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L0358828

ITAS ID - SPIKE L0358825

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED 4-28-94

SAMPLE REMAINDER RETURNED TO SCG ☒ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 4/29/94

COUNTING/MEASUREMENT AB 5-4-94

DATA REVIEWED MWM 5-5-94

ANALYTICAL PREP STORED MWM 5-5-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

Ext 5.2.94

ED 5.3.94

RC-048 12/92 REV 2

0096

9713515.2761

*** GAMMA ***

5/4/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-588

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0358818				
	L0358815	✓	QCAG011		
1)	40358801	✓	WHC	BOBKH6	
	F0358801	✓			

ACTIONS (Initial & Date)

1) INITIATED 3/31/94

2) PREP LAB RECEIVED 4/20/94

3) SAMPLE REMAINDER STORED 4/21/94

4) SEPARATION LAB RECEIVED N/A

5) COUNTING/MEASUREMENT LAB 4/26/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED MK 5594

QCAG011

Co60	55.145 ± .33256	=	24.840 ± 0.14980 pCi
Co137	110.24 ± 1.8507	=	49.6576 ± 0.8336 pCi
Eu152	110.01 ± 4.4138	=	49.554 ± 1.9882 pCi

0097

BATCH SUMMARY/CHAIN OF CUSTODY

SDG= W0012

ANALYSIS Tc-99 MATRIX Water DUE DATE 5/11/94

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L03531	-1B		QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L03531	-1M or 1S (circle)	EQnI 132	QC BATCH MATRIX/REAGENT SPIKE 90.153 ± 1.115 PCI/L 100.07 ± 1.2377 DPM
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F03 53101 F0347001	-		Duplicate of Sample # 40353101 40347001
40353101	- 03		
40347001	- 04		
40404001	- 03		
40358801	- 02		
40358301	- 03		
	-		
L03531n	- 6n		
W0347002	-	EQnI 196	270.568 ± 3.3433 PCI/L 300.33 ± 3.7111 DPM
W0404002	-	EQnI 145	90.351 ± 1.1165 PCI/L 100.29 ± 1.2393 DPM
	-		
	-		
	-		

Batched and QC updated by TGM GW on 5-5-94 Rec'd in C.R. by RM on 5/11/94

Rec'd in Prep Lab by TGM GW on 5-5-94 Data Reviewed and anal. Prep stored GW on 5/19/94.

Rec'd in Sep Lab by TGM GW on 5-5-94

Rec'd in Sep lab by N/A on _____ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

9713513.2753

4/27/94

*** TC-99 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

24-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-470

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40347001		WHC	BOBKG1	
	40347001	Dup			
2)	40347002		WHC	BOBKG2	
	40347002	MS			
3)	40347003		WHC	BOBKG4	
4)	40347004		WHC	BOBKG5	

ACTIONS (Initial & Date)

1) INITIATED B 3/24/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9213513.2784

*** TC-99 ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

29-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP ____W0012_____

MATRIX : WATER

BATCH NUMBER ___3-531_____

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40353101		WHC	BOBKH3	
	40353101 Dup				
2)	40353102		WHC	BOBKG3	
3)	40353103		WHC	BOBKG6	

ACTIONS (Initial & Date)

1) INITIATED 3/29/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713513.2765

5/3/94

*** TC-99 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-583

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40358301		WHC	B0BKG8	
2)	40358302		WHC	B0BKH8	
3)	40358303		WHC	B0BKG7	

ACTIONS (Initial & Date)

1) INITIATED 3/31/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9713513.2756

*** TC-99 ***

5/4/99

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-588

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40358801		WHC	BOBKH6	
2)	40358802		WHC	BOBKJ2	

ACTIONS (Initial & Date)

1) INITIATED 3/31/99

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9305[illegible]

*** TC-99 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

5-Apr-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

SAF 94-088

BATCH NUMBER 4-040

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40404001		WHC	B0BKH2	
2)	40404002		WHC	B0BKG9	
	40404002 MC				
3)	40404003		WHC	B0BKH0	

ACTIONS (Initial & Date)

1) INITIATED JH 4/5/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS UL MATRIX WATER DUE DATE _____

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 03470	-1B	WHC	QC BATCH REAGENT BLANK
L _____	-1X		QC BATCH MATRIX BLANK
L 03470	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE
1-28-94 ✓W0347001	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F _____			Duplicate of Sample # _____
W0347002			MATRIX SPIKE
F03470	03		DUPLICATE OF 40347003
F03470	04		DUPLICATE OF 40347004
403470 ~~40347004~~ 1-28-94	01 - 04		
403531	01- 03		
403583	01-		
403583	03		
403588	01- 02		
404040	01-03		

Batched and QC updated by 1-28 on 4-28-94 Rec'd in C.R. by [illegible] on 4/29/94

Rec'd in Prep Lab by 1-28 on 4-22-94 Data Reviewed and anal. Prep stored PK on 5-10-94

Rec'd in Sep Lab by NA on _____

Rec'd in Sep lab by NA on _____ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

4/27/94

*** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

24-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-470

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0347018 L0347015	W0347001 W0347002 4-28-94			
1)	40347001		WHC	BOBKG1	
2)	40347002		WHC	BOBKG2	
3)	40347003 F0347003		WHC	BOBKG4	
4)	40347004 F0347004		WHC	BOBKG5	

ACTIONS (Initial & Date)

) INITIATED 3/24/94

:) PREP LAB RECEIVED NA

:) SAMPLE REMAINDER STORED NA

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 4/29/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5/10/94

9715[illegible]

*** URANIUM ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

29-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-531

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40353101		WHC	B0BKH3	
2)	40353102		WHC	B0BKG3	
3)	40353103		WHC	B0BKG6	

ACTIONS (Initial & Date)

1) INITIATED 3/29/94

2) PREP LAB RECEIVED NA

3) SAMPLE REMAINDER STORED NA

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 4/29/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5-10-94

9413.271

*** URANIUM ***

5/3/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP WQ012

MATRIX : WATER

BATCH NUMBER 3-583

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40358301		WHC	B0BKG8	
2)	40358303		WHC	B0BKG7	

ACTIONS (Initial & Date)

1) INITIATED 3/31/94

2) PREP LAB RECEIVED NA

3) SAMPLE REMAINDER STORED NA

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 4/29/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5-10-94

*** URANIUM ***

5/4/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-588

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40358801		WHC	B0BKH6	
2)	40358802		WHC	B0BKJ2	

ACTIONS (Initial & Date)

1) INITIATED 3/31/94

2) PREP LAB RECEIVED NA

3) SAMPLE REMAINDER STORED NA

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 4/29/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5/10/94

0108

9215515.2275

*** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

5-Apr-1994
Page 1

CUSTOMER: WHC

SAF 94-088

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 4-040

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40404001		WHC	B0BKH2	
2)	40404002		WHC	B0BKG9	
3)	40404003		WHC	B0BKH0	

ACTIONS (Initial & Date)

1) INITIATED JH 4/5/94

2) PREP LAB RECEIVED NA

3) SAMPLE REMAINDER STORED NA

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB MP 4/29/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5-10-94

5/4/94

*** UISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-588

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0358828 ✓				
	L0358825 ✓				
1)	40358802 ✓		WHC	BOBKJ2	
	F0358802 ✓				

ACTIONS (Initial & Date)

) INITIATED 3/31/94

) PREP LAB RECEIVED 4/20/94

) SAMPLE REMAINDER STORED 4/21/94

) SEPARATION LAB RECEIVED 4/25/94

5) COUNTING/MEASUREMENT LAB 4-26-94

6) DATA REVIEWED AND ANALYTICAL PREP STORED 4-27-94

Error 4-27-94 [illegible] at a reduced vol.

Ext 4-25-94
EP 4-26-94

0113

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5-9

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Uro

NAME/DATE MWM / 4-27-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0012

MATRIX water

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) L0358802		Reanalyze using 10 or
2) F0358802		20 mL
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L0358828

ITAS ID - SPIKE L0358825

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED 4-28-94

SAMPLE REMAINDER RETURNED TO SCG ☒ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 4/29/94

COUNTING/MEASUREMENT AB 5-4-94

DATA REVIEWED MWM 5-5-94

ANALYTICAL PREP STORED MWM 5-5-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

Ext 5.2.94

ED 5.3.94

RC-048 12/92 REV 2

0114

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 403588

Lab Sample Numbers or SDG: W0012

Method/Test/Parameter: R03234 U,P

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

Comments on any "No" response:

Analyst: M Kellogg Date: 5-5-94

Second Level Review: Shay Daines Date: 5/16/94

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

ok to trafe 5-5-94

0129

INTERNATIONAL TECHNOLOGY CORPORATION

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

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

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

PARAMETER(S): U150

SAMPLE NUMBER(S) AFFECTED: 40350001 W0012

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): activity too high to analyze by ct rm
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): Sang Hoiles 5/6/94

0116

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

CORRECTIVE ACTION

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

sample activity too high to resolve

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

Rerun at reduced vol
rerun acceptable 5-5-94 MMM

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: M Kelley DATE: 5-5-94

RESPONSIBLE MANAGER: W Mackell DATE: 5/19/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cox DATE: 5/20/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cox DATE: 5/20/94

0117

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

5/4/94

*** GAMMA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-588

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0358818				
	L0358815	✓	QCAG011		
1)	40358801	✓	WHC	BOBKH6	
	F0358801	✓			

ACTIONS (Initial & Date)

) INITIATED 3/31/94

) PREP LAB RECEIVED 4/20/94

) SAMPLE REMAINDER STORED 4/21/94

) SEPARATION LAB RECEIVED N/A

5) COUNTING/MEASUREMENT LAB 4/26/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED MK 5-5-94

QCAG011

Co60	55.145 ± .33256	=	24.840 ± 0.14980 pCi
Co137	110.24 ± 1.8507	=	49.6576 ± 0.8336 pCi
Eu152	110.01 ± 4.4138	=	49.554 ± 1.9882 pCi

~~0266~~ 0267

SKS 5/25/94

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 403588

Lab Sample Numbers or SDG: L03588 1B - L03588 15 W1DC12

Method/Test/Parameter: Gamma

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

Comments on any "No" response:

Analyst: Joel Komarcevic Date: 5-7-94

Second Level Review: Sky Haines Date: 5/16/94

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

BATCH SUMMARY/CHAIN OF CUSTODY

SDG= W0012

ANALYSIS Tc-99 MATRIX Water DUE DATE 5/11/94

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L03531	-1B		QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L03531	1M or 1S (circle)	EQNI 132	QC BATCH MATRIX/REAGENT SPIKE 90.153 ± 1.115 PCI/L 100.07 ± 1.2377 DPM
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F03 53101 F0347001	-		Duplicate of Sample # 40353101 40347001
40353101	- 03		
40347001	- 04		
40404001	- 03		
40358801	- 02		
40358301	- 03		
	-		
L03531n	- 6n		
W0347002	-	EQNI 196	270.568 ± 3.3433 PCI/L 300.33 ± 3.7111 DPM
W0404002	-	EQNI 145	90.351 ± 1.1165 PCI/L 100.29 ± 1.2393 DPM
	-		
	-		
	-		

Batched and QC updated by TGM GW on 5-5-94 Rec'd in C.R. by RM on 5/11/94

Rec'd in Prep Lab by TGM GW on 5-5-94 Data Reviewed and anal. Prep stored GW on 5/19/94.

Rec'd in Sep Lab by TGM GW on 5-5-94

Rec'd in Sep lab by N/A on _____ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

9415113.0782

*** TC-99 ***

4/27/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

24-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-470

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40347001		WHC	BOBKG1	
	40347001	Dup			
2)	40347002		WHC	BOBKG2	
	40347002	MS			
3)	40347003		WHC	BOBKG4	
4)	40347004		WHC	BOBKG5	

ACTIONS (Initial & Date)

1) INITIATED 3/24/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

*** TC-99 ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

29-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP ____W0012_____

MATRIX : WATER

BATCH NUMBER ___3-531_____

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40353101		WHC	BOBKH3	
	40353101 Dup				
2)	40353102		WHC	BOBKG3	
3)	40353103		WHC	BOBKG6	

ACTIONS (Initial & Date)

1) INITIATED 3/29/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

5/3/94

*** TC-99 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-583

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40358301		WHC	B0BKG8	
2)	40358302		WHC	B0BKH8	
3)	40358303		WHC	B0BKG7	

ACTIONS (Initial & Date)

1) INITIATED 3/31/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

9/15/94 2785

*** TC-99 ***

5/4/99

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-588

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40358801		WHC	B0BKH6	
2)	40358802		WHC	B0BKJ2	

ACTIONS (Initial & Date)

1) INITIATED (S) 3/31/99

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

*** TC-99 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

5-Apr-1994
Page 1

CUSTOMER: WHC

MATRIX : WATER

SAF 94-088

SAMPLE DELIVERY GROUP W0012

BATCH NUMBER 4-040

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40404001		WHC	B0BKH2	
2)	40404002		WHC	B0BKG9	
	40404002 MC				
3)	40404003		WHC	B0BKH0	

ACTIONS (Initial & Date)

1) INITIATED JH 4/5/94

2) PREP LAB RECEIVED _____

3) SAMPLE REMAINDER STORED _____

4) SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 403531 403470 404040 403588 403583

Lab Sample Numbers or SDG: – W0012

Method/Test/Parameter: Tc99

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

Comments on any "No" response:

See NCM W0347009 Activity too high to see spike.

Analyst: [signature] Date: 5/19/94

Second Level Review: [signature] Date: 5/20/94

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

INTERNATIONAL TECHNOLOGY CORPORATION

0328

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

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): STR 5/19/95

PARAMETER(S): Tc99

SAMPLE NUMBER(S) AFFECTED: W0347002

MATRIX: H_2O

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): Sample activity much greater than spk level in MS.
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): Sung Daines 5/20/95

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

IT CORPORATION

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

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE SB 5/19/94

High sample level. completely swamped spike levels

☒ CORRECTIVE ACTION: INITIALS/DATE SB 5/19/94

Use other MS for chemical yield.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: [signature] DATE: 5/19/94.

RESPONSIBLE MANAGER: W MacKell DATE: 5/23/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cor DATE: 5/24/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cor DATE: 5/24/94

0349

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

*** TOTAL-SR ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

29-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-531

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	40353101				
1)	40353101		WHC	BOBKH3	

ACTIONS (Initial & Date)

INITIATED 3/29/94

PREP LAB RECEIVED _____

SAMPLE REMAINDER STORED _____

SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB _____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

*** TOTAL-SR ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

5-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-088

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 4-040

ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1) 40404001		WHC	BOBKH2	
F0404001				

ACTIONS (Initial & Date)

INITIATED JH 4/5/94

PREP LAB RECEIVED _____

SAMPLE REMAINDER STORED _____

SEPARATION LAB RECEIVED _____

5) COUNTING/MEASUREMENT LAB_____

6) DATA REVIEWED AND ANALYTICAL PREP STORED _____

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS Total-SR MATRIX WATER DUE DATE 5-11-94

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 03531	-1B	WHC	QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L 03531	-1M or 1S (circle)	EQL 987	QC BATCH MATRIX/REAGENT SPIKE 13.592 ± .1561 PCI 30.174 ± .3466 DPM
L	-2M or 2S (circle)		QC BATCH MATRIX/REAGENT SPIKE
F 0404001	-		Duplicate of Sample #
03-531	- 1		
04-040	- 1		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by DM on 5-17-94 Rec'd in C.R. by KR on 5-20-94

Rec'd in Prep Lab by N/A on _____ Data Reviewed and anal. Prep stored GEr on 9/29/94

Rec'd in Sep Lab by DM on 5-17-94

Rec'd in Sep lab by _____ on _____ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE _____

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Total-SR

NAME/DATE DM / 5-24-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP _____

MATRIX WATER

BATCH NUMBER _____

ITAS ID	CUSTOMER ID	COMMENTS
1) 40353101		
2) F0353101		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L0353128

ITAS ID - SPIKE L0353125

EQL 1051 = 30.02 ± .3448 DPM

CLIENT CODE 13.522 ± .1553 PCI

ACTIONS (Initial & Date)

PREP LAB RECEIVED N/A

SAMPLE REMAINDER RETURNED TO SCG ☑ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 5-24-94 DM

COUNTING/MEASUREMENT MS 25 94

DATA REVIEWED STE 5/25/94

ANALYTICAL PREP STORED GE 5/25/94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT ~~MS 25 94~~ KC 5/25 5/25

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 403531 404040

Lab Sample Numbers or SDG: W0012 -

Method/Test/Parameter: Sr TOT

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

Comments on any "No" response:

40353101 rerun high yield. NCM
Rerun accepted SCG 5/25/94

Analyst: [signature] Date: 5/25/94

Second Level Review: [signature] Date: 5/25/94

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

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-0149 page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): GB 5/24/94

PARAMETER(S): SvTOT

SAMPLE NUMBER(S) AFFECTED: -40353101

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): Double carrier run
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

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

PROJECT MANAGER (signature & date): Suzy Davies 5/25/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

IT CORPORATION

LOG #: RD-94-0149 page 2 of 2

CORRECTIVE ACTION

☑ ROOT CAUSE: INITIALS/DATE 5/25/94

Humidi curves - ppt wt too high to calc. adsorption curve. Reanalysis req.

☑ CORRECTIVE ACTION: INITIALS/DATE 5/25/94

Report reanalysis

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: DATE: 5/25/94

RESPONSIBLE MANAGER: DATE: 5/25/94

QC REVIEW

☑ NONCONFORMANCE ☐ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED

ASSIGNED TO

QC COORDINATOR: DATE: 5/25/94

CORRECTIVE ACTION VERIFICATION

☑ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON

NCM CLOSURE

QC COORDINATOR: DATE: 5/25/94

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

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS UL MATRIX WATER DUE DATE _____

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 03470	-1B	WHC	QC BATCH REAGENT BLANK
L	-1X		QC BATCH MATRIX BLANK
L 03470	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE
for 28-94 X W0347001	-2M or 2S (circle)		QC BATCH MATRIX REAGENT SPIKE
F			Duplicate of Sample #
W0347002			MATRIX SPIKE
F03470	03		DUPLICATE OF 40347003
F03470	04		DUPLICATE OF 40347004
403470 ~~40347004~~ for 4-28-94	01 - 04		
403531	01- 03		
403583	01-		
403583	03		
403588	01- 02		
404040	01-03		

Batched and QC updated by for on 4-28-94 Rec'd in C.R. by SHP on 4/29/94

Rec'd in Prep Lab by for on 4-22-94 Data Reviewed and anal. Prep stored PK on 5-10-94

Rec'd in Sep Lab by NA on _____

Rec'd in Sep lab by NA on _____ Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

4/27/94

*** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

24-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-470

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0347018 L0347015	W0347001 W0347002 4-28-94			
1)	40347001		WHC	BOBKG1	
2)	40347002		WHC	BOBKG2	
3)	40347003 F0347003		WHC	BOBKG4	
4)	40347004 F0347004		WHC	BOBKG5	

ACTIONS (Initial & Date)

) INITIATED 3/24/94

) PREP LAB RECEIVED NA

) SAMPLE REMAINDER STORED NA

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 4/29/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5/10/94

*** URANIUM ***

4/29/94

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

29-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP Wo012

MATRIX : WATER

BATCH NUMBER 3-531

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40353101		WHC	B0BKH3	
2)	40353102		WHC	B0BKG3	
3)	40353103		WHC	B0BKG6	

ACTIONS (Initial & Date)

) INITIATED 3/29/94

) PREP LAB RECEIVED NA

) SAMPLE REMAINDER STORED NA

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 4/29/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5-10-94

5/3/94

*** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-583

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40358301		WHC	B0BKG8	
2)	40358303		WHC	B0BKG7	

ACTIONS (Initial & Date)

) INITIATED 3/31/94

) PREP LAB RECEIVED NA

) SAMPLE REMAINDER STORED NA

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 4/29/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5-10-94

0468

5/4/94

*** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

31-Mar-1994
Page 1

CUSTOMER: WHC

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 3-588

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40358801		WHC	B0BKH6	
2)	40358802		WHC	B0BKJ2	

ACTIONS (Initial & Date)

) INITIATED 3/31/94

) PREP LAB RECEIVED NA

) SAMPLE REMAINDER STORED NA

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 4/29/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED RK 5/10/94

0469

*** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

5-Apr-1994
Page 1

CUSTOMER: WHC

SAF 94-088

SAMPLE DELIVERY GROUP W0012

MATRIX : WATER

BATCH NUMBER 4-040

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
1)	40404001		WHC	B0BKH2	
2)	40404002		WHC	B0BKG9	
3)	40404003		WHC	B0BKH0	

ACTIONS (Initial & Date)

) INITIATED JH 4/5/94

) PREP LAB RECEIVED NA

) SAMPLE REMAINDER STORED NA

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB MJP 4/29/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5-12-94

9214515285

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 403470, 403531, 403588, 404040, 403583

Lab Sample Numbers or SDG: W0012

Method/Test/Parameter: U nat

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?	✓			✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	✓
2.	Were all sample holding times met?	✓			✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	✓
2.	Is the Minimum-Detectable Activity for the Blank result ≤ the Contract Detection Limit?			✓	✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?			✓	✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?			✓	✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1.	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked? M.W 5/11/94	✓			PK
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

NCM re: matrix spikes

Analyst: Pam Kenitzer Date: 5-11-94

Second Level Review: Sidney Davies Date: 5/16/94

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

INTERNATIONAL TECHNOLOGY CORPORATION

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

0311

IT AS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): P Kenitzer 5-10-94

PARAMETER(S): U nat

SAMPLE NUMBER(S) AFFECTED: 403470, 403531, 403588, 404040, 403583

MATRIX: water W0347001 ~02 W002

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): two matrix spikes considered lost. We will assume 100% yield on the samples reagent spike OK
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

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

PROJECT MANAGER (signature & date): Suzy Davies 5/16/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0472

IT CORPORATION

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

CORRECTIVE ACTION

[X] ROOT CAUSE: INITIALS/DATE PK 5-11-94

2 samples were spiked with .09 ugm of U nat. The samples read ~1000.00 ugm/L. The spike was lost in such a high sample.

[ ] CORRECTIVE ACTION: INITIALS/DATE _____

[ ] RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

[X] ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE PK 5-11-94

In the future, using screening data, the prep tech will try to find a sample to use as a matrix spike that has few alpha counts, or use a higher level spike

FIRST LEVEL SUPERVISOR: Pam Kenitzer DATE: 5-11-94

RESPONSIBLE MANAGER: W Wolkelle DATE: 5/19/94

QC REVIEW

[ ] NONCONFORMANCE [X] DEFICIENCY [ ] RERUN

[ ] FURTHER ACTION REQUIRED:

ASSIGNED TO:

QC COORDINATOR: Jodie Cor DATE: 5/20/94

CORRECTIVE ACTION VERIFICATION

[X] VERIFIED [ ] CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cor DATE: 5/20/94

0473

SIGNED ORIGINAL MUST BE RETAINED IN FILE: [ ] QUALITY/OPERATIONS FILE [X] PROJECT FILE

9715513.2836

INTERNATIONAL TECHNOLOGY CORPORATION

MAY 1994
RECEIVED
SDLA

May 24, 1994

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

Dear Briana:

This letter is sent to inform you of an incorrect client ID number used throughout the chemical data package. The SDG number is W0012 and the SAF number is 94-088. The client ID is shown as BOBM24 in the package and the correct number should be BOBMZ4.

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

Sincerely,

Van Pettey
Project Manager

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

IT Corporation is a wholly owned subsidiary of International Technology Corporation

9413013.2807

Los Alamos Technical Associates, Inc.

8633 Gage Blvd. / Kennewick, WA 99336 / Telephone (509) 783-4369 / FAX (509) 783-9661

August 9, 1994

AUG 1994
RECEIVED
TQO

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

Dear Karl,

Attached is the data validation report for analytical results for 200-UP-1 (SDG W0012-ITC-028). The package was received by Los Alamos Technical Associates on June 20, 1994. Validation of this package began on July 21, 1994 and was completed on August 9, 1994.

If you have any questions, please let me know.

Sincerely,

Donald J. Smith
Senior Environmental Engineer

cc: Chris Haecker, LATA
VW401.93 file

RECEIVED
AUG 10 1994
VALIDATION DOCUMENTATION
SDLA

9414515.2838

AUG 1994
RECEIVED
TQO

DATA VALIDATION REPORT
for
200-UP-1
SDG W0012-ITC-028
LATA VW401.93

RECEIVED
AUG 10 1994
VALIDATION DOCUMENTATION
SDLA

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

August 9, 1994

9715516.2809

Table of Contents

Data Validation Narrative 2
- INTRODUCTION 2
- ANALYSES REQUESTED 2
- DATA QUALITY OBJECTIVES 3
- MAJOR DEFICIENCIES (REJECTED DATA) 3
- MINOR DEFICIENCIES 3
- REFERENCES 6
- DATA VALIDATION APPLIED QUALIFIERS 7
- LABORATORY APPLIED QUALIFIERS 8

Data Qualification Summary 10

Data Summary Tables 12

Sample Results 15

Checklists 55

Laboratory Case Narratives 109

Chain-of-Custody Information 113

VEDD Printout 133

200-UP-1
Data Validation Narrative

INTRODUCTION

All samples in Sample Delivery Group (SDG) W0012-ITC-028 were validated at level "D" as defined in the Data Validation Procedures for Chemical Analysis (WHC-SD-EN-SPP-002) and/or Data Validation Procedures for Radiochemical Analyses (WHC-SD-EN-SPP-001).

The data package was received by Los Alamos Technical Associates (LATA) on June 20, 1994. Validation began on July 21, 1994 and was completed on August 12, 1994.

The chemical analyses were performed by ITC-Knoxville. Samples requiring radiochemical analyses were analyzed by ITC-Richland.

ANALYSES REQUESTED

Nineteen (19) water samples were collected by WHC and transferred to ITC-Richland for analysis. ITC-Richland performed radiochemistry analyses and transfered eleven (11) samples to ITC-Knoxville for chemistry analyses. Dates of collection and receipt, as well as the analyses requested per sample are shown in the following table.

WHC		ITC Richland						ITC Knoxville					
Sample ID	Date Collected	Date Received	U Total	Tc 99	U 234/35/38	Sr 90	gamma spec	Date Received	VOA	NO_3	IC	ICP	GFAA
BOBK G1	22-Mar-94	23-Mar-94	x	x									
BOBK G2	22-Mar-94	23-Mar-94	x	x									
BOBK G4	22-Mar-94	23-Mar-94	x	x									
BOBK G5	22-Mar-94	23-Mar-94	x	x									
BOBK G3	23-Mar-94	25-Mar-94	x	x									
BOBK H3	23-Mar-94	25-Mar-94	x	x		x							
BOBK G6	24-Mar-94	25-Mar-94	x	x									
BOBK H8	25-Mar-94	29-Mar-94		x				31-Mar-94					x
BOBK H9	25-Mar-94	29-Mar-94						31-Mar-94					x
BOBK G7	28-Mar-94	29-Mar-94	x	x				31-Mar-94		x	x		
BOBK G8	28-Mar-94	29-Mar-94	x	x				31-Mar-94		x	x		
BOBK H6	29-Mar-94	30-Mar-94	x	x			x	31-Mar-94		x	x	x	
BOBK H7	29-Mar-94	30-Mar-94						31-Mar-94				x	
BOBK J2	29-Mar-94	30-Mar-94	x	x	x								
BOBK G9	1-Apr-94	4-Apr-94	x	x				5-Apr-94		x	x		
BOBK H0	1-Apr-94	4-Apr-94	x	x				5-Apr-94		x	x		
BOBK H2	1-Apr-94	4-Apr-94	x	x		x		5-Apr-94	x	x	x		
BOBK H5	1-Apr-94	4-Apr-94						5-Apr-94	x				
BOBM Z4	1-Apr-94	4-Apr-94						5-Apr-94	x				

DATA QUALITY OBJECTIVES

The data quality objectives for 200-UP-1 are specified in the *Remedial Investigation/Feasibility Study Work Plan for the 200-UP-1, Groundwater Operable Unit.* DOE-RL-92-76 Rev. 0.

The primary objective of the data validation effort was to ensure these data quality objectives were met, and that the data are usable and defensible. This was accomplished through a detailed examination of the data package to recreate the analytical process and verify that proper and acceptable analytical techniques had been applied. The data package was checked for correct submission of required deliverables, correct transcription of raw data to the summary forms, and for proper calculation of a number of parameters. Data qualifiers are assigned to any results that have been determined to be deficient. These are discussed below.

Precision: Goals for precision were met with the exception of those items discussed under "MINOR DEFICIENCIES".

Accuracy: Goals for accuracy were met with the exception of those items discussed under "MINOR DEFICIENCIES".

Sample Result Verification: All sample results were supported in the raw data.

Detection Limits: Detection limit goals were met for all sample results, with the exception of isotopic uranium, as specified in the *Remedial Investigation/Feasibility Study Work Plan for the 200-UP-1, Groundwater Operable Unit.* DOE-RL-92-76 Rev. 0.

Completeness: The data package was complete with the exception of nitrate anion results requested by WHC on the chain-of-custody.

MAJOR DEFICIENCIES (REJECTED DATA)

- No deficiencies were noted.

MINOR DEFICIENCIES

VOLATILES

- The method blank contained methylene chloride and acetone, therefore the sample results were qualified non-detect (U).

MINOR DEFICIENCIES (Cont.)

METALS

- The zinc results for samples B0BKH6 and B0BKH7 were qualified as U (non-detect) due to positive contamination in the preparation blank.

- The aluminum result for sample B0BKH7 was qualified as U (non-detect) due to positive contamination in a calibration blank.

GENERAL CHEMISTRY

- The matrix spike duplicate recovery for fluoride (IC) was >125%. The results are qualified as estimated (J) for samples B0BKG8, B0BKG7, and B0BKH6.

- The matrix spike recovery for sulfate (IC) was >125%. The results are qualified as estimated (J) for all samples.

- The matrix spike recovery for chloride (IC) was <75% and >30%. The results are qualified as estimated (J) for all samples.

- The duplicate RPD for sulfate and chloride (IC) were >20%. The results were qualified as estimated (J).

RADIOCHEMISTRY

- For U235, the laboratory control standard % recovery was >130%. Therefore, the results were qualified as estimated (J).

- For Eu152, the laboratory control standard % recovery was <70%. Therefore, the results were qualified as estimated (UJ).

- For U235, the duplicate RPD was >20%. Therefore, the result was qualified as estimated (J).

- The calibration coefficient for uranium was <0.98, therefore the results were qualified as estimated (J) for samples B0BKG6, B0BKH0, and B0BKG8.

- For isotopic uranium analysis, the background check was not performed within 30 days. Sample B0BKJ2 was qualified as estimated (J).

- For K40, blank contamination was detected. Sample B0BKH6 was qualified as estimated (J).

COMMENTS:

- Thallium was not analyzed with the original data package. Thallium results were subsequently sent by the laboratory in a separate data package and validated at a later date by LATA.

- Trip blank B0BKH5 contained 2-butanone.

- The MDAs were not met for isotopic uranium analysis.

- Tc99 yield was incorrectly calculated. All Tc99 data had to be recalculated and all Form I's corrected. This added several hours of work to the validation of this package.

- Nitrate by method 300 was not reported by the laboratory.

9716515.2814

REFERENCES

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

WHC 1993, *Data Validation Procedures for Chemical Analyses,* WHC-SD-EN-SPP-002, Rev. 2, Westinghouse Hanford Company, Richland, Washington.

WHC 1993, *Data Validation Procedures for Radiochemical Analyses,* WHC-SD-EN-SPP-001, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

WHC 1994, *Remedial Investigation/Feasibility Study Work Plan for the 200-UP-1, Groundwater Operable Unit,* DOE-RL-92-76 Rev. 0, Hanford Site, Richland, Washington.

DATA VALIDATION APPLIED QUALIFIERS

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows.

U- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a QC deficiency identified during data validation, the associated quantitation limit is an estimate.

J- Indicates the compound or analyte was analyzed for and detected. The associated concentration is an estimate, but the data are usable for decision making purposes.

BJ- Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R- Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency the data are unusable.

UR- Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data are unusable due to an identified QC deficiency.

JN- Indicates a tentatively identified compound (TIC) that has been determined to be valid in terms of identification and quantitation.

UJN- Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

NJ- Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific application (i.e., usable for decision making purposes).

N- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision making purposes).

LABORATORY APPLIED QUALIFIERS

Qualifiers which may be applied by the laboratory in compliance with applicable requirements are as follows.

Organic Data Qualifiers

U- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

J- Indicates an estimated value. This flag is used when estimating concentrations of tentatively identified compounds (TICs) or when the presence of a TCL compound is confirmed at a concentration of less than the CRQL but greater than the IDL.

N- Indicates presumptive evidence of a compound. This flag is used only by the laboratory for TIC results when the identification is based on a mass spectral library search.

P- This flag is used for pesticide/Aroclor target analytes when there is greater than 25% difference for detected values between the quantitation and confirmation GC columns. The lower of the two concentrations is reported on the report form and the result is flagged with a "P".

C- This flag applies to pesticide results where the identification has been confirmed by GC/MS. This flag should not be used by the laboratory if GC/MS confirmation was attempted but unsuccessful, in which case, the laboratory should use an "X" flag as defined below. The "X" flag is then defined in the SDG narrative.

B- This flag applies to results in which the analyte was detected in both the sample and the associated blank. The combination of the "B" flag with the "U" flag ("BU" or "UB") is expressly prohibited in the analytical SOW.

E- This flag identifies compounds whose concentrations exceed the calibrated range of the GC/MS instrument.

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

A- Indicates a TIC which is a suspected aldol-condensate product.

X- This is a non-specific flag used to properly define the results. If used, this flag must be properly defined within the body of the SDG.

LABORATORY APPLIED QUALIFIERS

Inorganic Qualifiers

U- Indicates the analyte was analyzed for but not detected in the sample.

B- Indicates the analyte concentration is less than the CRDL but greater than the IDL.

E- Indicates the value reported is estimated due to the presence of interference.

M- Indicates duplicate injection precision criteria were not met during graphite furnace (GFAA) analysis.

N- Indicates spiked sample recovery was not within the control limits.

S- Indicates the reported value was determined by the Method of Standard Additions (MSA).

W- Indicates post-digestion spike for GFAA analysis is outside control limits and the sample absorbance is less than 50% of the spike absorbance.

*- Indicates duplicate analysis was not within control limits.

+- Indicates the correlation coefficient (r) for the MSA was less than 0.995.

9713513.2818

Data Qualification Summary

DATA QUALIFICATION SUMMARY

SDG:W0012-ITC-028			
Compound/Analyte	Qualifier	Samples Affected	Reasons
Fluoride by IC	J	B0BKG8 B0BKG7 B0BKH6	Matrix Spike Duplicate > 125%
Sulfate by IC	J	ALL	Matrix Spike > 125%
Chloride by IC	J	ALL	Matrix Spike 30 - 75%
Zinc	U	B0BKH6 B0BKH7	Positive Prep Blank Contamination
Aluminum	U	B0BKH7	Positive Calibration Blank Contamination
Chloride, Sulfate by IC	J	ALL	Relative Percent Difference > 20%
Methylene Chloride, Acetone	U	ALL	Blank Contamination
Potassium-40	J	B0BKH6	Blank Contamination
Uranium-235	J	B0BKJ2	Laboratory Control Standard > 130%, Relative Percent Difference > 20%
Europium-152	UJ	B0BKH6	Laboratory Control Standard < 70%
Total Uranium	J	B0BKG6 B0BKH0 B0BKG8	Correlation Coefficient < 0.98
Isotopic Uranium (U233/234, U235, U238)	J	B0BKJ2	Background check not performed within 30 days.

9713513.2830

Data Summary Tables

VOLATILE ORGANICS DATA SUMMARY TABLE

FILE #:VW401.93		HEIS #:	B0BKH2		B0BKH5		B0BMZ4	
		Date:	1-Apr-94		1-Apr-94		1-Apr-94	
		Matrix:	WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q
Chloromethane	74-87-3	µg/L	10	U	10	U	10	U
Bromomethane	74-83-9	µg/L	10	U	10	U	10	U
Vinyl Chloride	75-01-4	µg/L	10	U	10	U	10	U
Chloroethane	75-00-3	µg/L	10	U	10	U	10	U
Methylene Chloride	75-09-2	µg/L	10	U	10	U	10	U
Acetone	67-64-1	µg/L	10	U	17	U	10	U
Carbon Disulfide	75-15-0	µg/L	10	U	10	U	10	U
1,1-Dichloroethene	75-35-4	µg/L	10	U	10	U	10	U
1,1-Dichloroethane	75-34-3	µg/L	10	U	10	U	10	U
1,2-Dichloroethene (total)	540-59-0	µg/L	10	U	10	U	10	U
Chloroform	67-66-3	µg/L	1	J	10	U	10	J
1,2-Dichloroethane	107-06-2	µg/L	10	U	10	U	10	U
2-Butanone	78-93-3	µg/L	19		3	J	10	U
1,1,1-Trichloroethane	71-55-6	µg/L	10	U	10	U	10	U
Carbon Tetrachloride	56-23-5	µg/L	8	J	10	U	10	U
Bromodichloromethane	75-27-4	µg/L	10	U	10	U	10	U
1,2-Dichloropropane	78-87-5	µg/L	10	U	10	U	10	U
cis-1,3-Dichloropropene	10061-01-5	µg/L	10	U	10	U	10	U
Trichloroethene	79-01-6	µg/L	10	U	10	U	10	U
Dibromochloromethane	124-48-1	µg/L	10	U	10	U	10	U
1,1,2-Trichloroethane	79-00-5	µg/L	10	U	10	U	10	U
Benzene	71-43-2	µg/L	10	U	10	U	10	U
trans-1,3-Dichloropropene	10061-02-6	µg/L	10	U	10	U	10	U
2-Chloroethyl Vinyl Ether	110-75-8	µg/L	10	U	10	U	10	U
Bromoform	75-25-2	µg/L	10	U	10	U	10	U
4-Methyl-2-pentanone	108-10-1	µg/L	10	U	10	U	10	U
2-Hexanone	591-78-6	µg/L	10	U	10	U	10	U
Tetrachloroethene	127-18-4	µg/L	10	U	10	U	10	U
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	10	U	10	U	10	U
Toluene	108-88-3	µg/L	10	U	10	U	10	U
Chlorobenzene	108-90-7	µg/L	10	U	10	U	10	U
Ethylbenzene	100-41-4	µg/L	10	U	10	U	10	U
Styrene	100-42-5	µg/L	10	U	10	U	10	U
Xylene (Total)	1330-20-7	µg/L	10	U	10	U	10	U

shaded areas show changes by the validator

METALS/CYANIDE DATA SUMMARY TABLE

FILE#:VW401.93		HEIS #:	B0BKH8		B0BKH9		B0BKH6		B0BKH7	
		Date:	18-Mar-94		18-Mar-94		18-Mar-94		18-Mar-94	
		Matrix:	WATER		WATER		WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q	Results	Q	Results	Q
Aluminum	7429-90-5	µg/L					40.00	U	88.80	U
Antimony	7440-36-0	µg/L					50.00	U	50.00	U
Arsenic	7440-38-2	µg/L	10.40		12.00					
Barium	7440-39-3	µg/L					30.80	B	34.20	B
Beryllium	7440-41-7	µg/L					1.00	U	1.00	U
Cadmium	7440-43-9	µg/L					5.00	U	5.00	U
Calcium	7440-70-2	µg/L					21800.00		25000.00	
Chromium	7440-47-3	µg/L					10.00	U	10.00	U
Cobalt	7440-48-4	µg/L					10.00	U	10.00	U
Copper	7440-50-8	µg/L					10.00	U	10.00	U
Iron	7439-89-6	µg/L					266.00		46.40	B
Lead	7439-92-1	µg/L	2.40	B	2.00	U				
Magnesium	7439-95-4	µg/L					10700.00		12300.00	
Manganese	7439-96-5	µg/L					11.30	B	12.20	B
Mercury	7439-97-6	µg/L								
Nickel	7440-02-0	µg/L					20.00	U	20.00	U
Potassium	7440-09-7	µg/L					3610.00	B	4920.00	B
Selenium	7782-49-2	µg/L	2.00	U	2.00	U				
Silver	7440-22-4	µg/L					5.00	U	5.00	U
Sodium	7440-23-5	µg/L					17100.00		19600.00	
Thallium	7440-28-0	µg/L	2.00	U	2.00	U				
Vanadium	7440-62-2	µg/L					14.20	B	19.60	B
Zinc	7440-66-6	µg/L					8.90	U	6.00	U
Titanium	7440-32-6	µg/L					3.00	U	3.00	U
Cyanide	5955-70-0	µg/L								

shaded areas show changes by the validator

9716513.2955

GENERAL CHEMISTRY DATA SUMMARY

FILE #: VW 401.93		HEIS #:	B0BKG8		B0BKG7	
		Date:	28-Mar-94		28-Mar-94	
		Matrix:	WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q
Chloride by IC	16887-00-6	mg/L	13	J	7.5	J
Fluoride by IC	16984-48-8	mg/L	0.44	J	0.64	J
Sulfate by IC	14808-79-8	mg/L	35	J	24	J
Nitrate Nitrite	NO_3+NO_2	mg/L	11		4.3	

FILE #: VW 401.93		HEIS #:	B0BKH6		B0BKH2	
		Date:	29-Mar-94		1-Apr-94	
		Matrix:	WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q
Chloride by IC	16887-00-6	mg/L	11	J	21	J
Fluoride by IC	16984-48-8	mg/L	0.67	J	0.4	U
Sulfate by IC	14808-79-8	mg/L	23	J	38	J
Nitrate Nitrite	NO_3+NO_2	mg/L	0.64		17	

FILE #: VW 401.93		HEIS #:	B0BKG9		B0BKH0	
		Date:	1-Apr-94		1-Apr-94	
		Matrix:	WATER		WATER	
Constituent	CAS #	Units	Results	Q	Results	Q
Chloride by IC	16887-00-6	mg/L	8.7	J	12	J
Fluoride by IC	16984-48-8	mg/L	0.4	U	0.4	U
Sulfate by IC	14808-79-8	mg/L	25	J	31	J
Nitrate Nitrite	NO_3+NO_2	mg/L	3.8		0.14	

shaded areas indicate changes by the validator

9713513.2834

RADIOCHEMISTRY DATA SUMMARY

FILE #:VW401.93		HEIS #:	B0BKG1			B0BKG2			B0BKG4		
		Date:	22-Mar-94			22-Mar-94			22-Mar-94		
		Matrix:	WATER			WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA	Results	Q	MDA
Technetium-99	14133-76-7	pCi/L	17710.00		2.6	16060.00		2.6	12990.00		2.6
Uranium, Total	7440-61-1	UG/L	1220.00		0.005	1040.00		0.005	944.00		0.005

FILE #:VW401.93		HEIS #:	B0BKG5			B0BKH3			B0BKG3		
		Date:	22-Mar-94			23-Mar-94			23-Mar-94		
		Matrix:	WATER			WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA	Results	Q	MDA
Strontium, Total	7440-24-6	pCi/L				14.50		0.793			
Technetium-99	14133-76-7	pCi/L	12690.00		2.6	21360.00		2.6	9765.00		2.6
Uranium, Total	7440-61-1	UG/L	407.00		0.005	1690.00		0.005	344.00		0.005

FILE #:VW401.93		HEIS #:	B0BKG6			B0BKH8			B0BKG7		
		Date:	24-Mar-94			25-Mar-94			28-Mar-94		
		Matrix:	WATER			WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA	Results	Q	MDA
Technetium-99	14133-76-7	pCi/L	6476.00		2.6	0.47		2.6	188.20		2.6
Uranium, Total	7440-61-1	UG/L	143.00	J	0.005				37.00		0.005

FILE #:VW401.93		HEIS #:	B0BKG8			B0BKH6			B0BKJ2		
		Date:	28-Mar-94			29-Mar-94			29-Mar-94		
		Matrix:	WATER			WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA	Results	Q	MDA
Cesium-134	13967-70-9	pCi/L				4.07		n/a			
Cesium-137DA	10045-97-3	pCi/L				-2.07	U	6.079			
Cobalt-58	13981-38-9	pCi/L				-0.47	U	10.29			
Cobalt-60	10198-40-0	pCi/L				-1.47	U	6.864			
Europium-152	14683-23-9	pCi/L				-9.74	UJ	44.16			
Europium-154	15585-10-1	pCi/L				-5.47	U	17.91			
Europium-155	14391-16-3	pCi/L				-1.01	U	12.26			
Iron-59	14596-12-4	pCi/L				-0.64	U	22.52			
Potassium-40	13966-00-2	pCi/L				87.00	J	n/a			
Ruthenium-106DA	13967-48-1	pCi/L				6.46		n/a			
Sodium-22	13966-32-0	pCi/L				-1.97		n/a			
Technetium-99	14133-76-7	pCi/L	582.10		2.6	173.17		2.6	7460.00		2.6
Uranium, Total	7440-61-1	UG/L	258.00	J	0.005	5.37		0.005	2700.00		0.005
Uranium-233/234	U-233/234	pCi/L							1070.00	J	4.04
Uranium-235	15117-96-1	pCi/L							46.70	J	2.82
Uranium-238	U-238	pCi/L							1070.00	J	3.63

FILE #:VW401.93		HEIS #:	B0BKG9			B0BKH0			B0BKH2		
		Date:	1-Apr-94			1-Apr-94			1-Apr-94		
		Matrix:	WATER			WATER			WATER		
Constituent	CAS #	Units	Results	Q	MDA	Results	Q	MDA	Results	Q	MDA
Strontium, Total	7440-24-6	pCi/L							-0.06	U	0.793
Technetium-99	14133-76-7	pCi/L	218.06		2.6	189.76		2.6	78.86		2.6
Uranium, Total	7440-61-1	UG/L	3.86		0.005	244.00	J	0.005	4.17		0.005

shaded areas indicate changes by the validator

9713513.2825

Sample Results (Form I's)

9413515.2836

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKH2

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 301 SAS No.: _____ SDG No.: W0012

Matrix: (soil/water) WATER Lab Sample ID: AA5277

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ADF05

Level: (low/med) LOW Date Received: 04/05/94

% Moisture: not dec. ____ Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	~~U~~ u
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10 3	~~BJ~~ u
67-64-1	Acetone	10 7	~~BJ~~ u
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	1	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	19	
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	8	J
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

10-14-94 (JTC)

BM 7-27-94

FORM I VOA 3/90

9145115.2837

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBKH5

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 301 SAS No.: _____ SDG No.: W0012

Matrix: (soil/water) WATER Lab Sample ID: AA5278

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ADF06

Level: (low/med) LOW Date Received: 04/05/94

% Moisture: not dec. ____ Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

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

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	~~U~~ u
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10 ~~1~~	~~BJ~~ u
67-64-1	Acetone	17	~~B~~ u
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	3	J
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

4-4-94 (JTC) 10- ~~U~~ u

FORM I VOA

3/90 BM 7-27-94

9413613.2828

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOBM24 & H
~~BOBM24~~

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 301 SAS No.: _____ SDG No.: W0012

Matrix: (soil/water) WATER Lab Sample ID: AA5279

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ADF07

Level: (low/med) LOW Date Received: 04/05/94

% Moisture: not dec. ____ Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

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

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	~~U~~ U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10 ~~1~~	~~BJ~~
67-64-1	Acetone	10 ~~7~~	~~BJ~~
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

10-14-94 (WOC)
~~U~~
BJ
4
4

9713515.2829

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOBM24

Lab Name: ITAS-KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: 301 SAS No.: _____ SDG No.: W0012

Matrix: (soil/water) WATER Lab Sample ID: AA5279

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: ADF07

Level: (low/med) LOW Date Received: 04/05/94

% Moisture: not dec. ____ Date Analyzed: 04/06/94

GC Column: DB-624 ID: 0.250 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

BM 8-3-94

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKH6

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO283 SAS No.: SDG No.: W0012
Matrix (soil/water): WATER Lab Sample ID: AA5127
Level (low/med): LOW Date Received: 03/31/94
% 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
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic				NR
7440-39-3	Barium	30.8	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	21800			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	266			P
7439-92-1	Lead				NR
7439-95-4	Magnesium	10700			P
7439-96-5	Manganese	11.3	B		P
7439-97-6	Mercury				NR
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	3610	B		P
7782-49-2	Selenium				NR
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	17100			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	14.2	B		P
7440-66-6	Zinc	8.9	~~B~~		P U
	Titanium	3.0	U		P
5955-70-0	Cyanide				NR

7-26-94

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

Comments:
COMPLETE CLIENT I.D.: 40358701 (A-C)
UNFILTERED

FORM I - IN

ILM02.1

9716516.2851

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKH7

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: WO283 SAS No.: SDG No.: W0012
Matrix (soil/water): WATER Lab Sample ID: AA5124
Level (low/med): LOW Date Received: 03/31/94
% 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	88.8	B		P
7440-36-0	Antimony	50.0	U		P
7440-38-2	Arsenic				NR
7440-39-3	Barium	34.2	B		P
7440-41-7	Beryllium	1.0	U		P
7440-43-9	Cadmium	5.0	U		P
7440-70-2	Calcium	25000			P
7440-47-3	Chromium	10.0	U		P
7440-48-4	Cobalt	10.0	U		P
7440-50-8	Copper	10.0	U		P
7439-89-6	Iron	46.4	B		P
7439-92-1	Lead				NR
7439-95-4	Magnesium	12300			P
7439-96-5	Manganese	12.2	B		P
7439-97-6	Mercury				NR
7440-02-0	Nickel	20.0	U		P
7440-09-7	Potassium	4920	B		P
7782-49-2	Selenium				NR
7440-22-4	Silver	5.0	U		P
7440-23-5	Sodium	19600			P
7440-28-0	Thallium				NR
7440-62-2	Vanadium	19.6	B		P
7440-66-6	Zinc	6.0	B		P
	Titanium	3.0	U		P
5955-70-0	Cyanide				NR

MW 7-25-94

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

Comments:
COMPLETE CLIENT I.D.: 40358702A
FILTERED

FORM I - IN

ILM02.1

9715515.2852

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKH8

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: W0283 SAS No.: SDG No.: W0012
Matrix (soil/water): WATER Lab Sample ID: AA5122
Level (low/med): LOW Date Received: 03/31/94
% 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
7440-36-0	Antimony				NR
7440-38-2	Arsenic	10.4			F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	2.4	B		F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide				NR

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

Comments:
COMPLETE CLIENT I.D.: 40358202A
UNFILTERED

FORM I - IN

ILM02.1

MW 8-4-94

9713513.2863

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKH9

Lab Name: ITAS KNOXVILLE Contract: HANFORD
Lab Code: ITSTU Case No.: W0283 SAS No.: SDG No.: W0012
Matrix (soil/water): WATER Lab Sample ID: AA5123
Level (low/med): LOW Date Received: 03/31/94
% 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
7440-36-0	Antimony				NR
7440-38-2	Arsenic	12.0			F
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead	2.0	U		F
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium	2.0	U		F
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Titanium				NR
5955-70-0	Cyanide				NR

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

Comments:
COMPLETE_CLIENT_I.D.: 40358203A
FILTERED

FORM I - IN

ILM02.1

8-4-94

9713513.2854

00006358

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

308KW8
~~8202A~~ as 10/12/94

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO283 SAS No.: SDG No.: W0012

Matrix (soil/water): WATER Lab Sample ID: AA5122

Level (low/med): LOW Date Received: 03/31/94

% 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
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium	2.0	U		F
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR

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

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

UNFILTERED.

FORM I - IN

ILM02.1

8 8/3/9x

000023a

9/15/15.2855

000006.35C

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

BOBKH9
~~8203A~~ 10/14/94

Lab Name: ITAS KNOXVILLE Contract: HANFORD

Lab Code: ITSTU Case No.: WO283 SAS No.: SDG No.: W0012

Matrix (soil/water): WATER Lab Sample ID: AA5123

Level (low/med): LOW Date Received: 03/31/94

% 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
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium				NR
7440-41-7	Beryllium				NR
7440-43-9	Cadmium				NR
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper				NR
7439-89-6	Iron				NR
7439-92-1	Lead				NR
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver				NR
7440-23-5	Sodium				NR
7440-28-0	Thallium	2.0	U		F
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR

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

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FILTERED.

FORM I - IN

ILM02.1

8 8/3/94

9-19-9

000023b

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	283
Client Sample ID:	BOBKG8	Analysis Date:	04/24/94
Lab Sample ID:	AA5110	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result	Qualifier	Detection Limit
fluoride	0.44	+ J	0.4
chloride	13	+ J	0.4
sulfate	35	+ J	1.5

7-29-94

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

9713513.2857

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	283
Client Sample ID:	BOBKG7	Analysis Date:	04/24/94
Lab Sample ID:	AA5120	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result		Qualifier	Detection Limit
fluoride	0.64	J	+	0.4
chloride	7.5	J	+ MW 7-29-94	0.4
sulfate	24	J	+	1.5

MW
7-29-94

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

9413515.2858

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	283
Client Sample ID:	BOBKH6	Analysis Date:	04/24/94
Lab Sample ID:	AA5125	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result		Qualifier	Detection Limit
fluoride	0.67	J	+	0.4
chloride	11	J	+	0.4
sulfate	23	J	+	1.5

7-25-94

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

9716513.2809

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	301
Client Sample ID:	BOBKH2	Analysis Date:	04/28/94
Lab Sample ID:	AA5283	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result		Qualifier	Detection Limit
fluoride	0.4	~~UJ~~	U	0.4
chloride	21	J	+	0.8
sulfate	38	J	+	6.0

no qualifier due on fluoride on 7-29-94

7-29-94

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

9716515.2080

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	301
Client Sample ID:	BOBKG9	Analysis Date:	04/28/94
Lab Sample ID:	AA5287	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result		Qualifier	Detection Limit
fluoride	0.4	~~UJ~~	~~U~~ U	0.4
chloride	8.7	J	+	0.8
sulfate	25	J	+	1.5

No quality change in fluoride
pw 7-29-94

7-29-94

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

9713515.2811

ANION ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	301
Client Sample ID:	BOBKH0	Analysis Date:	04/28/94
Lab Sample ID:	AA5289	Confirmation Date:	N/A
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Result		Qualifier	Detection Limit
fluoride	0.4	~~UJ~~	~~+~~ U	0.4
chloride	12	J	+	0.8
sulfate	31	J	+	3.0

No qualifier done on fluoride MW 7-21-94

7-29-94

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

9715515.2892

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	283
Sample Matrix:	Water	Analysis Date:	04/19/94
Concentration Units:	mg/l		

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6101	0.02	U
BOBKG7	AA5121	4.3	+
BOBKG8	AA5111	11	+
BOBKH6	AA5126	0.64	+

MW
7-29-94

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

9713515.2945

NITRATE/NITRITE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	301
Sample Matrix:	Water	Analysis Date:	04/19/94
Concentration Units:	mg/l		

Client Sample ID	Lab Sample ID	Result	Qualifier
Method Blank	P6101	0.02	U
BOBKG9	AA5288	3.8	+
BOBKH0	AA5290	0.14	+
BOBKH2	AA5284	17	+

7-29-94

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

9413513.2934

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0012
LAB SAMPLE ID: 4-03-470-01
MATRIX: WATER
WHC ID: BOBKG1
DATE RECEIVED: 3/23/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	~~1.98E+04~~	4.90E+01	2.14E+03	~~0.805~~	ITAS-IT-RS-0001
URANIUM	1.22E+03	N/A	1.83E+02	1	RD4200
Tc99	1.771 E4			.893	

LAB SAMPLE ID: 4-03-470-02
MATRIX: WATER
WHC ID: BOBKG2
DATE RECEIVED: 3/23/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	~~1.78E+04~~	4.44E+01	1.94E+03	~~0.805~~	ITAS-IT-RS-001
URANIUM	1.04E+03	N/A	1.56E+02	1	RD4200
Tc99	1.606 E4			.893	

LAB SAMPLE ID: 4-03-470-03
MATRIX: WATER
WHC ID: BOBKG4
DATE RECEIVED: 3/23/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	~~1.44E+04~~	3.63E+01	1.57E+03	~~0.805~~	ITAS-IT-RS-0001
URANIUM	9.44E+02	N/A	1.42E+02	1	RD4200
Tc99	1.299E4			.893	

JW 7-22-94

Tc99 corrected results

JM 8/9/94

~~0012~~

9713513.2815

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

SAMPLE RESULTS

LAB SAMPLE ID: 4-03-470-04

WHC ID: BOBKG5

REPORTING UNITS: pCi/L & ug/L

MATRIX: WATER

DATE RECEIVED: 3/23/94

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	~~1.41E+04~~	3.54E+01	1.54E+03	~~0.805~~	ITAS-IT-RS-0001
URANIUM	4.07E+02	N/A	6.10E+01	1	RD4200
TC99	1.269E4			.893	

AW
7-22-94

Tc99 Corrected results

00138 8/9/94

000033 682A-6-93

9413515.2946

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0012
LAB SAMPLE ID: 4-03-531-01
MATRIX: WATER
WHC ID: BOBKH3
DATE RECEIVED: 3/25/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TOTAL-SR	1.45E+01	9.38E-01	3.46E+00	0.573	RD3204
TC-99	~~2.37E+04~~	5.96E+01	2.59E+03	~~0.805~~	ITAS-IT-RS-0001
URANIUM	1.69E+03	N/A	2.53E+02	1	RD4200
TC 99	2.136E4			.893	

LAB SAMPLE ID: 4-03-531-02
MATRIX: WATER
WHC ID: BOBKG3
DATE RECEIVED: 3/25/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	~~1.33E+04~~	3.34E+01	1.46E+03	~~0.805~~	ITAS-IT-RS-0001
URANIUM	3.44E+02	N/A	5.16E+01	1	RD4200
Tc99	9.765E3			.893	

LAB SAMPLE ID: 4-03-531-03
MATRIX: WATER
WHC ID: BOBKG6
DATE RECEIVED: 3/25/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	~~7.18E+03~~	1.87E+01	7.86E+02	~~0.805~~	ITAS-IT-RS-0001
URANIUM	1.43E+02	N/A	2.15E+01	1	RD4200
Tc99	6.476E3			.893	

MW 7-22-94

Tc99 corrected results

0014 6/9/94

000034 682A-6-93

9213513.2847

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0012
LAB SAMPLE ID: 4-03-583-01
MATRIX: WATER
WHC ID: BOBKG8
DATE RECEIVED: 3/29/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	~~6.46E+02~~	5.93E+00	7.39E+01	~~0.805~~	ITAS-IT-RS-0001
J URANIUM	2.58E+02	N/A	3.87E+01	1	RD4200
Tc99	5.821E2			.893	

LAB SAMPLE ID: 4-03-583-02
MATRIX: WATER
WHC ID: BOBKH8
DATE RECEIVED: 3/29/94
REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	5.26E-01	1.25E+00	5.11E+00	~~0.805~~	ITAS-IT-RS-0001
Tc99	.4743			.893	

LAB SAMPLE ID: 4-03-583-03
MATRIX: WATER
WHC ID: BOBKG7
DATE RECEIVED: 3/29/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
~~TC-99~~	~~2.09E+02~~	3.41E+00	2.64E+01	~~0.805~~	ITAS-IT-RS-0001
URANIUM	3.70E+01	N/A	5.55E+00	1	RD4200
Tc99	1.882E2			.893	

MW 7-22-94

Tc99 corrected results

~~0015~~ 8/9/94

682A-6-93

9413515.2818

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0012
LAB SAMPLE ID: 4-03-588-01
MATRIX: WATER
WHC ID: BOBKH6
DATE RECEIVED: 3/30/94
REPORTING UNITS: pCi/L & ug/L

10-19-94 WJ

	ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
J	K-40	8.70E+01	7.56E+01	7.61E+01	N/A	RD3219
	CO-60	-1.47E+00	3.94E+00	3.94E+00	N/A	RD3219
	FE-59	-6.43E-01	1.16E+01	1.16E+01	N/A	RD3219
UJ	EU-152	-9.74E+00	2.46E+01	2.46E+01	N/A	RD3219
	CO-58	-4.71E-01	5.73E+00	5.73E+00	N/A	RD3219
	CS-137DA	-2.07E+00	3.90E+00	3.90E+00	N/A	RD3219
	CS-134	4.07E+00	2.87E+00	2.90E+00	N/A	RD3219
	RU-106DA	6.46E+00	3.86E+01	3.86E+01	N/A	RD3219
	NA-22	-1.97E+00	3.68E+00	3.68E+00	N/A	RD3219
	EU-155	-1.01E+00	6.94E+00	6.94E+00	N/A	RD3219
	EU-154	-5.47E+00	1.02E+01	1.02E+01	N/A	RD3219
	TC-99	~~1.92E+02~~	3.28E+00	2.47E+01	~~0.805~~	ITAS-IT-RS-0001
	URANIUM	5.37E+00	N/A	8.05E-01	1	RD4200

Tc99 173.17 .893

LAB SAMPLE ID: 4-03-588-02
MATRIX: WATER
WHC ID: BOBKJ2
DATE RECEIVED: 3/30/94
REPORTING UNITS: pCi/L & ug/L

	ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
J	U-234	1.07E+03	5.73E+01	1.66E+02	0.543	RD3234
J	U-235	4.67E+01	1.20E+01	1.38E+01	0.543	RD3234
J	U-238DA	1.07E+03	5.72E+01	1.65E+02	0.543	RD3234
	TC-99	~~8.28E+03~~	2.08E+01	9.05E+02	~~0.805~~	ITAS-IT-RS-0001
	URANIUM	2.70E+03	N/A	4.05E+02	1	RD4200

Tc99 7.460E3 .893

MW 7-22-94

Tc99 corrected results

8/9/94

882A-6-93

9715513.2819

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

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0012
LAB SAMPLE ID: 4-04-040-01
MATRIX: WATER
WHC ID: BOBKH2
DATE RECEIVED: 4/4/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TOTAL-SR	-6.11E-02	4.95E-01	4.95E-01	0.514	RD3204
TC-99	~~8.75E+01~~	2.41E+00	1.35E+01	~~0.805~~	ITAS-IT-RS-0001
URANIUM	4.17E+00	N/A	6.25E-01	1	RD4200
Tc99	78.86			.853	

LAB SAMPLE ID: 4-04-040-02
MATRIX: WATER
WHC ID: BOBKG9
DATE RECEIVED: 4/4/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	~~2.42E+02~~	3.62E+00	3.00E+01	~~0.805~~	ITAS-IT-RS-0001
URANIUM	3.86E+00	N/A	5.78E-01	1	RD4200
Tc99	218.06			.853	

LAB SAMPLE ID: 4-04-040-03
MATRIX: WATER
WHC ID: BOBKH0
DATE RECEIVED: 4/4/94
REPORTING UNITS: pCi/L & ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	~~2.11E+02~~	3.43E+00	2.66E+01	~~0.805~~	ITAS-IT-RS-0001
J URANIUM	2.44E+02	N/A	3.66E+01	1	RD4200
Tc99	189.76			.853	

MW 7-22-94

Tc99 corrected results

JM 8/19/94

9213515.2850

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

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0012

LAB SAMPLE ID: F-03-470-03

WHC ID: BOBKG4

REPORTING UNITS: ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
URANIUM	9.02E+02	N/A	1.35E+02	1	RD4200

LAB SAMPLE ID: F-03-470-04

WHC ID: BOBKG5

REPORTING UNITS: ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
URANIUM	4.02E+02	N/A	6.03E+01	1	RD4200

LAB SAMPLE ID: F-03-588-02

WHC ID: BOBKJ2

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
U-234	1.29E+03	6.37E+01	1.99E+02	0.53	RD3234
U-235	7.61E+01	1.55E+01	1.91E+01	0.53	RD3234
U-238DA	1.23E+03	6.23E+01	1.90E+02	0.53	RD3234

7-22-94

9713513.2951

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

RPD CALCULATIONS

LAB NAME: ITAS-RICHLAND SDG NO.: W0012

LAB SAMPLE ID: 4-03-470-03

WHC ID: BOBKG4

REPORTING UNITS: ug/L

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
URANIUM	9.44E+02	9.02E+02	4.55

LAB SAMPLE ID: 4-03-470-04

WHC ID: BOBKG5

REPORTING UNITS: ug/L

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
URANIUM	4.07E+02	4.02E+02	1.24

LAB SAMPLE ID: 4-03-588-02

WHC ID: BOBKJ2

REPORTING UNITS: pCi/L

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
U-234	1.07E+03	1.29E+03	18.64
U-235	4.67E+01	7.61E+01	47.88
U-238DA	1.07E+03	1.23E+03	13.91

U235 qualified as estimated (J)

MW 7-22-94

0019 8/9/9

682A-6-93

9215515.2852

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

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0012

LAB SAMPLE ID: F-03-531-01

WHC ID: BOBKH3

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TOTAL-SR	1.47E+01	9.27E-01	3.53E+00	0.603	RD3204
TC-99	~~2.25E+04~~	5.61E+01	2.46E+03	~~0.805~~	ITAS-IT-RS-0001
Tc99	2.03E4			.893	

LAB SAMPLE ID: F-03-470-01

WHC ID: BOBKG1

REPORTING UNITS: pCi/L

Tc99 corrected result

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TC-99	~~1.99E+04~~	4.98E+01	2.17E+03	~~0.805~~	ITAS-IT-RS-0001
	1.789E4			.893	

JMO
7-22-94

0020 JM 8/19/94

682A-6-93

9214515.2865

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

RPD CALCULATIONS

LAB NAME: ITAS-RICHLAND SDG NO.: W0012

LAB SAMPLE ID: 4-03-531-01

WHC ID: BOBKH3

REPORTING UNITS: pCi/L

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
TOTAL-SR	1.45E+01	1.47E+01	1.37
TC-99	2.37E+04	2.25E+04	5.19
Tc99	2.136 E4	2.03 E4	5%

LAB SAMPLE ID: 4-03-470-01

WHC ID: BOBKG1

REPORTING UNITS: pCi/L

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
TC-99	~~1.96E+04~~	~~1.99E+04~~	1.52
Tc99	1.771 E4	1.789 E4	1%

MW
7-22-94

Tc99 corrected results

8/9/94

9713513.2854

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

RPD CALCULATIONS

LAB NAME: ITAS-RICHLAND SDG NO.: W0012

LAB SAMPLE ID: 4-03-588-01

WHC ID: BOBKH6

REPORTING UNITS: pCi/L

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
K-40	8.70E+01	6.08E+01	35.45
CO-60	-1.47E+00 U	2.47E+00 U	788.00
FE-59	-6.43E-01 U	1.03E+01 U	226.63
EU-152	-9.74E+00 U	2.13E+01 U	537.02
CO-58	-4.71E-01 U	4.37E+00 U	248.32
CS-137DA	-2.07E+00 U	3.69E+00 U	711.11
CS-134	4.07E+00	3.30E+00	20.90
RU-106DA	6.46E+00	4.04E+01	144.86
NA-22	-1.97E+00	3.51E+00	711.69
EU-155	-1.01E+00 U	5.93E+00 U	282.11
EU-154	-5.47E+00 U	9.74E+00 U	712.41

all OK

LAB SAMPLE ID: 4-04-040-01

WHC ID: BOBKH2

REPORTING UNITS: pCi/L

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD
TOTAL-SR	-6.11E-02 U	2.60E-01 U	322.88

all OK

7-22-96

8/9/0

0023

 2A-6-93

9716013.2855

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

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0012

LAB SAMPLE ID: F-03-588-01

WHC ID: BOBKH6

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
K-40	1.67E+02	6.08E+01	6.31E+01	N/A	RD3219
CO-60	2.76E+00 U	2.47E+00	2.49E+00	N/A	RD3219
FE-59	2.58E+00 U	1.03E+01	1.03E+01	N/A	RD3219
EU-152	-1.86E+00 U	2.13E+01	2.13E+01	N/A	RD3219
CO-58	1.18E+00 U	4.37E+00	4.37E+00	N/A	RD3219
CS-137DA	1.15E+00 U	3.69E+00	3.69E+00	N/A	RD3219
CS-134	0.00E+00	3.30E+00	3.30E+00	N/A	RD3219
RU-106DA	1.84E+01	4.04E+01	4.04E+01	N/A	RD3219
NA-22	-2.51E+00	3.51E+00	3.52E+00	N/A	RD3219
EU-155	-1.74E+00 U	5.93E+00	5.93E+00	N/A	RD3219
EU-154	-6.96E+00 U	9.74E+00	9.77E+00	N/A	RD3219

LAB SAMPLE ID: F-04-040-01

WHC ID: BOBKH2

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TOTAL-SR	2.60E-01	6.25E-01	6.27E-01	0.383	RD3204

9715515.2856

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

BLANK RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0012

LAB SAMPLE ID: L-03-470-1B

REPORTING UNITS: ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
URANIUM	0.00E+00 U	N/A	1.00E-02	1	RD4200

LAB SAMPLE ID: L-03-531-1B

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TOTAL-SR	-1.24E-01 U	2.67E-01	2.69E-01	0.947	RD3204
TC-99	-1.60E+00 U	1.20E+00	4.95E+00	0.805	ITAS-IT-RS-0001

LAB SAMPLE ID: L-03-531-2B

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
TOTAL-SR	2.39E-01 U	2.60E-01	2.66E-01	0.699	RD3204

mo 7-22-94

~~0024~~ 8/9/94

 682A-6-93

9413513.2857

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

BLANK RESULTS

LAB SAMPLE ID: L-03-588-1B

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
K-40	1.04E+02	7.80E+01	7.87E+01	N/A	RD3219
CO-60	3.93E+00 U	4.22E+00	4.24E+00	N/A	RD3219
FE-59	5.77E+00 U	9.30E+00	9.32E+00	N/A	RD3219
EU-152	1.66E+01 U	1.36E+01	1.37E+01	N/A	RD3219
CO-58	-6.21E-01 U	3.63E+00	3.63E+00	N/A	RD3219
CS-137DA	-7.00E+00 U	4.15E+00	4.21E+00	N/A	RD3219
CS-134	4.62E-02	3.50E+00	3.50E+00	N/A	RD3219
RU-106DA	-6.00E+01	3.91E+01	3.95E+01	N/A	RD3219
NA-22	-3.60E-01	2.70E+00	2.70E+00	N/A	RD3219
EU-155	3.32E-01 U	7.35E+00	7.35E+00	N/A	RD3219
EU-154	-7.40E-01 U	7.57E+00	7.57E+00	N/A	RD3219

LAB SAMPLE ID: L-03-588-2B

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
U-234	2.34E+00 U	3.04E+00	3.06E+00	0.478	RD3234
U-235	6.63E-01 U	1.76E+00	1.76E+00	0.478	RD3234
U-238DA	7.33E-01 U	1.76E+00	1.76E+00	0.478	RD3234

7RDC

pw 7-22-94

8/9/94

 682A-6-93

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

LABORATORY CONTROL SAMPLES

LAB NAME: ITAS-RICHLAND **SDG NO.:** W0012

LAB SAMPLE ID: L-03-588-1S

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	EXPECTED	% RECOVERY
CO-60	2.06E+01	8.53E+00	8.78E+00	N/A	2.48E+01	83
EU-152	3.42E+01	2.92E+01	2.94E+01	N/A	4.96E+01	69
CS-137DA	5.07E+01	1.03E+01	1.15E+01	N/A	4.97E+01	102

EU152 % R < 70% (UJ)

LAB SAMPLE ID: L-03-531-1S

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	EXPECTED	% RECOVERY
TOTAL-SR	1.35E+01	1.06E+00	3.55E+00	0.899	1.36E+01	99

LAB SAMPLE ID: L-03-531-2S

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	EXPECTED	% RECOVERY
TOTAL-SR	1.22E+01	7.72E-01	3.01E+00	0.744	1.35E+01	90

MW 7-22-94

9715513.2859

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

LABORATORY CONTROL SAMPLES

LAB NAME: ITAS-RICHLAND SDG NO.: W0012

LAB SAMPLE ID: L-03-470-1S

REPORTING UNITS: ug/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	EXPECTED	% RECOVERY
URANIUM	4.10E-01	N/A	6.15E-02	1	4.52E-01	91

LAB SAMPLE ID: L-03-531-1M

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	EXPECTED	% RECOVERY
TC-99	~~9.61E+01~~	2.49E+00	1.44E+01	~~0.805~~	9.02E+01	~~107~~
Tc	86.63			.893		96

Tc 99 corrected result

LAB SAMPLE ID: L-03-588-2S

REPORTING UNITS: pCi/L

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	EXPECTED	% RECOVERY
U-234	9.43E+01	1.76E+01	2.25E+01	0.507	8.69E+01	109
U-235	7.20E+00	4.94E+00	5.05E+00	0.507	3.97E+00	181
U-238DA	9.43E+01	1.76E+01	2.25E+01	0.507	9.11E+01	104

U_{235} > 130% (J)

MW 7-22-94

002 8/9/94

 682A-6-93

9713513.2850

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

MATRIX SPIKE RESULTS

LAB NAME: ITAS-RICHLAND **SDG NO.:** W0012

LAB SAMPLE ID: W-04-040-02

REPORTING UNITS: pCi/L

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	SAMPLE RESULT	EXPECTED	% RECOVERY
TC-99	8.07E+01	3.41E+00	3.29E+01	1.95E+02	~~1.00E+02~~ 90.351	80 89.3

Tc99 corrected result

*SPIKE RESULT CORRECTED FOR SAMPLE RESULT

7-22-94

000048

682A-6-93

9713515.2861

SAMPLE IDENTIITY: 40358802

TITLE : U WHC

DETECTOR : ALP6 1
CONFIGURATION NAME : DKA200:[ALP6.SAMPLE]40358802_040541113.CNF;1

ACQUIRE DATE of BACKGROUND: 02-APR-1994 09:01:40

REPORT DATE : 04-May-94 SAMPLE DATE: 04-MAY-1994 12:00:00
ACQUIRE DATE: 04-MAY-1994 11:13:49 CALIB DATE : 02-APR-1994 03:21:32

Ct date

PRESET LIVE TIME: 0 03:20:00 ELAPSED LIVE TIME: 0 03:20:14

OFFSET : 3502.53 keV CONSTANT FWHM : 12.16670 Channels
SLOPE : 6.16529 keV/C SENSITIVITY : 4.00000 Std Dev's
QUAD COEFF : 5.753330E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

021 JM 08/9/94

9713515.2842

(NUM)	IT #	ISOTOPE	RESULT	ERROR*	COUNT ERROR*	YIELD	CALC MDA	UNITS	COMMENTS	DIAGNOSTICS
(26)	L035313N	TC99	-1.712E+01	2.038E+02	4.917E+01	1.000		PCI/L	AVER	No Contr Values
(27)	L035314N	TC99	2.566E+03	1.482E+02	4.933E+01	1.000		PCI/L		No Contr Values
(28)	L035314N	TC99	2.566E+03	1.482E+02	4.933E+01	1.000		PCI/L	AVER	No Contr Values
(29)	40347003	TC99	1.159E+04	6.331E+02	1.459E+01	1.000		PCI/L		No Contr Values
(30)	40347003	TC99	1.159E+04	6.331E+02	1.459E+01	1.000		PCI/L	AVER	No Contr Values
(31)	40347004	TC99	1.133E+04	6.186E+02	1.423E+01	1.000		PCI/L		No Contr Values
(32)	40347004	TC99	1.133E+04	6.186E+02	1.423E+01	1.000		PCI/L	AVER	No Contr Values
(33)	40404001	TC99	7.040E+01	5.430E+00	9.703E-01	1.000		PCI/L		No Contr Values
(34)	40404001	TC99	7.040E+01	5.430E+00	9.703E-01	1.000		PCI/L	AVER	No Contr Values
(35)	40404002	TC99	1.947E+02	1.208E+01	1.458E+00	1.000		PCI/L		No Contr Values
(36)	40404002	TC99	1.947E+02	1.208E+01	1.458E+00	1.000		PCI/L	AVER	No Contr Values
(37)	W0404002	TC99	2.754E+02	1.645E+01	1.705E+00	1.000		PCI/L		No Contr Values
(38)	W0404002	TC99	2.754E+02	1.645E+01	1.705E+00	1.000		PCI/L	AVER	No Contr Values
(39)	40404003	TC99	1.694E+02	1.072E+01	1.381E+00	1.000		PCI/L		No Contr Values
(40)	40404003	TC99	1.694E+02	1.072E+01	1.381E+00	1.000		PCI/L	AVER	No Contr Values
(41)	40358801	TC99	1.546E+02	9.917E+00	1.318E+00	1.000		PCI/L		No Contr Values
(42)	40358801	TC99	1.546E+02	9.917E+00	1.318E+00	1.000		PCI/L	AVER	No Contr Values
(43)	40358802	TC99	6.659E+03	3.641E+02	8.360E+00	1.000		PCI/L		No Contr Values
(44)	40358802	TC99	6.659E+03	3.641E+02	8.360E+00	1.000		PCI/L	AVER	No Contr Values
(45)	40358301	TC99	5.196E+02	2.973E+01	2.385E+00	1.000		PCI/L		No Contr Values
(46)	40358301	TC99	5.196E+02	2.973E+01	2.385E+00	1.000		PCI/L	AVER	No Contr Values
(47)	40358302	TC99	4.234E-01	2.061E+00	5.020E-01	1.000		PCI/L		No Contr Values
(48)	40358302	TC99	4.234E-01	2.061E+00	5.020E-01	1.000		PCI/L	AVER	No Contr Values
(49)	L035315N	TC99	5.586E+01	2.065E+02	4.986E+01	1.000		PCI/L		No Contr Values
(50)	L035315N	TC99	5.586E+01	2.065E+02	4.986E+01	1.000		PCI/L	AVER	No Contr Values

$\frac{(275.4 - 194.7)}{100.29} = .8047$

DPM

0396 8/9/94

9713513.2863

S# PID	TIME	CPMA DPM1	CPMB	tSIE	SIS	FLAG	LUM
16	13.83	11570.4	16.63	183.3	62.630	#	0
18	55 min.	12587.4					
	13.82	11582.4	17.01	182.8	62.400	A*	0
40347004		12603.7					
17	25.00	98.32	14.48	182.7	140.35	#	0
18		106.99					
17	25.00	100.40	15.20	183.2	146.20	#	0
18		109.23					
17	25.00	96.20	14.36	183.6	148.64	#	0
18		104.64					
17	25.00	97.04	15.20	182.8	148.49	#	0
18		105.60					
	25.00	97.99	14.81	183.1	145.92	A*	0
40404001		106.62					
18	25.00	228.04	14.84	228.0	123.54	#	0
18		244.19					
18	25.00	230.36	15.44	229.3	123.89	#	0
18		246.60					
18	25.00	222.12	15.28	229.4	128.17	#	0
18		237.77					
18	25.00	233.20	16.56	229.1	128.72	#	0
18		249.65					
	25.00	(228.43)	15.53	229.0	126.08	A*	0
40404002		(244.55)					
19	25.00	314.00	17.24	221.7	115.36	#	0
18		336.76					
19	25.00	311.56	15.80	223.9	111.91	#	0
18		333.95					
19	25.00	310.28	15.92	222.1	112.96	#	0
18		332.73					
19	25.00	310.72	15.24	222.7	110.74	#	0
18		333.15					
	25.00	(311.64)	16.05	222.6	112.74	A*	0
W0404002		(334.15)					
20	25.00	194.56	14.08	188.5	105.99	#	0
18		211.15					
20	25.00	204.32	14.60	188.0	106.60	#	0
18		221.79					
20	25.00	200.20	14.60	189.5	107.73	#	0
18		217.17					
20	25.00	199.08	15.76	189.7	113.78	#	0
18		215.94					
	25.00	199.54	14.76	188.9	108.53	A*	0
40404003		216.51					
21	25.00	184.36	15.32	228.6	137.91	#	0
18		197.39					
21	25.00	190.04	15.60	229.6	133.58	#	0
18		203.42					
21	25.00	186.72	15.16	232.3	134.84	#	0
18		199.76					
21	25.00	186.68	16.96	231.2	139.74	#	0
18		199.76					
	25.00	186.95	15.76	230.4	136.52	A*	0
40358801		200.08					
22	23.29	6870.63	18.42	200.8	69.830	#	0
18		7418.16					

$$\frac{334.15 - 244.55}{100.39} = .893$$

EQN 145 100.29 ± 1.2393 DPM

0372 8/9/94

000051

9715E6.2G4

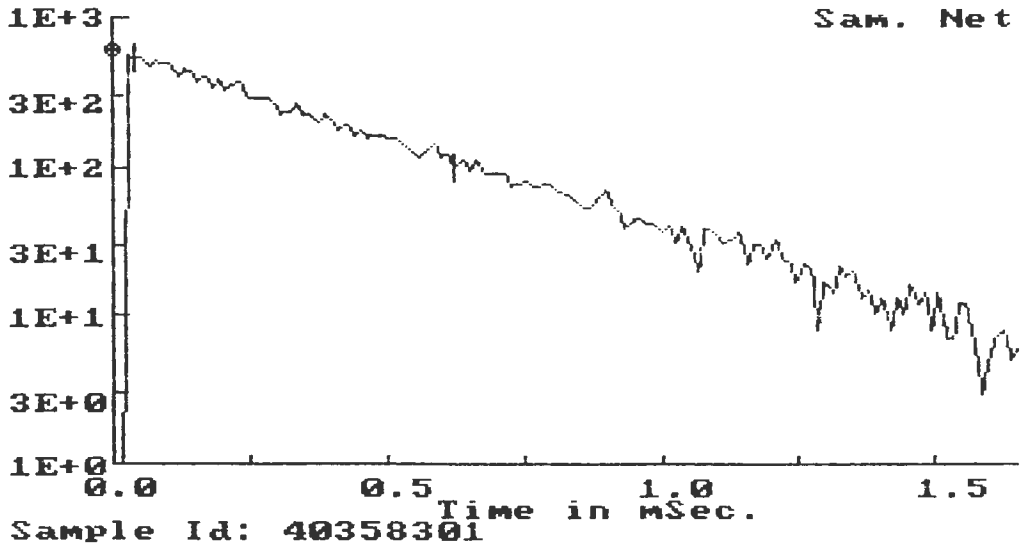
Total Sample Volume (V1): 200 ml
Volume of Total Sample Analyzed (V2): 200 ml
Final Volume after dissolving Residue (V3): 1000 ml
Volume of concentrate Pipetted into Cell (V4): 1 ml

BOBKG8

ANALYTICAL REPORT

25213 Disk Seq. #: 25213
Sample ID: 40358301
Description: 3-470 U-LASER WHC
Lifetime = 358.854 ± 7.930 µS
R^2 = 0.979
Calibrated at 50.980 ng / 1.000 ml
Calibration Seq. #: 25179
Bkgd. Type: Calibration
Uranium in Cell = 5.1625E+01 ng
Uranium/Sample = 5.1625E+04 ng / 200 ml
Total Uncert./Sample = 6.4526E+03 ng / 200 ml

User ID: [illegible]
Time/Date: 07:56:14 05-09-1994
Concentration = 258.[illegible] [illegible]/ml
Uncertainty = 29.569 ng/ml
Intercept = 3.076E-01/pulse ± 2.3%
Ref. Ratio = 1.004
Ref. Lifetime = 353.032 µS
LASER Pulses = 2000
Analysis Channels: 4 - 48



0516 8/9/94

9713513.2835

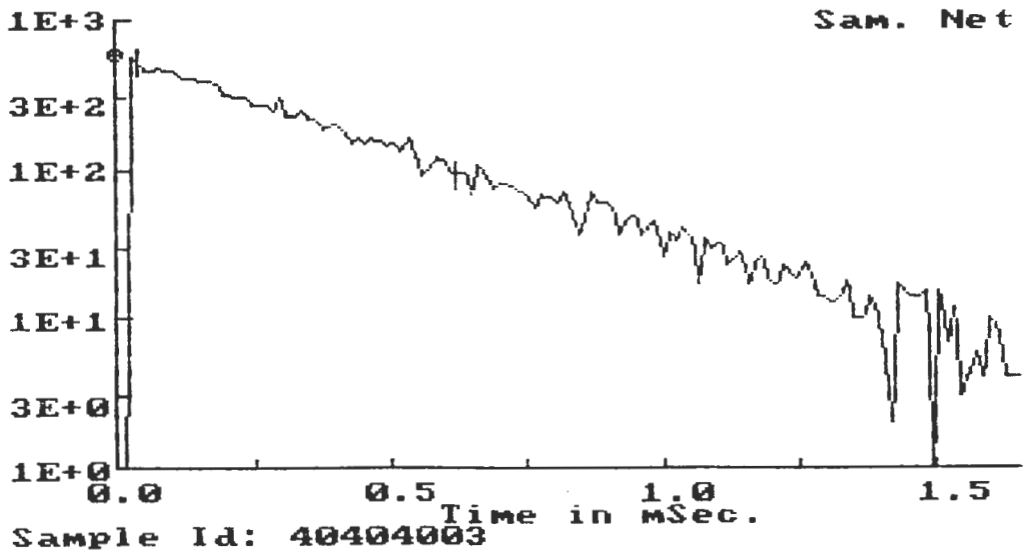
Total Sample Volume (V1): 200 ml
Volume of Total Sample Analyzed (V2): 200 ml
Final Volume after dissolving Residue (V3): 1000 ml
Volume of concentrate Pipetted into Cell (V4): 1 ml

BOBKHO

ANALYTICAL REPORT

25212 Disk Seq. #: 25212
Sample ID: 40404003
Description: 3-470 U-LASER WHC
Lifetime = 350.750 ± 9.301 µS
R^2 = 0.971
Calibrated at 50.980 ng / 1.000 ml
Calibration Seq. #: 25179
Bkgd. Type: Calibration
Uranium in Cell = 4.8767E+01 ng
Uranium/Sample = 4.8767E+04 ng / 200 ml
Total Uncert./Sample = 6.1485E+03 ng / 200 ml

User ID: APURYEAR
Time/Date: 07:51:06 05-09-1994
Concentration = 243.836 ng/ml
Uncertainty = 28.221 ng/ml
Intercept = 2.906E-01/pulse ± 2.8%
Ref. Ratio = 0.996
Ref. Lifetime = 355.128 µS
LASER Pulses = 2000
Analysis Channels: 4 - 48



051 8/9/94

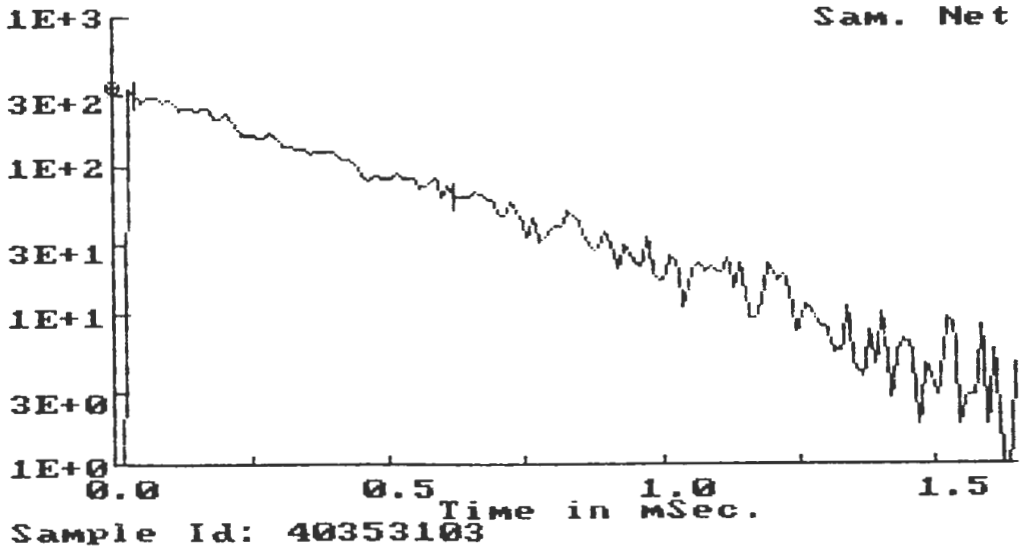
9713515.2856

Total Sample Volume (V1): 200 ml
Volume of Total Sample Analyzed (V2): 200 ml
Final Volume after dissolving Residue (V3): 1000 ml
Volume of concentrate Pipetted into Cell (V4): 1 ml

BOB LGG ANALYTICAL REPORT

25202 Disk Seq. #: 25202
Sample ID: 40353103
Description: 3-470 U-LASER WHC
Lifetime = 369.441 ± 8.923 µS
R^2 = 0.976
Calibrated at 50.980 ng / 1.000 ml
Calibration Seq. #: 25179
Bkgd. Type: Calibration
Uranium in Cell = 2.8633E+01 ng
Uranium/Sample = 2.8633E+04 ng / 200 ml
Total Uncert./Sample = 3.5867E+03 ng / 200 ml

User ID: APURYEAR
Time/Date: 07:19:01 05-09-1994
Concentration = 143.165 ng/ml
Uncertainty = 16.443 ng/ml
Intercept = 1.706E-01/pulse ± 2.5%
Ref. Ratio = 1.021
Ref. Lifetime = 354.053 µS
LASER Pulses = 2000
Analysis Channels: 4 - 48



~~0505~~ 8/9/94

9713513.2867

Checklists

9214515.2858

LATA GC/MS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-1		SDG: W0012-ITC-028
VALIDATOR: B. MORRIS	LATA NO.: VW401.93	DATE: 7-26-94
SAF NO.: 94-088	LAB: IT	CASE:

QAPP REFERENCE:	SAP REFERENCE:

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☒ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (pac column)	☐ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 8270 (pac column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX
BOBKH2 (WATER)
BOBKH5 (WATER)
BOBMZ4 (WATER)

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

10-10-94 DFC

Is technical verification documentation present? . . . . . Yes No N/A

Is a case narrative present? . . . . . Yes No N/A

Comments:

2. HOLDING TIMES *(see HOLDING TIME SUMMARY form)*

Are sample holding times acceptable? . . . . . Yes No N/A

Comments:

3. INSTRUMENT TUNING AND CALIBRATION *(see CALIBRATION DATA SUMMARY form)*

Is the GC/MS tuning/performance check acceptable? . . . . . Yes No N/A

★ **VOA:** Verify the calculation of the mass abundance percentages for the 95/96, 176/177 and 174/176 ratios.

★ **SVOA:** Verify the calculation of the mass abundance percentages for the 199/198 and 443/442 ratios.

Are initial calibrations acceptable? . . . . . 10-10-94 WJC Yes ~~No~~ N/A

★ Verify the RRF and %RSD values and recalculate the individual and average RRF values and RSD values for two TCL compounds for Volatiles (V) and Semivolatiles (S).

★

Initial Calibration Acceptable 10-19-94 WJC

Relative Response Factor

$$RRF = \frac{A_x C_{is}}{A_{is} C_x}$$

where:

A_x (V/S) = area of the characteristic ion measured for the sample
A_{is} (V/S) = area of the characteristic ion measured for the internal standard
C_x (V/S) = concentration [(VOA ng) (SVOA ng/µL)] of the compound of interest
C_{is} (V/S) = concentration [(VOA ng) (SVOA ng/µL)] of the associated internal standard

★

Relative Standard Deviation

$$\%RSD = \frac{STDEV}{MEAN} \times 100$$

where:

MEAN = mean of the initial five relative response factors
STDEV = standard deviation of the initial five RRFs per compound

$$= \sqrt{\sum_{i=1}^{n} \frac{(RRF_i - RRF)^2}{n-1}}$$

Are continuing calibrations acceptable? . . . . . Yes No N/A

★ Verify that the RRF and %D values are within the required limits and recalculate the individual RRF and %D values for at least two TCL compounds for Volatiles (V) and Semivolatiles (S).

★

Percent Difference

$$\%D = \frac{(RRF_i - RRF_s)}{RRF_i} \times 100$$

where:

RRF_i (V/S) = initial calibration average relative response factor
RRF_s (V/S) = continuing calibration average relative response factor

~~10-10-94 WJC~~

Comments: ~~Initial Calibration for bromoform % RSD > 30.5~~

DATA is not qualified because only one compound out. 10-19-94 WJC

 8/9/94

LATA GC/MS DATA VALIDATION CHECKLIST

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . ~~Yes~~ No N/A

Comments: ~~BOBKH5 → Change Acetone from B to U, not >10 blank and Methylene Chloride BJ to U.~~ AJ 9/18/9

BOBKH5 is a trip Blank

The lab method blank contained $MeCl_2$ & acetone. - All samples qualified (U)

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were surrogates/System Monitoring Compounds analyzed? . . . . . Yes No N/A

Are all surrogate/System Monitoring Compound recoveries acceptable? . . . . . Yes No N/A

★

Surrogate Recovery

$$\%R = \left(\frac{Q_d}{Q_a}\right) \times 100$$

where:
Q_d (V/S) = quantity of surrogate determined (analysis result)
Q_a (V/S) = quantity of surrogate added (true value)

Were MS/MSD samples analyzed? . . . . . Yes No N/A

Are all MS/MSD recoveries acceptable? . . . . . Yes No N/A

★

Spike Recovery

$$MS\%R = \frac{MS - OS}{SA} \times 100 \quad \text{or} \quad MSD\%R = \frac{MSD - OS}{SA} \times 100$$

where:
MS/MSD (V/S) = spiked sample result
OS (V/S) = sample result
SA (V/S) = spike added

Comments:

6. PRECISION *(see PRECISION DATA SUMMARY form)*

Are all MS/MSD RPD values acceptable? . . . . . Yes No N/A

★

Relative Percent Difference

$$RPD = \frac{|MS - MSD|}{\left(\frac{MS + MSD}{2}\right)} \times 100$$

where =
MS = MS recovery
MSD = MSD recovery

Comments:

7. FIELD QC SAMPLES

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? Yes No N/A

Are field/trip blank results acceptable? . . . . . ~~Yes~~ No N/A

Are field duplicate RPD values acceptable? . . . . . 10-10-94 Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Are performance audit sample results acceptable? . . . . . Yes No N/A

Comments:

Trip blank BOBKH's contained 2-butanone.

8. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . Yes No N/A

Are internal standard areas acceptable? . . . . . Yes No N/A

Are internal standard retention times acceptable? . . . . . Yes No N/A

Comments:

9. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No N/A

Is compound quantitation acceptable? . . . . . Yes No N/A

★

Results Calculations for VOA water (VW) samples

$$\text{Concentration } (\mu g/L) = \frac{(A_x VW)\ (I_s VW)\ (D_f VW)}{(A_{is} VW)\ (RRFVW)\ (V_o VW)}$$

where:

$A_x VW$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} VW$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s VW$ = amount of internal standard added (ng)
RRFVW = relative response factor (ambient temperature purge of the calibration standard)
$V_o VW$ = volume of water purged (ml)
$D_f VW$ = dilution factor

★

Results Calculations for VOA soil/sediment (VLS) samples (low level)

$$\text{Concentration } (\mu g/Kg) = \frac{(A_x VLS)\ (I_s VLS)}{(A_{is} VLS)\ (RRFVLS)\ (W_s VLS)\ (SVLS)}$$

where:

$A_x VLS$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} VLS$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s VLS$ = amount of internal standard added (ng)
RRFVLS = relative response factor (ambient temperature purge of the calibration standard)
$W_s VLS$ = weight of sample added (g)
SVLS = dry weight conversion factor [(100 - %moisture)/100]

★

Results Calculations for VOA soil/sediment (VMS) samples (medium level)

$$\text{Concentration } (\mu g/Kg) = \frac{(A_x VMS)\ (I_s VMS)\ (V_t VMS)\ (1000)\ (D_f VMS)}{(A_{is} VMS)\ (RRFVMS)\ (V_a VMS)\ (W_s VMS)\ (SVMS)}$$

where:

$A_x VMS$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} VMS$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s VMS$ = amount of internal standard added (ng)
RRFVMS = relative response factor (ambient temperature purge of the calibration standard)
$W_s VMS$ = weight of sample extracted (g)
$D_f VMS$ = dilution factor
SVMS = dry weight conversion factor [(100 - %moisture)/100]
$V_t VMS$ = total volume methanol extract (ml)
$V_a VMS$ = volume of the aliquot (ml)

9. COMPOUND IDENTIFICATION AND QUANTITATION (continued)

★

Results Calculations for SVOA water (SW) samples

$$\text{Concentration } (\mu g/L) = \frac{(A_x SW)\ (I_s SW)\ (V_t SW)\ (D_f SW)}{(A_{is} SW)\ (RRFSW)\ (V_o SW)\ (V_i SW)}$$

where:

$A_x SW$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} SW$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s SW$ = amount of internal standard added (ng)
RRFSW = relative response factor for the daily calibration standard
$V_o SW$ = volume of water extracted (ml)
$V_i SW$ = volume of extract injected (µL)
$V_t SW$ = volume of concentrated extract (µL)
$D_f SW$ = dilution factor

★

Results Calculations for SVOA soil/sediment (SS) samples

$$\text{Concentration } (\mu g/Kg) = \frac{(A_x SS)\ (I_s SS)\ (V_t SS)\ (D_f SS)}{(A_{is} SS)\ (RRFSS)\ (V_i SS)\ (W_s SS)\ (SSS)}$$

where:

$A_x SS$ = area of the quantitation ion (EICP) for the compound of interest
$A_{is} SS$ = area of the quantitation ion (EICP) for the specified internal standard
$I_s SS$ = amount of internal standard added (ng)
RRFSS = relative response factor for the daily calibration standard
$W_s SS$ = weight of sample extracted (g)
$D_f SS$ = dilution factor
SSS = dry weight conversion factor [(100 - %moisture)/100]
$V_t SS$ = total volume of concentrated extract (µL)
$V_i SS$ = volume of the extract injected (µL)

Comments:_____

10. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Do results meet the CRQLs? . . . . . Yes No N/A

Has the laboratory properly identified and coded all TIC? . . . . . Yes No N/A

Comments:_____

LATA GC/MS DATA VALIDATION CHECKLIST

VALIDATION SUMMARY

MAJOR DEFICIENCIES:

DATA NOT QUALIFIED AS ONLY ONE COMPOUND out
10-19-94 WJC

MINOR DEFICIENCIES: ① ~~The initial calibration for Bromomethane was then %D > 20 5 RSD resulting in the qualifier UJ.~~

② The method blank contained methylene chloride and acetone, but ~~the Sample BOBKH2 did not contain 10x the blank amount.~~ All samples were qualified as non-detects (U). jf 9/18/94

COMMENTS:

HOLDING TIME SUMMARY

SDG: W0012-ITC-028	VALIDATOR: B. MORRIS	DATE: 7-26-94	PAGE 1 OF 1
COMMENTS: GC/MS			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
BOBKH2	VOA	4-1-94	4-5-94	4-6-94	4	5	NONE
BOBKH5	VOA	↓	↓	↓	↓	↓	↓
BOBMZ4	VOA	↓	↓	↓	↓	↓	↓

PNO-DVF-017, R1

000063

CALIBRATION DATA SUMMARY

SDG: W0012 - ITC - 028	VALIDATOR: B MORRIS	DATE: 7-26-94	PAGE 1 OF 1
COMMENTS: GC/MS			

CALIB. TYPE:	(INITIAL)	CONT.	INSTRUMENT:

CALIB. DATE	COMPOUND	RF/CF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
4-4-94	BROMOMETHANE		RSD > 20.5	ALL	~~UJ~~ NO QUALIFIER 10-14-94 JSC

PNO-DVF-017, R1

000064

BLANK AND SAMPLE DATA SUMMARY

SDG: ~~W0028~~ By W0012-ITC-028	VALIDATOR: B. Morris	DATE: 7-26-94	PAGE 1 OF 1

COMMENTS: GC/MS

FIELD SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
Method Blank	Methylene Chloride	1	J	8:31	µg/L	5	10	AH ~~BOBKH2~~	U
"	Acetone	5	J	7:14	µg/L	25	50	~~BOBKH2~~ all	U

PNO-DVF-017, R1

590065

RELATIVE RESPONSE FACTOR

Analysis: GC/MS VOA
SDG: W0012-ITC-028
Sample ID: INIT CALIBRATION

Date: 26-Jul-94
Validator: B.MORRIS

Constituent	Response for Analyte of Interest AxV	Concentration of Internal Standard CisV	Area of Internal Standard AisV	Concentration of Analyte of Interest CxV	RRF
VINYL CHLORIDE	6023.00	50.00	18849.00	10.00	1.598
TOLUENE	25351.00	50.00	70970.00	10.00	1.786
BENZENE	22133.00	50.00	86002.00	10.00	1.287
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!

RELATIVE RESPONSE FACTOR

Analysis: GC/MS SVOA
SDG: W0012-ITC-028
Sample ID:

Date: 26-Jul-94
Validator: B.MORRIS

Target Constituent	Response for Analyte of Interest AxS	Concentration of Internal Standard CisS	Area of Internal Standard AisS	Concentration of Analyte of Interest CxS	RRF
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!
					#DIV/0!

990000

RELATIVE STANDARD DEVIATION

Analysis GC/MS VOA
SDG: W0012-ITC-028 Date: 26-Jul-94
Sample ID: INIT CALIB Validator: B.MORRIS

RRF1 Constituent: CHLOROBENZ

RRF1
0.93
0.895
0.938
0.965
0.914

MEAN	STDEV	RSD
0.928	0.0263	2.8

RELATIVE STANDARD DEVIATION

Analysis GC/MS VOA
SDG: W0012-ITC-028 Date: 26-Jul-94
Sample ID: INIT CALIBRA Validator: B.MORRIS

RRF2 Constituent: BROMOMETHANE

RRF2
1.192
1.028
1
0.69
0.731

MEAN	STDEV	RSD
0.928	0.2123	22.9

RELATIVE STANDARD DEVIATION

Analysis GC/MS SVOA
SDG: W0012-ITC-028 Date: 26-Jul-94
Sample ID: Validator: B.MORRIS

RRF3 Constituent:

MEAN	STDEV	RSD
#DIV/0!	#DIV/0!	#DIV/0!

RELATIVE STANDARD DEVIATION

Analysis GC/MS SVOA
SDG: W0012-ITC-028 Date: 26-Jul-94
Sample ID: Validator: B.MORRIS

RRF4 Constituent:

MEAN	STDEV	RSD
#DIV/0!	#DIV/0!	#DIV/0!

000067

PERCENT DIFFERENCE

Analysis: GC/MS VOA
SDG: W0012-ITC-028
Sample ID: CONT CALIB

Date: 26-Jul-94
Validator: B.MORRIS

Constituent	Initial Calibration Average RRF RRFiV	Continuing Calibration Average RRF RRFsV	%D
BROMOMETHANE	0.928	0.739	20.4%
TOLUENE	1.585	1.519	4.2%
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

PERCENT DIFFERENCE

Analysis: GC/MS SVOA
SDG: W0012-ITC-028
Sample ID:

Date: 26-Jul-94
Validator: B.MORRIS

Constituent	Initial Calibration Average RRF RRFiS	Continuing Calibration Average RRF RRFsS	%D
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

000068

SURROGATE RECOVERY

Analysis: GC/MS VOA
SDG: W0012-ITC-028
Sample ID: BOBKH2

Date: 26-Jul-94
Validator: B.MORRIS

Constituent	quantity of surrogate determined QdV	quantity of surrogate added QaV	%RV
TOLUENE-d8	47.49	50.00	95.0%
1,2-DICHLOROETHA-d4	53.90	50.00	107.8%
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

SURROGATE RECOVERY

Analysis: GC/MS SVOA
SDG: W0012-ITC-028
Sample ID:

Date: 26-Jul-94
Validator: B.MORRIS

Constituent	quantity of surrogate determined QdS	quantity of surrogate added QaS	%RS
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

9214513 2842

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP1	SDG: W0012-ITC-028	
VALIDATOR: MWebb	LATA NO.: VW401. 93	DATE: 7-29-94
SAF NO.: 94-088	LAB: ITC	CASE: —
QAPP REFERENCE:	SAP REFERENCE:	

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☒ CLP/ICP	☒ CLP/GFAA	☐ CLP/Hg	☐ CLP/CN	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846/CN	☐	☐

SAMPLES/MATRIX BOB KH6, BOB KH7 (ICP) (Waters)
BOB KH8, BOB KH9 (GFAA) Waters

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . Yes No N/A

Is a case narrative present? . . . . . Yes No N/A

Comments:

2. HOLDING TIMES *(see HOLDING TIME SUMMARY form)*

Are sample holding times acceptable? . . . . . Yes No N/A

Comments:

 MM 8/9/94

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS *(see CALIBRATION DATA SUMMARY form)*

Were initial calibrations performed on all instruments? . . . . . (Yes) No N/A

Are initial calibrations acceptable? . . . . . (Yes) No N/A

★ Recalculate the correlation coefficient (r) of the standard curves for atomic absorption and cyanide analyses.

Correlation Coefficient (r)

$$r = \frac{N \sum x_i y_i - \sum x_i \sum y_i^{1/2}}{[N \sum x_i^2 - (\sum x_i)^2]^{1/2} \; [N \sum y_i^2 - (\sum y_i)^2]^{1/2}}$$

Are ICP interference checks acceptable? . . . . . (Yes) No N/A

Were ICV and CCV checks performed on all instruments? . . . . . (Yes) No N/A

Are ICV and CCV checks acceptable? . . . . . (Yes) No N/A

★ Recalculate at least one ICV and CCV recovery for each method.

★

ICV/CCV Recovery

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments: _____

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Were ICB and CCB checks performed for all applicable analyses? . . . . . (Yes) No N/A

Are ICB and CCB results acceptable? . . . . . Yes (No) N/A

Were preparation blanks analyzed? . . . . . (Yes) No N/A

Are preparation blank results acceptable? . . . . . Yes (No) N/A

Comments: Zn result was qualified as U (non-detect) due to + contamination in the prep blank.

The ~~Cr~~ Al result was qualified as U (non detect) due to positive contamination in a calibration blank.

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were spike samples analyzed? . . . . . Yes No N/A

Are all spike sample recoveries acceptable? . . . . . Yes No N/A

Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A

Are all LCS recoveries acceptable? . . . . . Yes No N/A

★

Spike Recovery

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Comments:

6. PRECISION *(see PRECISION DATA SUMMARY form)*

Were laboratory duplicates analyzed? . . . . . Yes No N/A

Are all duplicate RPD values acceptable? . . . . . Yes No N/A

★

Relative Percent Difference

$$RPD = \frac{|OS - D|}{\left(\frac{OS + D}{2}\right)} \times 100$$

where:
OS = sample concentration (original sample/MS)
D = duplicate concentration (duplicate sample/MSD)

Comments:

6. PRECISION (continued) *(see PRECISION DATA SUMMARY form)*

Were ICP serial dilution samples analyzed? . . . . . Yes No N/A

Are all ICP serial dilution %D values acceptable? . . . . . Yes No N/A

★

Percent Difference

$$\%D = \frac{|I - S|}{I} \times 100$$

where:
I = analyte concentration before dilution
S = analyte concentration after serial dilution

Comments:

7. FIELD QC SAMPLES

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Are performance audit sample results acceptable? . . . . . Yes No N/A

Comments:

8. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A

Are all duplicate injection %RSD values acceptable? . . . . . Yes No N/A

Were analytical spikes performed as required? . . . . . Yes No N/A

Are all analytical spike recoveries acceptable? . . . . . Yes No N/A

Was MSA performed as required? . . . . . Yes No N/A

Are all MSA results acceptable? . . . . . Yes No N/A

Comments:

9. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes (No) N/A

Are all results supported in the raw data? . . . . . (Yes) No N/A

Are results calculated properly? . . . . . (Yes) No N/A

★

Inorganics Analysis Results Calculation, water sample

Concentration (µg/L) = CONCW × DFW

where:

CONCW = concentration off calibration curve (µg/L)

DFW = dilution factor (if any)

★

Inorganics Analysis Results Calculation, soil sample

$$\text{Concentration (mg/Kg)} = \frac{\text{CONCS} \times \text{DFS} \times \text{VOL}}{\text{WS} \times \text{SS}}$$

where:

CONCS = concentration off calibration curve (mg/L)

DFS = dilution factor (if any)

VOL = volume of final extract (ml)

WS = weight of sample (g)

SS = dry weight conversion factor [(100 - %moisture) × 100]

Do results meet the CRDLs? . . . . . (Yes) No N/A

Comments: CFAA metals were reported. Thallium was not analyzed by CFAA or by ICP

8/9/94

VALIDATION SUMMARY

W0012 - MC - 028

MAJOR DEFICIENCIES:

None

MINOR DEFICIENCIES:

The Zn result was qualified as U (non-detect.) due to + contamination in the prep blank (BOK4H6, 7)

The Pd result was qualified as U (non detect) due to + contamination in ~~the~~ a calibration blank. (BOB K149)

COMMENTS:

Thallium was not analyzed for by GFAA or by ICP. GFAA methods were requested

JM 8/9/94

BLANK AND SAMPLE DATA SUMMARY

SDG: W0012- MC- 028	VALIDATOR: MW066	DATE: 7-25-94	PAGE 1 OF 1
COMMENTS: INORGANIC ANALYSES			

FIELD SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB	Al	78.7			µg/L	393.5		BOBKH7	U
PB	Zn	6.54			µg/L	32.7		BOBKH6	U
PB	I	I			µg/L	I		BOBKH7	U

PNO-DVF-014, R1

00007662

9715513.2890

U.S. EPA - CLP

3
BLANKS

Lab Name: ITAS_KNOXVILLE_____ Contract: HANFORD___

Lab Code: ITSTU_ Case No.: W0283 SAS No.: _____ SDG No.: W0012_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

PBW0418B
APBW0411A

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	40.0	U	40.0	U	49.2	B	78.7	B	40.000	U	P
Antimony	50.0	U	50.0	U	50.0	U	50.0	U	50.000	U	P
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Barium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
Beryllium	1.0	U	1.0	U	1.2	B	1.7	B	1.000	U	P
Cadmium	5.0	U	5.0	U	5.0	U	5.0	U	5.000	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	66.060	B	P
Chromium	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Cobalt	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Magnesium	30.0	U	30.0	U	30.0	U	30.0	U	30.000	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
Mercury											NR
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	20.000	U	P
Potassium	1000.0	U	1000.0	U	1000.0	U	1000.0	U	1000.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	5.0	U	5.0	U	5.0	U	5.0	U	5.000	U	P
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	100.000	U	P
Thallium											NR
Vanadium	10.0	U	10.0	U	10.0	U	10.0	U	10.000	U	P
Zinc	5.0	U	5.0	U	5.0	U	5.0	U	6.540	B	P
Titanium	3.0	U	3.0	U	3.0	U	3.0	U	3.000	U	P

BOB KH7 Al Ca B→U
Zn B→U

FORM III - IN ILM02.1

Ca 66.06 * 5 = 330.30
Al 78.7 * 5 = 393.5
Be 1.7 * 5 = 8.5
Zn 6.54 * 5 = 32.7

mw
7-29-94

Zn qualifier changed from B to U due to prep blank (+ contamination)
Al " " " B to U due to CCB (+ contaminant)

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent: GFAA (As)
SDG: W0012-ITC-028

Calibration Date: 14-Apr-94

Date: 29-Jul-94
Validator: MC Webb

Concentration	Absorbance
0.00	-0.003
10.00	0.062
20.00	0.142
40.00	0.260
60.00	0.379
80.00	0.486

r 0.9986	r^2 0.9971
slope 162.7808	x intercept -0.9368
1/slope 0.0061	y intercept 0.0064

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent:
SDG: W0012-ITC-028

Calibration Date:

Date: 29-Jul-94
Validator: MC Webb

Concentration	Absorbance

r #DIV/0!	r^2 #DIV/0!
slope #DIV/0!	x intercept #DIV/0!
1/slope #DIV/0!	y intercept #DIV/0!

000076

PERCENT RECOVERY (ICV/CCV)

Analysis: Inorganic (metals/CN)
SDG: W0012-ITC-028

Date: 29-Jul-94
Validator: MC Webb

Constituent	Observed Value O	True Value A	%R
GFAA (As)	25.90	25.00	103.6%
ICP (Al)	19803.16	20000.00	99.0%
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

000076d

MATRIX SPIKE RECOVERY (MS)

Analysis: Inorganic (metals/CN)
SDG: W0012-ITC-028
Sample ID: See below

Date: 29-Jul-94
Validator: MC Webb

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
ICP (Al) B0BK46	1985.47	40.00	2000.00	97.3%
GFAA (As) B0BK48	43.82	10.42	40.00	83.5%
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!

PERCENT RECOVERY (LCS)

Inorganic (metals/CN)

Analysis: see below

SDG: W0012-ITC-028

mw 8-9-94

Date: 29-Jul-94

Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
ICP (Al)	2065.31	2000.00	103.3%
GFAA (As)	37.62	40.00	94.1%
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

000078

RELATIVE PERCENT DIFFERENCE

Analysis: Inorganic (metals/CN)
SDG: W0012-ITC-028
Sample ID: see below

Date: 29-Jul-94
Validator: MC Webb

Constituent	Original (Sample) concentration OS	Duplicate concentration D	RPD
GFAA (As) B0BKH6	10.42	8.98	14.8%
ICP (Ba) B0BKH8	30.85	36.23	16.0%
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

MW. 8-9-94

000079

PERCENT DIFFERENCE (ICP SERIAL DILUTION)

Analysis: ICP
SDG: W0012-ITC-028
Sample ID: see below

Date: 29-Jul-94
Validator: MC Webb

Constituent	Analyte Concentration before Dilution	Analyte Concentration after Serial Dilution	%D
	I	S	
ICP (Ba) BOBKH6	30.85	31.2	1.1%
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

MW 8-5-94

080080

INORGANICS RESULTS CALCULATION, WATER

Analysis: Inorganic (metals/CN)
SDG: W0012-ITC-028
Sample ID: See below

Date: 29-Jul-94
Validator: MC Webb

Constituent	Concentration from curve CONCW	Dilution Factor DFW	Concentration (µg/L)
ICP (Al) B0BKH7	88.80	1	88.8
GFAA (As) B0BKH7	10.40	1	10.4
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0

MW 8-9-94

000081

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-1		SDG: W0012-ITC-028
VALIDATOR: MWebb	LATA NO.: VW401.93	DATE: 9-19-94
SAF NO.: 94-088	LAB: ITC	CASE:
QAPP REFERENCE:		SAP REFERENCE:

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☐ CLP/ICP	☒ CLP/GFAA	☐ CLP/Hg	☐ CLP/CN	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846/CN	☐	☐

SAMPLES/MATRIX BOBKH8, BOBKH9 (GFAA) waters
(8202) (8203)

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES *(see HOLDING TIME SUMMARY form)*

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments: Sample Date 3-25-94
Analysis 4-14-94 180 d HT OK

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS *(see CALIBRATION DATA SUMMARY form)*

Were initial calibrations performed on all instruments? . . . . . Yes No N/A

Are initial calibrations acceptable? . . . . . Yes No N/A

★ Recalculate the correlation coefficient (r) of the standard curves for atomic absorption and cyanide analyses.

Correlation Coefficient (r)

$$r = \frac{N \sum x_i y_i - \sum x_i \sum y_i^{1/2}}{[N \sum x_i^2 - (\sum x_i)^2]^{1/2} \; [N \sum y_i^2 - (\sum y_i)^2]^{1/2}}$$

Are ICP interference checks acceptable? . . . . . Yes No N/A

Were ICV and CCV checks performed on all instruments? . . . . . Yes No N/A

Are ICV and CCV checks acceptable? . . . . . Yes No N/A

★ Recalculate at least one ICV and CCV recovery for each method.

★

ICV/CCV Recovery

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments:_____

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Were ICB and CCB checks performed for all applicable analyses? . . . . . Yes No N/A

Are ICB and CCB results acceptable? . . . . . Yes No N/A

Were preparation blanks analyzed? . . . . . Yes No N/A

Are preparation blank results acceptable? . . . . . Yes No N/A

Comments:_____

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were spike samples analyzed? . . . . . Yes No N/A

Are all spike sample recoveries acceptable? . . . . . Yes No N/A

Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A

Are all LCS recoveries acceptable? . . . . . Yes No N/A

★

Spike Recovery

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Comments:

6. PRECISION *(see PRECISION DATA SUMMARY form)*

Were laboratory duplicates analyzed? . . . . . Yes No N/A

Are all duplicate RPD values acceptable? . . . . . Yes No N/A

★

Relative Percent Difference

$$RPD = \frac{|OS - D|}{\left(\frac{OS + D}{2}\right)} \times 100$$

where:
OS = sample concentration (original sample/MS)
D = duplicate concentration (duplicate sample/MSD)

Comments:

6. PRECISION (continued) *(see PRECISION DATA SUMMARY form)*

Were ICP serial dilution samples analyzed? . . . . . Yes No N/A

Are all ICP serial dilution %D values acceptable? . . . . . Yes No N/A

★

Percent Difference

$$\%D = \frac{|I - S|}{I} \times 100$$

where:
I = analyte concentration before dilution
S = analyte concentration after serial dilution

Comments:

7. FIELD QC SAMPLES

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Are performance audit sample results acceptable? . . . . . Yes No N/A

Comments:

8. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A

Are all duplicate injection %RSD values acceptable? . . . . . Yes No N/A

Were analytical spikes performed as required? . . . . . Yes No N/A

Are all analytical spike recoveries acceptable? . . . . . Yes No N/A

Was MSA performed as required? . . . . . Yes No N/A

Are all MSA results acceptable? . . . . . Yes No N/A

Comments:

9. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

★

Inorganics Analysis Results Calculation, water sample

Concentration (µg/L) = CONCW × DFW

where:

CONCW = concentration off calibration curve (µg/L)

DFW = dilution factor (if any)

★

Inorganics Analysis Results Calculation, soil sample

$$\text{Concentration (mg/Kg)} = \frac{\text{CONCS} \times \text{DFS} \times \text{VOL}}{\text{WS} \times \text{SS}}$$

where:

CONCS = concentration off calibration curve (mg/L)

DFS = dilution factor (if any)

VOL = volume of final extract (ml)

WS = weight of sample (g)

SS = dry weight conversion factor [(100 − %moisture) × 100]

Do results meet the CRDLs? . . . . . Yes No N/A

Comments:

LATA INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION SUMMARY

W0012-ITC-028

MAJOR DEFICIENCIES:

None

MINOR DEFICIENCIES:

None

COMMENTS:

Validation is the missing thallium data for phase W0012-ITC-028

HOLDING TIME SUMMARY

SDG: WOU42 - ITC - 028	VALIDATOR: MWJ	DATE: 9-19-94	PAGE 1 OF 1

COMMENTS: INORGANIC ANALYSES

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
	GFAA	3-25-94	4-14-94			20	None

4T
180d

PNO-DVF-014, R1

000818

LINEAR REGRESSION ANALYSIS

Analysis: Inorganic (metals/CN)
Constituent: GFAA Tl
SDG: W0012-ITC-028

Calibration Date: 14-Apr-94

Date: 19-Sep-94
Validator: MC Webb

Concentration	Absorbance
0.00	0.003
10.00	0.035
20.00	0.069
40.00	0.120
60.00	0.168
80.00	0.209

r 0.9965	r^2 0.9931
slope 386.9760	x intercept -3.8840
1/slope 0.0026	y intercept 0.0107

I18000

PERCENT RECOVERY (ICV/CCV)

Analysis: Inorganic (metals/CN)
SDG: W0012-ITC-028

Date: 19-Sep-94
Validator: MC Webb

Constituent	Observed Value	True Value	%R
	O	A	
Tl ICV	23.72	25.00	94.9%
Tl CCV	40.58	40.00	101.5%

MATRIX SPIKE RECOVERY (MS)

Analysis: Inorganic (metals/CN)
SDG: W0012-ITC-028
Sample ID: BOBKH8

Date: 19-Sep-94
Validator: MC Webb

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
Tl	48.06	0.00	50.00	96.1%

000081K

97 3513 79B

RELATIVE PERCENT DIFFERENCE

Analysis: Inorganic (metals/CN)
SDG: W0012-ITC-028
Sample ID: BOBKH8

Date: 19-Sep-94
Validator: MC Webb

Constituent	Original (Sample) concentration OS	Duplicate concentration D	RPD
Thallium	non-detect	non-detect	NC

7180000

PERCENT RECOVERY (LCS)

Analysis: Inorganic (metals/CN)
SDG: W0012-ITC-028

Date: 19-Sep-94
Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
Thallium	53.30	50.00	106.6%

W 180000

INORGANICS RESULTS CALCULATION, WATER

Analysis: Inorganic (metals/CN)
SDG: W0012-ITC-028
Sample ID: BOBKH8

Date: 19-Sep-94
Validator: MC Webb

Constituent	Concentration from curve CONCW	Dilution Factor DFW	Concentration (µg/L)
Thallium	-0.03	1	0.0

N18000

LATA GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 200-UP 1	SDG: W0012-17C-028	
VALIDATOR: MWebb	LATA NO: VW401. 93	DATE: 7-29-94
SAF NO.: 94-088	LAB: 17C	CASE: —
QAPP REFERENCE:	SAP REFERENCE:	

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☐ Alkalinity 310.1	☐ Chloride 325.3	☐ pH 9040/150.1	☐ TOC 9060/415.1	☐ TDS 160.1 ☐ TSS 160.2	☐
☒ Anions 300.0	☐ Chromium+6 7196	☐ Phenols 9065/420.1	☐ TOX 9020/9022	☐ Sulfate 375.4	☐
☐ Ammonia 350.3	☐ COD 410.1	☐ Phosphorus 365.2	☐ TKN 351.3	☐ Sulfide 9030/376.1	☐
☐ BOD 405.1	☒ Nitrate+Nitrite 353.2	☐ Oil & Grease 413.1	☐ TPH 9070/418.1	☐	☐

SAMPLES/MATRIX	HEIS #	LAB #	Coll. Date
	BOBK68 (W)	AA 5110, 111	3-28-94
	BOBK67 (W)	AA 5120, 121	3-28-94
	BOBK46 (W)	AA 5125, 126	3-29-94
	BOBK42 (W)	AA 5283, 284	4-1-94
	BOBK49 (W)	AA 5287, 288	4-1-94
	BOBK40 (W)	AA 5289, 290	4-1-94

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES *(see HOLDING TIME SUMMARY form)*

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

	Anal date	HT		
NO3 NO2	4-15-94	28	22d	OK
Anions F, Cl, SO4		28	4-24-94	OK
1 ~~NO2, NO3, PO4~~		~~48hrs.~~	NOT reported!	

8/9/94

000082

3. INSTRUMENT CALIBRATION *(see CALIBRATION DATA SUMMARY form)*

Was initial calibration performed for all applicable analyses? . . . . . Yes No N/A

Are initial calibration results acceptable? . . . . . Yes No N/A

Was a calibration check performed for all applicable analyses? . . . . . Yes No N/A

Are calibration check results acceptable? . . . . . Yes No N/A

★ For methods requiring a calibration curve (three standards and a blank) use the following equation for correlation coefficient (r).

Correlation Coefficient (r)

$$r = \frac{N \sum x_i y_i - \sum x_i \sum y_i^{1/2}}{[N \sum x_i^2 - (\sum x_i)^2]^{1/2} \; [N \sum y_i^2 - (\sum y_i)^2]^{1/2}}$$

★ For methods requiring ICV/CCV or a calibration check standard, calculate recovery as follows:

Recovery

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments:

8/9/94

4. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Were laboratory blanks analyzed? . . . . . (Yes) No N/A

Are laboratory blank results acceptable? . . . . . (Yes) No N/A

Comments:

5. ACCURACY *(see ACCURACY DATA SUMMARY form)*

Were spike samples analyzed at the required frequency? . . . . . (Yes) No N/A

Are all spike recoveries acceptable? . . . . . Yes (No) N/A

★

Spike Recovery

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Were LCS analyses performed at the required frequency? . . . . . (Yes) No N/A

Are all LCS recoveries acceptable? . . . . . (Yes) No N/A

★

Recovery

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments: MS for chloride (IC) <75% >30% all samples estimated (J)
MSD for fluoride (IC) >125% B0BKG8, G7, H6 estimated (J)
MS >125% for sulfate (IC) all samples estimated (J)
RPD >20% for chloride & sulfate (IC) all samples qual. as estimated (J)

next, pg

6. PRECISION *(see PRECISION DATA SUMMARY form)*

Were laboratory duplicate samples analyzed at the required frequency? . . . . . Yes No N/A

Are all duplicate RPD values acceptable? . . . . . Yes No N/A

★

Relative Percent Difference

$$RPD = \frac{|OS - D|}{\left(\frac{OS + D}{2}\right)} \times 100$$

mm 7-29-94

where:
OS = sample concentration (original sample/MS)
D = duplicate concentration (duplicate sample/MSD)

Comments: RPD's for Cl^- & $SO_4^=$ by IC > 20%. All samples qualified as estimated (J)

7. FIELD QC SAMPLES

Were field QC samples (field/trip blanks, duplicates, splits, performance audit) identified? Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Are performance audit sample results acceptable? . . . . . Yes No N/A

Comments:

mm 8/9/94

8. ANALYTE QUANTITATION

Was analyte quantitation performed properly? . . . . . (Yes) No N/A

Are results calculated properly? . . . . . (Yes) No N/A

★ For methods with calibration curves:

General Chemistry Results Calculation, water sample

Concentration (µg/L) = CONCW × DfW

where:

CONCW = concentration off calibration curve (µg/L)

DfW = dilution factor (if any)

or

General Chemistry Results Calculation, soil sample

$$\text{Concentration (mg/Kg)} = \frac{(\text{CONCS} \times \text{DfS} \times \text{VOL})}{(\text{WS} \times \text{SS})}$$

where:

CONCS = concentration off calibration curve (mg/L)

VOL = volume of final extract (ml)

WS = weight of sample (g)

DfS = dilution factor (if any)

SS = dry weight conversion [(100 - %moisture) × 100]

★ For all other results calculations, see the analytical method.

Comments:

9. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes (No) N/A

Are results supported in the raw data? . . . . . (Yes) No N/A

Do results meet the CRDLs? . . . . . (Yes) No N/A

Comments:

WHC request Anions (NO_3) NO_3, NO_2, PO_4 were not analyzed by lab.

8/9/94

LATA GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

BWebb

VALIDATION SUMMARY

W0012 - ITC - 0028

MAJOR DEFICIENCIES:

None

MINOR DEFICIENCIES:

The matrix spike duplicate recovery for ~~Flouride~~ fluoride (IC) > 125%. The results are qualified as estimated ~~(J/UJ)~~. (J) B0BK68, KG7, KH6

The matrix spike recovery for sulfate (IC) > 125%. The results are qualified as estimated (J) (all samples)

The matrix spike's recovery for Chloride (IC) < 75% > 30%. The results are qualified as estimated (J) all samples

The RPD's for sulfate & chloride (IC) were > 20%. The results were qualified estimated (J/UJ)

COMMENTS:

No field QC samples identified

Not all analyses ~~reports~~ requested were reported. The COC requests Ammonia (NH_3) ~~NO_2, NO_3, & SO_4 were not analyzed by IC~~ was and reported Fl, Cl, and SO_4 instead. 10-10-94 (WJC)

JM 8/9/94

ACCURACY DATA SUMMARY

SDG: W0012-ITC-028	VALIDATOR: Webb	DATE: 7-29-94	PAGE 1 OF __

COMMENTS: GENERAL CHEMISTRY ANALYSES

FIELD SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
BOBKH2 MSD	Fluoride ~~MSD~~	126 %	BOB KG8 BOB KG7	J
			BOB KH6	J
BOBKH2 MS	Sulfate	139.8 %	all samples	J
BOBKH2 MS	Chloride	45 %	all samples	J

PNO-DVF-013, R1

000088

9/14/94

PRECISION DATA SUMMARY

SDG: W0012 - ITC-028	VALIDATOR: MWebb	DATE: 7-29-94	PAGE 1 OF 1

COMMENTS: GENERAL CHEMISTRY ANALYSES

COMPOUND	SAMPLE ID:	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
~~BOBKH~~ Sulfate	BOBKH2 MS	BOBKH2 MSD	35.6	all	J
Chloride	1	1	200	all	J

680000

PNO-DVF-013, R1

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent: Anion F
SDG: W0012-ITC-028

Calibration Date: 19-May-94

Date: 29-Jul-94
Validator: MC Webb

Concentration	Absorbance
0.00	228948.000
0.40	551748.000
1.99	2422224.000
4.00	5677147.000

r 0.9952	r^2 0.9904
slope 0.0000	x intercept -0.0093
1/slope 1381646.8001	y intercept 34010.2409

LINEAR REGRESSION ANALYSIS

Analysis: General Chemistry
Constituent: NO3NO2
SDG: W0012-ITC-028

Calibration Date: 19-May-94

Date: 29-Jul-94
Validator: MC Webb

Concentration	Absorbance
2.00	1549.000
1.00	757.000
0.40	298.000
0.10	72.000
0.04	28.000
0.02	14.000
0.00	-2.000

r 0.9999	r^2 0.9999
slope 0.0013	x intercept 0.0073
1/slope 774.0144	y intercept -5.5934

000090

PERCENT RECOVERY (ICV/CCV)

Analysis: General Chemistry
SDG: W0012-ITC-028

Date: 29-Jul-94
Validator: MC Webb

Constituent	Observed Value	True Value	%R
	O	A	
NO3NO2	0.95	1.00	95.1%
Anion F	2.00	2.00	100.0%
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

000091

MATRIX SPIKE RECOVERY (MS)

Analysis: General Chemistry
SDG: W0012-ITC-028
Sample ID: see below

Date: 29-Jul-94
Validator: MC Webb

Constituent	Spike Sample Result SSR	Sample Result SR	Spike Added SA	%R
F BOBKH2 MS	2.386	0.00	2.00	119.3%
F BOBKH2 MSD	2.520	0.00	2.00	126.0%
N/N AA5403 MS	0.932	0.016	1.00	91.6%
N/N AA5403 MSD	0.947	0.016	1.00	93.1%
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!
				#DIV/0!

NO2+NO3 MS AA 5403
MSD AA 5403 } not this work order. Only lab. ID available

MWebb 8-1-94

000092

PERCENT RECOVERY (LCS)

Analysis: General Chemistry
SDG: W0012-ITC-028

Date: 29-Jul-94
Validator: MC Webb

Constituent	Observed value	True value	%R
	OLCS	ALCS	
NO3NO2	0.95	1.00	95.2%
Anions F	1.90	2.00	95.0%
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

000093

RELATIVE PERCENT DIFFERENCE

Analysis: General Chemistry
SDG: W0012-ITC-028
Sample ID: see below

Date: 29-Jul-94
Validator: MC Webb

Constituent	Original (Sample) concentration OS	Duplicate concentration D	RPD
NO3NO2	91.60	93.10	1.6%
Anions F	119.30	126.00	5.5%
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!
			#DIV/0!

F MS BOBKH2
MSD BOBKH2

NO2+NO3 MS AA5403
MSD AA5403 } not this work order, No ID other than lab ID.

MWebb 8-9-94

000094

GENERAL CHEMISTRY RESULTS CALCULATION, WATER

Analysis: General Chemistry
SDG: W0012-ITC-028
Sample ID: see below

Date: 29-Jul-94
Validator: MC Webb

Constituent	Concentration from curve CONCW	Dilution Factor DfW	Concentration (µg/L)
NO3NO2 B0BKG8	10.70	1	10.7
Anions SO4 B0BKG8	11.53	3	34.6
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0

mw 8-9-94

9215515.2976

MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSIS

Laboratory Name:	ITAS-KNOXVILLE	SDG Number:	W0012
Contract Name:	Westinghouse Hanford	Job Number:	301
Client Sample ID:	BOBKH2	Extraction Date:	N/A
Lab Sample ID:	AA5283 OS/MS/MSD	Analysis Date:	04/28/94
Sample Matrix:	Water	Concentration Units:	mg/l

Compound	Orig. Sample Result	Conc. Spike Added	Conc. MS	% Rec.	Conc. MSD	%Rec.	RPD
fluoride	0.4 U	2	2.386	119.3	2.52	126	5.5
chloride	21 +	2	21.90	45.0	19.54	0	200
sulfate	38 +	10	51.98	139.8	47.36	93.6	39.6

MS Cl < 75 > 30% J/UJ
MSD Cl < 30% non dets = UR
RPD > 20% all Cl results estimated (J)

MSD F > 125% qual. result J/UJ
MS SO_4 > 125% " " J/UJ
Duplicate RPD > 20% Sulfate qualify results (J) estimate

MW
7-29-94

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

9413516.2987

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E

PROJECT: 200-UP-1	SDG: W0012-ITC-028	
VALIDATOR: MWebb	LATA NO.: VW401. 93	DATE: 7-21-94
SAF NO.: 94-088	LAB: ITC	CASE:
QAPP REFERENCE:	SAP REFERENCE:	

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☐ Gross Alpha ☐ Gross Beta	☐ Strontium-89 ☐ Strontium-90	☒ Technetium-99	☒ Isotopic Anal. Alpha Spec.	☒ Gamma Spectroscopy	☐ Iodine-129
☒ Total Uranium (KPA)	☐ Radium-226 ☐ Radium-228	☐ (LSC) Liquid Scintillation	☒ Total Sr	☐	☐

SAMPLES/MATRIX MATRIX = WATER

BOBKG1, BOBKG2, BOBKG4, BOBKG5, BOBKH3, BOBKG3
BOBKG6, BOBKG8, BOBKH3, BOBKG7, BOBKH6, BOBKJ2
BOBKH2, BOBKG9, BOBKH0

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification forms present? ..... (Yes) No N/A

Compliance screening form present? ..... (Yes) No N/A

Is a case narrative present? ..... (Yes) No N/A

Were all analyses requested reported? ..... (Yes) No N/A

Are all results supported in the raw data? ..... (Yes) No N/A

Comments:

2. CHAIN-OF-CUSTODY/HOLDING TIMES

Are sample holding times acceptable? ..... (Yes) No N/A

Are samples preserved correctly? ..... (Yes) No N/A

Was the pH of the sample checked prior to analysis? ..... (Yes) (No) N/A

Comments: There is no evidence that the pH was checked prior to analysis. Accepted - there is no variance report. MW 9-18-94

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

3. INITIAL CALIBRATION

Instruments/detectors calibrated within one year of sample analysis? . . . . . Yes (No) N/A

Initial calibration acceptable? . . . . . (Yes) No N/A

Standards NIST traceable? . . . . . (Yes) No N/A

Standards Expired? . . . . . Yes (No) N/A

Comments: The instrument was not calibrated within one year of the sample analysis but the continuing calibration requirements were sufficient to allow acceptance of data.

4. CONTINUING CALIBRATION

Background checked at proper frequency? . . . . . Yes (No) N/A

Background check acceptable? . . . . . Yes (No) N/A

Efficiency checked at proper frequency? . . . . . (Yes) No N/A

Efficiency check acceptable? . . . . . (Yes) No N/A

Calibration check standards NIST traceable? . . . . . (Yes) No N/A

Calibration check standards expired? . . . . . Yes (No) N/A

Comments: Bkg > 300 cts for U isotopic analysis. All sample results are qualified as estimated (J)

5. BLANKS *(see BLANK AND SAMPLE DATA SUMMARY form)*

Method blank analyzed? . . . . . (Yes) No N/A

Method blank results acceptable? . . . . . (Yes) No N/A

Analytes detected in method blank? . . . . . (Yes) No N/A

Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: U234 result 2.34 pCi/L (MDA 4 pCi/L) RDL = 1 pCi/L
No qualifier assigned

K-40 identified in the blank - qualify BOBK46 as ~~non-detected~~ estimated (J).
~~Since RDL is identified for K-40.~~

10-19-94 (JSC)

8/9/94

000098

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

6. MATRIX SPIKES *(see ACCURACY DATA SUMMARY form)*

Matrix spike analyzed? . . . . . Yes No N/A

Spike recoveries acceptable? . . . . . Yes No N/A

Spike source traceable? . . . . . Yes No N/A

Spike source expired? . . . . . Yes No N/A

Transcription/Calculation Errors? . . . . . Yes No N/A

★

Spike Recovery

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:
SSR = spiked sample result
SR = sample result
SA = spike added

Comments: MS analyzed for Sr (total)

7. LABORATORY CONTROL SAMPLES *(see ACCURACY DATA SUMMARY form)*

LCS analyzed? . . . . . Yes No N/A

LCS recoveries acceptable? . . . . . Yes No N/A

LCS traceable? . . . . . Yes No N/A

Transcription/Calculation Errors? . . . . . 10-10-94 JDZ . . . Yes No N/A

★

Recovery

$$\%R = \frac{\text{observed value}}{\text{true value}} \times 100$$

Comments: U235 spike %R > 130 % U235 result qualified as estimated (J)
EU152 spike (8) < 70% EU152 qualified as UJ estimated

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

8. CHEMICAL RECOVERY *(see ACCURACY DATA SUMMARY form)*

Chemical carrier added?	Yes	No	N/A
Chemical recovery acceptable?	Yes	No	N/A
Tracer added?	Yes	No	N/A
Tracer recovery acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Transcription/Calculation errors?	Yes	No	N/A

★

Alpha Spec Tracer Recovery

$$\frac{A.1 - B.1}{(2.22)(E.1)(T.1)}$$

where:
- A.1 = gross counts per minute
- B.1 = background counts per minute of tracer
- 2.22 = conversion factor, dpm/pCi
- E.1 = detector efficiency
- T.1 = activity (pCi) of tracer added to sample (can be determined by taking dpm of tracer added divided by 2.22)

Comments: Ra 99 yield was based on MS recovery. The yield was calculated incorrectly. All results had to be recalculated. See attached information

R2 < .98 (U TOTAL) for B0BK66, B0BKH0, B0BKG8 Ra results are qualified as estimated (J/UJ)

9. DUPLICATES *(see PRECISION DATA SUMMARY form)*

Duplicates Analyzed?	Yes	No	N/A
RPD Values Acceptable?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

★

Relative Percent Difference

$$RPD = \frac{|OS - D|}{\left(\frac{OS + D}{2}\right)} \times 100$$

where:
- OS = sample concentration (original sample/MS)
- D = duplicate concentration (duplicate sample/MSD)

Comments: % RPD for U235 > 20% U235 results qualified as estimated

10. FIELD QC SAMPLES

Field blank(s) identified? . . . . . Yes (No) N/A

Field blank results acceptable? . . . . . Yes No (N/A)

Analytes detected in field blank(s)? . . . . . Yes No (N/A)

Field duplicate sample(s) identified? . . . . . Yes (No) N/A

Field duplicate RPD values acceptable? . . . . . Yes No (N/A)

Field split sample(s) identified? . . . . . Yes No (N/A)

Field split RPD values acceptable? . . . . . Yes No (N/A)

Performance audit sample(s) identified? . . . . . Yes (No) ~~(N/A)~~ mw

Performance audit sample results acceptable? . . . . . Yes No (N/A)

Comments:

11. DETECTION LIMITS (LEVELS D & E)

MDA's meet required detection limits? . . . . . Yes (No) N/A

Transcription/calculation errors? . . . . . Yes (No) N/A

★

$$\frac{\text{Minimum Detectable Activity (MDA)}}{\dfrac{4.66 \times \sqrt{(B.2)(T.2)}}{2.22(E.2)(I.2)(R.2)(D.2)(V.2)(Y.2)(T.2)}}$$

where:

- B.2 = background counts per minute (cpm) or the reported standard deviation of the background (S) cpm
- T.2 = counting time for associated sample
- 2.22 = conversion dpm/pCi
- E.2 = detector efficiency
- I.2 = ingrowth correction factor (if applicable or 1)
- R.2 = carrier recovery factor (if applicable or 1)
- D.2 = decay factor (if applicable or 1)
- Y.2 = chemical yield factor (if applicable or 1)
- V.2 = sample volume in liters or grams

Comments: MDA's were not acceptable for U ISO analysis No qualifiers assigned.

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

Results Calculation Equations

Gross α/β and Tritium

$$\frac{(A.3 - B.3) \times C.3}{(2.22)(E.3)(V.3)}$$

where:

A.3 = gross counts per minute
B.3 = background counts per minute
C.3 = activity of α fraction in β channel*
2.22 = conversion factor, dpm/pCi
E.3 = detector efficiency
V.3 = sample volume, liters or grams
*if for calculation of gross β, otherwise substitute 1

Strontium (total)

$$\frac{A.4 - B.4}{(2.22)(E.4)(I.4)(D.4)(R.4)(V.4)}$$

where:

A.4 = gross counts per minute
B.4 = background counts per minute
2.22 = conversion factor, dpm/pCi
E.4 = detector efficiency
I.4 = ingrowth correction factor
R.4 = carrier recovery factor
D.4 = strontium decay factor
V.4 = sample volume, liters or grams

Strontium-90 (corrected for Sr-89)

$$\frac{A.5 - B.5}{(2.22)(Y.5)(E.5)(I.5)(D.5)(R.5)(V.5)}$$

where:

A.5 = gross counts per minute
B.5 = background counts per minute
Y.5 = yttrium-90 yield factor
2.22 = conversion factor, dpm/pCi
E.5 = detector efficiency
I.5 = ingrowth correction factor
R.5 = strontium-89 yield factor
D.5 = strontium decay factor
V.5 = sample volume, liters or grams

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

Results Calculation Equations, continued

Technetium-99

$$\frac{A.6 - B.6}{(2.22)(E.6)(R.6)(V.6)}$$

where:
A.6 = gross counts per minute
B.6 = background counts per minute
2.22 = conversion factor, dpm/pCi
E.6 = detector efficiency
R.6 = carrier recovery factor
V.6 = sample volume, liters or grams

Alpha Spec Isotopes

$$\frac{A.7 - B.7}{(2.22)(E.7)(R.7)(V.7)}$$

where:
A.7 = gross counts per minute for isotope
B.7 = background counts per minute for detector
2.22 = conversion factor, dpm/pCi
E.7 = detector efficiency
R.7 = tracer recovery factor
V.7 = sample amount, liters or grams

Gamma Spec Isotopes

$$\frac{A.8}{(2.22)(B.8)(D.8)(E.8)(V.8)(T.8)}$$

where:
A.8 = peak area for isotope
D.8 = decay factor for isotope
2.22 = conversion factor, dpm/pCi
B.8 = abundance factor for isotope
E.8 = efficiency factor for isotope
V.8 = sample amount, liters or grams
T.8 = live time (minutes)

Results Calculation Equations, continued

Total Uranium by Laser Fluorometry

$$\frac{(W.9 - I.9)(R.9)(D.9)}{U.9 - W.9}$$

where:

W.9 = sample reading with Fluran
I.9 = initial sample reading
R.9 = concentration of uranium standard after dilution with sample (µg/L)
D.9 = dilution factor
U.9 = sample reading with uranium standard

Radium-226 by Radon Emanation

$$D = \frac{COUNT}{(2.22)(CAL)(VOL)} \times \frac{1}{1 - e^{-\lambda t_1}} \times \frac{1}{e^{-\lambda t_2}} \times \frac{t_3}{1 - e^{-\lambda t_3}}$$

where:

COUNT = net count rate, cpm
CAL = calibration constant of the de-emanation system and the scintillation cell in counts per minutes/disintigrations per minute of radon-222
VOL = sample aliquot in liters
t_1 = the elapsed time in days between the first and second de-emanations, and λ is the decay constant for radon-222 (0.181 d^{-1})
t_2 = the time interval in hours between the second de-emanation and counting, and λ is the decay constant of radon-222 (0.00755hr^{-1})
t_3 = the counting time in minutes, and λ is the decay constant of radon-222 (1.26×10^{-4} min^{-1})
2.22 = conversion factor, dpm/pCi

200-UP-1

9715513.2995

WU012-ITC-C2Y

Muiebb

LATA RADIOCHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION SUMMARY

MAJOR DEFICIENCIES: None

MINOR DEFICIENCIES:

1. U235 LCS > 130% U235 result qualified as estimated (J)
   Eu152 LCS < 70% Eu152 result qualified as est. (UJ)
2. U235 RPD > 20% U235 result qualified as est (J)
3. R^2 < .98 BOBKG6, BOBKH0, BOBKG8 qualified as est (J/UJ)
   ↑ calibration coefficient

4. BOBK52 qualified J for isotopic U as background check not performed with 30 days 10-10-94 WJC

5. K-40 detected in blank. Sample BOBKH6 qualified as estimated (J). 10-19-94 WJC

COMMENTS: Tc99 yield was incorrectly calculated. All Tc99 data had to be recalculated & all Form 1s corrected. This added several hours of work to the validation of this package.

MDAs were not acceptable for isotopic U analysis. No qualifiers assigned.
10-11-94 WJC

PNO-DVF-015, R1

 8/9/94

000105

BLANK AND SAMPLE DATA SUMMARY

SDG: W0012 - ITC - 028	VALIDATOR: MWebb	DATE: 7-22-94	PAGE 1 OF 1

COMMENTS: RADIOCHEMICAL ANALYSES

FIELD SAMPLE ID	CONSTITUENT	RESULT pci/L	MDA pci/L	RDL pci/L	UNITS	5X RESULT	SAMPLES AFFECTED	QUALIFIER
		Blank						
	U234	2.34	4.05	1	pci/L	11.7	None	None
4-03-588-01	K-40	~~87~~ 104			pci/L	520	1BBKHG	J
		10-14-94 (WJC)						
10-14-94 (WJC)								

PNO-DVF-015, R1

000106

PRECISION DATA SUMMARY

SDG: W002-ITC-028	VALIDATOR: MWebb	DATE: 7-22-94	PAGE 1 OF 1
COMMENTS: RADIOCHEMICAL ANALYSES			

CONSTITUENT	FIELD SAMPLE ID:	DUPLICATE ID:	RPD/ CRDL	SAMPLES AFFECTED	QUALIFIER
	U235	40350802 F0350802	47.88	B0B KJ2	J

PNO-DVF-015, R1

ACCURACY DATA SUMMARY

SDG: WD012 - ITC - 028	VALIDATOR: MLKbb	DATE: 7-22-94	PAGE 1 OF 1

COMMENTS: RADIOCHEMICAL ANALYSES

FIELD SAMPLE ID	CONSTITUENT	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER
	Eu152	69%	40358801 BOBRH6	UJ
	U_{235}	181	40358802 BOB KJ2	J

PNO-DVF-015, R1

000108

9713513.2999

Laboratory Case Narratives

9213515.2940

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352
Attn: J.A. Lerch

May 11, 1994

Job Number: 283; 301

This is the Certificate of Analysis for the following samples:

SDG:	W0012
Client Project ID:	Westinghouse Hanford
Date Received by Lab:	April 1, 1994; April 5, 1994
Number of Samples:	Twelve (12)
Sample Type:	Water

I. Introduction

On April 1 and April 5, 1994, twelve (12) waters sample arrived at ITAS-Richland, Washington and were transferred to ITAS-Knoxville for chemical analysis. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. Soil results are reported on a dry weight basis.

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

Reviewed and Approved:

Sheree' A. Schneider
Project Manager

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

9715513.2941

IT Corporation
May 11, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 283; 301

II. Analytical Results/Methodology (Continued)

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

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

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

III. Quality Control

The volatiles analyses were performed on April 5, 1994 by purge and trap with a J & W DB-624 capillary column on a Hewlett-Packard 5970 GC/MS/DS. All QC results were within method specified limits.

Data were reported with qualifiers as follows:

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

The samples were digested on April 18, 1994 for ICP and April 11, 1994 for GFAA. The GFAA analyses for arsenic, lead and selenium were performed from April 11 through April 15, 1994; the remaining metals were analyzed by ICP on April 18, 1994. All run QC was acceptable. A duplicate/spike pair was prepared using sample number 8202A for GFAA and sample number 8701C for ICP. Spike recovery (accuracy) results were within acceptance limits for all requested parameters. Duplicate RPD (precision) results were within acceptance limits for all requested parameters.

IT Corporation
May 11, 1994

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Westinghouse Hanford

Job Number: 283; 301

III. Quality Control (Continued)

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

TABLE I

WHC ID	Richland ID	Knoxville ID	Test
BOBKG8	40358201A	AA5110	ANION
BOBKG8	40358201B	AA5111	NO3NO2
BOBKH8	40358202A	AA5122	METALS
BOBKH9	40358203A	AA5123	METALS
BOBKH7	40358702A	AA5124	METALS
BOBKG7	40358204A	AA5120	ANIONS
BOBKG7	40358204B	AA5121	NO3NO2
BOBKH6	40358701A	AA5125	ANIONS
BOBKH6	40358701B	AA5126	NO3NO2
BOBKH6	40358701C	AA5127	METALS
BOBKH2	40403901A	AA5277	VOA
BOBKH2	40403901D	AA5283	ANIONS
BOBKH2	40403901E	AA5284	NO3NO2
BOBKH5	40403902A	AA5278	VOA
BOBM24	40403903A	AA5279	VOA
BOBKG9	40403904A	AA5287	ANIONS
BOBKG9	40403904B	AA5288	NO3NO2
BOBKH0	40403905A	AA5289	ANIONS
BOBKH0	40403905B	AA5290	NO3NO2
TRIP BLANK	40403906A	AA5280	VOA
TRIP BLANK	40403906B	AA5280	VOA

9713513.2943

Chain-of-Custody Information

9213513.2944

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 03/22/94

Ice Chest No. GWS141

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-~~20~~21 KS 3/23/94

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG1
1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40347001

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
B. WHITTEN	3/23/94	0850	L Sweeney / Sweeney	3/23/94	0850
L Sweeney / Sweeney	3/22/94	1155	Karen Ackenburg IAS	3-23-94	11:50

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. Samples stored in frig. #3C by K.D. Lee 03/22/94 1454

0038 8/9/94

A-6000-407 (12/92) WEF061

9213513.2995

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/22/94

Ice Chest No. GWS141

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-21

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG2
1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40347002

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] B. Wootten	3/23/94	0850	L Sweeney L Sweeney	3/23/94	0850
L Sweeney L Sweeney	3/23/94	1155	[illegible]	3-23-94	11:50

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. Samples stored in frig. at 3C by K.O. Lee 3/22/94 1459

A-6000-407 (12/92) WEF061

~~00410~~ 8/9/94
000115

9213513.0946

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 03/22/94

Ice Chest No. GWS141

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-21

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG4

1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40347003

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] B. WHITTON	3/23/94	0850	L Sweeney L Sweeney	3/23/94	0850
L Sweeney L Sweeney	3/23/94	1155	Karen Achtenberg	3-23-94	11:50

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. samples stored in fr's. # 3C by K.D. Lee 03/22/94 1459

A-6000-407 (12/92) WEF061

00428/9/94

000116

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/22/94

Ice Chest No. GWS141

Field Logbook No. EFC-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-21

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK65

1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40347004

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] B WHITTER	3/23/94	0850	[illegible]	3/23/94	0850
[illegible] L Sweeney	3/23/94	1155	[illegible]	3-23-94	11:50

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. Samples stored in Bldg. #3C by K.D. Lee 3/22/94 1459

A-6000-407 (12/92) WEF061

~~0044~~ 8/9/94

000117

9213515.2938

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/23/94

Ice Chest No. SMC118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NA

Offsite Property No. W94-0-03-36-24

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK H3

1; 2L; P; WATER; TOTAL URANIUM (HNO3)
3; 1L; P; WATER; Sr-90 (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40353101

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
G G Hamilton	3/23/94	1445	D.St. John D. St. John	3-23-94	1445
D.St. John D.St. John	3/25/94	0801	L Sweeney L Sweeney	3/25/94	0801
L Sweeney L Sweeney	3/25/94	1335	[illegible]	3/25/94	13.35

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone STORED Frig #3b @ 1502 3/23/94

A-6000-407 (12/92) WEF061

~~0050~~ 8/9/4

000118

9713513.2949

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator GG Hamilton

Company Contact PH BUTCHER

Project Designation/Sampling Locations 200-UP-1

Ice Chest No. SMC-118

Bill of Lading/Airbill No. NA

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Telephone (509) 376-5045

Collection Date 3/23/94

Field Logbook No. EFL 1124

Offsite Property No. W94-0-0336-24

Sample Identification

BOBKG3

1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40353102

[X] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
GG Hamilton	3/23/94	1444	D. St. John	3-23-94	1444
D. St. John	3/25/94	0802	L. Sweeney	3/25/94	0801
L. Sweeney	3/25/94	1355	[illegible]	3/25/94	13:45

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. Stored Frig. #36 @ 1502 3/23/94

~~0053~~ 8/9/94

A-6000-407 (12/92) WEF061

9213513.2950

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/24/94

Ice Chest No. SMC118

Field Logbook No. FFL-1124

Bill of Lading/Airbill No. NA

Offsite Property No. W94-0-0336-24

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG6
1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

40353103

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
K.A. Lee K.A. Lee	03/25/94	0722	L Sweeney L Sweeney	3/25/94	0722
L Sweeney L Sweeney	3/25/94	1335	[illegible]	3/25/94	13:45

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone. Samples stored in Frig. #3C by K.A. Lee 3/24/94 1417

A-6000-407 (12/92) WEF061

0057 8/9/94

000120

9215513.2951

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/28/94

Ice Chest No. SMC118

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-C 0336-25

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKG5 40358201

1; 500mL; G; WATER; ANIONS (IC)-NO3 A
1; 500mL; P; WATER; NO3 (H2SO4) B
1; 2L; P; WATER; TOTAL URANIUM (HNO3) 40358301 A
1; 1L; P; WATER; Tc-99 (HCl) B

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
B.L. Whitten B L WHITTEN	3/28/94	1444	A J Simpson AJ SIMPSON	3/28/94	1444
A J Simpson AJ SIMPSON	3/29/94	0720	L Sweeney L Sweeney	3/29/94	0720
L Sweeney L Sweeney	3/29/94	1430	R Boyd	3-29-94	1440

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone Relins to Fig # 3A By Bill WHITTEN 3/28/94

A-6000-407 (12/92) WEF061

~~C06~~ 28/9/

000121

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 03/25/94

Ice Chest No. SMC118

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-25

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK H8

1; 1L; P; WATER; Tc-99 (HCl) 40358302A

1; 1L; P; WATER; GFAA METALS (HNO3) UNFILTERED 40358202A

BOBK H9

1; 1L; P; WATER; GFAA METALS (HNO3) FILTERED 40358203A

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] B. WHITEN	3/28/94	0720	D. Sweeney D. Sweeney	3/28/94	0720
D. Sweeney D. Sweeney	3/29/94	1430	R. Boydt Jr	3-29-94	1440

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

Data Deliverable-Standalone samples stored in frig. #3C by K.D. Lee 3/25/94

A-6000-407 (12/92) WEF061

~~C064~~ 8/9/94

000122

9416K1395

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/28/94

Ice Chest No. SMC-118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-25

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK67

1; 500mL; G; WATER; ANIONS (IC)-NO3 A 40358204.
1; 500mL; P; WATER; NO3 (H2SO4) B
1; 2L; P; WATER; TOTAL URANIUM (HNO3) 40358303 A
1; 1L; P; WATER; Tc-99 (HCl) B

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] B. WHITTEN	3/28/94	1445	AJ Simpson AJ SIMPSON	3/28/94	1445
AJ Simpson AJ SIMPSON	3/29/94	0720	L Sweeney L Sweeney	3/29/94	0720
L Sweeney L Sweeney	3/29/94	1480	[illegible]	3-29-94	1440

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone Reling to Fnlc # 3A By Bill WHITTEN 3/28/94

C066 8/9/94

A-6000-407 (12/92) WEF061

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3-29-94

Ice Chest No. SMC-118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-26

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBK H6

1; 500mL; G; WATER; ANIONS (IC)-NO3 A 40358701

1; 500mL; P; WATER; NO3 (H2SO4) B

1; 2L; P; WATER; TOTAL URANIUM (HNO3) 40358801 A

3; 1L; P; WATER; GAMMA SPEC. to include Co-58/60, Cs-137, Eu-152/154/155, Fe-59 (HNO3) B

1; 1L; P; WATER; Tc-99 (HCl) C

1; 1L; P; WATER; ICP METALS (HNO3) UNFILTERED C

BOBK ~~H6~~ H7 DG 3-29-94

1; 1L; P; WATER; ICP METALS (HNO3) FILTERED 40358702A

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[signature] B. WHITTEN	3/29/94	1313	[signature] AJ SIMPSON	3/29/94	1313
[signature] AJ SIMPSON	3/30/94	0904	[signature] L Sweeney	3/30/94	0904
[signature] L Sweeney	3/30/94	1030	[signature] D Gilmore	3/30/94	1025

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

Data Deliverable-Standalone Placed in Refrig 3C by AJ SIMPSON 3/29/94 1313

A-6000-407 (12/92) WEF061

~~00738~~ 8/9/94

9315515.2945

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 3/29/94

Ice Chest No. SML-118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-26.

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

BOBKJ2

1; 2L; P; WATER; TOTAL URANIUM (HNO3) A 40358802

1; 1L; P; WATER; Tc-99 (HCl) B

3; 1L; P; WATER; U-234/235/238 (HNO3) C

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[signature] B. Butcher	3/29/94	1313	[signature] AJ SIMPSON	3/29/94	1313
[signature] AJ SIMPSON	3/30/94	0904	[signature] L Sweeney	3/30/94	0904
[signature] L Sweeney	3/30/94	1030	~~[signature]~~	3/30/94	1025

Final Sample Disposition

Disposal Method:	Disposed by: —	Date/Time:

Comments:
Data Deliverable-Standalone. ~~Relinq to FAIR # By [signature] 3-29-94~~ BW
FAIR #3C by AJ SIMPSON

C0758/9/94

A-6000-407 (12/92) WEF061

9413.1956

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 4-1-94

Ice Chest No. SMC 118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-0-0336-30

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

40403901
BOBK H2
ABC 3; 40mL; Gs; WATER; VOA (HCl)
D 1; 500mL; G; WATER; ANIONS (IC)-NO3
E 1; 500mL; P; WATER; NO3 (H2SO4)
40404001 1; 2L; P; WATER; TOTAL URANIUM (HNO3)
3; 1L; P; WATER; Sr-90 (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

BOBK H5
40403902 A 3; 40mL; Gs; WATER; VOA (HCl)
B
C

BOBM Z4 3; 40mL; G WATER VOA (HCL)
40403903 A
B
C

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	4/1/94	1350	L Sweeney L Sweeney	4/1/94	1350
L Sweeney L Sweeney	4-4-94	1140 ~~0930~~	R. Boyd JT	4/4/94	1140

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone

Placed in Refrig 3C temp. OK AJS 4/1/94

A-6000-407 (12/92) WEF061

0079 8/9/94

000126

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 4-1-94

Ice Chest No. SMC118

Field Logbook No. EFL-1124

Bill of Lading/Airbill No. NONE

Offsite Property No. W94-C-C336-30

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

40403904
BOBKG9
A 1; 500mL; G; WATER; ANIONS (IC)-NO3
B 1; 500mL; P; WATER; NO3 (H2SO4)
40404002 1; 2L; P; WATER; TOTAL URANIUM (HNO3)
1; 1L; P; WATER; Tc-99 (HCl)

~~BOBM24 3, 40 mL G water VOA (HCL)~~ BW 4-1-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] Summer	4/1/94	1350	[illegible] L Sweeney	4/1/94	1350
[illegible] L Sweeney	4-4-94	~~0930~~ 1140	R. Boyd DT	4/4/94	1140

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone

Placed in Refrig 3C JJ SIMPSON 4/1/94 Temp OK

A-6000-407 (12/92) WEF061

~~0081~~ 8/9/94

000127

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 4-1-94

Ice Chest No. SMC-118

Field Logbook No. EFL 1124

Bill of Lading/Airbill No.

Offsite Property No. W94-0-0336-30

Method of Shipment EMERY

Shipped to IT

Possible Sample Hazards/Remarks NONE DETECTED

Sample Identification

40403905
BOBKH0
A 1; 500mL; G; WATER; ANIONS (IC)-NO3
B 1; 500mL; P; WATER; NO3 (H2SO4)
40404003 1; 2L; P; WATER; TOTAL URANIUM (HNO3)
↓ 1; 1L; P; WATER; Tc-99 (HCl)

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] B. WHITE	4/1/94	1350	L Sweeney L Sweeney	4/1/94	1350
L Sweeney L Sweeney	4-4-94	~~1350~~ 1140	R. Boyd	4/4/94	1140

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:
Data Deliverable-Standalone

Placed in Refrig 3C Temp. OK AJ Simpson 4/1/94

A-6000-407 (12/92) WEF061

0083 8/9/94

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001377*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

RL#381 WO#283

Reference Document No. 340355
Page 1 of 2

Project Name/No. 1: SAF 94088
Sample Team Members 2:
Profit Center No. 3: 4632
Project Manager 4: Van Pattey
Purchase Order No. 6:
Required Report Date 11: 5-3-94

Samples Shipment Date 7: 3/30/94
Lab Destination 8: Middlebrook
Lab Contact 9:
Project Contact/Phone 12:
Carrier/Waybill No. 13: N/A

Bill to: 5: I.T. Richland
Report to: 10: I.T. Richland

White: To accompany samples
Yellow: Field copy

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
40358201A	BOBKG8/WATER	3-28-94 12:00	500ml/G	500ml		ANIONS	3°C BPS 3/31/94	
↓ B	BOBKG8	↓	500mL P	500mL		NO3	↓	
40358202A	BOBKH8	3-25-94 10:37	P	1L		UNFILTERED GFAA METALS		
40358203A	BOBKH9	3-25-94 10:37	P	1L		FILTERED. GFAA METALS		
40358204A	BOBKG7	3-28-94 11:05	G	500ml		Anions		
↓ B	BOBKG7	3-28-94 11:05	P	500mL		NO3		
40358701A	BOBKH6	3-28-94 12:07	G	500ml		ANIONS		
↓ B	↓	↓	P	500mL		NO3	↓	

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions: 23

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

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

Turnaround Time Required: 26
Normal ☐ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0017

1. Relinquished by 28 (Signature/Affiliation) Karen Stockenberg ITAS Date: 3/30/94 Time: 16:00	1. Received by 29 (Signature/Affiliation) Bryan Blomquist ITASKN Date: 3/31/94 Time: 8:10
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

*See back of form for special instructions.

MCA 3/15/91

0001129

INTERNATIONAL TECHNOLOGY CORPORATION

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

WO#283
R#381

Reference Document No.[30] 340355

Page 2 of 2

Project Name WHC SAF 94-088

Project No.

Samples Shipment Date

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
40358701C	BOBXH6	3-29-94/ 12:07	P	1L		ICP UNFILTERED METALS	3C BB 3/31/94	
40358702A	BOBXH7	3-29-94/ 12:07	P	1L		ICP FILTERED METALS	↓	
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY
							FOR LAB USE ONLY	FOR LAB USE ONLY

JH 3/30/94

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA-3/15/91

000130

INTERNATIONAL TECHNOLOGY CORPORATION

COC NO. *0001396*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO #301
RL #392

Reference Document No. 340360
Page 1 of 2

Project Name/No.[1] SAF 94-088
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] 4-4-94
Lab Destination[8] Middlebrook
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13] 395 3500 634

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

White: To accompany samples
Yellow: Field copy

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]
40403901 A	BOBKH2 / water	4-1-94 1210	Gs	40 ml	Cool 40	VOA	2°C BPB 4/05/94	
B	↓	↓	↓	↓	↓	VOA	↓	
C	↓	↓	↓	↓	↓	VOA	↓	
D	↓	↓	↓	500 ml	↓	Anions (IC) NO3	↓	
E	↓	↓	Poly	500 ml	↓	NO3 (H2SO4)	↓	
40403902 A	BOBKH5 /	↓	Gs	40 ml	↓	VOA	↓	
B	↓	↓	↓	↓	↓	VOA	↓	
C	↓	↓	↓	↓	↓	VOA	↓	

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions:[23]

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

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

Turnaround Time Required:[26] Normal ☐ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0012

1. Relinquished by[28] (Signature/Affiliation) R. Boyd IT	Date: 4-4-94 Time: 1600	1. Received by[28] (Signature/Affiliation) Bryan Blomquist IT-RICH	Date: 4/05/94 Time: 9:10
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]

*See back of form for special instructions.

MCA 3/15/91

000131

INTERNATIONAL TECHNOLOGY CORPORATION

COC No 1396

WO#301
RL#392

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

Reference Document No.[30] 340360
Page 2 of 2

Project Name ______

Project No. SAF 94-088

Samples Shipment Date 4-4-94

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
40403903 A	BOBMZ4/water	4-1-94 1210	GS	40ml	cool 4C	VOA	2°C BPB 4/05/94	
↓ B	↓	↓	↓	↓	↓	VOA	↓	FOR LAB
↓ C	↓	↓	↓	↓	↓	VOA	↓	USE ONLY
40403904 A	BOBKG9	4-1-94 1008	GS	500 ml	↓	Anions (IC)-NO3	↓	FOR LAB
↓ B	↓	~~4-1-94~~ 1115 4-4-94	Poly	500 ml	↓	NO3 (H2SO4)	↓	USE ONLY
40403905 A	BOBKHO	4-1-94 1115	GS	500 ml	↓	Anions (IC)-NO3	↓	
↓ B	↓	4-1-94 1115	Poly	500 ml	↓	NO3 (H2SO4)	↓	FOR LAB
40403906 A	TRIP Blank	4-4-94 1600	GS	40 ml	↓	VOA	↓	USE ONLY
↓ B	↓	↓	↓	↓	↓	VOA	↓	
								FOR LAB
								USE ONLY
								FOR LAB
								USE ONLY
								FOR LAB
								USE ONLY
								FOR LAB
								USE ONLY

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

000133

9713513.2963

VEDD Printout

VALIDATION ELECTRONIC DELIVERABLE W0012-ITC-028

Monday, August 08, 1994

HEIS-SN	Form	FormNr	LabCode	ConstID	Media	Value	ConcFlag	Qual	CountErr	Units
B0BKH7	NCLP	NA	ITC	7429-90-5	SW			U		
B0BKH6	NCLP	NA	ITC	7440-66-6	SW			U		
B0BKH7	NCLP	NA	ITC	7440-66-6	SW			U		
B0BKG8	NCLP	NA	ITC	16887-00-6	SW			J		
B0BKG7	NCLP	NA	ITC	16887-00-6	SW			J		
B0BKH6	NCLP	NA	ITC	16887-00-6	SW			J		
B0BKH2	NCLP	NA	ITC	16887-00-6	SW			J		
B0BKG9	NCLP	NA	ITC	16887-00-6	SW			J		
B0BKH0	NCLP	NA	ITC	16887-00-6	SW			J		
B0BKG8	NCLP	NA	ITC	16984-48-8	SW			J		
B0BKG7	NCLP	NA	ITC	16984-48-8	SW			J		
B0BKH6	NCLP	NA	ITC	16984-48-8	SW			J		
B0BKG8	NCLP	NA	ITC	14808-79-8	SW			J		
B0BKG7	NCLP	NA	ITC	14808-79-8	SW			J		
B0BKH6	NCLP	NA	ITC	14808-79-8	SW			J		
B0BKH2	NCLP	NA	ITC	14808-79-8	SW			J		
B0BKG9	NCLP	NA	ITC	14808-79-8	SW			J		
B0BKH0	NCLP	NA	ITC	14808-79-8	SW			J		
B0BKH6	NCLP	NA	ITC	10198-40-0	SW			U		
B0BKH6	NCLP	NA	ITC	13981-38-9	SW			U		
B0BKH6	NCLP	NA	ITC	10045-97-3	SW			U		
B0BKH6	NCLP	NA	ITC	14596-12-4	SW			U		
B0BKH6	NCLP	NA	ITC	14683-23-9	SW			UJ		
B0BKH6	NCLP	NA	ITC	14391-16-3	SW			U		
B0BHK6	NCLP	NA	ITC	15585-10-1	SW			U		
B0BKJ2	NCLP	NA	ITC	U-233/234	SW			J		
B0BKJ2	NCLP	NA	ITC	15117-96-1	SW			J		
B0BKJ2	NCLP	NA	ITC	U-238	SW			J		
B0BKH0	NCLP	NA	ITC	7440-61-1	SW			J		
B0BKG8	NCLP	NA	ITC	7440-61-1	SW			J		
B0BKH2	NCLP	NA	ITC	75-09-2	SW			U		
B0BKH5	NCLP	NA	ITC	75-09-2	SW			U		
B0BMZ4	NCLP	NA	ITC	75-09-2	SW			U		
B0BKH2	NCLP	NA	ITC	67-64-1	SW			U		

Entered by: BH 8/9/94

Checked by: BH 8/9/94

HEIS-SN	Form	FormNr	LabCode	ConstID	Media	Value	ConcFlag	Qual	CountErr	Units
B0BKH5	NCLP	NA	ITC	67-64-1	SW			U		
B0BMZ4	NCLP	NA	ITC	67-64-1	SW			U		
B0BKH2	NCLP	NA	ITC	74-83-9	SW			UJ		
B0BKH5	NCLP	NA	ITC	74-83-9	SW			UJ		
B0BMZ4	NCLP	NA	ITC	74-83-9	SW			UJ		
B0BKH2	NCLP	NA	ITC	7440-24-6	SW			U		

Entered by: GH 8/9/94

Checked by: GH 8/9/94

9715515.2956

END OF PACKAGE